Non-audit services and audit quality: evidence from private firms

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Abstract

The purpose of this study is to examine the relationship between audit quality in private firms and the provision of non-audit services (NAS) - an issue that has rarely been considered in prior research. The threats to auditor independence are different in private firms compared to public firms. The same is true of the opportunities to use the same knowledge for audit and for NAS. Therefore, the effect of the provision of NAS on audit quality is also likely to be different. In this study, audit quality is measured by discretionary accruals, as well as by managers' perceptions of the extent to which the audit improves accounting quality. The regression analysis is based on 420 surveyed private firms in Sweden and suggests that audit quality is positively associated with NAS in general and accounting services in particular. The findings indicate that the joint provision of audit and NAS do not necessarily result in impaired auditor independence, but rather support the existence of knowledge spillover between the services.

Key words: audit quality, auditor independence, non-audit services (NAS), knowledge spillover, private firms.

1.   Introduction

The purpose of this study is to examine the relationship between audit quality in private firms and the provision of non-audit services (hereafter NAS) to the audit client. Private firms are typically small and medium-sized enterprises (SMEs), but despite their predominance in the world economy very little research has been done on NAS and audit quality in a private firm setting. One noticeable exception is a recent paper by Hope and Langli (2010). In their examination of a large sample of private Norwegian firms they found no association between auditors' fees and the propensity to issue a going concern opinion.

Certain characteristics of the auditor-client relationship are different in private firms compared to public firms (see Coffee, 2005). As the competence level of accounting among managers of small private firms is generally low, the auditor plays an important role when assisting the firm with various technical accounting and tax-related issues. The work of auditors in suggesting necessary adjustments throughout the audit process may be relatively more important for the quality of financial statements in private firms compared to public firms. Given that only a few individuals are typically involved in the process of jointly providing auditing and NAS to these smaller clients, auditors have unique opportunities to draw on the effects of knowledge spillover between services. On the other hand, there is an increased risk of social bonding and the auditor assuming a more managerial role. Therefore, the auditor-private firm relationship has certain unique characteristics that may affect an association between NAS and audit quality.

On the whole, the empirical evidence relating to the association between NAS and audit quality and auditor independence is mixed. Importantly, prior studies have almost exclusively focused on public firms and primarily use U.S. data. Most of those studies find no support for an association between NAS fees and (i) indicators of earnings management (see Ashbaugh *et al*., 2003; Chung and

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Kallapur, 2003; Larcker and Richardson, 2004; Reynolds *et al.*, 2004; Francis and Ke, 2006; Ruddock *et al.*, 2006; Huang *et al.*, 2007) or (ii) going concern opinions (see Craswell *et al.*, 2002; DeFond *et al.*, 2002; Hay *et al.*, 2006a; Li *et al.*, 2009). Most of the cited studies are based on U.S. data. The exceptions are Ruddock *et al.* (2006) and Craswell *et al.* (2002), whose studies are based on Australian data, and Hay *et al.* (2006a), who use data from New Zealand. The absence of consistent results and the fact that very little research has been conducted on private firms has motivated the current study. As little is known about the relationship between audit quality and NAS in a private firm setting, the findings should have important implications for regulators and will hopefully also be of interest to users of financial statements in private firms. The E.U. addresses auditor independence and the provision of NAS in a recent Green Paper on audit policy (European Commission, 2010/561/EU). The Commission proposes prohibiting audit firms to provide NAS, but may still consider allowing the auditor to provide certain types of NAS to small audit clients.

The above papers use aggregated NAS data, which means that any potential effects on audit quality from specific types of NAS are not captured. Different NAS may have various effects on audit quality, but only a few studies of specific types of NAS have been carried out and none of these focus on private firms in particular. Kinney *et al.* (2004) found that specific NAS had different effects on audit quality for a sample of U.S. public firms. There is evidence to support a positive association between auditor-provided tax services and audit quality (Kinney *et al.*, 2004; Robinson, 2008), although no association with the quality indicator of restatements has been found for financial information systems and internal audit services (Kinney *et al.* 2004). I argue that potential spillover effects are more evident if the type of NAS provided are closely related to the audit, as this allows for greater use of the same information and requires similar client-specific knowledge. Based on the idea

of exploring the effects of specific NAS in private firms, this study investigates the association between audit quality and advisory or support services in i) accounting, ii) tax, iii) legal and iv) investments.

In comparison with the previous literature, I measure audit quality via the management's perception of audit quality. The indicator used signals the extent to which reporting quality is improved by the audit process - a dimension that will not be captured by using earnings management indicators or an auditor's propensity to issue a going concern opinion. Considering that management is typically responsible for the contact with auditors and is also involved in the production of the annual report, managers are in a favorable position to evaluate quality improvements throughout the audit process. Also, management has no obvious incentives to overrate the value of the audit process. However, the perception of management might be biased and may therefore not represent 'actual audit quality'. The use of this perception-based measure is particularly warranted, since accounting information in general is considered to be less reliable for private firms. In this study, discretionary accruals have been used as an alternative measure.

The study made use of data from 420 privately-held SMEs in Sweden. In Sweden audit firms are allowed to provide most types of advisory services to audit clients. For example, they can provide taxation services, legal services, management consultancy services, investment services and financial services. The results of the study showed positive associations between management's perception of audit quality and i) the proportion of NAS fees to total fees, and ii) advisory services in accounting, tax and law. Also, negative associations were found between discretionary accruals and i) the proportion of NAS fees to total fees, and ii) the natural logarithm of NAS fees, and iii) accounting services. A positive association was found between discretionary accruals and legal services. This implies that there are potential knowledge spillovers between services and that audit quality is not necessarily negatively affected by potential independence issues following the provision of NAS. However, no

association was found between perception of audit quality and the natural logarithm of non-audit services. Based on both measures of audit quality, the empirical evidence supported the expected positive association between provision of accounting services and audit quality. Using management's perception of audit quality, there was also support for positive associations between audit quality and consulting services in tax and legal issues.

Checks were also made for endogeneity, but despite using theoretically motivated instrumental variables no evidence was found to suggest that measures of NAS, audit fees and audit quality were endogenous constructs in this particular sample of private firms. The over-identifying restriction tests suggested that the chosen instruments were not perfect. Based on this evidence, OLS regressions were used for the main analysis. However, as a sensitivity analysis, the results from the OLS and 2SLS regressions were compared. Most of the 2SLS regressions did not show any association between measures of audit quality and NAS, although a significant positive association was found between perception of audit quality and the proportion of NAS fees to total fees.

The paper is structured as follows: in the next section the literature review and the hypotheses are presented. The sample description and the research design with model specification follow in section 3. The descriptive statistics, the main results and the sensitivity analysis are reported in section 4. The conclusions and implications are presented in section 5.

2   Literature review

This study is related to the literature on NAS and auditor independence. This literature considers whether (economic) bonding has negative consequences for auditor independence and audit quality. However, this study is also related to the literature examining potential knowledge spillovers between auditing and NAS, which is discussed in more detail below.

Economic and social bonding

There are basically two types of independence risks associated with NAS to audit clients, namely economic bonding and social bonding. These types of bonding are inherent and already present when the auditor is appointed, but are further increased if lucrative consulting opportunities are evident. Economic bonding creates incentives for the audit firm to act opportunistically and to handle conflicts in a way that benefits the client (Ferguson *et al*., 2004; Antle *et al*., 2006). However, the economic incentives are smaller in private firms compared to public firms because the absolute level of fees is lower and distributed among a larger portfolio of clients. Auditors in Sweden have a large number of audit assignments. Based on a sample of 1,202 bankrupt private firms in Sweden, the average number of total audit assignments held by auditors-in-charge was 123 (Sundgren and Svanström, 2011).[1] Among these bankrupt firms, only just over 10 % of clients had a turnover that exceeded 5 % of the total sales audited by the firm's auditor.[2] The reported figures stipulate that the auditor's total revenues (audit fees and non-audit fees) are in general unlikely to hinge on revenue concentration to a few clients. At audit firm level, dependency on a single client is even lower. Economic bonding is thus unlikely to have a major impact on audit quality in private firms, as suggested by Hope and Langli (2010).

