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The Interplay between Internal Governance Structures, Audit Fees and Earnings Management in Finnish Listed Companies

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ABSTRACT

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Purpose of the study

The main purpose of this thesis is to examine the joint effects of the internal corporate governance structures, audit fees and earnings management in Finnish listed companies. More precisely, the thesis examines the effects of the existence internal governance structures firstly to the audit fees and secondly to the magnitude of earnings management. The connective factor between the two presented research directions is financial reporting quality. The secondary purpose of this thesis is to explore the endogeneity issues raised in the previous literature and the methods for alleviating this problem.

Data

The data employed in this study is mainly sourced from Thomson Financial and Orbis databases. Also, the audit fee and governance related data is handpicked from the financial statements of the sample companies. Earnings management was proxied by the modified Jones cash flow discretionary accruals. The sample consists of companies listed in OMX-Helsinki, whose fiscal year ended in the year 2008. The financial companies were excluded from the sample, which has 107 observations in total.

Methods

The quantitative methods used in this study to analyse the hypothesized effects are performed using multivariate OLS and 2SLS regressions with the Stata statistic program. The 2SLS regressions performed were also tested extensively for the validity and powerfulness of the used instrumental variables. The validness of the instrumental variables was also tested separately for each variable.

Results

The results of this thesis support the complementary view between the existence of the audit committee and the amount of audit fees. Also, there is evidence that the auditors are most efficient in constraining earnings management. No statistically significant support for the association of the internal audit was found. These results are fairly robust when controlling for endogeneity between the hypotheses variables. However, the IV models do suffer from weak instrumental variables, which can skew the results.

The robustness of the results were also confirmed by using alternative measures for earnings management, audit fees and internal audit. The additional analyses provide some evidence on the positive effect of the earnings management to the audit fees, when the earnings management was measured with the last quarter earnings reversal.

Keywords
audit fees, earnings management, corporate governance, endogeneity

AALTO-YLIOPISTON KAUPPAKORKEAKOULU TIIVISTELMÄ
Laskentatoimen pro gradu tutkielma
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Tutkimuksen tavoitteet

Tutkimuksen päätavoitteena on tutkia yrityksen sisäisten hallintorakenteiden, tilintarkastuspalkkioiden ja tuloksenjärjestelyn keskinäisiä vaikutuksia suomalaisissa pörssiyhtiöissä. Tutkielman päätavoitetta tarkastellaan kahdesta eri näkökulmasta: hallintorakenteiden ja tuloksenjärjestelyn vaikutuksia tilintarkastuspalkkioihin sekä hallintorakenteiden ja tilintarkastuspalkkioiden vaikutusta tuloksenjärjestelyyn. Yhdistävä tekijä näiden kahden esitetyn tutkimusnäkökulman välillä on taloudellisen raportoinnin laatu. Toisena päätavoitteena on tutkia aikaisemmissa tutkimuksissa esiinnoussutta endogeenisuusongelmaa kyseisten toimijoiden välillä sekä käyttää sopivia menetelmiä ongelman lieventämiseksi.

Lähdeaineisto

Tutkimuksessa käytettävä aineisto on pääosin koottu Thomson Financial ja Orbis tietokannoista. Tilintarkastuspalkkiota ja hallintoa koskevat tiedot on käsinpoimittu yritysten vuosikertomuksista. Tuloksen järjestelyä mitattiin muunnellun Jonesin mallin mukaisilla harkinnanvaraisilla jaksotuserillä. Otosjoukko koostuu Helsingin pörssiin listatuista yrityksistä, joiden tilikausi on päättynyt vuoden 2008 aikana. Rahoitusalan yritykset on jätetty otoksen ulkopuolelle, jolloin lopullinen otoskoko on 107.

Aineiston käsittely

Tässä kvantatiivisessa tutkimuksessa on käytetty erilaisia monimuuttuja regressio-malleja (OLS ja 2SLS) hypoteesien tutkimiseksi. Endogeenisuutta kontrolloivissa 2SLS-malleissa käytettyjen instrumentaalimuuttujien validiutta ja tilastollista vaikuttavuutta on myös tutkittu tarkemmin sekä yhteisesti että muuttujakohtaisesti.

Tulokset

Tutkimuksen tulokset tukevat sisäisten hallintorakenteiden komplementaarista näkö-kulmaa, mikä näkyy tilintarkastusvaliokunnan olemassaolon ja tilintarkastus-palkkioiden positiivisena yhteytenä. Saadut tulokset myös tukevat hypoteesia tilintarkastuksen ja tuloksenjärjestelyn laajuuden negatiivisesta yhteydestä. Tutkimusmallit eivät kuitenkaan löytäneet tukea sisäisen tarkastuksen olemassaolon vaikutuksista kummassakaan tutkimusnäkökulmassa. Endogeenisuutta kontrolloivat 2SLS mallit tukevat varauksin näitä tuloksia. Käytetyt testit osoittivat että 2SLS mallien instrumentaalimuuttujat olivat heikkoja, joten näiden mallien tulokset voivat olla vääristyneitä.

Tulosten luotettavuutta tutkittiin myös käyttämällä vaihtoehtoisia muuttujia tuloksenjärjestelylle, tilintarkastuspalkkioille sekä sisäiselle tarkastukselle. Lisäanalyysit löysivät positiivisen yhteyden viimeisen neljänneksen tuloksen järjestelyn sekä tilintarkastuspalkkioiden välillä.

Avainsanat
tilintarkastus, tuloksen ohjaus, corporate governance, endogeenisuus

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1. Introduction

1.1 Background of the thesis

Recent world events have led to increased demand on companies' transparency requirements in their financial reporting either through legislative or through other standards related to disclosure. As pointed out by Ball (2008), financial reporting is an important economic activity. The demand for financial reporting arises from information asymmetry between the managers and owners of the company (Jensen & Meckling, 1976 and Healy & Palepu 2001). High quality of financial reporting is a prerequisite for an efficient allocation of capital (Healy & Palepu, 2001). Thus financial reporting quality is of interest to those who use financial reports for decision-making. External financial statement users including current and potential investors, creditors and many others need reliable financial information on which to base their resource allocation decisions. While numerous studies have investigated the effects of various corporate governance and audit quality variables on earnings management, empirical evidence is rather inconsistent. Thus, there is a clear need for more evidence on the interplay of these various corporate governance actors on financial reporting quality.

One of the key actors in ensuring the financial reporting quality is the external auditor. There is an extensive body of research focusing on the relationship between audit quality and financial reporting quality. Prior studies suggest that audits of higher quality are more effective in restricting management discretion over accounting issues than audits of lower quality, and thus resulting in higher earnings quality. High quality audits increase reporting reliability by reducing both intentional and unintentional measurement errors in historical earnings, which analysts use to predict future earnings, their forecasts are likely more accurate and less dispersed when audit quality is high (Behn et al., 2008, p.328). Companies often use a variety of services to increase their credibility in reporting, when the extent and accuracy of disclosed information increases and the frequency of reporting accelerates. These services should enhance the fact, that the users of this information can rely on the information obtained and make better judgment about the company. For the companies to answer the demand for more accurate and more reliable information, the companies and their boards and/or audit committees can make use of the expertise of internal and external audit functions.

The previous studies on the effect of internal audit and audit committee on audit fees have also been very inconsistent. The current prevailing theory and audit related textbooks see the work of internal audit function to be a substitutive related to the external auditors' work. According to this view the work of external auditors and internal auditors does not overlap as the external auditors do not need to audit the work internal auditors have already audited and vice versa. Now more recent studies (e.g. Knechel & Willekens, 2006 and Hay et al., 2008) have questioned this view and see the internal auditors' role on external auditors' workload to be more complementary instead of direct substitution.

Similarly, the effect of audit committees on auditors' workload is as controversial as the internal audit findings in related studies. One of the main tasks of the audit committee is the coordination of different control mechanisms in the organization, like internal audit and external audit. They can oversee and monitor the work various functions and they can assess the joint-effectiveness of various additional services, so that the company would have the most cost-effective monitoring package needed to meet the tightening requirements of stakeholders and authorities. One obvious way to enhance cost-effectiveness is by minimizing overlapping work. However, the existence of audit committees is also seen to increase audit fees in more recent studies (e.g. Stewart & Kent, 2006, Hay et al., 2008). The audit committee, through its expertise on the matter, may require more reports and face-to-face meetings thus increasing the bureaucracy of the auditors.

The level of earnings management has been widely used as a proxy for financial reporting quality. As the overall economic situation has deteriorated along the profits of the companies, the incentives for earnings management should be expected to increase. Company's earnings can be managed by manipulating variety of discretionary accruals (e.g. activations), or by changing the accounting principles where possible within the standards and recommendations. These efforts can affect the company's reported result, when considering the valuation of the public company or the accounting data related compensation of the executives, so that is most favourable to the company's purposes. As the company purposely manages earnings according to their needs, they do not necessary give a true and fair view of the company's earnings. Therefore, the quality of the reported earnings can be harder to interpret by an outsider and thus these manipulating efforts can diminish the quality of the financial reporting. As mentioned, the key players in ensuring the high quality of financial reporting are the various corporate governance actors.

As Cohen et al. (2004) found in their study internal audit and audit committee have an effect on both the audit quality and financial reporting quality. A close relationship between internal auditors and the audit committee has the potential to enhance the corporate governance capabilities of both parties. The independence of the internal audit is strengthened when it reports directly to the audit committee and is not hampered by concerns of divulging sensitive findings as compared to when internal audit reports to top management. Further, the breadth and hence, perceived value, of the internal audit is likely to be enhanced when it is employed as an important agent of the audit committee. Correspondingly, the effectiveness of the audit committee is strengthened when it is able to deploy the resources of the internal audit staff to obtain significant information on issues of concern within the company such as the strength of internal controls and quality of accounting policies. (Cohen et al., 2004).

Cohen et al. (2004) noticed that different corporate governance parties can strengthen each others' capabilities, which makes the corporate governance system more cost-efficient as a whole. This two-way relationship has been the interest of the modern accounting research, as it may skew the results of the earlier studies. This problem is called endogeneity. Chenhall & Moers (2007b) emphasize the seriousness of the possible endogenous issues in accounting research. Their main point is that "endogeneity is a serious matter as if it 'exists', we can no longer be confident that the results from the regression support the causality implied in the structural equation" (Chenhall & Moers, 2007b, p.219). They challenge their colleagues to a "lively debate on theory development and empirical testing of alternate theories can help develop better theory and assist in understanding how variables interrelate and help address issues of potential endogeneity (Chenhall & Moers, 2007b, p.220).

Hay et al. (2008) further explain the endogeneity problem related to the corporate governance studies and compare the different research directions: "Variables for control or governance, which are endogenous, namely internal audit and audit committee. There is expected to be a two-way relationship between external auditing and control. It has been argued in many 'substitution view' papers (e.g., Simunic 1980, 1984) that an organization can choose to trade off more or less internal auditing against external auditing; and it has also been argued that external auditing may have an impact on voluntarily forming an audit committee (Eichenseher & Shields, 1985 and Pincus et al., 1989). Alternatively, using the complementary controls arguments presented earlier, the relationship between controls and auditing is expected to be endogenous, but complementary. Increased external auditing could lead to increases in

control and governance, for example if auditors identify weaknesses in internal controls or recommend formation of an audit committee." (Hay et al., 2008)

Thus, there has been an ever-growing interest to study the effects of the internal governance structures to the audit fees or to the earnings management in the recent literature. Especially, there is a growing interest to study these effects in the context of endogeneity. Also, as the previous results are rather mixed, there is a need for additional studies to further our understanding relationships in the complex and vast corporate governance network.

1.2 Objective of the thesis

The main objective of this study is to investigate the interplay between audit committees, internal audit and external auditors in ensuring financial reporting quality. More specifically, as indicated by prior research, it is hypothesized that external auditors, internal auditors and audit committee contribute to minimizing earnings management thus improving financial reporting quality. Also, these same actors should help in improving financial reporting quality through audit quality, which is proxied by the amount of audit fees. In this study commonly used audit fee regression model developed first by Simunic (1980) and modified Jones earnings management regression (Dechow et al., 1995) are been used to explain the effect of the above mentioned governance structures on audit quality and financial reporting quality.

The secondary objectives of this study is to alleviate the possible endogeneity problems by using a two stage least squares (2SLS) method with extensive reporting on the results as Chenhall & Moers (2007a) and Larcker & Rusticus (2009) called for. If the variables are endogenous, use of OLS regression could lead to biased and inconsistent results. Therefore, two-stage least squares (2SLS) is used to estimate the relationship between audit fees, earnings management and the corporate governance variables. Also, this study tries to find strong instrumental variables to diminish the endogeneity problem and to provide as statistically sound results as possible.

The results should add to the growing body of literature on various facets of financial reporting quality and audit fees by strengthening our understanding of the determinants of audit fees, especially in the Finnish setting. Also, the results of this study should further our

understanding of the relationship between audit fees under different types of disclosure systems and earnings management in Finland. In this sense, this study should also contribute to the literature related to earnings quality.

The remainder of this study is organized as follows: Chapter 2 reviews the relevant prior research and literature in the field of auditing, internal auditing, and audit committee and earnings management. Chapter 3 presents the theoretical foundation for the testable hypotheses based on the previous chapter's prior research and literature. Chapter 4 contains the methodology for this study, including a description of the sample selection, sample characteristics, descriptive statistics and models to be tested. Chapter 5 presents the main testing results of the models and additional sensitivity analyses. Finally, Chapter 6 provides conclusions of the study with the considerations on the study's limitations and future research.

2. Theory and professional standards

This chapter reviews the relevant theories and professional standards used to explain the joint effects of the internal governance actors, audit fees and earnings management. In the first section 2.1, corporate governance mosaic is presented, which is used as a framework throughout the thesis. The following section 2.2 concentrates on the agency theory, which describes the demand for different monitoring functions to reduce the information asymmetry between the companies' owners and managements. Then the three different internal governance actors studied in this thesis are defined and their respective professional standards and guidelines are presented in detail in sections 2.3 through 2.5. The following section 2.6 explains the concept of earnings management. The final section 2.7 ties it all together by introducing the different determinants for the audit quality and financial reporting quality.

2.1 Corporate governance mosaic

As Messier et al. (2008) mention in their book, there is no universal definition of corporate governance: "While there is no generally accepted definition, corporate governance may be defined as a system 'consisting of all the people, processes and activities to help ensure stewardship over an entity's assets" (Messier et al., 2008, p.36). For a more practical definition of the corporate governance, Lin & Hwang (2010) define the benefits of well-organized corporate governance: "A good corporate governance structure helps ensure that the management properly utilizes the enterprise's resources in the best interest of absentee owners, and fairly reports the financial condition and operating performance of the enterprise" (Lin & Hwang, 2010, p.59)

As the above definitions of the corporate governance state, the corporate governance is a network of many actors trying as effectively as possible to cater the needs of both the company itself and the also the interest groups outside and inside. For a more illustrative presentation of the complex corporate governance network, Cohen et al. (2004) have constructed a corporate governance mosaic, which aims to describe how different corporate governance actors affect the financial reporting quality. This mosaic is presented on Figure 1 in the next page.

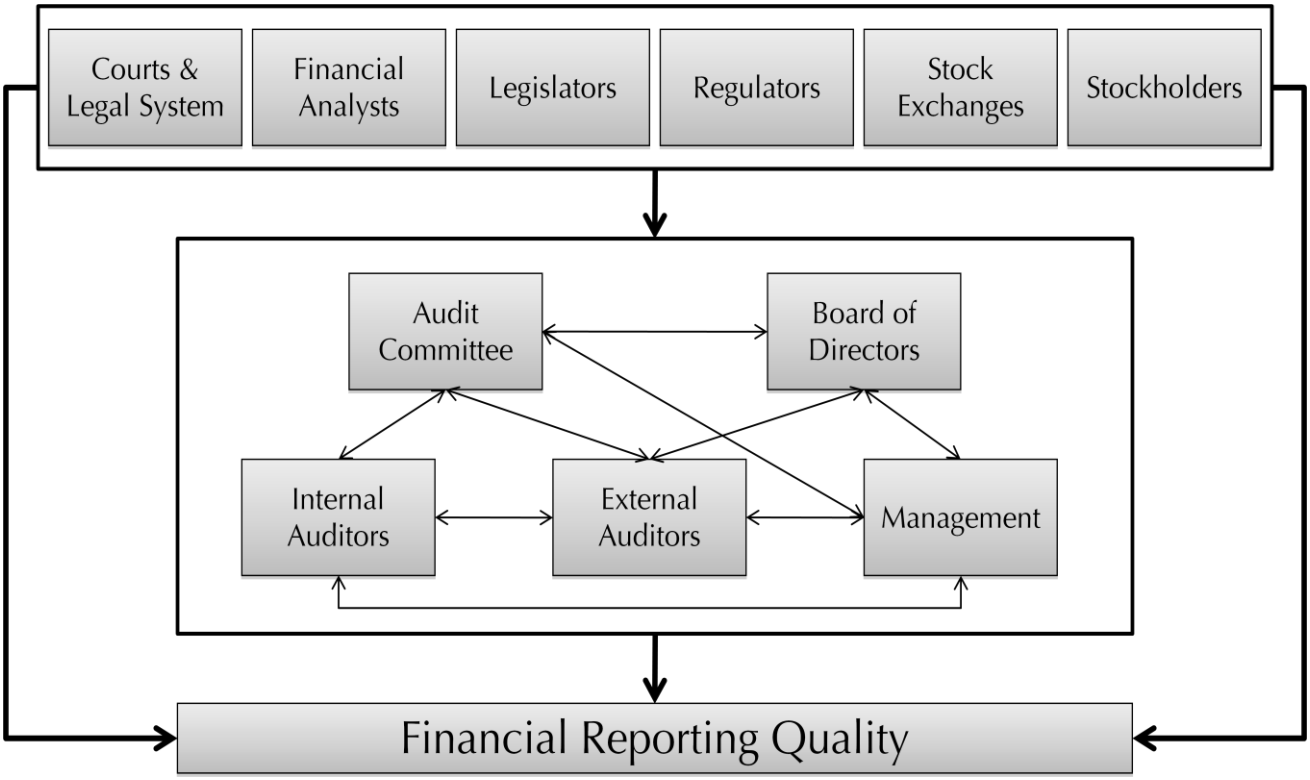

Figure 1 Corporate governance mosaic and financial reporting quality (Cohen et al., 2004)

The corporate governance mosaic is divided to external and internal actors in relation to the company's governance structures. The upper part of the figure includes such external actors as courts and the legal system, financial analysts, legislators, regulators, stock exchanges and stockholders. These external players often shape and influence the interactions among the actors who are more directly involved in the governance of the corporation and are integral to safeguarding the interest of a company's stakeholders (Cohen et al., 2004, p.90). For example there are some additional reporting requirements to stock exchanges when the company is listed. Further, when the company is listed, it is required to follow corporate governance recommendations set by the stock exchange. Also, there is some pressure to the company to meet the expectations of the financial analysts and stockholders.