Social bonding is recognized in the IFAC's Code of Ethics as the familiarity threat. Auditors and clients develop knowledge-based trust from repeated interaction (Gulati, 1995). Trust is important in establishing a well functioning service relationship and being involved with and taking a personal interest in the client is typically preferable for the final outcome of consulting services (Bennett and Robson, 2005). However, frequent interaction related to NAS could make it difficult for the auditor to remain independent. While social bonding is a risk in any audit assignment, there is reason to believe

that social bonding increases with the closeness of the auditor-manager relationship in private firms and with the auditor providing external advice.

Both economic and social bonding is present to some extent in most assignments. However, in empirical studies it is typically difficult to separate the two types of bonding. Only a few of the archival studies on public firms indicate that audit quality is reduced when larger amounts of NAS are provided to audit clients. Frankel *et al*., (2002) found support for lower earnings quality in U.S. firms with high levels of NAS, although their findings have proved to be a result of misspecified models in subsequent studies (Ashbaugh *et al*., 2003; Reynolds *et al*., 2004). Basioudis *et al.* (2008) found that NAS had a detrimental effect on auditor reporting judgments for financially distressed firms in the UK, in that those firms with high magnitudes of NAS fees were less likely to receive a going concern modified audit opinion.

Regulators at both national and international level are concerned that the provision of consultancy services 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 (2005).[3] The Swedish regulations seem to be less restrictive than the rules applied in some other countries, such as the U.S., China, Japan, Mexico, Germany and France, where audit firms are not allowed to provide certain types of NAS to their audit clients (Tafara, 2006; 6).

The extent to which (economic) bonding should be expected to negatively influence auditor independence and audit quality has been suggested to be related to the risk of litigation and a loss of reputation (Hope and Langi, 2010; Vander Bauwhede and Willekens, 2004). The litigation risk is low in Sweden compared to the U.S., although there are court cases and out-of-court settlements.

Furthermore, the Supervisory Board of Public Accountants (SBPA) issues disciplinary sanctions against auditors.[4] The possible sanctions are (i) a reprimand, (ii) a warning and (iii) withdrawal of license. During the period 2003-2005, disciplinary sanctions were issued against 3.7 % of qualified auditors. [5] Twenty-five auditors (0.6 %) had their licenses withdrawn in the same period.

In a country with high book-tax alignment, such as Sweden, the tax authorities scrutinize the audited annual report because it constitutes the basis for taxation. Based on findings during the tax audits, the tax authorities often report auditor misconduct to the SBPA.[6] As their work and integrity may be questioned in the follow-up by the tax authorities and SBPA, Swedish auditors in general, and those providing NAS in particular, therefore have increased incentives to maintain audit quality levels. Cross-national studies within Europe also indicate that the level of tax-book alignment in a country has a positive impact on (high quality) auditors' incentives to maintain quality in private firms (Van Tendeloo and Vanstraelen, 2008; Maijoor and Vanstraelen, 2006).

Knowledge spillovers

There are potential knowledge spillovers to gain from providing auditing and NAS to the same client (Simunic, 1984; Kinney *et al*., 2004; Antle *et al*., 2006, Gleason and Mills, 2007; Robinson, 2008). Productive effects arise from the fact that services utilize the same client specific information (Arruñada, 1999). Spillover effects have also been acknowledged by standard-setters: "the provision of such non-assurance services will often result in the assurance team obtaining information regarding the assurance client's business and operations that is helpful in relation to the assurance engagement" (IFAC's Code of Ethics 2005, para. 290.158). For example, auditors who consult on improvements to

the client's internal controls are also in a good position to conduct appropriate tests of internal controls during the audit process.

Client-specific knowledge is of vital importance when conducting private firm audits, given the strict time budget for these assignments. Since only two or three auditors (consultants) are typically involved in both the audit process and the provision of NAS, client-specific knowledge is more directly transferable between services. The knowledge gained does not have to be communicated between different audit team members and consultants, which reduces the risk of a loss of information.

Studies of the association between fees for NAS and audit fees in the U.S. (Abdel-Khalik, 1990; Davis *et al*., 1993) and Australia (Barkess and Simnett, 1994) do not give a conclusive answer to the question of whether there are audit production efficiencies from knowledge spillovers. Moreover, it is not obvious how any potential association between audit and NAS fees should be interpreted in terms of the existence of knowledge spillovers. However, assuming that potential endogeneity issues are dealt with adequately, higher audit quality among firms purchasing NAS would indicate spillovers between services. Antle *et al*. (2006) researched audit fees, non-audit fees and abnormal accruals in a system of simultaneous equations and identified a significant, negative association between non-audit fees and abnormal accruals in the UK sample, while no relationship was found for the U.S. sample. Recent studies on U.S. public firms have also found a positive association between auditor-provided tax services and measures of audit quality and audit efficiency, thus suggesting knowledge spillovers between tax services and auditing (Robinson, 2008; Lee *et al*., 2009). However, it should be recognized that the spillover argument has been questioned in empirical studies, since no association has been found between the provision of NAS to public firms and number of audit hours spent by U.S. audit firms (O'Keefe *et al*., 1994) or between audit fees and non-audit fees when controlling for an

endogenous NAS demand using U.S. and New Zealand samples (Whisenant *et al*., 2003; Hay *et al*., 2006a).

Specific types of NAS

The aggregate measure of NAS typically used in prior studies includes fees paid for a number of different services with various characteristics. However, it is inadequate to only deal with NAS as one category, since specific types of NAS may have various effects on audit conduct. A few studies have recognized the need to consider categories of NAS, though. Ezzamel *et al*. (2002) used survey data from the UK to study how categories of NAS were related to audit fees in public firms. They found that fees for corporate finance services were positively and significantly associated with audit fees, while no association with audit fees was found for internal audit and accounting-related fees. Kinney *et al*. (2004) found that tax services provided by the audit firm were negatively associated with restatements for public firms in the U.S., while unspecified professional services proved to be positively associated. No significant association with restatements was found for audit-related NAS and financial information system design and implementation. Huang *et al*. (2007) found marginal support that biased financial reporting was lower among U.S. public clients with high values of tax fee ratio and "other" non-audit fee ratio. In sum, these findings imply that specific types of NAS do not necessarily have the same association with audit quality and that further research is warranted.

Hypotheses development

A variety of research approaches pertaining to the relationship between NAS and audit quality are reported in the literature. On the whole, there is not much evidence to suggest that NAS is significantly associated with audit quality in public firms. The one prior study on private firms failed to find any

association between (abnormal) NAS fees and auditors' propensity to issue a going concern opinion (Hope and Langli, 2010). As there are also contradictory arguments on how NAS is related to audit quality, the first hypothesis is formulated as follows:

(H1)   There is no association between NAS and audit quality.

This study also reports on four types of NAS provided by the audit firm to an audit client: accounting, tax, legal and investments. These services are commonly provided to audit clients, but only tax-related advice has been studied in relationship to audit quality in previous research. Accounting related support includes technical assistance in preparing the financial statement and advice related to this, but does not include bookkeeping. Tax services include tax planning as well as more technical assistance and advice. Legal services encompass a broad range of services, such as contract support, advice in connection with investments, mergers and acquisitions as well as various other legal matters. Finally, investments refer to various types of advice related to larger investment decisions. As suggested in the introduction, beneficial spillover effects from NAS increases are possible if the advice is closely related to auditing. Therefore, advisory services related to accounting, tax and legal issues are expected to provide the auditor with valuable knowledge that can be used to identify extreme accounting choices and evaluating if financial statements are materially misstated. For example, an auditor providing these partly audit-related services will have much more knowledge about clients' accounting systems and routines and will possibly have more detailed information about aggressive tax and accounting positions than an auditor who does not provide such services. However, performing investment service gives the auditor a better understanding of clients' business strategies, but typically provides little information that is of direct value for the audit. Based on the above discussion, the following hypotheses were formed:

(H2a) There is a positive association between accounting support and audit quality.

(H2b) There is a positive association between tax services and audit quality.

(H2c) There is a positive association between legal services and audit quality.

(H2d) There is no association between investment services and audit quality.

3.   Research design

Sample

The data used in this study was collected from a large scale national survey of small and medium-sized enterprises (SMEs) in 2006. A major advantage of this survey data, as compared to only using secondary data, is the possibility of using alternative quality measures and analyzing specific types of NAS. It also allows for the control of audit firm tenure. Stratified random sampling was used for gathering the data in order to ensure a sufficient number of responses from each size category and region. A postal questionnaire was sent to a total of 900 firms in three size categories (1–9 employees, 10–49 employees and 50–249 employees) and three geographical regions.[7] Only active, unlisted limited liability companies were included, while financial firms and insurance companies were excluded from the sample. At the time of the study, Company Law stipulated that all limited liability companies had to be audited.[8] The selected regions differed significantly in terms of population density and number of available suppliers of audit and consulting services. On an aggregated level, the sampling procedure should ensure that collected data includes a broad range of private SMEs. Audited annual reports from the fiscal year of 2005 were used to gather additional information about firms' characteristics and for estimating discretionary accruals.

A total of 420 usable responses were received, which was a response rate of 47.1 % of the final sample.[9] The responses were relatively evenly distributed among the size

categories and regions. Two different non-response bias tests were performed. These tests did not indicate any significant differences with regard to a set of firm characteristics between: i) early and late respondents, or ii) respondents and all firms included in the final sample.

The data was weighted in order to generalize the results to the population of SMEs. The population of SMEs includes a relatively large number of micro firms (1-9 employees) as compared to small firms (10-49 employees) and medium-sized firms (50-249 employees). Also, a relatively large number of firms are located in the metropolitan area of Stockholm, as compared to rural regions. A weighting procedure based on the total number of active firms within each stratum was used to correct for these two biases. All the reported statistics and regressions results are based on the weighted data.

Model specification

In order to investigate the association between audit quality and NAS I estimated variations of the following multiple regression model (variables are explained in Table 1):

$$|\mathrm{DA}| = \beta_0 + \beta_1 \mathrm{NASRATIO} + \beta_2 \mathit{LNTENURE} + \beta_3 \mathrm{BIG4} + \beta_4 \mathrm{LNTA} + \beta_5 \mathrm{ROA} + \beta_6 \mathrm{SOLVENCY} +$$
$$\beta_7 \mathrm{EXTOWNERS} + \beta_8 \mathrm{SUBSIDIARY} + \beta_9 \mathit{EMP}1 - 9 + \beta_{10} \mathrm{EMP}10 - 49 + \beta_{11} \mathrm{REGION1} + \qquad (1)$$
$$\beta_{12} \mathrm{REGION2}$$

[Insert Table 1 about here]

Measures of audit quality

It is very difficult to objectively identify the level of audit quality and there is no single optimal way of measuring it. This study reports the findings on two alternative measures. I first report the conventional measure of discretionary accruals that has been used in prior studies (DeFond and Jiambalvo, 1994; Ashbaugh *et al*., 2003; Vander Bauwhede and Willekens, 2004; Larcker and Richardson, 2004; Antle *et al*. 2006, Lim and Tan, 2007; Chen *et al*., 2008) and then report on a unique measure of manager-

perceived audit quality that has not previously been used. Given the relatively similar results, the use of alternative measures of quality would appear to add credibility to the findings, especially since they are independent of each other and have been estimated very differently.

Discretionary accruals and earnings management incentives

Companies may use accruals to systematically steer reported earnings towards desired outcomes (Healy, 1985; Jones, 1991; DeFond and Park, 1997). An opportunistic use of accruals is a way for companies to achieve short-term goals with the aid of accounting measures. Earnings management is therefore assumed to be an indicator of low-quality financial reporting (Kinney *et al*., 2004). In a country like Sweden, with a high alignment between financial reporting and tax accounting, management may find it advantageous to use income-decreasing earnings management for tax reasons (Burgstahler *et al*., 2006; Van Tendeloo and Vanstraelen, 2008). However, banks are an important source of financing, especially for private firms that typically find it difficult to attract (large) investors. Various debt covenants can be used to reduce the shareholder-bondholder conflict of interest. Many of these debt covenants rely on accounting numbers, which creates incentives to manipulate earnings upwards in order to meet the lending agreements stipulated in the covenants.

Empirical evidence relating to private firms suggests that auditing is important in the relationship with lenders. Studies have found that a firm's choice of voluntary auditing is positively associated with the proportion of debt (Chow, 1982; Carey *et al*., 2000; Senkow *et al*., 2001; Hay and Davis, 2004), and that audited firms receive lower interest rates than unaudited firms (Blackwell *et a*l., 1998). Other incentives for income-increasing earnings management could be to increase the possibility to pay dividends and attract investors. By using the absolute value of discretionary accruals, results show the impact of audit quality on both income-increasing (positive accruals) and income-

decreasing (negative accruals) earnings management (Vander Bauwhede and Willekens, 2004). Both of these types of earnings management may be detrimental to stakeholders. In a supplementary analysis I studied income-increasing and decreasing accruals separately and analyzed a subset of highly leveraged firms.

Discretionary accruals have been used as a measure of audit quality in public firms (Becker *et al*., 1998; Francis *et al*., 1999; Myers *et al*., 2003; Lim and Tan, 2007, Chen *et al*., 2008) and private firms (Vander Bauwhede and Willekens, 2004) and as a measure of auditor independence (Ashbaugh *et al*., 2003; Myers *et al*., 2003; Reynolds *et al*., 2004). This is because it is assumed that auditors should constrain earnings management (Kinney *et al*., 2004). If the auditor identifies material misstatements in financial statements, he or she should first encourage the client to revise the accounting figures. The selection of a qualified audit opinion would usually not be considered before the final stage of the audit process.

Discretionary accruals are estimated as the difference between total (actual) accruals and estimated expected accruals. In this study, total accruals have been estimated as:

Total accruals $= \Delta AR_{04\text{-}05} + \Delta INV_{04\text{-}05} + \Delta ACCA_{04\text{-}05} - \Delta AP_{04\text{-}05} - \Delta ACCL_{04\text{-}05} - DEP_{05}$

Where,

AR =   Accounts receivable

INV =   Inventory

ACCA =   Accrued assets (prepaid expenses and accrued revenues)

AP =   Accounts payable

ACCL =   Accrued liabilities (prepaid revenues and accrued expenses)

DEP =   Depreciation

Discretionary accruals |DA| are then estimated using the cross-sectional variation of the Jones 1991 accrual estimation model reported in, for example, DeFond and Jiambalvo (1994) and DeFond and Subramanyam (1998). Modified Jones-models have often been used in research (see Becker *at al.*, 1998; Johnson *et al.*, 2002; Krishnan, 2003; Gul *et al.*, 2003; Ferguson *et al.*, 2004; Venkatamaran *et al.*,2008). Discretionary accruals are estimated for each of the following four industries: manufacturing, retail, service and others.

Discretionary accruals are estimated as the residuals from the following regression model: [10]

$$TA_{ij05}/A_{ij04} = \alpha(1/A_{ij04}) + \beta_1 * (\Delta REV_{ij04-05}/A_{ij04}) + \beta_2 * (PPE_{ij05}/A_{ij04}) + \epsilon_{ij05}$$

where,

TA_{ij05} = total accruals for sample firm *i* in industry *j* for year 2005

A_{ij04} = total assets for sample firm *i* in industry *j* for year 2004

$\Delta REV_{ij04-05}$ = change in net revenues for sample firm *i* in industry *j* for year 2005

PPE_{ij05} = gross property, plant, and equipment for sample firm *i* in industry *j* for year 2005

ϵ_{ij05} = error term for sample firm *i* in industry *j* for year 2005

Perceived audit quality

Several authors have doubted the ability of Jones-models to accurately measure earnings management (Guay *et al.*, 1996; Durtschi and Easton, 2005; Kothari *et al.*, 2005). Basically, the problem is to differentiate between normal and abnormal accruals. I compensated for the limitations of discretionary accruals by using respondents' perceptions of quality as an alternative measure. This measure, PERCQUAL, is based on a respondent's reply to the statement: "*The audit process improves the quality of external accounting information*". Respondents replied on a scale of 1 (strongly disagree) to

7 (strongly agree). As the responding CEOs and CFOs are in contact with the auditor and are involved in the production of the annual report, they are in a good position to evaluate how the audit process impacts accounting quality.