The most interesting part and the scope of this study is in the middle part of the figure. The middle part consists of internal actors of the corporate governance, which include audit committee, board of directors, internal auditors, external auditors and management. Almost all of the internal actors in the mosaic have a two-way relationship suggesting that they have a joint effect on the corporate governance and finally the financial reporting quality. However, the mosaic suggests that internal auditors do not have a connection with the board of directors. This is due to the fact that the internal auditors mostly influence the corporate

governance through the audit committee. The forming of audit committee is mandatory for the listed companies in the US under the SOX. However, there can also be a link between these actors, when the audit committee has not been formed. While all of the actors in the mosaic should contribute to better financial reporting quality, these five internal actors are expected to have a more direct impact on a company's financial reporting quality. This study focuses on the main three of those actors: external auditor, internal auditor and audit committee.

International Standards on Auditing (ISA315) defines the internal control in the paragraph 42 emphasizing its purpose to the financial reporting quality: "Internal control is the process designed and effected by those charged with governance, management, and other personnel to provide reasonable assurance about the achievement of the entity's objectives with regard to reliability of financial reporting, effectiveness and efficiency of operations and compliance with applicable laws and regulations. It follows that internal control is designed and implemented to address identified business risks that threaten the achievement of any of these objectives." Thus, the better quality of the internal controls should improve the reliability of the financial statement giving the true and fair view to its users.

The quality and magnitude of internal controls (such as internal audit and audit committee) should also be relevant to the auditors, when they perform their auditing duties, as they may have a significant effect on the audit workload. Also, as the designated internal control actors have "specialized" to their own niche of the control environment, this should be cost-effective to the company and its stakeholders as well. The next section describes the agency theory relating to the cost-efficiency of the control structures in the context of the demand for auditing.

2.2 Agency theory

The demand for audit is based on the agency theory (Jensen & Meckling, 1976), theorizing that the company consists of various agreements between the company's owners (principals) and the management (agents). They define an agency relationship as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some

service on their behalf which involves delegating some decision making authority to the agent."

Agency theory also suggests that agents have more information about the company than the principals. This asymmetry of information diminishes the principal's ability to control that the agents act according to the principal's own interests. In addition to information asymmetry, the agent theory assumes that both parties act rationally and they seek to maximize their own benefit disregarding the interests of another party. "If both parties to the relationship are utility maximizers there is a good reason to believe that the agent will not always act in the best interests of the principal." (Jensen & Meckling, 1976). To reduce the likelihood of this moral hazard, both parties try to seek a pareto-optimal situation as cost-efficiently as possible.

Jensen & Meckling (1976) distinguish two different costs that could occur when trying to reduce the moral hazard between the agent and principal: monitoring costs and bonding costs. Firstly, the principal can limit divergences from his interest by establishing appropriate incentives for the agent and by incurring *monitoring costs* designed to limit the aberrant activities, of the agent. Secondly, in some situations it will pay the agent to expend resources (*bonding costs*) to guarantee that he will not take certain actions that would harm the principal or to ensure that the principal will be compensated if he does take such actions. According to Jokipii et al. (2008), agency theory assumes a trade-off between different monitoring mechanisms used for corporate governance. In other words, to minimize total agency costs, a firm chooses a mix of monitoring devices, which are assumed to be at least partial substitutes.

As Lin & Hwang (2010) noted, the independent corporate governance actors are the key part in diminishing the agency costs and aligning the interest of the different parties. Owing to the separation of ownership and control (and the resulting agency problems) in the modern business world, a system of corporate governance is necessary, through which management is overseen and supervised to reduce the agency costs and align the interests of management with those of the investors (Lin & Hwang, 2010). When seeking this pareto-optimal situation, one of the most cost-efficient ways is using different external and internal monitoring services (e.g. external, internal audit and audit committee) by bringing an independent and trusted party to verify the reported information.

In practice, the demand for auditing and other control mechanisms is broader than the agent theory assumes. As seen in the corporate governance mosaic, there are other parties, in

addition to the owner and management, who use the financial information to their own interests and they benefit from the credible information. In this case also the other stakeholders can be confident that the information gives a fair and true view about the company's financial situation. Also stricter legislation with the improving accounting and auditing standards seek to diminish the information asymmetry between different parties.

Principal-agent problem in the context of the demand for auditing has been widely studied (Chow, 1982; Watts & Zimmerman, 1983 and Francis & Wilson, 1988). Prior studies have also linked this problem to internal control mechanisms like the internal auditing (Simunic, 1980 and Wallace, 1984) and audit committees (Eichenseher & Shields, 1985, Pincus et al., 1989, and Bradbury, 1990). The role of external auditors in the corporate governance framework is further studied in the next section 2.3. After that, the roles of internal audit function and audit committee are explained in sections 2.4 and 2.5 respectively.

2.3 External audit

International Auditing and Assurance Standards Board (IAASB), an independent standard-setting body within the International Federation of Accountants (IFAC), have published International Standards on Auditing (ISA), which are used widely to guide the work of the auditors. The objective of the IAASB is to serve the public interest by setting high quality auditing and assurance standards and by facilitating the convergence of international and national standards, thereby enhancing the quality and uniformity of practice throughout the world and strengthening public confidence in the global auditing and assurance profession. These standards also give the auditors extensive guidelines to base their audit work on. Standards include detailed recommendations on how to perform the audit work in various audit items and matters, which the registered auditors must follow when expressing the audit opinion. ISA standards are also in use in Finland through The Finnish Institute of Authorized Public Accountants (KHT-yhdistys), which develops and makes recommendations on generally accepted auditing practices applied in Finland.

As a basis for the auditor’s opinion, ISAs require the auditor to obtain reasonable assurance about whether the financial statements, as a whole, are free from material misstatement,

whether due to fraud or error. Reasonable assurance is a high level of assurance. It is obtained when the auditor has obtained sufficient appropriate audit evidence *to reduce audit risk* (that is, the risk that the auditor expresses an inappropriate opinion when the financial statements are materially misstated) *to an acceptably low level*. (ISA200, IFAC, 2009) When evaluating the reasonable assurance level of the audit, audit formula is used to calculate the total audit risk to conceptualize the meaning of reasonable assurance.

Audit risk is a function of the risk of material misstatement and *detection risk*. The assessment of risks is based on audit procedures to obtain information necessary for that purpose and evidence obtained throughout the audit. The assessment of risks is a matter of professional judgment, rather than a matter capable of precise measurement. (ISA200, IFAC, 2009) The risk of material misstatement can be further divided to *inherent risk* and *control risk*, thus the Audit risk formula consists of three risk components:

Audit Risk (AR) = Inherent risk (IR) x Control Risk (CR) x Detection Risk (DR)

IFAC defines these risk components in ISA200. Inherent risk and control risk are the entity's risks; they exist independently of the audit of the financial statements. *Inherent risk* is higher for some assertions and related classes of transactions, account balances, and disclosures than for others. For example, it may be higher for complex calculations or for accounts consisting of amounts derived from accounting estimates that are subject to significant estimation uncertainty. External circumstances giving rise to business risks may also influence inherent risk. For example, technological developments might make a particular product obsolete, thereby causing inventory to be more susceptible to overstatement. Factors in the entity and its environment that relate to several or all of the classes of transactions, account balances, or disclosures may also influence the inherent risk related to a specific assertion. Such factors may include, for example, a lack of sufficient working capital to continue operations or a declining industry characterized by a large number of business failures. (IFAC, ISA200, 2009, p.95)

Control risk is a function of the effectiveness of the design, implementation and maintenance of internal control by management to address identified risks that threaten the achievement of the entity's objectives relevant to preparation of the entity's financial statements. However,

internal control, no matter how well designed and operated, can only reduce, but not eliminate, risks of material misstatement in the financial statements, because of the inherent limitations of internal control. These include, for example, the possibility of human errors or mistakes, or of controls being circumvented by collusion or inappropriate management override. Accordingly, some control risk will always exist. The ISAs provide the conditions, under which the auditor is required to, or may choose to, test the operating effectiveness of controls in determining the nature, timing and extent of substantive procedures to be performed. (IFAC, ISA200, 2009, p.96)

For a given level of audit risk, the acceptable level of *detection risk* bears an inverse relationship to the assessed risks of material misstatement at the assertion level. For example, the greater the risks of material misstatement the auditor believes exists, the less the detection risk that can be accepted and, accordingly, the more persuasive the audit evidence required by the auditor. Detection risk relates to the nature, timing, and extent of the auditor's procedures that are determined by the auditor to reduce audit risk to an acceptably low level. It is therefore a function of the effectiveness of an audit procedure and of its application by the auditor. According to ISA200, matters such as adequate planning, proper assignment of personnel to the engagement team, the application of professional scepticism and supervision and review of the audit work performed assist in enhancing the effectiveness of an audit procedure and of its application and reduce the possibility that an auditor might select an inappropriate audit procedure, misapply an appropriate audit procedure, or misinterpret the audit results. Detection risk, however, can only be reduced, not eliminated, because of the inherent limitations of an audit. Accordingly, some detection risk will always exist. (IFAC, ISA200, 2009, p.96-97)

ISA315 and ISA330 with the appendices have more than a hundred different items the auditor must consider and assess to form the audit opinion of the entity's operating environment and internal controls. The company's internal governance structures can have a very big impact in lowering the audit risk and therefore reducing the auditor's workload, which should therefore result in lower audit fees. The role of internal auditors is further explored in the following section 2.4.

2.4 Internal audit

The institute of Internal Auditors (IIA) defines internal auditing as follows:

> ***"Internal audit is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes."***

The IIA provides comprehensive guidance for the profession through its International Professional Practices Framework (IPPF), similar as the ISA for the auditors. The IPPF comprises the official definition of internal auditing, the International Standards for the Professional Practice of Internal Auditing (the Standards), the Code of Ethics, Practice Advisories, Position Papers and Practice Guides, and developmental and practice aids. Conformance with the Standards and the Code of Ethics is mandatory for all members of the IIA and Certified Internal Auditors (CIAs). (IIA, homepage) The internal auditing practice in Finland follows the same standards, because the Institute of Internal Auditors Finland (Sisäiset tarkastajat ry.) is an IIA member.

Although internal auditors are *independent of the activities* they audit, they are integral to the organization and provide ongoing monitoring and assessment of all activities. On the contrary, external auditors are *independent of the organization*, and provide an annual opinion on the financial statements. Internal and external auditors have mutual interests regarding the effectiveness of internal financial controls. Both professions have code of ethics and professional standards set by their respective professional associations, which they need to comply when carrying out their assignment. However, there are major differences with regard to their relationships to the organization, and to their scope of work and objectives.

The internal auditors are part of the organization and professional standards, the board, and management determine their objectives. Thus, their primary clients are management and the board. The internal auditors serve the organization by helping it accomplish its objectives, and improving operations, risk management, internal controls, and governance processes.

By contrast, external auditors are not an integral part of the organization and primarily laws, regulations and their client, the board of directors, set their objectives. The primary mission of the external auditors is to provide an independent audit opinion on the company's financial statements. Also the Finnish Audit Act (13.4.2007/459) and the ISA state that the liability of the audit engagement and the resulting auditor's report is solely the responsibility of the auditor. Liability issues of the audit cannot be completely transferred to other actors like the internal audit. Therefore the auditors must assess the usability of the internal audit's work for their auditing purposes.

The IFAC has set a particular standard (ISA 610) for the external auditors on using the work of internal auditors, which emphasizes the complementary view of the work done by the internal auditors. "The objectives of the internal audit function are determined by management and, where applicable, those charged with governance. While the objectives of the internal audit function and the external auditor are different, some of the ways in which the internal audit function and the external auditor achieve their respective objectives may be similar." (IFAC, ISA 610.3, p.643)

ISA 610 also requires an evaluation of the internal auditor function before their work can be used for auditing purposes and differentiates the responsibilities when expressing the audit opinion. "Irrespective of the degree of autonomy and objectivity of the internal audit function, such function is not independent of the entity as is required of the external auditor when expressing an opinion on financial statements. The external auditor has sole responsibility for the audit opinion expressed, and that responsibility is not reduced by the external auditor's use of the work of the internal auditors." (IFAC, ISA 610.4, p.643) The evaluation consists of determining internal audit's objectivity, technical competence, due professional care and communication. ISA610 provides an extensive guidance on the matter, which the external auditors' can rely, when considering using the internal auditor's work in their auditing procedures.

As one of the main responsibilities of the internal audit function is to audit and evaluate the organization's policies and internal controls related to financial reporting. The auditing process of the company's internal controls should not differ much from the internal auditing process and some of their objectives and therefore results should be as similar. The internal

audit should also contribute to lower risk of fraud and thus it should also reduce the audit work, if the auditors expect to be able to rely on internal audit.

Prior studies explaining the effect of internal audit function to audit fees have been very controversial. These studies and textbooks see the internal and external audit work as an substitute for the audit effort, where the auditor does not need redo the auditing work an internal audit have already done, thus minimizing overlapping work. But more recent internal audit studies have supported the complementary view of the internal control mechanisms in relation to each other and have questioned the earlier view of direct substitution. For example Anderson et al. (1993) find that internal auditing increases relative to external auditing with firm size while directors' monitoring decreases relative to total auditing.

Similar contradicting views have been reported when explaining the association of the audit committee to audit fees and earnings management. In addition to the internal and external audit functions, an audit committee can also be appointed to help the company's board and management to reduce the overlapping control mechanisms by optimizing the "monitoring package". This relationship is further explored in the following section 2.5.

2.5 Audit committee

The Sarbanes-Oxley Act (SOX 2002, section 2, par. 3) defines an audit committee as:

> ***"A committee (or equivalent body) established by and amongst the board of directors of an issuer for the purpose of overseeing the accounting and financial reporting processes of the issuer and audits of the financial statements of the issuer".***

In the beginning of 2003 Hex Plc (nowadays NASDAQ OMX Helsinki Ltd), The Central Chamber of Commerce of Finland and the Confederation of Finnish Industry and Employers (nowadays the Confederation of Finnish Industries, EK) took note of the growing significance and international development of the Corporate Governance (CG) practices and they established a working group for amending the recommendations. *Corporate Governance*

Recommendation for Listed Companies (CG-code) was issued on the basis of this work in December 2003.

This Code recommends the boards of the listed companies to establish an audit committee to aid the board in financial oversight of the company. "The proper function of the corporate governance of a company requires that board work be organized as efficiently as possible. The establishment of board committees may enhance the efficient preparation of matters within the competence of the board." (CG working group, 2003) For example, the duties of the audit committee may include:

- follow-up of the financial position of the company
- supervision of financial reporting (financial statements, interim reports)
- evaluation of the adequacy and appropriateness of internal control and risk management
- handling of internal audit plans and reports
- evaluation of compliance with laws and regulations
- preparation of the decision concerning appointment of external auditor
- contacts with the auditor, and examination of the auditor's reports
- evaluation of the advisory services supplied by the external auditor (CG working group, 2003, p.10)

The code was in effect from 1.1.2004 to all the Helsinki Stock Exchange-traded listed companies. Compliance with the recommendations has been quite diverse among the companies, depending on the size of the company (compliance with the recommendations is not reasonable in relation to the company's activities) or other information obligations (in the U.S. listed companies have already reported on corporate governance due the SOX). On the other hand the recommendation for "Comply or Explain" -principle forces companies to assess their compliance with the corporate governance recommendations. This principle also applies to the audit committee. If the committee is not established, it must be mentioned in the footnotes of the financial statement or in CG-statement.

Corporate governance Code has been updated at 20.10.2008, where the recommendation 30 concerning the audit committee has remained similar to previous code of 2003. A new recommendation has been added, which states that if the company does not have an audit

committee, the audit committee's tasks are the responsibility of the board. The new code did enter into force from 1.1.2009 in most parts. As the fiscal year of the sample companies ended in the end of year 2008 or earlier, the new code may not have any influence on the companies studied in this thesis.

According to the 2003 CG Code the extent of the operations of the company may require some directors to concentrate particularly on matters relating to financial reporting and control. The audit committee has better possibilities than the entire board to review questions connected with the financial administration and control of the company and ensure contacts with auditors and the internal audit function. The audit committee should comprise at least three members, the members of the audit committee should be independent of the company and the members should have the qualifications necessary to perform the responsibilities of the audit committee. (CG working group, 2003, p.10)

The Code of 2008 contains a more precise recommendation on the qualifications of financial expertise of the audit committee members than the previous Code. The members shall have the qualifications necessary to perform the responsibilities of the audit committee, and at least one member shall have expertise specifically in accounting, bookkeeping or auditing (CG working group, 2008, p.14).

The basic rationale for the existence of such committees is that they provide a link between management and the auditor in the review of the annual accounts and the determination of audit fees (Sherer and Kent 1983, p.33). One of the most important tasks of the audit committee is to monitor the external and internal auditors' audit plans and engagements. Therefore the audit committee has an important role in minimizing the overlapping work of the external and internal auditor, since it can evaluate the overall picture of the assurance parties. Thus, in theory, audit committee should contribute to lower audit fees through more efficient distribution of work between internal and external auditors.

Collier & Gregory (1996) suggest that strong internal controls will reduce the amount of audit work when relying on internal controls and the auditor can limit his substantive testing procedures. But if the control tests indicate that internal controls are not operating properly then the auditor will be unable to restrict his substantive testing. Even though internal audit,

audit committee and external auditors have some overlapping tasks, each actor should strengthen the internal controls of the company as whole.

Older empirical research supports this substitutive view of internal control strength and audit fees. Wallace (1984) found a direct relationship between expenditure on internal control and reduced external audit fees, while Kreutzfeldt and Wallace (1986) showed that weak control environments involved more audit work because audit tests would find higher error rates which would necessitate further testing. Thus they state that, ceteris paribus, companies with strong internal controls would experience lower audit fees.

Given the role of audit committees in improving internal controls through their monitoring of the work of internal and external auditors it might be anticipated that internal controls are stronger in companies, which had an audit committee, and that consequently their audit fee would be lower to reflect this. Felix et al. (2001) found also that facilitating coordination between the internal and external auditors can reduce the audit fees. The audit committee has an important function, when coordinating the work between internal and external auditors.

In the context of earnings management, there is also evidence (see e.g. Cohen et al., 2004 and Lin & Hwan, 2010) that voluntary formation of the audit committee has a constraining effect on earnings manipulation and fraud, which should improve financial reporting quality. One possible way of measuring the quality of financial reporting is with the magnitude of discretionary accruals. If the different corporate governance actors can restrain the possibility of fraudulent earnings management, the quality of the accruals improves resulting to higher usability and reliability of the reported earnings. The concept of earnings management is further studied in the next section.