PERCQUAL captures service quality rather than actual audit quality. In the marketing literature the concept of service quality is commonly used. Researchers studying professional services typically use customers' perceptions of the service as "the quality measure". Service quality has been linked to customer satisfaction, purchase intention and profitability (Cronin and Taylor, 1992; Zeithaml *et al*., 1996). A relevant limitation is that management's perception of audit quality might be biased, in that they (the client) are paying for the audit services and therefore expecting certain outcomes. In this respect they can either overvalue or undervalue the actual audit quality. However, given the statutory audit requirement, management does not have to justify the use and value of audit services internally or in relation to various business partners. While recognizing that audit services ultimately should benefit outside interested parties rather than management, I still argue that management perception is a valid proxy for audit quality. An alternative approach would be to study the perceptions of the final users of accounting information. Creditors and trade partners may be concerned about the level of accounting and audit quality, but do not have sufficient information about the audit process to evaluate the value of the audit work performed.

NAS measures

Researchers have used different measures of NAS to study its relationship with audit quality. The proportion of NAS fees to total fees captures the relative value of NAS in relation to total fees paid to the audit firm, and this ratio is widely used (DeFond *et al*., 2002; Ashbaugh *et al*., 2003; Ferguson *et al*., 2004; Reynolds *et al*., 2004; Huang *et al*., 2007). This study has used the proportion of NAS fees to

total fees, NASRATIO, in models 1 and 4. If auditors receive proportionally more NAS fees in relation to audit fees, they have incentives to preserve or expand the lucrative NAS fees and may be more inclined to adopt a client perspective on auditing. In the literature, audits are considered as "loss leaders" that are simply used to gain access of "lucrative" consulting contracts (Antle *et al*., 2006). From a knowledge spillover perspective, NASRATIO captures the relative level of information that the auditor gains from NAS "for free" and that can potentially be used in the audit. However, the optimal level of NASRATIO is not specified. In order to capture the absolute level of fee dependency on the client, the natural logarithm of NAS fees, LNNAF, and the natural logarithm of audit fees, LNAF, have both been included in models 2 and 5. Finally, in order to study the relationship between specific types of NAS and audit quality, indicator variables for i) ACCOUNTING, ii) TAX, iii) LEGAL and iv) INVESTMENTS have been tested in models 3 and 6.

Control variables

Mautz and Sharaf (1961) suggested that lengthy auditor assignments may impair auditor independence and in turn reduce audit quality. The opposite argument is that audit quality improves over time due to improved client knowledge and learning effects (Knapp, 1991) or the existence of future quasi rents (DeAngelo, 1981a; Geiger and Raghunandan, 2002). Studies of public companies provide somewhat mixed evidence of this, but there is generally no support for reduced audit quality as the auditor-client relationship lengthens (Carcello and Nagy, 2004; Ghosh and Moon, 2005; Jenkins and Velury, 2008). The natural logarithm of audit firm tenure in years, LNTENURE, has been included.

It has been theoretically suggested (DeAngelo, 1981b), and empirically supported in the U.S., that Big 4 audit firms perform higher quality audits than non Big 4 audit firms (Francis *et al*. 1999; DeFond, 2002; Li, 2009; Choi *et al*., 2010). However, there is much less European evidence to support

quality differences between audit firms (Vander Bauwhede and Willekens, 2004; Maijoor and Vanstraelen, 2006; Van Tendeloo and Vanstraelen, 2008). This has been explained by the less risky audit environment (Vander Bauwhede and Willekens, 2004). In the regression models, an indicator variable for the use of a Big 4 audit firm has been included. Larger companies are expected to have more sophisticated financial-reporting systems than smaller companies, which lead to increased precision in the accounting information (Johnson *et al*., 2002). Also, the value of audit is expected to increase with the complexity of transactions (Knechel *et al*., 2008). In this study the natural logarithm of total assets, LNTA, has been included. Firms with financial problems have greater incentives to manipulate earnings (DeFond and Jiambalvo, 1994). Financial distress may further be related to higher audit risk and increased audit procedures (Cameran, 2005). In this context, a variable stating the proportion of own equity, SOLVENCY, and a performance variable, ROA, have been included in the regression models.

Accounting and audit quality is of vital importance for external owners who lack information about day-to-day activities. If the firm is not wholly owned by the management, external owners may consider the risk of financial information being misleading (Power, 1997; Tauringana and Clarke, 2000). Managers' incentives to manage earnings create a demand for high quality auditing in order to monitor management behavior in firms that distinguish between management and ownership (Carey *et al*., 2000; Collis *et al*., 2004). Theoretically, owner-managed firms may be less concerned with audit quality because they have private information about the company. The ownership variable included here is EXTOWNERS, which distinguishes between firms with owners that are not part of the management and owner-managed firms. Furthermore, accounting may have a different role in a company group where activities and monitoring are more complex (Abdel-Khalik, 1993). For example, subsidiaries may be required to quickly and accurately report earnings to the parent company. In this

study, an indicator variable for subsidiary firms, SUBSIDIARY, has been included. Finally, indicator variables for region, REGION1 and REGION2, and number of employees, EMP1-9 and EMP10-49, have been included in the regression models.[11]

4.   Results

Table 2 includes descriptive statistics for the variables included in the regression models and for audit fees (in thousand SEK), non-audit fees (in thousand SEK) and audit firm tenure (number of years).

[Insert Table 2 about here]

The median for NASRATIO is 0, which is due to the fact that, according to the figures reported in their annual reports, 50.3% of firms did not purchase NAS. However, approximately two-thirds of the firms stated that they had engaged their audit firm for advisory services in the past year. The audit fee median is 20,000 SEK. The high standard deviation for audit fees and non-audit fees is the result of a few firms paying very high fees for auditing and NAS. However, the dependent variable NASRATIO does not include any extreme values, since it only takes on values between 0 and 1. Approximately two thirds of the firms use a Big 4 auditor, which is a relatively high proportion for a private firm setting. The average length of the audit firm-client relationship is 14.6 years, which indicates that in Sweden private firms retain their auditor for a long period. LNTENURE is based on the survey responses.

Just over 40 % of firms hire the audit firm for accounting support, such as year end procedures and technical advice. Almost 49 % of firms purchase tax services from the audit firm, and here the proportions are 22.4 % and 6.2 % respectively for legal advice and investment services. On average, firms are financed to the extent of 46 % by their own equity. The proportion of equity financing is 43 % for firms buying accounting support compared to 48 % for firms not doing so. The average ROA is 4.6 % in the sample, with a variation from -78 % to 98 %; 36 % of firms have owners that are not part of management (EXTOWNERS) and 41 % are subsidiaries (SUBSIDIARY).

A too high correlation between the independent variables may cause problems with multicollinearity. Table 3 shows the correlations between the dependent and independent variables. Correlations between the independent variables are generally low. However, LNNAF and LNAF are relatively highly correlated at 0.54. These two fee variables are also highly correlated with LNTA at 0.55 and 0.70, respectively. These correlations are expected, given that prior research has documented a strong positive association between audit fees and NAS and between firm size and both types of fees (Simunic, 1984; Barkess and Simnett, 1994, Hay *et al*., 2006b). Although I have chosen to include these correlated variables in the same regression models, as a robustness check I also ran separate models, leaving just one of the correlated variables without finding any significant affect on remaining variables.