2.6 Earnings management

Healy and Wahlen (1999) define the earnings management in their study:

> ***Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.***

Scott (2009) takes a more relaxed and practical view in defining earnings management opposed to Healy and Wahlen above:

> ***Earnings management is the choice by a manager of accounting policies, or actions affecting earnings, so as to achieve some specific reported earnings.***

Scott (2009) has listed some patterns of earnings management that the company and its managers may engage:

1. Taking a bath – This can take place during periods of organizational stress or reorganization. If a firm must report a loss, management may feel it might as well report a large one – it has little to lose at this point. Consequently, it will write-off assets, provide for expected future costs, and generally "clear the decks". Because of accrual reversal, this enhances the probability of future reported profits. (Scott, 2009, p.405)

2. Income minimization – This is similar to taking the bath, but less extreme. Such a pattern may be chosen by a politically visible firm during periods of high profitability. Policies thus suggest income minimization include rapid write-offs of capital assets and intangibles, expensing of advertising and R&D expenditures, successful-efforts accounting for oil and gas exploration costs, and so on. Income tax considerations, such as for LIFO inventory in the United States, provide another set of motivations for this pattern, as does enhancement of arguments for relief from foreign competition. (Scott, 2009, p.405)

In Finland, the accounting legislation and generally accepted accounting practices are still closely tied to taxation and the income minimization purposes of the earnings management are very likely in effort to minimize taxes. "Distinguishing distributable equity is usually main reason for setting an earnings target. With the earnings target, the company can evaluate the tax burden and practice tax planning." (Alhola et al., 2002, p.10).

3. Income maximization – From positive accounting theory, mangers may engage in a pattern of maximization of reported net income for bonus purposes, providing this does not put them above the gap. Firms that are close to debt covenant violations may also maximize income. (Scott, 2009, p.405)

4. Income smoothing – From contracting perspective, risk-averse managers prefer a less variable bonus stream, other things equal. Consequently, managers may smooth reported earnings over time so as to receive relatively constant compensation. Efficient compensation contracting may exploit this effect, and condone some income smoothing as a low-cost way to attain the managers' reservation utility. The more volatile the stream of reported income, the higher the probability that covenant violation will occur. This provides another smoothing incentive – to reduce the volatility of reported income so as to smooth covenant ratios over time. Managers may feel, with some justification, that they may be fired when reported earnings are low. Income smoothing reduces the likelihood of reporting low earnings. Finally, firms may smooth reported net income for external reporting purposes. Smoothing can convey inside information to the market by enabling the firm to communicate its expected persistent earnings power. (Scott, 2009, p.405)

Scott also suggests the concept of "good" earnings management, when stakeholders can use the inside information obtained from earnings management actions, where possible to detect, to make a better judgment of the company's future actions. Accruals let managers communicate their private inside information and thereby improve the ability of earnings to reflect underlying economic value (Krishnan, 2003). Therefore the earnings management applied can be taken into account by the investors when valuing the company. The big problem is the detecting the earnings management, because there may be other unknown reasons to the chosen policy change.

Thus, earnings management may not necessarily always reflect opportunistic behaviour. Healy and Palepu (1993, 1995) argue that voluntary disclosures can be a vehicle for managers to communicate private information about the firm's future prospects. Subramanyam (1996) extends the disclosure-oriented perspective of Healy and Palepu (1993, 1995) by suggesting that accruals also function as a vehicle for managers to communicate private information about the firm's prospects. He finds that both nondiscretionary and discretionary accruals are positively associated with firm valuation. However, the communication value of accruals is undermined if outsiders are suspicious of managers' ability to opportunistically use accruals for private gain. To be credible, reported accruals must conform to a reasonable application of GAAP and be subject to verification through the audit. (Francis et al., 1999)

As presented, all earnings management is not necessarily bad, if the users of the information can interpret it correctly and they also can rely on the information received from the financial reporting. But usually this interpretation is very difficult, because the incentives for the earnings management are not known to the outside, or even inside, stakeholders and the possibility of earnings management might not come into mind of the user of the information.

According to Scott (2009) the devices for earnings management can be divided to two main parts. He divides the earnings management to include making choices in both accounting policies and real actions affecting the earnings.

First of the devices is the real actions affecting the earnings are done by e.g. lowering R&D and marketing efforts to cut costs. While these affect directly to the cash flows and they have long-run implications to the company, the reasons behind the actions are more easily obtained by the stakeholders or investors. Therefore, this type of earnings management is not focus of this study.

The second device for earnings management is the managers' choices on accounting policies. This type of earnings management also includes the discretionary accruals, which is used as an indicator for earnings management in this study. Scott further divides choice of accounting policy to two parts: "A choice of accounting policy per se, such as straight-line versus declining-balance amortization, or policies for revenue recognition. The other category is *discretionary accruals*, such as provisions for credit losses, warranty costs, inventory values, and timing and amounts of non-recurring and extraordinary items such as write-offs and provisions for reorganization." (Scott, 2009) The concept of accrual accounting is one of the cornerstones of the current generally accepted accounting principles and is further explained in the following two chapters.

If the company reports in accordance to International Financial Reporting Standards' (IFRS) requirements, the financial statements are to be prepared on the accrual basis of accounting. Under this basis, the effects of transactions and other events are recognized when they occur (and not as cash or its equivalent are received or paid) and they are recorded in the accounting records and reported in the financial statements of the periods to which they relate. Financial statements prepared on the accrual basis inform users not only of past transactions involving the payment and receipt of cash but also of obligations to pay cash in the future and of

resources that represent cash to be received in the future. Hence, this provides the type of information about past transactions and other events that is most useful to users in making economic decisions. (IASB, 2009, IFRS framework, par. 22)

The accrual basis of accounting can be divided to two principles: revenue recognition principle and expense matching principle. The revenue recognition principle states that revenues should be recognized when the firm has delivered a product or has produced a substantial proportion of it, and the cash receipt is reasonably certain. The matching principle requires that the revenues recognized during one period be matched with the costs associated with them. Over the lifetime of the firm, cash flows and earnings are the same but when accounting principles are applied over finite time periods, cash flows have to be adjusted to produce the earnings number. These adjustments are made with accruals on the balance sheet, and thus, earnings are the sum of period's change in accruals and its cash flows. (Spohr 2005, p.6)

In the most of the earnings management studies, the main method for explaining the possible earnings management has been the amount of discretionary accruals. As explained above, the companies use accruals to recognize revenues or expenses to their respective period according to the accounting principles. Beneish (2001) summarizes the reasons why the accrual-based earnings management research is more popular. This is because, firstly, the "earnings management occurs on the accrual rather than the cash flow component of earnings. Secondly, studying accruals reduces the problems associated with the inability to measure the effect of various accounting choices on earnings. Third, if earnings management is an unobservable component of accruals, it is less likely that investors can unravel the effect of earnings management." (Beneish, 2001)

In the earnings management studies, total accruals have been divided to non-discretionary and discretionary accruals by typically using a regression, which tries to capture the non-discretionary accruals with the variables explaining the "expected/normal" accruals. The "not-expected/abnormal" part is the discretionary accruals, which is not explained by the selected variables. Widely used Modified Jones discretionary accruals model by Dechow (1995) is used in this study and is further explained in the methods part of the thesis in Chapter 4. The next section summarizes the previous theory sections and explains the relation between the presented corporate governance actors, audit quality and financial reporting quality.

2.7 Audit quality, earnings management and financial reporting quality

The purpose of this section is to tie all the previous sections together and as the heading of this section state, to provide the explanation to the relation between the audit quality, earnings management and financial reporting quality.

As the corporate governance mosaic in section 2.1 shows, there are several actors affecting the quality of the financial reporting. Rich (2009) has listed some existing research suggesting that there are economic benefits to high quality financial reporting. For example, Hong (2001) finds that firms with low levels of discretionary accruals experience higher risk-adjusted returns than firms with high discretionary accruals. Furthermore, Francis et al. (2005) provides evidence that firms with low Dechow and Dichev (2002) accruals quality face higher costs of debt and equity capital than firms with high quality accruals. One possible explanation for these results is that investors perceive low quality financial reporting to indicate the presence of high agency costs. Evidence supporting this idea comes from studies highlighting opportunistic use of financial reporting by managers before equity offerings (Teoh et al. 1998), and stock option exercises (Bartov and Mohanram 2004).

One of the main users of the financial reporting is the investors and they have an interest for the higher quality and therefore higher usability of such reporting. Investors typically lack the information necessary to assess the actual reliability or quality of company disclosures (Jennings, 1987). Therefore, investors must assess the credibility or believability of company disclosures in addition to the information content of the disclosure. Kinney (2002) notes that the need for the better quality of financial reporting is due both to an increase in investors' confidence in the competence and care of the application of stated measurements methods and trustworthiness of the display of measurement results (Holt, 2009).

Mercer (2004) provides a framework for assessing investor perceptions of disclosure credibility. She notes that one key factor that affects perceptions of disclosure credibility is the degree of external and internal assurance. This assurance may come from external parties such as auditors, business journalists, and financial analysts, or from internal parties such as the board of directors, audit committee, and internal auditors (Mercer, 2004).

There is less evidence on whether investors consider these factors when assessing disclosure credibility, but preliminary research suggests that they do. Black et al. (2003) find that firms with a large percentage of outside directors and/or an audit committee command higher market valuations, and argue that these effects occur because investors value the same earnings stream more highly for such firms. Wild (1996) finds that the formation of an audit committee leads to greater reliance on the firm's earnings disclosures. Thus, the existing evidence suggests that investors consider the composition of a firm's board of directors and audit committee when assessing disclosure credibility. The heightened scrutiny on boards of directors due to recent accounting scandals may result in boards of directors playing an even greater role in disclosure credibility in the future. (Mercer, 2004)

Audit committee accounting expertise has also been linked to more informative earnings. More specifically, prior studies provide evidence of higher earnings response coefficients for firms having at least one accounting expert on their audit committee (Bryan et al. 2007; Qin 2007) than firms without an accounting expert. These results suggest that accounting expertise is associated with investor perceptions that earnings are persistent (Collins and Kothari 1989), and therefore of high quality. (Rich, 2009)

Another potential within-firm source of assurance is the firm's internal audit department. Internal auditors often serve as the first line of defence against disclosure errors, ferreting out unintentional errors caused by weaknesses in a company's internal controls and intentional errors due to fraud. Consequently, if investors can assess internal audit quality, then firms with a strong internal audit department may have higher disclosure credibility. There is little existing research on the relation between internal audit department strength and disclosure credibility. One likely reason for the dearth of studies is that it is difficult for both investors and researchers to determine whether a firm has high-quality internal auditors. (Mercer, 2004)

As Mercer (2004) explained, one of the external parties in improving investors' assurance on the financial reporting is the auditors. The assumption in this study that audit quality is positively linked to earnings quality is not new and has been extensively documented in the accounting and auditing literature.

Several prior studies document an association between measures of higher quality auditors (such as auditor size or industry expertise) and higher quality of financial reporting (e.g.

Becker et al., 1998; Johnson et al., 2002; Krishnan, 2003; Balsam et al., 2003; Myers et al., 2003; Ghosh and Moon, 2005). This linkage is based on the argument that high-quality auditors, as a result of more effective monitoring, are more likely to detect questionable accounting practices and misrepresentations by management than low-quality auditors. If managers are unwilling to address the auditor's concerns with regard to questionable accounting practices and misrepresentations, high-quality auditors are more likely to issue qualified audit reports. In this sense, the quality of financial reporting (earnings quality) may be viewed as a joint product of managerial and auditor efforts. (Gul et al, 2009)

In sum, internal auditors, audit committee and auditors should diminish the possibility of the earnings management and therefore improve the financial reporting quality, which furthermore improves the credibility of the information to its users. The next chapter presents the research hypotheses of this thesis and the relevant prior studies on the matter.

3. Prior studies and hypothesis development

This chapter presents the relevant prior studies and develops the research hypothesis to be modelled in the next Chapter 4. The research is ultimately conducted with two separate models, one for examining the relationships of the internal governance actors to audit quality and the second model for studying their effects on the magnitude of earnings management.

Audit quality is measured by audit fees paid to the auditor and magnitude of earnings management is measured by discretionary accruals. Also, audit quality model is to be included with the earnings management proxy, and vice versa, for additional hypothesis on their effects to each other. Overall, these both should have an impact on the financial reporting quality as explained in section 2.7. The Figure 2 below clarifies the hypotheses and finally the main idea of the audit fee and earnings management models to be used in this study.

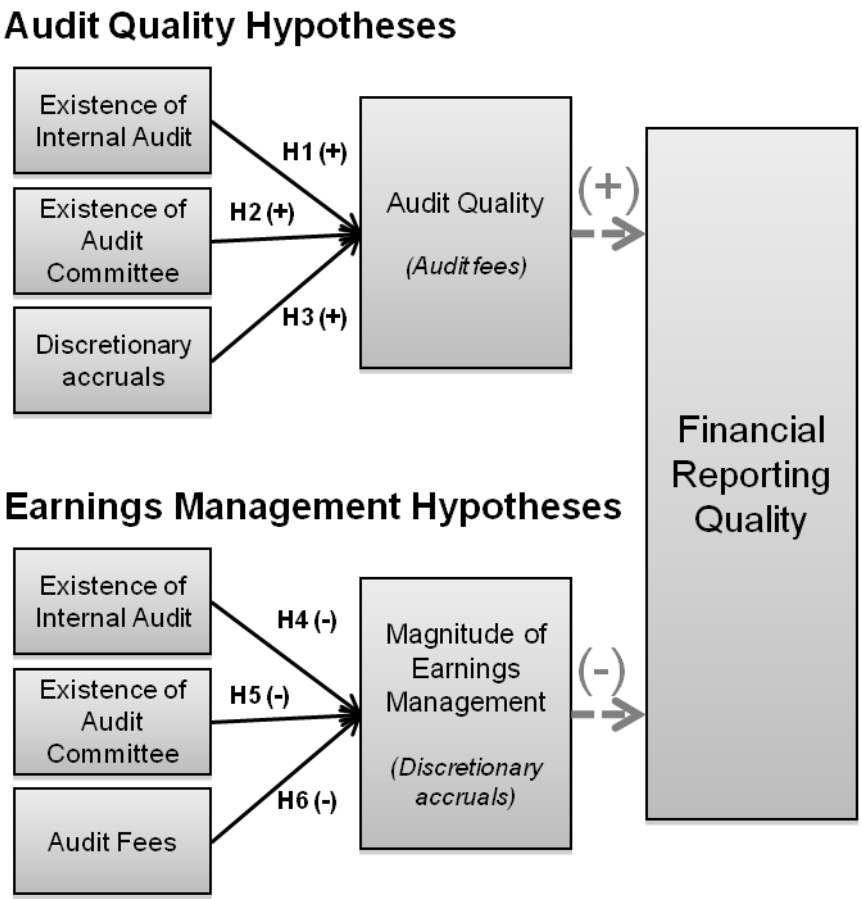

Figure 2 Audit quality and earnings management models with hypotheses and their signs

As seen from the Figure 2, the hypotheses H1-H3 should be positively associated to audit quality and finally positively associated to financial reporting quality. Also, the hypotheses

H4-H6 should have a negative effect on the magnitude of the earnings management and finally the magnitude of earnings management should have a negative effect on the financial reporting quality.

As mentioned earlier, the magnitude of earnings management itself is often used as the indicator for the financial reporting quality. But here, the financial reporting quality is used as a common nominator to the both audit quality and the magnitude of earnings management to clarify the research setting. The effects of the audit quality and earning management to the financial reporting quality are not studied separately as additional hypotheses.

As mentioned, there are total of six different hypotheses to be studied and they are divided to two main groups. Firstly, the hypothesized association of the internal audit, audit committee and earnings management to the *audit quality*, proxied with audit fees, are presented in section 3.1. Secondly, the section 3.2 hypothesizes the relationships between the same internal governance structures and audit fees to the *magnitude of earnings management* using discretionary accruals as a proxy.

3.1 The effect of internal governance structures and earnings management to audit fees

The effect of internal auditors, audit committee and discretionary accruals to audit fees is linked by the concept of lowering information asymmetries and audit risk as reported above. Therefore, there should be an effect on the external auditor's workload and fees. As the audit fees are used as an indicator of audit quality, these internal governance functions and the magnitude of earnings management should have a positive effect on the amount of fees as hypothesized in the following sections.

3.1.1 Internal audit function

As Gray & Manson (2008) mention the internal audit is an important element in the internal control system and existence (or non-existence) reflects top management's attitude towards internal control. The very existence of an internal audit department thus should have an impact on the external auditor's assessment to control risk.

However, as the internal audit's role to audit fees has been studied extensively, the results are rather mixed. Felix et al. (2001) found that, the greater the contribution of internal auditors to the financial statement audit, the lower the audit fee. They used a questionnaire, where external auditors could assess the contribution and quality of internal audit function to financial statement audit work performed. Their findings suggest that internal audit contribution can result in reduced external audit fees, and that client firms can potentially affect internal audit contribution by investing in internal audit quality.

Based on agency theory, especially, internal audit function is considered a bonding cost "by which the management lowers the moral hazard in their expense to improve transparency of the company to owners" (Watts, 1988, p.129). Other researchers have also recognized the role of internal audit as a bonding function in the contracting process of the company. For example Sherer and Kent (1983, p.99) perceive internal auditing to be "a bonding cost borne by the senior managers to satisfy the demands for accountability made by external participants, especially shareholders". They also argue that internal audit is an adjunct of the function performed by external audit, "the difference being that the cost of an internal audit is incurred directly by the managers" (Sherer & Kent, 1983, p.99) and that agent/managers have an

incentive to incur costs of internal audit in total cost of the audit process, both internal and external, is less than the perceived cost of external auditing on its own. For example, cost savings may arise as a result of internal auditors' specific industry knowledge and expertise in systems and operational audits. (Sherer & Kent, 1983, p.99)

On the other hand, in order to use the work of internal audit, external auditors have to determine whether the work of internal audit is adequate to the purposes of the audit, which will result in more audit work. For example, if external auditors are to rely on internal audit work they must fully document the decisions to use internal audit work. There could also be a possibility that the external auditors cannot use the work of internal auditors or their work is not suitable for the purposes of the audit.

In their book, Gray & Manson (2008) summarize the practical approach to control testing: "In practice, auditors seek to identify inherent risks and then record, test and evaluate controls to form a view as to whether the controls are adequate to reduce the impact of inherent risk to a low, acceptable level. If they conclude that both inherent risk and control risk is high, they will have to rely upon substantive procedures (tests of details of transactions and balances or analytical procedures) to reduce the overall audit risk." (Gray & Manson, 2008, p.179) They also acknowledge the work of the internal auditors can reduce control risk, which mitigates the impact of inherent risk. However, they also remind the importance of evaluating the usability and independence of internal audit's work to the auditor.

Hay et al. (2006, 2008) have studied effect of the internal governance functions on each other's work. Their results support the complementary view of the internal audit function in the auditing process. According to study the demand for audit work grows, if the companies invest in other governance functions e.g. the internal audit function. Also Knechel & Willekens (2006) found support for the complementary view of the internal audit in demand for audit fees. Further, Jokipii et al. (2008) found similar results on the positive effect of internal audit and other internal monitoring functions on demand for audit services.

This study hypothesizes that the internal audit function is in a complementary relationship to other internal governance structures and thus there should be a positive effect on audit fees:

H1: Existence of the internal audit is positively associated to the audit fees.

3.1.2 Audit committee

Similarly, the studies on the effects of audit committees to audit fees were as controversial as studies explaining the internal audit. One of the main tasks of the audit committee is to coordinate the different control functions in the company. At the same time, they can oversee and assess the effectiveness of various additional services as whole. At its best, they can arrange the internal control mechanisms, so that the company would have the most cost-efficient monitoring package, which still meets the requirements of the organizational control. On the other hand the existence of audit committees has been seen to increase audit fees, since it also requires more extensive audit work from the auditors. Also, the audit committee has been proven to increase bureaucracy of the auditors with increased reports needs and meetings with the auditors.

The interest of the researchers on the effect of audit committees to the audit fees has been increasing from the start of this decade. The probable reason for this late interest might be the growing existence of audit committee in companies and also the corporate governance codes are becoming more common throughout the world. CG recommendations have also led to mandatory publication of the information related to corporate governance through "comply or explain" principle, which should also contribute to easiness of obtaining the information for researching purposes.

More recent studies have reported the positive association between the audit committee and audit fees in contradiction to the older theories and recommendations. However, the positive association has been documented earlier. For example, the Cadbury Committee noted about the audit committee's positive effect on audit fees: "The existence of the Audit Committee may result in increased audit fees, because the audit committee should ensure the fulfilment of the minimum requirements by requiring a higher quality audit." (Cadbury Committee, 1992, pp.36-37, par.5.10)

Collier & Gregory (1996) summarize the mixed role of audit committee in relation to the audit fees: "To the extent that audit committees should enhance audit quality, partly by ensuring that audit hours are not reduced, an audit committee may be expected to increase total audit fees. At the same time, an audit committee may reasonably be thought to be a proxy for internal control strength. *Ceteris paribus*, companies with strong internal controls

may be expected to pay lower audit fees than those with weak internal controls." (Collier & Gregory, 1996)

Recent studies have shown that audit committees are associated with the demand for high quality audit and therefore higher audit fees. For example they show (e.g. Stewart & Kent, 2006, Hay et al., 2008), that the existence of an audit committee leads to more meetings with the auditors and they need to prepare various reports to the Audit Committee, which will increase the audit fees. As Stewart and Munro (2007) summarize, the existence of an audit committee is expected to lead to an increase in audit fees due to the added bureaucracy of the auditors. The audit committee also reduces the possibility of auditor switch, which may strengthen the position of the auditor in fee negotiations and leads to longer auditor tenure (Abbott et al., 2003). Hypothesis is again formed according to the more recent studies' findings:

H2: Existence of the audit committee is positively associated to the audit fees.

3.1.3 Earnings management

As the main purpose for audit work is to determine whether the financial statements are fairly presented. When audit quality is poor, the financial statements are more likely to contain items that obscure the company's "true" operating results and financial condition. The quality of reported earnings thus reflects the quality of audit work.

The effect of earnings management to audit fees has not been extensively studied in prior research, but their link can also be justified through audit risk concept presented earlier. The larger the magnitude of discretionary accruals should lead to higher the *inherent risk*, which can result to higher audit effort and therefore higher audit fees. The same positive association have been documented by Abbott et al. (2006, p.88): "The audit risk model would suggest that any misstatement (regardless of direction) should result in greater audit work."

In addition, if and when the auditors try to protect their reputation from audit failures and litigations, they should direct more audit effort to diminish the possible fraudulent earnings

manipulation. Large accruals are found to be positively associated with subsequent audit failures and auditor litigation (Geiger and Raghunandan 2002; Heninger 2001).

Caramanis & Lennox (2008) found a positive relationship between audit hours and abnormal accruals (especially income-increasing earnings management) even after controlling for endogeneity. Thus their results suggest that auditors might have to work harder if they believe that their clients are attempting to manage earnings.

Based on the above reasoning, the following hypothesis is suggested:

H3: The magnitude of earnings management is positively associated to audit fees.

3.2 The effect of internal governance structures and audit fees to earnings management

While early research on earnings management focused almost exclusively on understanding the existence of earnings management, recent studies have moved away from detecting earnings management to an examination of the factors, like corporate governance actors, limiting earnings management. In addition to the previously hypothesized effects of internal governance structures to audit fees, this thesis tries to further the understanding on the role of these governance actors by using earnings management model to explain their relationships in the context of earnings management. The summary of the hypothesis to be presented is, that the more efficient the internal governance structures are, the smaller the magnitude of the earnings management should be. Therefore, the existence of the internal governance structures and high quality audits should improve financial reporting quality. The following sections justify hypothesized effects of the internal audit, audit committee and external auditor to earnings management measured with discretionary accruals.

3.2.1 Internal audit function

Still continuing the contracting substitute/complementary views on the effect of individual internal corporate governance actors, the results seem to be more in unison than in the case of audit fees. However, most of these studies study the effect of the internal audit as separate, not as the part of the corporate governance system. Overall, the research studying the role of internal audit to earnings management sees the internal auditors diminishing the possible earnings management.

In their, meta-analysis, Gramling et al. (2004) found evidence that the internal audit is positively associated to corporate governance quality, including financial reporting quality and firm performance. Especially, they found evidence on that the presence of efficient internal audit function improves the internal control environment and thus deters financial reporting irregularities. Also, they concluded that the internal auditors have an increasing role in ensuring and further improving the quality of corporate governance with the other corporate governance actors.

Davidson et al. (2005) have listed some of the research studying the effects of internal auditors on earnings management: Schneider & Wilner (1990) find that companies with an internal audit function are less likely to have financial reporting irregularities. Eighme and Cashell (2002) regard the role of internal audit in detecting earnings management as being a complementary one to that of external audit. They believe that both should be actively involved in the detection of inappropriate earnings management. Clikeman (2003) argues that internal auditors should not only be actively involved in detecting earnings management, but that they also should take a proactive approach to educating managers and directors about the dangers of the practice. Using specific components on the quality of the internal audit function, Prawitt et al. (2009) find a statistically negative relationship between internal audit function quality and absolute abnormal accruals. Thus, they suggest that the higher-quality internal audit function is associated with lower level of earnings management.

As the mentioned studies suggest, the presence of an internal audit function should be associated with a lower level of earnings management and the following hypothesis is proposed:

H4: The existence of internal audit is negatively associated to the magnitude of earnings management.

3.2.2 Audit committee

To effectively monitor the financial discretion of management, the audit committee is expected to review the financial reporting process, as well as to facilitate a flow of information among the board of directors, the internal and external auditors, and management (McMullen and Raghundan, 1996). In order to more efficiently perform their duties, the board of directors often delegates the responsibility for overseeing financial reporting to an audit committee. The audit committee is viewed as enhancing the board of directors' capacity to monitor management in the financial reporting process by providing more detailed knowledge and understanding of financial statements and other financial disclosures issued by the company. The existence of an audit committee may be perceived as indicating higher quality monitoring and should reduce the occurrence of opportunistic earnings management.

Janin et al. (2007) see the role of audit committee in improving the quality of the audit process and therefore improving the earnings quality. First, by supervising major accounting choices, the committee should mitigate earnings management practices. Second, by coordinating the internal and external audits, and by protecting external auditors' independence from managerial pressure (McMullen & Raghundan, 1996), the audit committee should maximize the likelihood that irregularities discovered by auditors will be reported at a sufficiently high level. (Janin et al., 2007) Also, according to Davidson et al. (2005) the existence of an effective audit committee provides a firm with an added layer of governance, which is expected to constrain earnings management behaviour.

In their meta-analysis, Lin & Hwang (2010) find very mixed results on the existence of the audit committee to the earnings management. They find significant relationship between the existence of an audit committee and earnings management in the articles they studied. For example, while Bédard et al. (2004) and Jaggi & Leung (2007) report a significantly negative relationship between earnings management and the existence of an audit committee, all the other existing studies either fail to find a significant relationship or find a significant but positive (contrary to expectation) relationship (Lin & Hwang, 2010).

For example Mercer (2004) found some audit committee characteristics that affect the magnitude of earnings management. Firms with more independent boards and audit committees, as measured by the number of outside members, experience less earnings management and fraud. Less earnings management is also found in firms whose boards and audit committees meet more frequently and have greater financial expertise. This evidence implies that firms whose boards and audit committees are more independent, diligent, and have the expertise needed provide higher quality disclosures.

The hypothesis is constructed considering that the very existence of the audit committee should diminish the magnitude of earnings management and thus improving financial reporting quality:

H5: The existence of audit committee is negatively associated to the magnitude of earnings management.

3.2.3 Audit fees

The agency problems associated with the separation of ownership and control, along with information asymmetry between management and absentee owners, create the demand for external audit. External auditors are responsible for verifying that the financial statements are fairly stated in conformity with GAAP and that these statements reflect the 'true' economic condition and operating results of the entity. Thus, the external auditor's verification adds credibility to the company's financial statements. Also, the external auditors are required by auditing standards to discuss and communicate with the audit committee about the quality, not just the acceptability, of accounting principles applied by the client company. Therefore, a high quality audit is expected to constrain opportunistic earnings management as well as to reduce information risk that the financial reports contain material misstatements or omissions. (Lin & Hwang, 2010)

Audit quality is reflected by the role that auditors play in reducing the estimation errors in accruals. Audit effort and competence enable the auditors to get information and make judgments on the accrual estimation errors. A truly independent auditor will require the management to correct their estimates and modify their accounting methods to improve accrual quality. Furthermore, the presence of a competent and independent auditor will deter managers from making intentional errors and motivate them to exercise greater care in reducing the unintentional errors.

Since the auditing should reduce information asymmetries that exist between managers and firm stakeholders by allowing outsiders to verify the validity of financial statements. The effectiveness of auditing, and its ability to constrain the management of earnings, is therefore expected to vary with the audit quality. Audit quality differences result in variation in credibility offered by the auditors, and in the earnings quality of their audit clients. Because auditor quality is multidimensional and inherently unobservable, no single auditor characteristic can be used to proxy for it' (Balsam et al., 2003, p.71).

In comparison to low-quality audit, high-quality audit is more likely to detect questionable accounting practices and, when detected, to object to their use and/or to qualify the audit report. Thus, high-quality audit acts as an effective deterrent to earnings management because management's reputation is likely to be damaged and firm value reduced if misreporting is

detected and revealed (Becker et al., 1998, p.6). Therefore, the earnings management should be lower in high quality audits and the final hypothesis is expressed as follows:

H6: Audit fees are negatively associated to the magnitude of earnings management.

4. Research methodology and sample

The following chapter presents the audit fee models and the earnings management models used to portray the hypothesized effects on audit quality and earnings quality.

Widely used audit price regression model developed by Simunic (1980) is used to study the effect of the existence of internal governance function and the magnitude of earnings management to audit fees. Similar models have been used in several previous similar studies (e.g. Firth, 1985; Gist, 1992; Collier & Gregory, 1996; Menon & Williams, 2001; Niemi, 2004; Hay et al., 2008 and Jokipii et al., 2008), using the audit fees as a dependent variable. The other variables are related mainly to the size, audit risk and complexity of the auditee.

Earnings management is modelled by using absolute discretionary accruals. There are various different models trying to capture this effect. The most used of these models is probably the modified Jones model by Dechow et al. (1995), which is also used in this study. Data sample (section 4.1), models (sections 4.2 and its subsections) and related variables with their descriptive statistics (section 4.3) are presented in this chapter.

4.1 Data sample description

The initial sample consists of 126 companies, which were listed in OMX-Helsinki at the end of calendar year 2008. The construction of sample is presented in the Table 1 below.

Table 1. Construction of the final sample

Year 2008	**n**
Initial sample (OMX-Helsinki listed at 31.12.2008)	126
Less: Financials	15
Less: Companies listed in US	1
Less: Companies with missing data items	3
Final sample	**107**

Total of 19 companies are excluded from the initial sample to reach the final sample of 107. Following the prior research, 15 of the excluded companies are financial institutions, which

have a different type of financial reporting structure and do not have all the data items as the others have (e.g. inventory). Also one company had to be excluded because of the tighter corporate governance requirements of the US stock exchange, where it was also listed. Finally, three more companies are excluded due the insufficient data obtained from the databases used. Therefore, the final sample used in this study consists of 107 OMX-Helsinki listed Finnish companies representing about 85% of the all companies listed.

The data for the models is obtained from number of different sources. The data concerning the existence of internal audit function and audit committee is handpicked from the companies' financial reports, corporate governance reports and, if not found in either sources, from the web pages of the companies. Also the audit fee data is handpicked from the aforementioned sources. The data related to other financial figures of the sample companies is obtained from the Thomson Financial database with Thomson One Banker tool. Orbis database is used to obtain subsidiary data and data related to major stockowners. The data for this study consists of companies, which had fiscal years ending any time during the calendar year 2008. Also, financial data for year the 2007 is also used to calculate some of the variables, mainly for those variables, which are lagged or indicate change.

The data consists only of listed companies, since they have to comply with the corporate governance code required by the stock exchange and are large enough to use additional internal corporate governance actors. When a company complies with the corporate governance code, it must disclose the amount of audit fees and other fees paid to the auditor. Therefore, the audit fee data may also be harder to obtain from private companies' financial statements. Also, for the same reason obtaining governance data from the private companies is very difficult. Thus private companies are excluded from the data set and the listed companies are used as explained above. Table 2 on the next page describes the data related to audit fees.

Table 2 is classified to size groups by the listing classification of the OMX-Helsinki stock exchange related to their market capitalization size. As the means of the market capitalizations of the different categories shows, the classification is consistent with the OMX size classification. The size classifications are also consistent, when compared to other size variables like sales, total assets and number of subsidiaries. Also, all the audit fee variables are larger as the OMX size category suggests.

Table 2 Descriptive statistics of fee and size variables classified by OMX size categories *)

OMX size category	Variable	Mean	Median	Std Dev	Std Error	Min	Max
All (n=107)	Audit fees	0.524	0.137	0.795	0.077	0.015	4.232
	Other fees to auditor	0.339	0.095	0.581	0.056	0.000	2.900
	Total audit fees	0.863	0.248	1.282	0.124	0.024	5.600
	Market capitalization	698.4	105.7	2 120.1	205.0	2.6	15 890.3
	Sales	1 362.6	242.5	2 572.3	248.7	3.8	15 043.0
	Total assets	1 401.6	177.3	3 474.8	335.9	3.9	22 840.4
	Total subsidiaries	28.9	15.0	35.4	3.4	2.0	151.0
Large (n=25)	Audit fees	1.524	1.300	1.019	0.204	0.193	4.232
	Other fees to auditor	1.004	0.800	0.780	0.156	0.080	2.900
	Total audit fees	2.528	1.900	1.526	0.305	0.329	5.600
	Market capitalization	2 613.9	1 479.7	3 847.8	769.6	450.7	15 890.3
	Sales	4 445.7	3 399.2	3 804.6	760.9	697.0	15 043.0
	Total assets	4 852.2	2 939.4	5 973.1	1 194.6	574.1	22 840.4
	Total subsidiaries	74.1	75.0	45.3	9.1	8.0	151.0
Medium (n=31)	Audit fees	0.405	0.181	0.482	0.087	0.025	1.900
	Other fees to auditor	0.242	0.100	0.428	0.077	0.007	2.294
	Total audit fees	0.647	0.338	0.835	0.150	0.054	3.985
	Market capitalization	243.8	226.4	132.9	23.9	71.5	624.7
	Sales	841.3	475.4	885.9	159.1	55.4	3 236.0
	Total assets	769.9	380.3	920.8	165.4	44.6	4 500.0
	Total subsidiaries	23.1	18.0	19.3	3.5	4.0	101.0
Small (n=51)	Audit fees	0.105	0.070	0.125	0.018	0.015	0.802
	Other fees to auditor	0.072	0.036	0.121	0.017	0.000	0.798
	Total audit fees	0.177	0.128	0.232	0.032	0.024	1.600
	Market capitalization	35.7	28.2	28.6	4.0	2.6	142.3
	Sales	168.2	78.3	481.3	67.4	3.8	3 443.2
	Total assets	94.1	56.1	139.4	19.5	3.9	922.5
	Total subsidiaries	10.2	8.0	7.3	1.0	2.0	34.0

*) Numbers are in millions of Euros, except total subsidiaries.

The amount of audit fees also follows with the size classification, as the Large Cap group has a median of total audit fees of 1.9 millions of Euros compared to the Small Cap group's median of 0.128 millions of Euros, while the median for the whole sample is 0.248 millions of Euros. Also, the Table 2 suggests, that the larger the company, the larger the amount of other fees paid to the auditor. This might be due to the increasing complexity of the larger companies' business environment, which makes such companies to purchase additional services from their auditors. However, the portion of the other fees remains pretty similar (about 1/3 of the total fees) throughout the different size groups. This can be seen from the Appendix 3 by studying the *FEERATIO* variable included in the coming models. Other interesting point in the Table 2 is that some of the smaller companies have not paid any non-audit related fees to their responsible auditor, while the other companies have paid at least

some amount. This might have an effect to the independence and the objectivity of the auditor and is included in the audit fee model as an instrumental variable.

As mentioned earlier, listed companies must disclose information about the internal controls and the board committees if established. Corporate governance code (CG working group, 2008) requires that the company's corporate governance report "must include the organization of the internal audit function and the central principles applied to internal audits, such as the reporting principles." The Code also requires that information about the established audit committee must be included: "The board shall confirm the central duties and operating principles of a committee in a written charter, the essential contents of which shall be described" (CG working group, 2008). The data related to corporate governance dummy variables, including the BIG4-auditor and major shareholder, can be found in the Table 3 below.

Table 3 Descriptive statistics of dummy variables classified by OMX size category

OMX size category		Frequency	Mean
All (n=107)	Own IA function	42	0.400
	Outsourced IA function	7	0.100
	Internal audit functions in total	49	0.458
	Audit committee	53	0.495
	Major Shareholder >20 %	51	0.477
	BIG4-auditor	100	0.900
Large (n=25)	Own IA function	24	0.960
	Outsourced IA function	0	0.000
	Internal audit functions in total	24	0.960
	Audit committee	22	0.880
	Major Shareholder >20 %	10	0.400
	BIG4-auditor	25	1.000
Medium (n=31)	Own IA function	12	0.387
	Outsourced IA function	1	0.032
	Internal audit functions in total	13	0.419
	Audit committee	16	0.516
	Major Shareholder >20 %	14	0.452
	BIG4-auditor	29	0.935
Small (n=51)	Own IA function	6	0.118
	Outsourced IA function	6	0.118
	Internal audit functions in total	12	0.235
	Audit committee	15	0.294
	Major Shareholder >20 %	27	0.529
	BIG4-auditor	46	0.902

The Table 3 shows that 45.8 % of the data sample has an own internal audit function or has outsourced it. Also, all but one (96 %) of the large companies has established their own or outsourced the internal audit function. The smaller the company size seems to be, the smaller the portion of the existence of the internal audit functions in some form is. Also, the smaller companies seem to be more eager to outsource their internal audit functions when compared to their larger counter parts in the sample. This might be due the previously mentioned reason for the cost-efficiency of outsourcing rather than the arranging an own internal audit function, when the scope of the business is narrower. The outsourcing of the internal audit is within the CG-code of 2004 (Recommendation 51), which only states, that the organization of the internal audit must be disclosed, but forming an internal audit function is not required by the code: "The organization and working methods of internal audit depend on the nature and scope of the company's operations, the number of personnel and other similar factors." (CG group, 2003, p.15) As the above Table 3 shows, the organization of the internal audit functions is somewhat similar as the CG-code recommends.