[Insert Table 3 about here]

Six regression models are reported in Table 4. In models 1-3, the dependent variable is discretionary accruals, |DA|, while in models 4-6 the dependent variable is the respondent's perception of audit quality, PERCQUAL. The ordinary least square (OLS) regression was performed in accordance with the model specification.

[Insert Table 4 about here]

NAS and audit quality

Model 1 shows a negative association that is marginally significant between |DA| and NASRATIO (sig. 0,058). Since low discretionary accruals relate to low levels of earnings management, the result indicates that audit quality is positively related to an increased proportion of non-audit fees paid to the auditor. In order to analyze the association between |DA| and NASRATIO further, I ran complementary regressions with indicator variables for different levels of fee ratio.[12] These analyses report that firms with a NASRATIO exceeding 50 % and firms with a NASRATIO of 1-49 % have significantly lower

discretionary accruals compared to firms that do not purchase NAS (sig. < 0.001 and sig. 0.001). The presence of higher audit quality with larger levels of NAS is further supported by model 2, which shows a significant negative association between |DA| and LNNAF (sig. 0.013). No significant association is found with LNAF. A positive association between NAS and audit quality is also supported by model 4, in which the NASRATIO is found to be significantly and positively associated with PERCQUAL (sig. 0.001). However, neither LNNAF nor LNAF is significant in model 5. Running complementary regressions eliminating up to two percent of the extreme values for |DA| does not affect the significance level for the independent variables of interest. When the regressions are run with unweighted data, the results are qualitatively similar (results not tabulated for brevity).

Regression models 3 and 6 report on specific NAS. The results show a significant negative association between ACCOUNTING and |DA| (sig. 0.009) and a significant positive association between ACCOUNTING and PERCQUAL (sig. 0.006). Basically, the associations indicate that accounting support has a positive effect on audit quality. Model 5 also reports positive associations with PERCQUAL for TAX and LEGAL (sig. 0.005 and sig. < 0.001), while INVESTMENTS is insignificant. Insignificant associations with |DA| for TAX and INVESTMENTS are reported in model 3, while a positive association is found between |DA| and LEGAL (sig. 0.012). The results on |DA| are robust to eliminating up to two percent of the extreme values. The differences noticed when using unweighted data, is that ACCOUNTING is negative and significant at the 0.05 level of probability in model 3, while the other specific NAS measures are insignificant. Also, in model 6, ACCOUNTING and TAX are positive and significant at 0.10, while LEGAL and INVESTMENTS are insignificantly associated with PERCQUAL.

Overall, the findings remain similar if regressions are run without a mean value replacement of missing values. However, NASRATIO is then significantly negatively associated with |DA| at the 0.05

level in model 1, and LNNAF is significantly positively associated with PERCQUAL in model 5 at the 0.05 level. In sum, I conclude that the findings for aggregated NAS measures (based on NASRATIO and LNNAF) and for ACCCOUNTING are robust to the use of (un)weighted data and to the mean value replacement.

Control variables

Models 1-3 report negative associations between LNTENURE and |DA|. The associations are significant at the 0.01 level of probability. Models 4 and 5 on PERCQUAL give additional support for improved quality with longer tenure (LNTENURE sig. at $p < 0.05$). These findings suggest that audit quality improves with the length of the audit engagement and support the existence of a learning curve for auditors.

No significant association is found between discretionary accruals and being audited by a Big 4 auditor. The absence of quality differentiation between audit firms contradicts results from previous studies on U.S. public companies (Becker *et al*., 1998, Francis *et al*., 1999; DeFond *et al*., 2002; Li, 2009). However, the results concur with findings conducted on private firms in Belgium (Vander Bauwhede *et al*., 2003; Vander Bauwhede and Willekens, 2004). A marginally negative association is even found between PERCQUAL and BIG4 in models 4 and 5.

All six models indicate that quality significantly increases with firm size, LNTA. The performance variable, ROA, shows no significant association with the level of discretionary accruals. Using PERCQUAL, models 4 and 5 show a negative association with ROA, thus suggesting that poor performance firms perceive audit quality to be lower.[13] ROA is generally sensitive to model specifications and the variable is not significant if using unweighted data. The measure of financial status, SOLVENCY, has a significant negative association with |DA|, which means that accounting and

audit quality is lower in highly leveraged firms. This corresponds with greater incentives for firms in financial distress to manipulate earnings (DeFond and Jiambalvo, 1994). A negative and significant association is found between |DA| and EXTOWNERS in models 1-3, which is consistent with agency theory in that accounting and audit quality is prioritized in firms where ownership and management are separated. Model 4 also provides some marginal support for this association. Insignificant associations are generally found between SUBSIDIARY and quality measures.

Signed accruals

The test for discretionary accruals in Tables 1-3 is based on absolute (unsigned) values. To further investigate how NAS is associated with earnings management, I divided the sample into two sub-samples: 210 firms with positive (income-increasing) discretionary accruals and 176 firms with negative (income-decreasing) discretionary accruals. Models 1-3 were then re-estimated for each sub-sample. For observations having positive accruals, NASRATIO (model 1) and LNNAF (model 2) are negative and significant at $p < 0.001$. ACCOUNTING (model 3) is negative and significant at $p < 0.001$, while LEGAL is positive and significant at $p < 0.05$. TAX and INVESTMENTS are insignificant. For observations with negative accruals, NASRATIO is positive but not significant. LNNAF is positive and significant at $p < 0.001$. All specific NAS measures are insignificantly associated with negative accruals (model 3). The findings indicate that both income-increasing and income-decreasing accruals are more constrained as larger amounts of NAS are provided, but the evidence is stronger for income-increasing accruals. NAS in general and auditor involvement in the production of financial statements in particular seems to primarily reduce income-increasing earnings management. The negative association with positive accruals for NASRATIO and ACCOUNTING is even stronger when running regressions on a sub-sample of firms being financed by debt to more than

50 %. The joint provision of audit and NAS seems to especially constrain earnings manipulation upwards for highly leveraged firms. This finding is most interesting from a creditor perspective, as it suggests that the combination of NAS and auditing reduces the risk of management exploiting debt holders via the financial report. Under a mandatory audit requirement, the purchase of certain types of NAS may play a similar assurance role as the demand for auditing in a voluntary audit setting.

Addressing potential endogeneity problems

In this study the aim has been to examine whether the provision of NAS to audit clients is related to audit quality. However, an endogeneity problem arises if the same underlying factors determine non-audit fees, audit fees and audit quality. Antle *et al*. (2006) confirm prior research, which suggests that audit fees, non-audit fees and abnormal accruals are related to many of the same factors, such as variables that capture agency cost, performance and client characteristics, and are thus jointly determined. Using joint estimation, they identify a negative association between non-audit fees and abnormal accruals.

In an attempt to resolve this potential econometric problem, I selected a set of variables assumed to be exogenous and then used the two stage least squares (2SLS) method to estimate the coefficients in the regressions model. The challenge was to find truly exogenous instrumental variables that affected NAS, but not the dependent variable, audit quality (i.e. structural error term), other than via NAS. As stressed by Larcker and Rusticus (2010), the instruments should be theoretically motivated. The chosen firm specific instruments were i) growth, ii) export, iii) subcontractor, and iv) number of people working in the financial/administrative department or similar, including management. All the instrumental variables are from "outside the system" and relate to a firm's need to purchase NAS. Specifically, growing firms have a larger need for advisory services than mature firms

(Kent, 1994). Second, exporting firms are active on more than one geographical market and as a consequence need to deal with e.g. different legislation, which increases the need to purchase NAS. Third, subcontractors typically work closely with larger main contractors on rather complex assignments (Miller *et al*., 2002). The role of small private subcontractors is somewhat exposed and issues such as contracts for joint ventures will often require some kind of external assistance, for example from the auditor. Fourth, firms that do not have the resources to hire full-time specialized staff will have a greater need to complement internal capacities with external expertise. The number of people working with administrative and financial tasks on a daily basis could be expected to affect the need to hire external consultants such as an auditor. In sum, the four chosen instrumental variables are expected to relate to the demand for NAS, although importantly there is no reason to believe that these "firm-based instruments" are associated with audit quality. However, most of the over-identifying restriction tests indicated that the chosen instruments are not perfect, but rather correlated with the error term.