The Recommendation 27 of the CG-code recommends forming an audit committee to further strengthen the quality of the company's financial reporting, if needed: "The audit committee shall be established, if the extent of the company's business requires preparation of matters relating to financial reporting and control to be dealt with by a group with more compact composition than the entire board. The extent of the operations of the company may require some directors to concentrate particularly on matters relating to financial reporting and control. The audit committee has better possibilities than the entire board to review questions connected with the financial administration and control of the company and ensure contacts with auditors and the internal audit function." (CG group, 2003, p.10) Audit committee has been established by almost half of the total sample (49.5 %), of which the companies in the large category, in accordance with the CG-code, have been the most keen to add another layer of corporate governance as the size of the company is larger.

Some of the listed companies also have a major stockowner, which controls more than 20% of the voting shares. In the whole group, the mean for the existence of the major shareholder is 47.7%, which seems quite high when considering that the companies are listed. This might be explained by the fact, that in most cases the major owner is the Finnish Government or the founder of the company. This is particularly apparent in the small size category, where the

more than a half of the companies have a major shareholder owning more than 20 % of the voting rights.

Also, most of the sample companies (93.5%) are audited by a Big4 auditor, while the companies in the large classification are all audited by a Big4 auditor. This is partially due to the fact, that the listed companies have to be audited by auditor or an audit company, which has been approved by the Finnish Institute of Authorized Public Accountants (KHT-yhdistys). All of the Big4 audit firms are such firms. Also, there might be credibility or cost-efficiency factor to using the Big4 audit firms as they all are operating worldwide as their auditees do. There are numerous other reasons for using a Big4 auditor (reputation, cost-efficiency, etc.), but this is not the scope of this study and the variable is omitted from the coming models. This is because that it is not statistically relevant as almost all of the sample companies are audited by such audit firm. The non-statistical relevancy of the variable was also confirmed in preliminary tests.

The Table 4 below presents the means of the board, executive group and audit committee variables of the sample group classified by OMX size category. The more detailed statistics can be found in the Appendix 2.

Table 4 Means of the board, executive and audit committee data classified by OMX size category

Variable	ALL (n=107)	Large (n=25)	Med. (n=31)	Small (n=51)
Board size	6.084	7.400	6.258	5.333
- of financially educated %	0.439	0.432	0.491	0.411
- of independent %	0.680	0.774	0.699	0.622
Executive group size	7.617	9.520	8.452	6.176
- of financially educated %	0.410	0.461	0.408	0.387
Board and exec. group size in total	13.701	16.920	14.710	11.510
- of financially educated %	0.417	0.438	0.434	0.396
AC size	1.505	3.040	1.419	0.804
- of independent %	0.868	0.841	0.906	0.872
Voting rights held by insiders	0.176	0.063	0.124	0.264

As seen in the Table 4 above, the means of the board and executive group variables are larger when the companies are larger. This might be explained by the increasing requirements for the governance structures, as the companies gets larger and thus may be more difficult to lead efficiently with smaller corporate governance structures.

As the Recommendation 11 in the 2004 CG-code states, the minimum number of the board members is five. But this recommendation also allows three members, if it is justified and the smaller board can perform its duties efficiently. ”To ensure the effective implementation of the duties of the board, it should comprise at least five directors. In some circumstances, however, it may be justified to elect less than five directors. In a relatively small company, a board consisting of three directors may be able to adequately discharge the duties pertaining to the board.” (CG-group, 2003) As seen from the Appendix 2, where the more detailed statistics can be found, the large and medium sized companies have the required minimum of five members, thus complying with the recommendation. Some of the smaller companies have a smaller board than the required five, but none of the companies have a board smaller than three.

For example, Cencorp Oyj has three board members during the year 2008 and explains the size of their board in their annual statement: “The annual general meeting has concluded that the size of the board is adequate, when considering the scale of the company’s business. The number of board members is evaluated yearly by the AGM.”

As explained previously, usually the smaller companies tend to have their founder as the major owner relying to his/hers own judgment, which is best for the company, whatever the reason might be. One way of committing the board and key executives to follow the interests of the shareholders is by owning the shares of the company. This is also seen in the above Table 4, as the smaller companies have a larger portion of insider holdings than the larger ones, which have a more diversified shareholder base.

Also, the portion of the financially educated members is larger as the company size gets larger. The CG-code of 2004 states about the knowledge of the elected members in the recommendation 15: “Successful board work requires knowledge of the business operations. It is imperative for the board work and its effective functioning that the board is composed of directors with versatile and mutually complementing capabilities and skills.” As this is not as clear to interpret as the previous recommendation, all of the companies seem to have complied with this recommendation, since no explanations for not complying for this recommendation are found within the sample companies. However, all of the companies disclose the educations of its board members and executives in their annual statements or in the corporate governance statements, thus leaving the evaluation of the board’s knowledge-

mix to the reader. The financial education is not the prerequisite for the board work, but it should be relevant in the context of this study as it might have an effect on the audit fees and/or earnings management. This might also have an effect on the forming of internal audit functions and audit committee and therefore it has been selected as an instrumental variable in the models.

Additionally, the bigger portion of the financially educated members might be explained by the fact that the larger companies can be more appealing to such members, which are in accordance to the corporate governance recommendations (e.g. financially educated and independent from the company and major shareholders). The larger companies tend to pay more to their board members and they also offer a more interesting environment for its members and executives.

The independency of the board members is defined by the CG-code of 2004 in recommendation 17 and 18 as follows: The duties of the board consist of supervision and control of the operative management of the company. This task requires that the majority of directors should have no interdependent relationship to the company. Although it is recommended that directors hold shares in the company, the majority consisting of independent directors should include at least two directors independent of significant shareholders of the company. Such composition of the board supports the objective that the board should act in the interests of the company and all of its shareholders." (CG group, 2003, pp.8-9) The independency variable here is calculated as the portion of the members, who are both independent from the company and the shareholders, from the total size of the board or audit committee. The independency variables in the Table 4 suggest that the sample companies generally have a greater portion of independent members both in the boards and audit committees.

As seen from the Table 4, the size of the audit committee varies a lot within the groups. The mean of the size is about 1.5 members, which is lower than the recommendation 27 of the CG-code: "To ensure the effective implementation of the duties of the audit committee, it shall comprise at least three members. The members must have sufficient knowledge of the accounting practices and preparation of financial statements, because the audit committee deals with matters relating to the financial reporting and control of the company." (CG group, 2003, p.10) The low mean of the whole sample can be explained by the fact that most of the

sample companies do not have an audit committee. Therefore, this is skews the results, as in these companies the size of the audit committee is zero. Nevertheless, after removing the zeros from the sample, the means for the All, Large, Medium and Small categories are 3.03, 3.45, 3.04 and 2.73 respectively. Thus, there are several companies having less than three members in the audit committee throughout the size categories. For example, some large category companies, Outotec and Pöyry, have a two member audit committee and they explain the reasons for not to comply with the CG-code in their annual statement. They both conclude that when considering the members' financial experience and the scope of the business, the composition of the audit committee is adequate for their needs.

The next section 4.2 presents the research models and the variables to be used for to study the hypothesized effects.

4.2 Research models and variables

This section shows the variables and the models constructed in order to study the hypothesized effects to audit quality and to financial reporting quality. Firstly, an overview of the 2SLS regression method is shown in subsection 4.2.1, used for helping to alleviate the endogeneity problems associated with internal governance. Secondly, the subsection 4.2.2 presents the basic OLS regression models and two-stage least squares (2SLS) regressions testing for the audit fee related hypothesis H1-H3 introduced in chapter 3. Finally, the subsection 4.2.3 similarly presents the models and variables related to earnings management, which purpose is to test the above mentioned hypothesis H4-H6. The results of these models are then presented in the following chapter 5.

4.2.1 Endogeneity and the 2SLS model

As the 2SLS method is not as familiar as the more often used OLS method, the concept and the methods related to the 2SLS method are explained in more detail. The most recent studies (e.g. Hay et al., 2008 & Jokipii et al., 2008) have used a two-stage least squares (2SLS) regression model in order to reduce endogeneity of the variables (a variable correlates with the error term or with another variable). As Larcker & Rusticus (2009) explain the instrumental variable (IV) methods are commonly used in accounting research (e.g., earnings management, corporate governance, executive compensation, and disclosure research) when the regressor variables are endogenous. In this study the internal audit and audit committee variables are seen to be endogenous due to their two-way relationship in the companies' internal governance structure, which is used as a dependent variable and as an independent variable in the regressions. There are also some additional tests performed, where the audit fee and the discretionary accruals are seen as endogenous to further study the joint effect of the hypothesis variables.

As Hay et al. (2008) explain in their article, this two-way relationship between internal governance structures and auditors have been argued in many "substitution view" papers (e.g. Simunic, 1980, 1984) that an organization can choose to trade off more or less internal auditing against external auditing; and it has also been argued that external auditing may have an impact on voluntarily forming an audit committee (Eichenseher & Shields, 1985; Pincus et

al., 1989). In this thesis, the existence of internal audit and audit committee is presumed endogenous in all of the 2SLS models as Hay et al. (2008) suggest. If there is a two-way relationship between the auditors and controls, the OLS regression could lead to biased and inconsistent results and therefore 2SLS method is used to alleviate the possible endogeneity problems.

Chenhall & Moers (2007a) explain the differences of the endogenous variables in their paper: In general usage, a distinction between exogenous and endogenous variables may be made that relates the origins of the variables to be either 'inside' or 'outside' the structural equation. A variable is endogenous if it is determined within the context of the model, while an exogenous variable is a variable that affects the values of endogenous variables, but whose values are determined outside the model." They further illustrate this with an econometric example (Chenhall & Moers, 2007a, p177):

$$\mathbf{Y=\beta_0+\beta_1 X_1+u} \qquad \textbf{Eq.1}$$

Assume that the following equation applies:

$$\mathbf{X_1=\alpha_0+\alpha_1 Z_1+v} \qquad \textbf{Eq.2}$$

Equation (2) indicates that the variable X_1 is endogenous, as it is the explained variable. The main question, however, is whether it is endogenous in equation (1). The variable X_1 is endogenous in equation (1) if it is correlated with the structural error term, that is, $Cov(X_1, u) = 0$. If X_1 is correlated with the structural error term, then X_1 is determined inside the model (equation (1)), because the presence of this correlation is either due to $Cov(Z_1, u) = 0$ or due to $Cov(v, u) = 0$. That is, (some of) the factors that affect X_1 also affect Y and as a result equations (1) and (2) are parts of the same model. If X_1 is not correlated with the structural error term of equation (1), then it must hold that both $Cov(Z_1, u) \neq 0$ and $Cov(v, u) \neq 0$, and X_1 is thus determined outside the model and not endogenous. (Chenhall & Moers, 2007a, p.177) In sum, the explained variable is, by definition, endogenous because it is always correlated with the structural error term.

Larcker and Rusticus (2009) explain the usual way of employing the 2SLS in their very insightful working paper on the matter: "In a typical 2SLS application, the researcher first

selects a set of variables that are assumed to be exogenous and then uses two-stage least squares or similar estimation methods to estimate the coefficients in the regression model. This standard textbook solution to endogeneity is appropriate if the researcher can find instrumental variables that are correlated with the endogenous regressor but uncorrelated with the error in the structural equation." (Larcker & Rusticus, 2009, p.1)

To address the endogeneity issue in this thesis, the 2SLS method is used with appropriate instrumental variables in the first-stage. In the first-stage, the endogenous variables are regressed as the dependent variable with the variables included in the second-stage and instrumental variables as independent variables using OLS method. In the second stage, the predicted values of the endogenous variables from the first-stage models enter as independent variables, with the other control variables, in the both final audit fee and earnings management models.

As the endogenous variables are dichotomous in this thesis, one might argue, that the method used in the first-stage regression should be a probit of logit method instead of the proposed OLS. Estimating the first-stage using probit or logit is unnecessary, because in 2SLS the consistency of the estimates in the second stage are not dependent upon specifying the correct functional form in the first stage (Kelejian, 1971). Also, Heckman (1978) proves that using probit or logit methods for the dummy variables in the first-stage are not needed, but can be used, if the sole purpose is to interpret the results of the second-stage. "It is unnecessary to obtain consistent estimators of the parameters of reduced form equations in order to consistently estimate structural equations. Since the linear probability procedure is the simplest one to use, it is recommended. However, it is likely that the use of the probit instrument results in more efficient estimators although no proof of this assertion is offered." (Heckman, 1978, p.947) Similarly, for example Angrist (2001, p.8) concludes in the same spirit, that "it is generally safer to use a linear first-stage".

Larcker & Rusticus (2009) remind the users of the 2SLS and other IV methods to report and study the different statistics on the validity of the used instrumental variables to further justify that the used method is statistically solid. They especially warn on the effect of using weak instruments, which are weakly correlated with the regressor. This is common in these types of studies, where it is very hard to find powerful instrumental variables to alleviate the endogeneity problem. If the instrument is only weakly correlated with the regressor, IV

methods can produce highly biased estimates when the instrumental variable is even slightly endogenous. In those cases, it is likely that IV estimates are more biased and more likely to provide the wrong statistical inference than simple OLS estimates that make no correction for endogeneity (Larcker & Rusticus, 2009).

In order to check the appropriateness of the instrumental variables, a number of tests are used in the coming 2SLS models as Larcker and Rusticus suggested. The calculation and the interpretation of these tests (Partial R^2, Partial F-test, Weak instrument F-test, Over-identification test and Durbin-Wu-Hausman endogeneity test) are presented in the following chapters with more detail as these tests may not be as familiar as with the OLS methods. If these tests fail to support the using of the 2SLS method, the OLS method is then used to study effects of the hypotheses.

Larcker & Rusticus (2009) explain the interpretation and the calculation of the **partial R^2** as follows. "One problematic aspect of accounting IV applications is that if a first-stage R^2 is reported, it is the explanatory power for the *total* first-stage model, and not the *partial* explanatory power for the instruments that are unique to the first-stage regression. Thus, using reported first-stage explanatory power would lead to a substantial overstatement of the strength of the instrumental variables in the first-stage regression." (Larcker & Rusticus, 2009, p.6)

The typical analysis in empirical research involves an endogenous y that is a function of an endogenous x variable and a set of exogenous control variables (z_1). In addition, there are multiple instruments, exogenous variables (z_2) that are not included in the equation describing y. In this case, the proper measure of the strength of the instrument is the partial R^2. The partial R2 can be easily computed using: $(R^2_{y,z}-R^2_{y,z_1})/(1-R^2_{y,z_1})$, where the z is the combined set of z_1 and z_2. (Larcker & Rusticus, 2009, p.6) In short, the partial R^2 is the $R^2$of the first-stage regression with only the instrumental variables included.

In addition to the partial R^2, a similar test of the strength of the instruments is the **partial F-test**. The validness of the instruments jointly can also be interpreted from the **weak instrument F-test.** The difference of these tests is that the partial F-test is conducted for a single first-stage model, whereas the weak instrument F-test is conducted jointly for all of the

firs-stage models. A simple way to detect the presence of weak instrument problems is to look at the first stage F-test that the instruments are jointly zero (or partial F-test if there are other control variables). If the F-statistic is low, this implies that the selected instruments are weak. In their survey of the weak instrument literature Stock & Yogo (2002) developed some benchmarks for the critical values of the F-statistic. When the number of instruments is 1, 2, 3, 5, 10, the suggested critical F-values are 8.96, 11.59, 12.83, 15.09, and 20.88 respectively. If the first stage (partial) F-statistic falls below these critical values, the instruments are considered to be weak and inference problems are potentially serious. (Larcker & Rusticus, 2009, p.29) The critical values for this test at the significance level of 0.05 are shown with the test statistics with the results of the 2SLS models.

As mentioned by Larcker & Rusticus (2009), an **overidentification test** must be conducted and reported before the appropriate endogeneity test. If and only if an equation is overidentified, we may test whether the excluded instruments are appropriately independent of the error process. That test should always be performed when it is possible to do so, as it allows the researcher to evaluate the validity of the instruments. The overidentification test performed in this thesis is the Sargan-Hansen test of overidentifying restrictions produced by Stata with the ivreg2 command used to calculate the 2SLS models.

The Sargan-Hansen test regresses the residuals from an IV or 2SLS regression on *all* instruments. This test statistic is chi-square distributed with the number of over-identification restrictions as the degrees of freedom. In the upcoming models, there are 2 or 3 endogenous explanatory variables, and 4 to 6 exogenous instruments, so there is 2 to 3 degrees of freedom. A Sargan-Hansen test statistic of more than 5.99 (for 2 d.f.) and 7.82 (for 3 d.f.) would thus lead to rejecting the null hypothesis using a 95% confidence level.

Counter-intuitively to the usual statistical tests, the null hypothesis of this test is that instruments are uncorrelated with the error term in the structural equation, and that the excluded instruments are correctly excluded from the estimated equation (Baum et al., 2003). Therefore, the test statistic and its significance should be under the appropriate F-value and the significance of the test should be over the selected 0.15 level for the instruments to be valid. As Baum (2003) summarizes, the Sargan–Hansen test of overidentifying restrictions should be performed routinely in any overidentified model estimated with instrumental

variables techniques. If a strong rejection of the null hypothesis of the Sargan–Hansen test is encountered, the validity of the estimated should be strongly doubted.

After the overidentification test has been conducted, the common way to justify the use of 2SLS rather than OLS results is to perform the standard **Durbin-Wu-Hausman test of endogeneity**. As Baum (2006) suggests, the test is perhaps best interpreted not as a test for the endogeneity or the exogeneity of regressors per se but rather as a test of the consequence of using different estimation methods on the same equation (Baum, 2006, p.212). The test statistic is distributed as chi-square where the degrees of freedom are the number of regressors being tested for endogeneity. A strong rejection of the null favours using the 2SLS instead of OLS model's estimates.

Next, the models and variables used are explained in the following two subsections. Subsection 4.2.2 presents the models, when the influence of the auditors and earnings management is presumed to be *exogenous* and in similar matter the subsection 4.2.3 presents the models, where these are seen to be *endogenous* in the internal governance framework.

4.2.2 Regression models with exogenous fee and discretionary accruals

This subsection presents the different regression models and variables used in the analysis chapter, when the auditors and earnings management is presumed to be exogenous. There is going to be several regression equations for to reach the final 2SLS models. Also, for comparison purposes there is going to be "basic" OLS models, where the possible endogenous hypothesis variables are entered as they are. Further, a regression (Eq.3-5) is required for to obtain the discretionary accruals variable adding the number of different regression equations used in this thesis to 27 (plus the additional sensitivity tests). Figure 3 below provides a helpful illustration of the different models to be presented in this subsection.