The Hausman test is a formal test of whether the estimates using instrumental variable estimator are significantly different from the estimates produced from the OLS estimator. For 2SLS regressions with various combinations and numbers of proposed instrumental variables, the Hausman test consistently proved to be insignificant, i.e. the null hypothesis of no systematic differences between estimates from the instrumental variable and the OLS estimator could not be rejected. The Hausman test thus indicates that there are no major endogeneity problems. However, the test result is dependent on the quality of the chosen instruments. Based on the difficulty of finding uncorrelated instruments and the lack of evidence of endogeneity in this sample, the use of single-equations seems more appropriate for the main analysis on audit quality. I have therefore used them as the basis for

conclusion. As argued by Larcker and Rusticus (2010), OLS regressions would typically be preferably if no proper instrumental variables can be identified.

As a further control I compared the main results from the OLS regressions reported in Table 4 with those found using 2SLS regressions on audit quality measures (|DA| and PERCQUAL). [14] Based on 2SLS regressions, the predicted value of NASRATIO is positively associated with PERCQUAL (sig.0.036) in model 4 and negatively but insignificantly associated with |DA| in model 1. In line with OLS regressions, LNTENURE is positively associated with PERCQUAL and negatively associated with |DA| at the 0.01 level. Also, EXTOWNERS is significant in both models at the 0.10 and 0.01 percent level respectively. LNTA is positively associated with PERCQUAL but, contrary to OLS regression, insignificantly associated with |DA|. Next, insignificant coefficients are reported for predicted values of LNNAF and LNAF in models 2 and 5. Finally, coefficients for all of the specific NAS measures are also insignificant in models 3 and 6. In sum, 2SLS regressions provide rather weak evidence for an association between NAS and audit quality.

5.   Conclusions and implications

The issue of whether providing audit clients with NAS affects auditor independence and audit quality has been extensively debated and researched. Prior studies have almost solely focused on public firms and reported mixed results. This study is one of the first to analyze NAS and audit quality in a private firm setting and to explore specific types of NAS. The findings do not imply that auditor independence is impaired as a consequence of NAS. Rather, there are some indications that NAS actually has a positive affect on audit quality. Specifically, accounting support is shown to be positively related to audit quality. This finding should be viewed in the light that auditors are highly knowledgeable about appropriate year-end procedures and know how to use the relevant client-specific information

effectively. The study partly supports prior findings and the hypothesis of a positive association between tax advice and audit quality. However, mixed evidence is found for the influence of legal advice on audit quality, while investment advice does not seem to be related to audit quality. The findings are largely robust to the two quality measures and to various regression assumptions. However, the levels of significance for individual NAS indicators vary between the models and associations are generally weaker or insignificant for the 2SLS regression models. One study limitation is that it may be difficult for respondents to fully distinguish between different types of services provided by the auditor. Furthermore, it is not possible to fully distinguish between accounting quality improvements as a direct result of NAS and as spillovers benefitting the audit.

The unique characteristics involved in jointly providing auditing and NAS to private firms is the probable explanation for the reported results, as they are not typically found in prior research on public firms. In finding some positive association between NAS and audit quality, the results deviate to some extent from the findings related to Norwegian private firms reported by Hope and Langli (2010). The measures of audit quality and NAS used in the two studies are largely different, as is the level of tax-book alignment applied in Norway compared to Sweden. A positive relation between NAS and audit quality is consistent with theories of efficiencies and synergies following knowledge spillovers from the joint provision of auditing and NAS. Certain client-specific knowledge gained while performing NAS that is closely related to auditing could be effectively transferable to the audit in private firm assignments. Further studies from other jurisdictions are warranted in order to increase our knowledge about the association between NAS and audit quality in private firms.

The findings have important implications for the continuing discussion about how to regulate auditor independence in private firms. The independence issue has to be carefully considered for these joint assignments, although the findings indicate that, from an audit quality perspective, it is actually

beneficial if the audit firm also provides NAS. This means that further restricting the audit firm's opportunity to provide NAS to private firms may have an undesirable effect on reporting and audit quality.

Table 1. Definition of dependent and independent variables

Variable	Definition	Measurement
|DA| (dependent variable in models 1–3)	Absolute value of estimated total discretionary accruals.	According to specification in section 3.
PERCQUAL (dependent variable in models 4–6)	Respondent's perception regarding to what extent the audit improves accounting quality.	Measured on a likert scale from 1 (strongly disagree) to 7 (strongly agree), where 4 is equal to a neutral opinion to the given statement.
NASRATIO	Proportion of non-audit fee as compared to total fees paid to the audit firm.	Non-audit fee/total fee.
LNNAF	Natural logarithm of fees paid for non-audit services.	
LNAF	Natural logarithm of fees paid for audit services.	
ACCOUNTING	Indicator variable for whether or not the audit firm is hired for "accounting support" such as preparation of accounts and year-end procedures. Bookkeeping is not included. (based on survey responses)	0 = The audit firm is *not* hired for accounting assistance. 1 = The audit firm is hired for accounting assistance.
TAX	Indicator variable for whether or not the audit firm is hired for tax services. (based on survey responses)	0 = The audit firm is *not* hired for tax services. 1 = The audit firm is hired for tax services.
LEGAL	Indicator variable for whether or not the audit firm is hired for legal services. (based on survey responses)	0 = The audit firm is *not* hired for legal services. 1 = The audit firm is hired for legal services.
INVESTMENTS	Indicator variable for whether or not the audit firm is hired for advice related to major investments. (based on survey responses)	0 = The audit firm is *not* hired for investment services. 1 = The audit firm is hired for investment services.
LNTENURE	Natural logarithm of audit firm tenure in years. (based on survey responses)	

BIG4	Indicator variable for whether or not the firm is audited by Öhrlings PwC, Ernst & Young, KPMG or Deloitte (Big 4).	0 = The firm is *not* audited by a Big 4 audit firm. 1 = The firm is audited by a Big 4 audit firm.
LNTA	Natural logarithm of total assets.	
ROA	Return on total assets.	Net income/total assets. [15]
SOLVENCY	Proportion of assets financed by equity.	(0,7 * untaxed reserves+equity) /total assets.
EXTOWNERS	Indicator variable for whether or not the firm has owners that is not part of management. (based on survey response)	0 = The firm is wholly owner-managed. 1 = The firm has owners that is not part of management.
SUBSIDIARY	Indicator variable for whether or not the firm belongs to a company group. (based on survey response)	0 = The firm is *not* a subsidiary. 1 = The firm is a subsidiary.
EMP1-9	Indicator variable for micro firm.	0 = 10–49 employees. 1= 1–9 employees. (Reference category 50–249 employees is coded 0)
EMP10-49	Indicator variable for small firms.	0 = 1–9 employees . 1 = 10–49 employees. (Reference category 50–249 employees is coded 0)
REGION1	Indicator variable for region. (For specified information, see note 7).	0 = Småland. 1 = Norrland. (Reference category Stockholm is coded 0)
REGION2	Indicator variable for region. (For specified information, see note 7).	0 = Norrland. 1 = Småland. (Reference category Stockholm is coded 0)