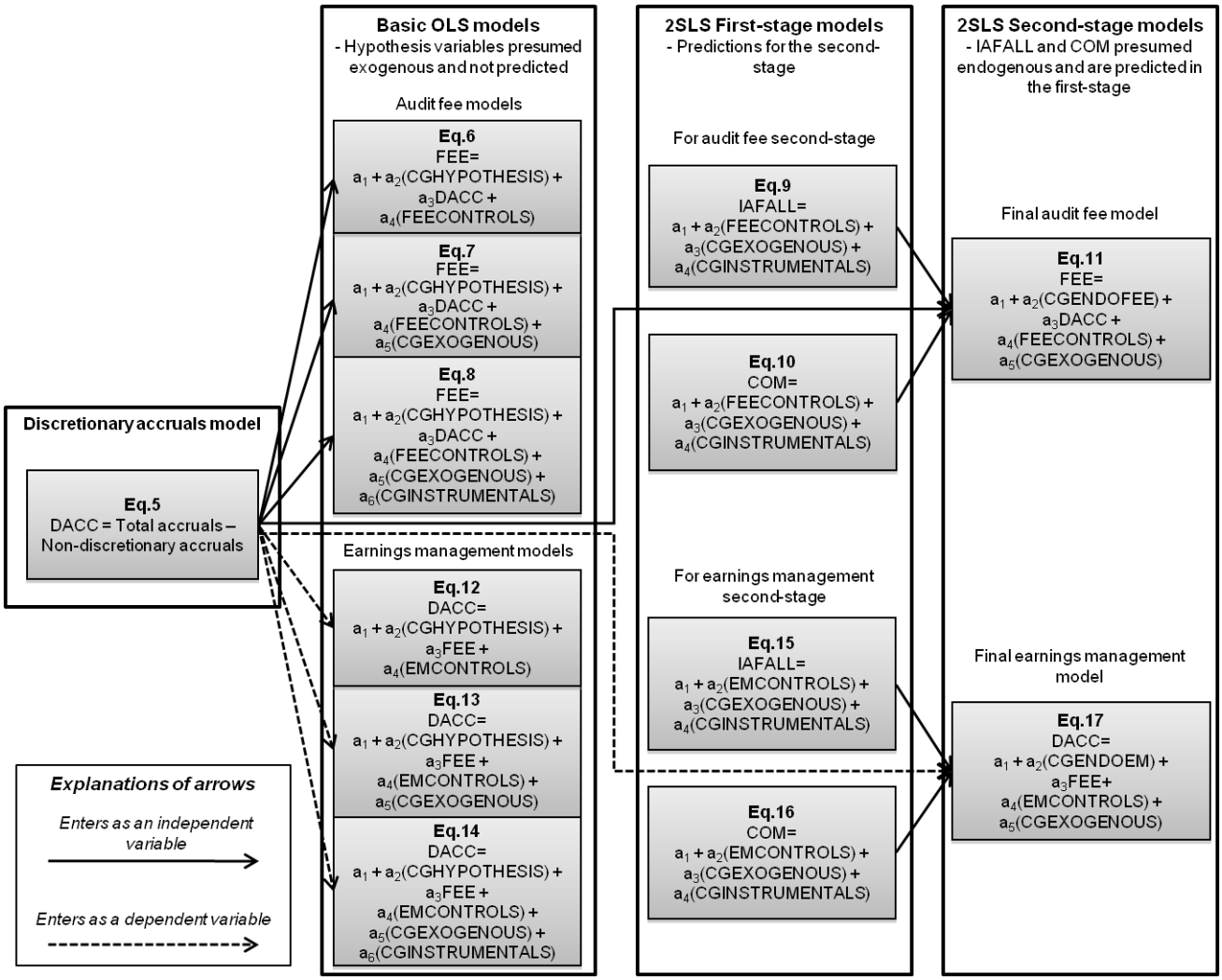

Figure 3 Illustration of regression models with exogenous audit fees and discretionary accruals

As seen in the Figure 3, there are two main groups of models in this thesis: audit fee models (in the upper part of the figure) and earnings management models (in the lower part of the

figure). In the audit fee models the audit fee variable is the dependent variable in the OLS and in the second-stage of the 2SLS. Similarly for the earnings management models, discretionary accruals are the dependent variable in the same models. For the ease of reading, the variable sets are grouped and they consist of the following variables presented in Table 5 below:

Table 5 Variable sets for exogenous audit fees and earnings management models

FEE	Dependent variable in the fee models and hypothesis variable in the EM models (*LNFEEALL* in the main models)
DACC	Dependent variable in the EM models and hypothesis variable in the fee models (*ABSDACCMJS-CF* in the main models)
CGHYPOTHESIS	*IAFALL COM*
FEECONTROLS	*LNASSETS SQRALLSUBS FOREIGN CRATIO INVREC SWITCH FEERISK*
EMCONTROLS	*LNMKTCAP LOSS OPCYCLE365 MKTRET SALESGPCG ZRATIO SMALLEPSCNG*
CGEXOGENOUS	*MAJ20 BINDEPENDENT*
CGINSTRUMENTALS	*ANALYSTS LIABRATIO FINEXP LITI*
CGENDOFEE	Predicted $\overline{IAFALL}$ and $\overline{COM}$ from equations 9 & 10.
CGENDOEM	Predicted $\overline{IAFALL}$ and $\overline{COM}$ from equations 15 & 16.

For each main group, three types of regression models are regressed. Firstly, there are the "basic" OLS models, where the variable sets are added incrementally. The first OLS regression consists of the hypothesis variables and the related control variables. Then, the variable sets are added to the OLS models finally adding up to three separate OLS regressions for each of the model groups.

Secondly, the two of the rightmost columns in the Figure 3 consists of the first-stage and the second-stage regressions of the 2SLS method as described earlier. In the middle, the number of first-stage regressions is dependent on the number of endogenous variables being instrumented. The endogenous variables are used as the dependent variables in the first-stage models with the control variables (in addition to the exogenous *FEE*/*DACC*) and the instrumental variables. Finally, as seen in the right-most part of the Figure 3, the predictions from the first-stage are entered in the second-stage models of the 2SLS with the exogenous variables.

There are two dependent variables that are the main interest of the study: natural logarithm of total audit fees (*LNFEEALL*) and absolute modified Jones discretionary accruals (*ABSDACCMJS-CF*). In addition to being dependent variables, *FEE* and *DACC* variables also enter as a hypothesis variables to each others' models: *FEE* in the earnings management

model and, vice versa, *DACC* in the audit fee model. The following paragraphs provide a more detailed explanation of all the variables used in the models, where the *FEE* and *DACC* are presumed exogenous. The text follows the structure of Table 5 presented above.

Audit fee (FEE)

The first of these dependent/hypothesis variables is the natural logarithm of audit fees *LNFEEALL*, which also does include the non-audit fees in the main analysis. The natural logarithm of total audit fees has been extensively used to portray the audit effort or the audit quality. Following the related literature and research it is suggested that audit fees reflect audit effort, which further benefits auditor's decision-making and thus improves the quality of services provided by the external auditor (e.g. Carcello et al., 2002; Frankel et al., 2002; Abbott et al., 2003; Larcker & Richardson, 2004; Niemi, 2004; Srinidhi et al., 2007 and Caramanis et al., 2008).

The audit research has also suggested several measures for audit quality including audit firm size, audit firm industry specialization, audit tenure, audit fees. But as Miettinen (2008) suggests in her dissertation studying the US companies, the total audit fees are relevant in a very homogenous audit environment. This assumption can also be justified in the Finnish setting as most of the sample companies were audited by Big4-auditors as the descriptive statistics suggested and they should have very similar audit processes as with their US parents. There are also other measures used for audit effort. For example, Niemi (2005) and Jokipii et al. (2008) have used the actual work hours of the auditors, which should better portray the audit work effort, but this data is not publicly available. As mentioned before, the audit fee data is publicly available in the financial statements of the listed companies as the corporate governance code requires and it is therefore used in this thesis.

It should be noted that the value 1 is also added to the total audit fees, and also to the other audit fee related variables, before the logarithmic transformation. This ensures that firms with no fees will have a 0 value on the variables even after the transformation (as the log of 1 is 0). Adding a value of 1 is relevant especially in the case of the non-audit fees as there were some firms, who report that they have not paid such fees to their auditors.

As the Figure 3 suggested, the *LNFEEALL* variable is used as a dependent variable in the audit fee models and also as an exogenous and endogenous hypothesis variable in the

earnings management models. Caramanis & Lennox (2008) summarize the endogeneity problem related to the audit fees and earnings management well in their article. They conclude that auditors might work harder if they believe that clients are attempting to manage earnings. In this case, endogeneity would induce a spurious positive relation between audit hours and earnings management. On the other hand, clients that wish to manage earnings can anticipate that hard-working auditors are more likely to thwart their earnings management attempts and might therefore contract with their auditors to exert less effort. In this case, endogeneity would induce a negative relation between audit hours and earnings management. (Caramanis & Lennox, 2008) Either way, the audit fees are firstly tested to be exogenous and secondly they are also tested as endogenous hypothesis variable in the earnings management models.

Discretionary accruals (*DACC*)

Second of the dependent/hypothesis variables is the absolute modified Jones cash flow discretionary accruals, *ABSDACCMJS-CF*. Earnings management research follows the general discretionary accruals framework proposed by McNichols & Wilson (1988). Their framework divides accruals into non-discretionary and discretionary components and argues that high levels of discretionary accruals indicate that the firm is engaged in earnings management. There are several discretionary accruals calculation methods proposed by various researchers and some of these are also tested in the sensitivity tests after the presentation of the main model, where the absolute modified Jones cash flow discretionary accruals are used.

In this study, the discretionary accruals variable is calculated from the modified Jones model by Dechow et al. (1995) with the cash flow related total accruals. Dechow et al. (1995) have added the change in revenues to the second term of the discretionary accruals model to control for the company growth. Finally, the absolute measure of the model's residual is used to proxy for magnitude of earnings management and financial reporting quality. Because earnings can be managed either upward or downward depending on the manager's objectives, the larger the absolute discretionary accruals is the indicator of lower earnings quality. This is consistent with studies in which the direction of the managers' incentives to engage in earnings management is not clear (e.g. Klein, 2002).

The modified version of the Jones model (Dechow et al., 1995) estimates the discretionary accruals from regressions of total accruals on changes in sales, change in receivables and on property, plant, and equipment. To determine the coefficients for the Modified Jones model, the following OLS regression is run:

$$\frac{TACF_{it}}{A_{it-1}} = \alpha_{0t}\frac{1}{A_{it-1}} + \alpha_{1t}\frac{\Delta REV_{it}}{A_{it-1}} + \alpha_{2t}\frac{PPE}{A_{it-1}} + \varepsilon_{it} \qquad \textbf{Eq.3}$$

The variables are defined as follows:
$TACF_{it}$ = Total accruals for each company i for the period t = Net income – Cash Flows from Operations
A_{it-1} = Total assets for each company i in the beginning of period t
ΔREV_{it} = Change in revenues for each company i in period t
PPE_{it} = Gross property, plant and equipment for each company i in period t
ε_{it} = residual for each company i in period t

Total accruals are calculated as the Net Income – Cash flows from Operations for the period. This is the cash flow method of calculating the unexplained portion of accruals from the reported earnings. This study uses net income instead of income before extra-ordinary or special items to avoid any abnormal accruals misclassification by Jones model. As suggested by Bernard and Skinner (1996), these special items are usually not discretionary but Jones model misclassifies them as discretionary because they are not linearly related to changes in revenues.

Then the estimated $\hat{\alpha}_0$, $\hat{\alpha}_1$ and $\hat{\alpha}_2$ from the previous (non-modified) Jones model are used to calculate modified Jones cash flow nondiscretionary accruals (*NDA*):

$$NDA_{it} = \hat{\alpha}_{0t}\frac{1}{A_{it-1}} + \hat{\alpha}_{1t}\frac{(\Delta REV_{it} - \Delta REC_{it})}{A_{it-1}} + \hat{\alpha}_{2t}\frac{PPE}{A_{it-1}} \qquad \textbf{Eq.4}$$

The variables are defined as follows:
NDA_{it} = Nondiscretionary accruals
A_{it-1} = Total assets for each company i in the beginning of period t
ΔREV_{it} = Change in revenues for each company i in period t
ΔREC_{it} = Change in total receivables for each company i in period t
PPE_{it} = Gross property, plant and equipment for each company i in period t

Then the modified Jones cash flow discretionary accruals (DA_{it}) are calculated subtracting the total cash flow accruals from the nondiscretionary accruals (NDA_{it}) calculated in the equation 1b above. Therefore, the discretionary accruals are calculated as follows:

$$DA_{it} = \frac{TACF_{it}}{A_{it-1}} - NDA_{it} \qquad \textbf{Eq.5}$$

The variables are defined as follows:
DA_{it} = Discretionary accruals
$TACF_{it}$ = Total accruals for each company i for the period t = Net income – Cash Flows from Operations
A_{it-1} = Total assets for each company i in the beginning of period t
NDA_{it} = Nondiscretionary accruals

Finally, the magnitude of earnings management is measured with the *absolute* discretionary accruals (*ABSDACCMJS-CF*). This absolute measure of earnings management is used by several other studies (see e.g. Bartov et al., 2000; Klein, 2002; Frankel et al. (2002), Chung & Kallapur, 2003 and Yu, 2008) as a proxy for the combined effect of a positive and negative earnings management. Because all the variables are scaled by total assets at the beginning of the period, the magnitude of a firm's discretionary accruals is indicated as a percentage of the assets of the firm (Yu, 2008). Thus, the absolute value of discretionary accruals represents the inverse of the quality of the disclosed earnings. A higher value of the absolute DACC indicates more use of discretion over the reported earnings and therefore lowers the quality of the disclosed earnings and vice versa.

Due the limitations of the small sample size, the modified Jones model does not include industry specifications (e.g. there is only one company in the Energy sector). Also, the modified Jones model's coefficients are obtained using the original cross-sectional Jones method for to keep the sample as large as possible as Dechow et al. (1995) suggest.

Bartov et al. (2000) suggest that the cross-sectional original Jones model is statistically dominant than the time-series counterpart. As Bartov et al. (2000), and Subramanyam (1996) point out, the cross-sectional version of the Jones model has statistical properties that make it better, ex ante, than its time-series cousin. First, the number of observations per model is considerably higher under the cross-sectional version. This increases the precision of the estimates. Second, by not imposing availability of time series data, the cross-sectional sample is less subject to survivorship bias and allows the researcher to include firms with short histories. Third, misspecification of the coefficients due to non-stationary is not an issue for the time series version.

There are also other different calculation methods for total accruals as well as there are different methods calculating the discretionary accruals. For example Van Tendeloo & Vanstraelen (2008) have used an aggregate earnings management indicator, which consists of many different EM indicators to capture a wide range of different manipulative behavior. Further, Aaker & Gjesdal (2009) have identified more than a hundred different models proxying for the earnings management. Some of these different models have been tested as an additional analysis in the section 5.3.

As well as the audit fee variable, the earnings management variable is tested as an exogenous and also as an endogenous hypothesis variable in the audit fee models and it is the dependent variable in the earnings management models.

Hypothesis variables (*CGHYPOTHESIS*)

As mentioned, the previous two dependent variables are also used as hypothesis variables. Further, there are two additional hypothesis corporate governance related variables (*IAFALL* and *COM*), which are also the main interest of this study with the previously presented variables.

First of the hypothesis variables is ***IAFALL,*** which is a dummy variable taking value of 1, if the company has established an own internal audit function or has outsourced it. This same variable has been used by e.g. Davidson et al (2005) and Jokipii et al. (2008). In the additional analysis further ahead, the *IAFALL* is replaced by a dummy variable not including the outsourced internal audit functions (*IAF*) and a dummy including only the outsourced internal audit functions (*IAFOUT*).

There are also more "precise" methods used for to study the effect of internal audit on audit fees and earnings management (see e.g. Gramling et al., 2004, for comparison of the different internal audit quality measures). For example, Prawitt et al. (2009) use an internal audit quality variable, which consists of the various measures for their involvement in the audit process, size of the internal audit function, training hours and professional certifications of the internal auditors to better capture their effect on earnings management. While this might be a better approach in explaining the influence of the internal audit function, there are no such data available from the public records or the databases used for the Finnish companies.

Therefore, for practical purposes, a more rudimentary, but also extensively used, measure is used in the thesis.

The existence of the internal audit function is seen to be endogenous, because as the previous studies and agency theory suggests that both the internal governance and the magnitude of audit fees increase with organizations' size and complexity. This can also been seen from the previously presented descriptive statistics, where the companies were classified by the OMX size classification. But as hypothesized earlier, the existence of the internal audit function should be positively associated to both audit fees and negatively associated to earnings management.

The second hypothesis variable is ***COM*.** It also is a dummy variable, which takes the value 1, if the board has appointed an audit committee. The variable has been used by Knechel & Willekens (2006), Hay et al. (2008) and Jokipii et al. (2008) and many other various audit fee and earnings management studies.

Earlier audit fee studies have used some of the audit committee characteristics for to study the more precise effects of existence of the audit committee to the audit fees (e.g. size of the audit committee, number of meetings held, independence of the members, financial expertise of the members, etc.). Similar characteristics of the audit committee have also been studied in the earnings management literature.

However, in this study a dummy variable for the existence of the audit committee is used for to be equivalent with the existence of the internal audit function as presented earlier and its effect is also easier to interpret. The existence of audit committee is predicted to be associated positively to audit fees and negatively to the magnitude of earnings management as hypothesized previously.

Control variables in the fee models (*FEECONTROLS*)

The following seven variables are used to control the effects of audit quality in the audit fee models and most of them are similar as in the study by Hay et al. (2008) with some exceptions. The audit fee models' control variables are based on the following interpretations:

First control variable is ***LNASSETS*** representing the size effect of the auditee. Auditee's size is reported to be positively associated to larger fees (e.g. Niemi, 2004), because of the workload should increase as the company is larger in size and it should be seen as larger audit fees. For example, Hay et al. (2008) explain the use of this variable as follows. "Larger companies are likely to face more and varied risks from their environment. Furthermore, it is well documented that audit fees are significantly associated with the size of an organization." Hay et al. (2008) Thus, a positive association is expected with the audit fees.

Secondly, ***SQRALLSUBS*** is used to control the complexity of the auditee's operations (e.g. Menon & Williams, 2001; Niemi, 2004 & Hay et al., 2008). The larger the number of subsidiaries, the more audit work it should require. Organizations that are more diverse and widespread can also face incrementally more risks, and experience higher fees (Hay et al., 2008). Thus, a positive association is expected.

Third control variable for the audit fee regression is ***FOREIGN***. It is a calculated by dividing foreign subsidiaries to total subsidiaries. It represents the more tedious work, when the auditors need to audit the foreign subsidiaries. Companies with foreign operations are expected to require greater audit effort due to more heterogeneous information and business complexity (Miettinen, 2008). Foreign assets are an indicator of a more complex company, and a more complex audit, and are expected to be associated with higher fees (Simunic, 1980). Therefore, a positive association between *FOREIGN* and audit fees is expected.