Table 2. Descriptive statistics

Variable	Mean	Median	Standard deviation	Min	Max
|DA|	0.061	0.041	0.067	0.00003	0.447
PERCQUAL	5.020	5.000	1.559	1	7
Audit fee	50.241	20.000	224.254	3.800	9000
Non-audit fee	33.156	0.000	256.095	0	11000
NASRATIO	0.226	0.000	0.273	0.000	0.938
ACCOUNTING	0.403	0	0.491	0	1
TAX	0.485	0	0.500	0	1
LEGAL	0.224	0	0.417	0	1
INVESTMENTS	0.062	0	0.240	0	1
Audit firm tenure	14.383	10.000	14.988	1	90
LNTENURE	2.176	2.303	1.048	0.000	4.500
BIG4	0.672	1	0.470	0	1
LNTA	9.219	8.870	1.968	4.828	18.352
ROA[16]	0.046	0.041	0.215	-0.776	0.981
SOLVENCY[17]	0.462	0.457	0.300	-0.053	1.000
EXTOWNERS	0.356	0.000	0.479	0	1
SUBSIDIARY	0.408	0	0.492	0	1
EMP1-9	0.829	1	0.377	0	1
EMP10-49	0.145	0	0.352	0	1
REGION1	0.178	0	0.383	0	1
REGION2	0.197	0	0.398	0	1

The sample consists of 420 SMEs. The dependent variables are |DA| and PERCQUAL.

|DA| is the absolute value of estimated discretionary accruals. PERCQUAL is the respondent's perception of the extent to which the audit improves accounting quality measured on a likert scale from 1 (strongly disagree) to 7 (strongly agree). 4 are equal to a neutral opinion. The audit and non-audit fee is in thousand SEK. 1 Euro = 9.13 SEK as of December 1, 2011. Audit firm tenure is reported in years. The independent variables are defined as follows: NASRATIO is the proportion of non-audit fees to total fees paid to the audit firm; ACCOUNTING is an indicator variable equal to one if the audit firm is hired for accounting services , and zero otherwise; TAX is an indicator variable equal to one if the audit firm is hired for tax services, and zero otherwise; LEGAL is an indicator variable equal to one if the audit firm is hired for legal services, and zero otherwise; INVESTMENTS is an indicator variable equal to one if the audit firm is hired for investment services, and zero otherwise; LNTENURE is the natural logarithm of number of years that the current audit firm has audited the firm; BIG 4 is an indicator variable equal to one if the firm is audited by Öhrlings PricewaterhouseCoopers, Ernst & Young, KMPG or Deloitte, and zero otherwise; LNTA is the natural logarithm of total assets as reported in the annual report of 2005; ROA is return on assets (net income/total assets) as reported in the annual report of 2005; SOLVENCY is the sum of own equity and 70 % of untaxed reserves divided by total assets in 2005; EXTOWNERS is an indicator variable equal to one if one or more of the firm's owners are not part of the management, and zero otherwise; SUBSIDIARY is an indicator variable equal to one if the firm is a subsidiary, and zero otherwise. EMP1-9 is an indicator variable equal to one if the firm has 1 to 9 employees, and zero otherwise; EMP10-49 is an indicator variable equal to one if the firm has 10 to 49 employees, and zero otherwise; REGION1 is an indicator variable equal to one if the firm is registered in Region1 (Norrland), and zero otherwise; REGION2 is an indicator variable equal to one if the firm is registered in Region 2 (Småland), and zero otherwise.

Table 3. Linear correlations between dependent and independent variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
PERCQUAL (1)	1.00																			
|DA| (2)	-0.06	1.00																		
NASRATIO (3)	0.22	-0.12	1.00																	
LNNAF (4)	0.09	-0.18	0.53	1.00																
LNAF (5)	0.14	-0.12	0.05	0.54	1.00															
ACCOUNTING (6)	0.17	-0.12	0.47	0.02	-0.12	1.00														
TAX (7)	0.23	-0.09	0.06	0.27	0.33	0.04	1.00													
LEGAL (8)	0.26	0.06	0.16	0.31	0.27	0.05	0.38	1.00												
INVESTMENTS (9)	0.06	0.06	0.15	0.13	0.16	0.13	0.20	0.19	1.00											
LNTENURE (10)	0.14	-0.19	0.29	0.00	0.09	0.33	0.08	0.15	0.14	1.00										
BIG 4 (11)	-0.02	0.01	0.10	0.36	0.22	-0.01	0.18	0.05	0.08	-0.00	1.00									
LNTA (12)	0.12	-0.20	0.13	0.55	0.70	-0.14	0.33	0.22	0.10	-0.11	0.29	1.00								
ROA (13)	-0.04	-0.20	0.20	0.19	0.22	0.11	-0.01	0.00	-0.03	0.14	-0.00	0.43	1.00							
SOLVENCY (14)	-0.07	-0.27	-0.04	-0.06	-0.02	-0.07	0.06	-0.12	-0.11	-0.12	-0.00	0.21	0.45	1.00						
EXTOWNERS (15)	0.08	-0.17	-0.13	0.07	0.21	-0.08	0.14	0.10	-0.06	-0.22	-0.01	0.25	0.04	0.13	1.00					
SUBSIDIARY (16)	0.00	-0.10	0.08	0.24	0.38	0.04	0.25	0.25	0.13	-0.14	0.27	0.50	0.23	0.04	0.27	1.00				
EMP1-9 (17)	-0.06	0.05	-0.13	-0.32	-0.45	0.04	-0.09	-0.17	-0.08	0.00	-0.06	-0.32	-0.09	0.05	-0.16	-0.15	1.00			
EMP10-49 (18)	0.06	-0.06	0.13	0.27	0.34	-0.01	0.08	0.17	0.08	0.02	0.02	0.22	0.08	-0.03	0.12	-0.05	-0.91	1.00		
REGION1 (19)	0.03	-0.01	0.23	-0.04	-0.14	0.11	-0.10	-0.06	0.09	0.06	0.03	-0.01	-0.05	-0.02	0.05	0.05	-0.05	0.04	1.00	
REGION2 (20)	0.18	-0.02	0.28	-0.22	-0.09	0.21	-0.01	-0.01	0.07	0.19	0.02	-0.09	-0.05	-0.08	0.04	-0.06	0.00	0.01	-0.23	1.00

Table reports Pearson correlation coefficients. Variables are explained below.

|DA| is the absolute value of estimated discretionary accruals and PERCQUAL is the respondent's perception of the extent to which the audit improves accounting quality, measured on a likert scale from 1 to 7. The explanatory variables are defined as follows: NASRATIO is the proportion of non-audit fees to total fees paid to the audit firm; LNNAF is the natural logarithm of non audit fees; LNAF is the natural logarithm of audit fees; ACCOUNTING is an indicator variable equal to one if the audit firm is hired for accounting services , and zero otherwise; TAX is an indicator variable equal to one if the audit firm is hired for tax services, and zero otherwise; LEGAL is an indicator variable equal to one if the audit firm is hired for legal services, and zero otherwise; INVESTMENTS is an indicator variable equal to one if the audit firm is hired for investment services, and zero otherwise; LNTENURE is the natural logarithm of number of years that the current audit firm has audited the firm; BIG 4 is an indicator variable equal to one if the firm is audited by Öhrlings PricewaterhouseCoopers, Ernst & Young, KMPG or Deloitte, and zero otherwise; LNTA is the natural logarithm of total assets as reported in the annual report of 2005; ROA is return on assets (net income/total assets) as reported in the annual report of 2005; SOLVENCY is the sum of own equity and 70 % of untaxed reserves divided by total assets in 2005; EXTOWNERS is an indicator variable equal to one if one or more of the firm's owners are not part of the management, and zero otherwise; SUBSIDIARY is an indicator variable equal to one if the firm is a subsidiary, and zero otherwise; EMP1-9 is an indicator variable equal to one if the firm has 1 to 9 employees, and zero otherwise; EMP10-49 is an indicator variable equal to one if the firm has 10 to 49 employees, and zero otherwise; REGION1 is an indicator variable equal to one if the firm is registered in Region1 (Norrland), and zero otherwise; REGION2 is an indicator variable equal to one if the firm is registered in Region 2 (Småland), and zero otherwise.

Table 4. Results of six ordinary least squares (OLS) regressions on measures of audit quality

	Discretionary accruals (/DA/)			Perceived audit quality (PERCQUAL)		
	Model 1 Coeff. (p-value)	Model 2 Coeff. (p-value)	Model 3 Coeff. (p-value)	Model 4 Coeff. (p-value)	Model 5 Coeff. (p-value)	Model 6 Coeff. (p-value)
NASRATIO	-0.025* (0.058)			1.051*** (0.001)		
LNNAF		-0.010** (0.013)			0.070 (0.499)	
LNAF		0.004 (0.364)			0.159 (0.166)	
ACCOUNTING			-0.017*** (0.009)			0.440*** (0.006)
TAX			-0.003 (0.708)			0.471*** (0.005)
LEGAL			0.020** (0.012)			0.700*** (<0.001)
INVESTMENTS			0.017 (0.176)			-0.273 (0.377)
LNTENURE	-0.014*** (<0.001)	-0.015*** (<0.001)	-0.015*** (<0.001)	0.174** (0.035)	0.178** (0.039)	0.066 (0.429)
BIG4	0.008 (0.241)	0.010 (0.140)	0.009 (0.192)	-0.297* (0.075)	-0.297* (0.082)	-0.266 (0.102)
LNTA	-0.005** (0.012)	-0.006** (0.028)	-0.007*** (0.001)	0.181*** (<0.001)	0.135** (0.035)	0.152*** (0.004)
ROA	0.021 (0.258)	0.016 (0.365)	0.027 (0.142)	-1.162*** (0.009)	-0.828* (0.062)	-0.618 (0.163)
SOLVENCY	-0.055*** (<0.001)	-0.054*** (<0.001)	-0.051*** (<0.001)	-0.136 (0.631)	-0.147 (0.609)	-0.181 (0.516)
EXTOWNERS	-0.021*** (0.003)	-0.019*** (0.006)	-0.019*** (0.006)	0.297* (0.081)	0.178 (0.295)	0.144 (0.381)
SUBSIDIARY	-0.002 (0.790)	-0.004 (0.617)	-0.004 (0.578)	-0.196 (0.268)	-0.189 (0.292)	-0.412** (0.020)
EMP1-9	-0.012 (0.532)	-0.011 (0.570)	-0.014 (0.487)	0.318 (0.508)	0.536 (0.283)	0.130 (0.782)
EMP10-49	-0.012 (0.564)	-0.011 (0.583)	-0.018 (0.385)	0.279 (0.575)	0.443 (0.379)	0.072 (0.882)
REGION1	0.006 (0.477)	0.001 (0.908)	0.005 (0.567)	0.017 (0.937)	0.340 (0.102)	0.348* (0.078)
REGION2	0.005 (0.569)	-0.004 (0.647)	0.003 (0.676)	0.446** (0.030)	0.768*** (<0.001)	0.665*** (0.001)
N	420	420	420	420	420	420
F-value (sig.)	6.046 (< 0.001)	5.841 (< 0.001)	5.718 (< 0.001)	4.510 (< 0.001)	3.431 (< 0.001)	5.667 (< 0.001)
Adjusted R^2	0.126	0.130	0.144	0.091	0.070	0.143

The dependent variable in models 1-3 is |DA| and in models 4-6 it is PERCQUAL. |DA| is the absolute value of estimated discretionary accruals and PERCQUAL is the respondent's perception of the extent to which the audit improves accounting quality, measured on a likert scale from 1 to 7. The explanatory variables are defined as follows: NASRATIO is the proportion of non-audit fees to total fees paid to the audit firm; LNNAF is the natural logarithm of non audit fees; LNAF is the natural logarithm of audit fees; ACCOUNTING is an indicator variable equal to one if the audit firm is hired for accounting services , and zero otherwise; TAX is an indicator variable equal to one if the audit firm is hired for tax services, and zero otherwise; LEGAL is an indicator variable equal to one if the audit firm is hired for legal services, and zero otherwise; INVESTMENTS is an indicator variable equal to one if the audit firm is hired for investment services, and zero otherwise; LNTENURE is the natural logarithm of number of years that the current audit firm has audited the firm; BIG 4 is an indicator variable equal to one if the firm is audited by Öhrlings PricewaterhouseCoopers, Ernst & Young, KMPG or Deloitte, and zero otherwise; LNTA is the natural logarithm of total assets as reported in the annual report of 2005; ROA is return on assets (net income/total assets) as reported in the annual report of 2005; SOLVENCY is the sum of own equity and 70 % of untaxed reserves divided by total assets in 2005; EXTOWNERS is an indicator variable equal to one if one or more of the firm's owners are not part of the management, and zero otherwise; SUBSIDIARY is an indicator variable equal to one if the firm is a subsidiary, and zero otherwise; EMP1-9 is an indicator variable equal to one if the firm has 1 to 9 employees, and zero otherwise; EMP10-49 is an indicator variable equal to one if the firm has 10 to 49 employees, and zero otherwise; REGION1 is an indicator variable equal to one if the firm is registered in Region1 (Norrland), and zero otherwise; REGION2 is an indicator variable equal to one if the firm is registered in Region 2 (Småland), and zero otherwise.

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

Notes

[1] Information about client portfolios held by auditors-in-charge was acquired from the Credit Information Agency UC. The 839 auditors auditing these 1202 companies in 2008 and 2009 (several companies were audited by the same auditor) had on average 123 audit assignments. The median was 113.

[2] Firm size is a good proxy for fee dependency, as size explains a large proportion of the variation in fees (Hay et al. 2006b).

[3] Members of the EU may impose stricter rules. The regulation with respect to NAS also varies considerably between European countries (European Commission 2010/561/EU; p.12).

[4] SBPA is a governmental authority that investigates both on its own initiative and after having received complaints from clients, public authorities and individuals.

[5] SBPA initiated a total of 431 investigations against auditors during 2003-2005. In 36 % of the cases some type of disciplinary sanction was issued.

[6] The tax authorities had reported to the SBPA on auditor misconduct on 126 (29 %) of all 431 initiated investigations.

[7] The included regions are Norrland (counties of Västerbotten, Västernorrland, Jämtland, and Gävleborg), Småland (counties of Jönköping, Kalmar, and Kronoberg) and Stockholm (county of Stockholm),

[8] From November 1, 2010 firms exceeding two out of the following size criteria were exempted from the audit requirement: 3 employees, a balance sheet total of 1.5 million SEK (approx. 164,294 Euro) and a turnover of 3 million SEK (approx. 328,587 Euro). 1 Euro = 9.13 as of December 1, 2011.

[9] Nine firms were excluded due to bankruptcy, liquidation or merger. The questionnaire was sent to the CEO of the firm. In the covering letter it was stipulated that if a CFO or similar was responsible for contact with the audit firm then he or she should respond. The CEO responded in 60 % of the firms, the CFO in 31 % and 9 % of respondents had another position in the firm. 77 % of the CEOs owned shares in the firm, while this proportion was 20 % among CFOs and other respondents.

[10] When estimating discretionary accruals the one percent most extreme positive and negative values were eliminated for: i) total accruals and ii) change in net revenues divided by total assets. The one percent most extreme values for gross property, plant and equipment were also eliminated. In addition, I ran robustness checks on models using |DA| (models 1–3) as dependent variables, where up to two percent of the extreme values of |DA| were eliminated. The reason for being very observant about extreme values is that extreme discretionary accruals may be due to measurement errors (Kothari et al. 2005).

[11] REGION1 consists of firms from the region of Småland.. REGION 2 consists of firms from the region of Norrland. Region3 is reference category and consists of firms from Stockholm. Emp50-249 is reference category and consists of firms with 50 to 249 employees.

[12] NASRATIO has here been divided into three groups: i) NAS fees exceeding 50% of total fees; ii) NAS fees in the interval 1-50 % of total fees and iii) no NAS fees.

[13] The same associations with quality measures are found when using an indicator variable for loss instead of ROA.

[14] Tabulated results are available from the author upon request.

[15] Return of total assets, ROA, is typically defined as earnings before interest and taxes divided by total assets. The measure used in this study includes cost of interest. The consequence is that the reported values of ROA are somewhat lower than if cost of interest was excluded.

[16] One company reported an extreme value for ROA (-178%). This value was eliminated.

[17] The two most extreme values of SOLVENCY (-334% and -66%) were eliminated.

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