Fourth control variable in the audit fee models is ***CRATIO***. It controls for the financial condition of the auditee. It is calculated by dividing the current assets with current liabilities. Organizations that are suffering from fiscal distress and/or are unprofitable are often perceived as being riskier and more challenging to audit (Simunic, 1980). The smaller the ratio, the greater the audit risk and therefore it should require more audit work. Therefore, negative association to audit fees is expected.

Fifth variable is ***INVREC***, which controls for the inherent risk and complexity of the audit engagement and it is calculated as the percentage of the inventory and receivables from the total assets. As Hay et al. (2006, 2008) summarize certain assets are perceived as being riskier to audit, resulting in higher audit fees due to the more audit work or specialized audit procedures in order to lower the audit risk to acceptable level. Also, Niemi (2002, 2005), and

Knechel et al. (2008) have used this variable to control for the complexity of the audit engagement with Finnish companies. This variable should also be positively associated to the audit fees.

Sixth control variable is the recent change of audit firm ***SWITCH***. A dummy variable is used to indicate this effect and it takes the value of 1 if the company has switched auditors from the previous year. Client companies that have changed auditor in the last year might have lower audit fees, if lowballing takes place. A common reason for clients to change auditors is to obtain a reduced fee from a new audit firm. Lower fees may be due to audit firms intentionally offering services at a discount in order to win new business (often referred to as low-balling) or because a new auditor can offer more efficient service, justifying a fee reduction (Hay et al. 2006). According to Hay et al. (2006) some papers define the change of auditor when auditor tenure is one year or less, while others use a cut-off of two or three years (e.g. Niemi, 2005). However as Hay et al. (2006) conclude, the results should still be the same and the *SWITCH* variable should indicate audits where the auditor is relatively new and fees are likely to be lower. Thus, a negative relationship is predicted.

Hay et al. (2008) also used a dummy variable to control the big audit firm premium. These audit firms are regarded as having higher audit quality, and are expected to be able to earn higher audit fees as a result. But, as the previously presented descriptive statistics show, almost all of the sample companies have been audited by a big audit firm. The preliminary testing of the variables indicated that this type of variable is not statistically relevant and it is therefore omitted from the audit fee model. In order to control the "supply side" effect to the audit fees a following variable is used in place of the Big4-auditor dummy.

The final control variable for the fee models, ***FEERISK***, controls for the importance of a particular client to the audit firm. *FEERISK* is calculated by dividing the particular client's total audit fees by the total audit fees received by the audit firm in the sample. Therefore, the variable represents the importance of the client to the audit firm, which may have an effect on the pricing of the audit. As DeAngelo (1981) contends, the greater the portion of total revenues the auditor receives from a particular client, the less objective the auditor will be on that client's engagement. Also, as auditors become less objective (or their professional scepticism begins to erode) the risk of auditor litigation is likely to increase (Heninger, 2001). The non-Big4 auditors have been pooled as a combined group and have not been calculated

separately, because most of them have only one client in the sample. *FEERISK* should be positively associated to audit fees and has stronger correlation than the other hypothesis variables.

Control variables in the earnings management models (*EMCONTROLS*)

The six control variables used in the earnings management models are explained in the following paragraphs. They are to some extent similar as in a recent article on innate accruals quality and corporate governance by Kent et al. 2010.

First of the control variables is ***LNMKTCAP***. It is calculated as the natural logarithm of the total market capitalization at the end of the year. Kent et al. (2010) used a natural logarithm of total assets as a size indicator, but as the earlier presented descriptive statistics and the high correlation (0.903) between these variables show they should measure for the similar effect. As mentioned this variable relates to the size of the company and as Miettinen (2008) explains it is expected to have a negative relationship with the magnitude of earnings management. Large companies may engage in income-decreasing earnings management in order to mitigate political pressure (Watts and Zimmerman, 1986). This political costs hypothesis suggests a negative relation between abnormal accruals and firm size. Large companies are expected to have systematically lower discretionary accruals due to operating characteristics such as greater stability and diversification of portfolio of activities (Miettinen, 2008). But as Gul et al (2009) note, the size effect is not as straightforward when accounting for longer periods: while some researchers argue that larger firms have more stable discretionary accruals (Dechow and Dichev, 2002), others document that the magnitude of discretionary accruals reported by larger firms is systematically lower (e.g. Ashbaugh et al., 2003). Therefore, a negative relationship is expected.

Second control variable for the earnings management models is the occurrence of loss, **LOSS.** *LOSS* is a dummy variable which takes a value of 1 if the net income of the fiscal year is negative and is otherwise 0. For example, Kent et al. (2010) used a dummy variable, which takes a value of 1 if a loss was recorded in some of the three previous years. The variable in this thesis is chosen to keep the already small sample size as large as possible by using only one year range. The earnings management literature suggests that financially distressed companies may be more prone to use accruals to manage earnings upwards (Dechow &

Dichev, 2002; Li & Lin, 2005; Antle et al. 2006, Srinidhi et al. 2007 and Miettinen 2008). Therefore, a positive sign for the coefficient of this variable is anticipated.

Thirdly, ***OPCYCLE365*** controls for the uncertainty of operations and it is widely used in previous earnings management research (e.g. Becker et al., 1998; Srinidhi et al., 2007; Miettinen, 2008, Gong et al., 2009 & Kent et al., 2010). *OPCYCLE365* is the average age of inventory plus the average age of receivables (in days) in the year 2008 after winsorizing at 365 days. It is calculated as follows:

$$\text{OPCYCLE}_{\text{inventory}} = \frac{365}{\frac{\text{Sales}}{\text{Average accounts receivables}}} + \frac{365}{\frac{\text{Cost of goods sold}}{\text{Average inventory}}}$$

For companies with no inventories *OPCYCLE365* is only the average age of receivables (in days) and is calculated as follows:

$$\text{OPCYCLE}_{\text{no inventory}} = \frac{365}{\frac{\text{Sales}}{\text{Average accounts receivables}}}$$

Dechow et al. (2002), Srinidhi et al. (2007) and Kent et al (2010) argue that longer operating cycle is associated with more uncertainty and more estimation, thus leading to lower earnings quality. Therefore, *OPCYCLE365* is expected to have a positive effect on *DACC*.

Kent et al. (2010) also used a standard deviation of operating revenue in five year period as one of the control variables in their model. But as with the *LOSS* variable, calculating such a variable including several years of data, could lead to smaller sample size in this thesis. Thus, this variable is replaced by some of the other frequently used control variables found in the earnings management literature.

The fourth control variable is ***MKTRET***. The variable is calculated as the change in company's stock in the year 2008 deducted by the change of the stock index following all the companies listed in the Helsinki stock exchange. If the company had two different share classes in the OMXH, the more liquid stock was used to control for the market growth. The market adjusted stock return has been used as control variable for the earnings management by e.g. Frankel et al. (2002), Li et al. (2005) and Gong et al. (2009). The annual return of the

stock should control for the success of the companies' operations and finally on the expectations of the investors. There might also be some association to the performance based compensation of the managers, which may induce the managers to manipulate earnings as the shares are lower than the benchmark index. Therefore, the sign of the coefficient is unclear.

Fifthly, growth percentage of sales ***SALESGPCG*** is used (e.g. Kothari et al., 2005) to capture the effect of growth opportunities on discretionary accruals. Sales growth percentage is the one period change in sales, scaled by previous period's sales. Some studies have also used a compounded growth percentage including several years. High growth firms have high equity incentives and thus have greater incentives to manage earnings than low growth companies (Antle et al. 2006). Therefore, *SALESGPCG* is expected to be positively associated with earnings management.

Sixth control variable in the earnings management models is ***ZRATIO*** as calculated by Laitinen & Laitinen (2004) for the Finnish companies. The variable is calculated as follows:

$$ZRATIO = 2.6 \times Quick\ ratio + 0.6 \times EBITDA\text{-}\% + 2.4 \times Equity\ ratio$$

The variables are defined as follows:
Quick ratio= (Current assets – Inventories) /Current liabilities
EBITDA-%= Income before interest, taxes, depreciation and amortization / Sales x 100
Equity ratio= Shareholder's equity / Total assets x 100

The variable used by Laitinen & Laitinen (2004) is similar to the more widely used Z-score by Altman (1969) measuring the possibility of bankruptcy. This compounded variable should control for the potential impacts of firm performance and distress risk on managers' forecast errors and accruals. If the value is less than 70, there is prominent risk that the company will get a payment default (maksuhäiriö) in the near future. Prior research (e.g. Frost, 1997; Rogers et al., 2005 and Gong et al., 2009) suggests that managers of poorly performing firms or financially distressed firms have greater incentives to provide optimistic earnings forecasts to support market earnings expectations. Firms' operating performance also directly affects the level of accruals through the accrual accounting system (Gong et al., 2009). Therefore, the poorer the financial situation of the company is, poorer the Z-ratio and the larger the magnitude of the earnings management should be. Thus, a positive association is expected.

The final control variable is ***SMALLEPSCNG***. This variable should control for the possible income smoothing by managers to minimize the volatility of the earnings as mentioned in the

theory by Scott (2009). The variable is a dummy variable, which takes a value of 1, if the earnings per share have had an absolute annual change of 0-5 cents. This variable has been used by e.g. Burgstahler et al. (1997), Davidson et al. (2005) and Li et al. (2005) as an indicator for earnings management. There are also variations of this measure, where the range of change is smaller or the variable measures only for positive change. Also, some researchers have used the consensus estimate as the benchmark for the variable. As Scott (2009) suggests, this variable should be positively associated to discretionary accruals.

Exogenous corporate governance variables (*CGEXOGENOUS*)

In the spirit of the audit fee study by Hay et al (2008), two of the corporate governance variables (*MAJ20* and *BINDEPENDENT*) are presumed to be exogenous in both of the main models.

First of the corporate governance related variables, which are presumed to be exogenous is ***MAJ20***. This is a dummy variable, which takes a value of 1 if the company has a shareholder having more than 20% of the voting rights. A major shareholder often has the ability to directly intervene in the operations and controls of an organization and impose an audit requirement on the organization (Hay et al, 2008). Jensen (1993) describes active investors who hold large investments in a company and participate in its strategic direction as important to good governance and effective internal control. The existence of such a major shareholder may also lead to further demand for increased external auditing, both as a means for the major investor to monitor its investment, and for other shareholders to protect themselves from the major shareholder. Thus, a positive relationship for the audit fees is expected. The sign of the coefficient is not clear for the earnings management models as the major owner may have own incentives for exercising earnings management, especially when the major owner is not independent from the company as they often are not.

Second exogenous corporate governance variable is ***BINDEPENDENT***. This is the ratio of the independent board members from the total board size. For board member to be classified as independent, he/she should be independent from both the major shareholders and the company. As with previous variable, a positive association is expected with the audit fees as the corporate governance is more efficient. For example, Carcello et al. (2002, p.371) state the following on this effect: “Given the incentives that outside directors have to ensure reliable financial reporting, more independent boards may support the purchase of differentially

higher-quality audit services, thus leading to increased audit fees." (p. 371). Also, a negative association is expected to the magnitude of earnings management, because the higher the proportion of the independent directors should diminish the earnings management actions through better monitoring of the management and there should be fewer incentives for earnings management.

Instrumental variables for the internal audit and audit committee (*CGINSTRUMENTS*)

As mentioned earlier, some valid instrumental variables are needed for the 2SLS model. As Hay et al. (2008) express "the appropriate set of instrumental variables to use has not been explored in the previous (audit fee) literature". In addition to the lack of instrumental variables in previous studies, their efficiency is usually hard to interpret, when the relevant tests or the first-stage regression are usually not reported. Therefore, some of the instrumental variables are from the article by Hay et al. (2008) and some of the selected instrumental variables are justified in the spirit of Larcker and Rusticus (2009).

First instrumental variable is ***ANALYSTS***. Variable is calculated as the number of recommendations from the analysts following the company. As mentioned, this variable has been used as an instrumental variable by Hay et al. (2008) in their audit fee model. They hypothesize a positive relationship of the analysts following and the demand for corporate governance: "The greater following by share market analysts, as higher profile in the market is likely to induce directors to demand more control mechanisms in order to protect their reputation." (Hay et al., 2008, p.14). A positive association is expected with the endogenous corporate governance variables.

Second of the instrumental variables is ***LIABRATIO***, which controls for the debt holders' influence on the internal control functions. This variable is calculated as the total liabilities divided by total assets as calculated by Davidson et al (2005). For example, the debt holders might require as a debt covenant for the company to have a member in the board or require additional governance in order to lower the risk of the borrower. While debt is sometimes used in audit fee models as a measure of risk, it is often not significant (Hay et al., 2006) and appears to be more directly related to governance (Hay et al., 2008).

There might be some conflicts with the theory when using this variable as an instrumental variable in the earnings management 2SLS-models. This variable is often (e.g. Dechow et al.,

1995) used to control for the possibility of earnings management to avoid debt covenant violations. However, for example Healy & Palepu (1990) and DeAngelo et al. (1994) do not find statistically significant association with the (income increasing) earnings management and debt covenant violations. As there is some evidence, that this variable is not always significant in the earnings management models and, as Hay et al. (2008) mentioned, it should be more directly related to governance, this variable is used as an instrumental variable in both of the models. A positive association is expected with the endogenous corporate governance variables.

Third instrumental variable is ***FINEXP***. Hay et al. (2008) use the number of chartered accountants as an instrumental variable for the internal audit and audit committee, but this information is not disclosed by the companies or the databases used for this thesis. This instrumental variable is then calculated as the portion of the board members, who have a higher degree financial education, from the total board size. For the higher level financial education, an academic bachelor degree has been used as a cut-off point. For example, second-level educations (Business college graduate or merkonomi) have not been deemed as good enough financial experience for the individual board member. The reasoning behind the greater financial education of the board is that knowledge for the different roles of the governance actors might be higher. Therefore, the greater percentage of financially educated board members in the whole board should have greater demand for the different corporate governance actors. Thus, a positive association is expected.

The final instrumental corporate governance variable is ***LITI*** controlling for the higher litigation risk of particular industries. Hay et al (2008) use a utility industry dummy as an instrumental variable in their article, but as they have not formalized the composition of the dummy, a similar type of variable is composed for the use for this thesis. *LITI* is a dummy variable, which takes a value of 1, if the company operates in a industry, which has a higher risk for litigation as identified by Francis et al. (1994) and also used by e.g. Heninger (2001), Antle et al. (2002), Ashbaugh et al. (2003) and Gul et al. (2009). The high litigation risk industries are companies which operate in industries with the SIC-codes as follows: biotechnology (SIC codes 2833-2836 and 8731-8734), computers (SIC codes 3570-3577 and 7370-7374), electronics (SIC codes 3600-3674), and retailing (SIC codes 5200-5961). This instrumental variable should be "out of control" for the companies as the industry is usually predetermined when the company is founded. Also, the companies can be keener to

streamline their operations in effort to specialize in one particular industry and thus there should be no industry selection interest related to this variable.

There is some evidence that *LITI* should have a positive effect on the existence of the corporate governance functions. The companies in the mentioned industries should make some effort to diminish this is risk by appointing additional corporate governance functions.

Predicted corporate governance hypothesis variables with fee controls (CGENDOFEE)

These predicted variables are obtained from the first-stage regressions (Eq.9 and Eq.10) and they enter as the independent variable in the 2SLS audit fee model (Eq.11). The predicted corporate governance variables $\overline{IAFALL}$ and $\overline{COM}$ are regressed with the audit fee controls and the exogenous corporate governance variables. Also here, in the exogenous DACC model, these variables are also regressed with the discretionary accruals. They should be similarly associated (positively) as their non-predicted counterparts as explained above and as hypothesized in the Chapter 3.

Predicted corporate governance hypothesis variables with earnings management controls (CGENDOEM)

Similarly, predicted corporate governance variables for the earnings management models are obtained from the first-stage regressions with the exogenous audit fee variable, earnings management control variables and exogenous corporate governance variables as the independent variables. Then the predicted $\overline{IAFALL}$ from Eq.15 and $\overline{COM}$ from Eq.16 enter in to the second-stage regression as independent variables, where the endogeneity problems should be controlled for.

The next section presents the second set of OLS and 2SLS models, where the audit fees and the earnings management proxy are treated endogenously. Also, the additional variables related to these models are presented.

4.2.3 Regression models with endogenous fee and discretionary accruals

In the previous section, the audit fee and the discretionary accruals were presumed to be exogenous. Here, for further analysis, these variables (*LNFEEALL* and *DACC*) are presumed to be *endogenous*, which leads to a second set of the different regression models as illustrated in Figure 4 found below.

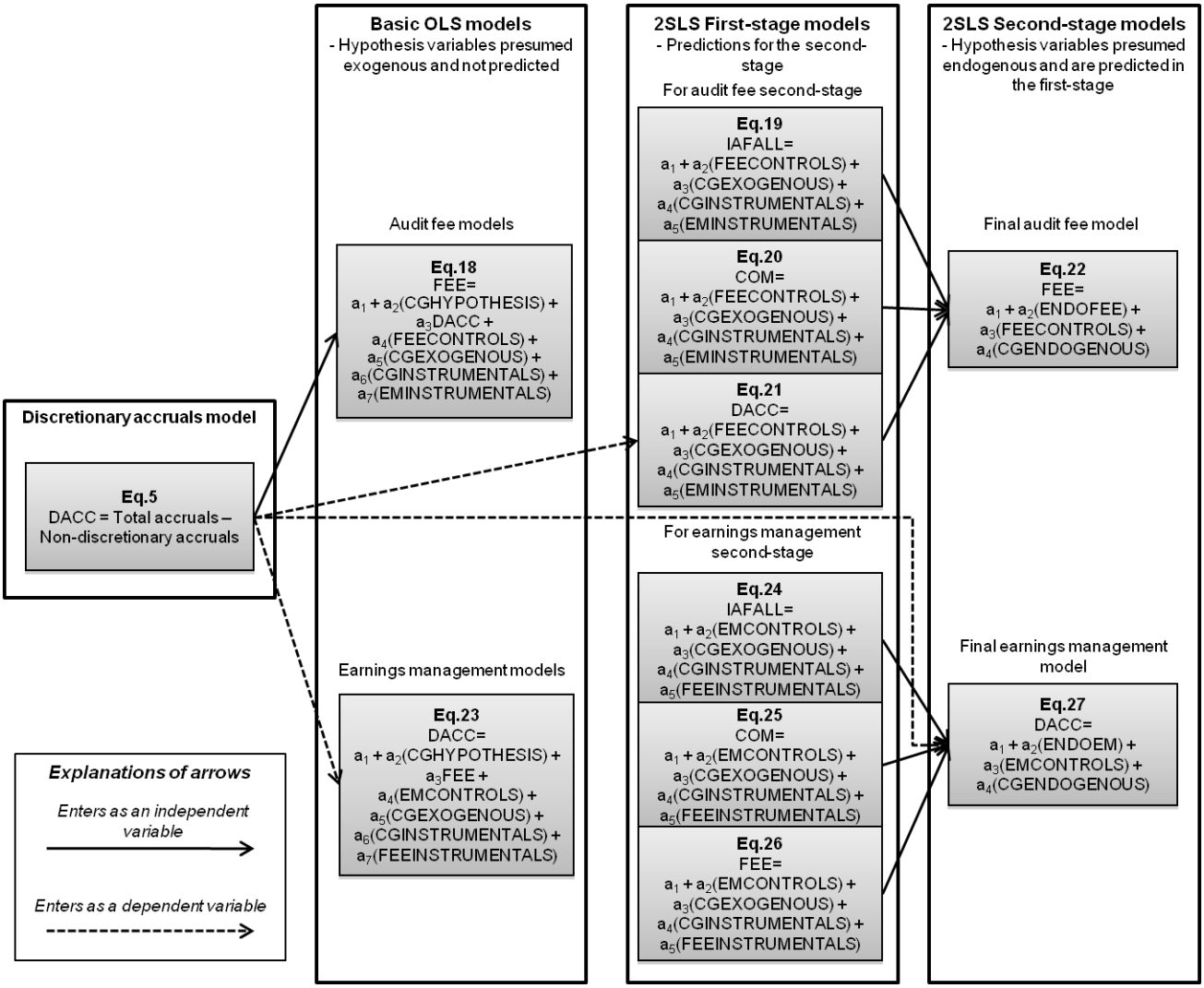

Figure 4 Illustration of regression models with endogenous audit fees and discretionary accruals

As the Figure 4 shows, two new OLS models are presented (Eq.18 and Eq.23), where the new instrumental variables for the discretionary accruals and audit fees are entered. These new instrumentals are added to keep the overidentification requirements valid as there are two new variables to be instrumented in the first-stage of the 2SLS. The first-stage of the 2SLS models (Eq.19-21 and Eq.24-26) and therefore also the second-stage regressions (Eq. 22 and Eq. 27) have also changed to include the additional instrumentals and the new predictions for the

LNFEEALL and *DACC* variables. The variable sets *CGHYPOTEHSIS, FEECONTROLS, EMCONTROLS, CGEXOGENOUS* and *CGINSTRUMENTALS* remain the same as presented in the previous section.

The new variable sets introduced for the endogenous fee and earnings management models are *EMINSTRUMENTALS, FEEINSTRUMENTALS, ENDOFEE* and *ENDOEM*. The new variable sets are presented in Table 6 below and their use is further justified in the following chapters.

Table 6 Variable sets for endogenous audit fee and earnings management models

FEE	Dependent variable in the fee models and hypothesis variable in the EM models (*LNFEEALL* in the main models)
DACC	Dependent variable in the EM models and hypothesis variable in the fee models (*ABSDACCMJS-CF* in the main models)
CGHYPOTHESIS	*IAFALL COM*
FEECONTROLS	*LNASSETS SQRALLSUBS FOREIGN CRATIO INVREC SWITCH FEERISK*
EMCONTROLS	*LNMKTCAP LOSS OPCYCLE365 MKTRET SALESGPCG ZRATIO SMALLEPSCNG*
CGEXOGENOUS	*MAJ20 BINDEPENDENT*
CGINSTRUMENTALS	*ANALYSTS LIABRATIO FINEXP LITI*
EMINSTRUMENTALS	*TACF ACQ*
FEEINSTRUMENTALS	*FEERATIO REPORTLAG*
ENDOFEE	Predicted $\overline{IAFALL}$, $\overline{COM}$ and $\overline{DACC}$ from equations 19, 20 & 21.
ENDOEM	Predicted $\overline{IAFALL}$, $\overline{COM}$ and $\overline{LNFEEALL}$ from equations 24, 25 & 26.

Instrumental variables for audit fee (FEEINSTRUMENTALS)

The new instrumental variables (*FEERATIO* and *REPORTLAG)* in the above first-stage equations 24-26 are used to predict the *ENDOFEE* variables, which are used in the second-stage of the earnings management 2SLS model (Eq.27).

First instrumental variable for the endogenous audit fees is ***FEERATIO*** and it is calculated as the amount of obtained additional services from the auditor divided by the total audit fees of the company. This variable is usually used to convey the level of auditor independency, which can be deemed poor if the ratio is high. As Hay et al. (2006) found in their meta-analysis, there is support for both directions for the association of the independency of the auditors and total audit fees: "On the one hand, it is argued that the provision of audit services can lead to lower fees because of cross-subsidization of fees or synergies between audit and nonaudit services. On the other hand, nonaudit services could be associated with higher audit fees because such services may lead to extensive changes in an organization that require additional audit effort, or because clients that buy consulting services may be problematic in general, or

because monopoly power and service efficiency in the nonaudit service market allow auditors to charge fee premiums." (Hay et al., 2006, 178-179). However, they concluded that there is more support for the positive association for this variable.

Second instrumental variable for the endogenous audit fee variable is ***REPORTLAG***. The variable is calculated as the number of days between the fiscal year end and the issuance date on the auditor's report. This variable is sometimes interpreted as an indication of the efficiency of an audit because a longer delay is likely to indicate problems during the course of the audit, difficulties in resolving sensitive audit issues, or more complex financial reports to prepare (Knechel and Payne 2001). Therefore, audit report lag is expected to have a positive association with audit fees.

Instrumental variables for discretionary accruals (*EMINSTRUMENTALS*)

New instrumental variables are also needed for the discretionary accruals, because it might still suffer from endogeneity as it may correlate with the other control variables (and the error term) in the final audit fee 2SLS model (Eq.22). The instrumental variables to be used in the equivalent first-stage models (Eq.19-21) are *TACF* and *ACQ* and they are as follows:

TACF is the total accruals, as calculated in the Eq.3 (Net income – Cash flow from operations). This variable is used by Frankel et al. (2002) and they reported a positive association for this variable and earnings management. Usually, the larger the amount of total accruals is, the higher the discretionary accruals are. There should be a positive association with the discretionary accruals.

In the additional tests, where the *balance sheet* discretionary accruals (e.g. absolute modified Jones *balance sheet* discretionary accruals, *ABSDACCMJS-BS*) are used, this instrumental variable is replaced by the equivalent total accruals measure, *TABS*. The variable is calculated according to the Dechow et al. (1995) and it is calculated as follows: [(ΔCurrent Assets - ΔCash) - ΔCurrent liabilities] - Depreciation and amortization costs divided by total assets at the beginning of the year.

ACQ is the number of acquisitions the individual company made during the sample year. The data for the acquisitions is collected from Talouselämä's (Finnish business magazine) publicly available list of the acquisitions, where Finnish companies are involved. This

instrumental variable controls for the changes in the companies' data items, if they have been involved in an acquisition of another company. Hribar and Collins (2002) show that current (working capital) accruals are biased when estimated from changes in balance sheet data. The bias is larger around major financing events because these firms tend to have acquisitions (or other such transactions) that affect the numbers in consecutive balance sheets. When a company acquires a company, the balance sheet items tend to increase, thus a positive association is expected with the discretionary accruals measures.

Predicted hypothesis variables with fee controls (*ENDOFEE*)

As mentioned earlier, the predicted values of *IAFALL* and *COM* also change, because of the additional instrumental variables in the first-stage regressions (Eq.19-21). Therefore, the *ENDOFEE* variable set includes the new predicted variables $\overline{\boldsymbol{IAFALL}}$, $\overline{\boldsymbol{COM}}$ and $\overline{\boldsymbol{DACC}}$, which is used in the final audit fee 2SLS model (Eq. 22), where also the DACC is presumed to be endogenous. However, the predicted signs remain the same as hypothesized earlier also with these variables and therefore a positive association is also expected in this audit fee model.

Predicted hypothesis variables with earnings management controls (*ENDOEM*)

As with the previous set of variables, the newly included instrumental variables for the endogenous audit fees (Eq. 27) are used also in the first-stage regressions of the endogenous corporate governance variables (Eq. 24-26). The predictions ($\overline{\boldsymbol{IAFALL}}$, $\overline{\boldsymbol{COM}}$ and $\overline{\boldsymbol{LNFEEALL}}$) from the first-stage models are used as the independent variables in the second-stage of the 2SLS earnings management model, where the audit fees are also endogenous. Also, with these variables, the association is predicted to be negative as hypothesized earlier.

In sum, there are two main groups of models, which both are further divided to three subgroups. Firstly, the audit fee main group of models consist of OLS audit fee models equations 6-8 and 18), *exogenous DACC* 2SLS audit fee model (Eq. 11) and *endogenous DACC* 2SLS audit fee model (Eq.22). The most interesting of the 2SLS models is the *exogenous DACC* audit fee model (Eq.11) as it treats the internal audit and the audit committee endogenously. The *DACC* variable's effect on the audit fees should not originate internally in the corporate governance system. But for explorative purposes, it is also presumed to be endogenous in the final 2SLS model.

Secondly, the three subgroups in the earnings management main group of models consist of OLS earnings management models (equations 12-14 & 23), *exogenous FEE* 2SLS earnings management model (Eq. 17) and *endogenous FEE* 2SLS earnings management model (Eq.27). In addition to the OLS models, the most interesting 2SLS model is the final 2SLS model, where the audit fees are also treated endogenously (Eq.27). When considering the corporate governance factors affecting the magnitude of earnings management, all of the hypothesis variables should have a diminishing role, which originates from the inside of the system.

Therefore, in addition to the OLS models, the main interests are the 2SLS audit fee model, where the discretionary accruals are treated exogenously (Eq.11) and the 2SLS model, where the audit fees are treated endogenously (Eq.27). The next section presents the descriptive statistics of the regression variables.

4.3 Descriptive statistics of the variables used in regressions

This section presents the descriptive statistics of the variables used in above mentioned regressions and they are presented in Table 7 below.

Table 7 Descriptive statistics of all regression variables (n=107)

Variable (set)	Mean	Median	Min	Max	Std Dev	Std Error	Sum	Skewness	Kurtosis
FEE (Audit fee variables)									
LNFEEALL	0.466	0.222	0.024	1.887	0.507	0.049	49.894	1.331	3.564
DACC (Earnings management variables)									
ABSDACCMJS-CF	0.068	0.048	0.000	0.356	0.063	0.006	7.236	2.214	9.527
CGHYPOTHESIS (Hypothesis variables)									
IAFALL	0.458	0.000	0.000	1.000	0.501	0.048	49.000	0.169	1.029
COM	0.495	0.000	0.000	1.000	0.502	0.049	53.000	0.019	1.000
FEECONTROLS (Control variables for the fee models)									
LNASSETS	5.514	5.178	1.363	10.036	1.915	0.185	590.043	0.292	2.332
SQRALLSUBS	4.631	3.873	1.414	12.288	2.734	0.264	495.534	1.231	3.745
FOREIGN	0.586	0.632	0.000	1.000	0.278	0.027	62.669	-0.564	2.477
CRATIO	1.736	1.454	0.417	5.247	1.030	0.100	185.754	1.476	4.944
INVREC	0.357	0.334	0.023	0.913	0.187	0.018	38.150	0.421	2.607
SWITCH	0.112	0.000	0.000	1.000	0.317	0.031	12.000	2.458	7.043
FEERISK	0.047	0.015	0.001	0.690	0.094	0.009	5.000	4.869	30.495
EMCONTROLS (Control variables for the earnings management models)									
LNMKTCAP	4.801	4.661	0.944	9.673	1.835	0.177	513.717	0.333	2.655
LOSS	0.234	0.000	0.000	1.000	0.425	0.041	25.000	1.259	2.585
OPCYCLE365	125.0	112.8	22.541	365.0	68.447	6.617	13 370.1	1.160	4.568
MKTRET	0.062	0.020	-0.250	0.650	0.192	0.019	6.640	0.762	3.490
SALESGPCG	0.056	0.053	-0.513	0.830	0.184	0.018	6.028	0.530	6.389
ZRATIO	142.189	149.842	-16.061	453.133	49.709	4.806	15214.2	1.764	16.350
SMALLEPSCNG	0.206	0.000	0.000	1.000	0.406	0.039	22.000	1.457	3.122
CGEXOGENOUS (Exogenous corporate governance variables)									
MAJ20	0.477	0.000	0.000	1.000	0.502	0.049	51.000	0.094	1.009
BINDEPENDENT	0.680	0.667	0.167	1.000	0.241	0.023	72.757	-0.289	2.128
CGINSTRUMENTALS (Corporate governance variables used as instrumentals in both 2SLS models)									
ANALYSTS	6.710	5.000	0.000	29.000	6.722	0.650	718.000	1.287	4.356
FINEXP	0.417	0.420	0.000	0.780	0.141	0.014	44.580	-0.032	2.917
LIABRATIO	0.565	0.572	0.175	1.909	0.209	0.020	60.425	2.277	17.412
LITI	0.168	0.000	0.000	1.000	0.376	0.036	18.000	1.774	4.147
EMINSTRUMENTALS (Variables used as instrumentals in the audit fee 2SLS model)									
TACF	-0.045	-0.044	-0.342	0.360	0.085	0.008	-4.814	0.553	8.245
ACQ	0.832	0.000	0.000	10.000	1.707	0.165	89.000	3.315	15.471
FEEINSTRUMENTALS (Variables used as instrumentals in the earnings management 2SLS model)									
FEERATIO	0.354	0.357	0.000	0.803	0.206	0.020	37.878	0.261	2.303
REPORTLAG	43.916	42.000	22.000	90.000	12.013	1.161	4 699.000	1.667	6.843

The variables are defined as follows:
LNFEEALL= Natural logarithm of all audit fees. ABSDACCMJS-CF= Absolute modified Jones discretionary accruals from equation 5. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidiaries to total subsidiaries. CRATIO= Current Ratio, Current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in the sample. LNMKTCAP= The natural logarithm of year end market cap. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. MKTRET= Market adjusted stock return. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS change is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. FINEXP= Percentage of financial educated the board members and executives from the whole group. LIABRATIO= Total liabilities to total assets. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. TACF= Cash flow total accruals. ACQ= Number of acquisitions made. FEERATIO= Percentage of the audit related fees from the total fees paid to the auditor. REPORTLAG=Days the auditors signed the audit report from fiscal year end.

As seen in the Table 7, the variables are grouped in the same manner as in the previous subsections. As some variables (e.g. corporate governance variables) are studied earlier in the first section of this chapter, the main analysis of the variables is concentrated on the distribution analysis of the variables, indicated by skewness and kurtosis.

Skewness is a measure of symmetry, or more precisely, the lack of symmetry. A distribution, or data set, is symmetric if it looks the same to the left and right of the centre point. Thus, it is evenly distributed around the mean of the sample and should have skewness value near to zero. Negative values for the skewness indicate data that are skewed left and positive values for the skewness indicate data that are skewed right.

Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. That is, data sets with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy tails. Data sets with low kurtosis tend to have a flat top near the mean rather than a sharp peak. The kurtosis for a standard normal distribution is three.

As a rule of thumb the skewness value should be within -1 and 1 and the kurtosis value should be smaller than 10. The skewness and kurtosis statistics show that there seems to be some problem with the distribution of some variables (e.g. *ABSDACCMJS-CF*, *FEERISK*, *LIABRATIO*, and *ACQ*). This is partly due to the fact that these variables are modified or are relative measures and therefore their characteristics are not normally distributed. This might infer the test statistics and the regression used, as they usually assume normal distribution of the variables.

Aside from the distribution analysis, a few variables of interest are highlighted here. For example, most of the subsidiaries in the sample seem to be foreign (mean of 0.586). Also, 12 companies have switched their auditor in between 2007 and 2008. The companies in the sample beat the market by 6.2%. This can be explained by the sharp decline of the market value of the financials companies during the market crash. Interestingly, the *ZRATIO* of seven listed companies was below the 70 threshold indicating a risk for a payment default in the future. Among these companies one company had a *ZRATIO* less than 50, indicating an apparent risk of default. The audit report lag was approximately 44 days on average, while all the auditors did stay within the 90 day limit from the end of the fiscal year.

There is also a more detailed presentation of the descriptive statistics in the Appendix 3, where the regression variables are grouped by OMX size categories. For example, it is possible to compare the absolute discretionary accruals values between the different categories. The comparison of the discretionary accruals indicates that the large group have lower means than the smaller group. This suggests that, ceteris paribus, the larger companies have a better financial reporting quality.

The next chapter presents the results of the presented audit fee and earnings management models with the additional sensitivity analyses.

5. Empirical results

In this chapter, the results from the models introduced in the previous chapter 4, are presented and interpreted accordingly to hypothesis proposed in the chapter 3. In the first section results related to the audit fees are presented. The second section shows the result related to the earnings management models. In both models the results from the OLS models are presented first, following by the 2SLS models, where the discretionary accruals or the audit fees are presumed to be exogenous and lastly the same variables are presumed to be endogenous in the final presentation of 2SLS models. Finally, the third section presents some sensitivity and additional tests to test the robustness of the results. This section presents the results when using other similar variables in the same models for to check the robustness of the main models.

5.1 Results related to effects on audit fees

This section presents the results of the three different audit fee models. First, the results of the OLS models are presented. Secondly, the results of the 2SLS model, where the discretionary accruals are presumed to be exogenous. And finally, the results of the 2SLS models, where the discretionary accruals are endogenous in the audit fee model.

Audit fee OLS models

The results from the different audit fee *OLS models* are presented in the Table 8 on the next page. All the OLS models have a satisfactory model fit as the adjusted R^2 is about 0.8 in and the significance of F-values is smaller than 0.001. There are four different OLS models, where the first model has only the control variables for the audit fee models with the hypothesis variables. The second model has the exogenous corporate governance variables included in model. The third and fourth model has the instrumental variables added to the models as independent variables. The third model has the corporate governance related instrumentals, which are used to study the effect of the variables when the *DACC* is exogenous and the final fourth model has also the instruments for the *DACC* added to the model, used later for the 2SLS model where the discretionary accruals are endogenous in the models. Also, the predicted sign of the coefficients can be found in the second column from the left and the definitions of the regression variables. The Variance Inflator Factor scores

(VIF) of all the variables in all of the OLS and 2SLS models in this thesis are in the range of 1-6, which suggests that no serious multicollinearity are present in the models. Unfortunately, as there is a lot models to be reported, the VIF scores had to be omitted from this thesis for the ease of reading.

Table 8 Results from the audit fee OLS models (n=107)

Model		**FEECONTROLS**			**FEECONTROLS + CGEXOGENOUS**			**FEECONTROLS + CGEXOGENOUS + CGINSTRUMENTALS**			**FEECONTROLS + CGEXOGENOUS + CGINSTRUMENTALS + EMINSTRUMENTALS**		
Equation		**Eq.6**			**Eq.7**			**Eq.8**			**Eq.18**		
Dependent variable		***LNFEEALL***			***LNFEEALL***			***LNFEEALL***			***LNFEEALL***		
	Pred.	**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**	
Intercept		-0.707	-6.130	***	-0.655	-4.800	***	-0.762	-3.580	***	-0.826	-3.800	***
Hypothesis variables													
IAFALL	+	0.023	0.380		0.021	0.340		0.007	0.110		-0.002	-0.030	
COM	+	0.180	3.170	***	0.205	3.470	***	0.171	2.910	***	0.160	2.680	***
ABSDACCMJS-CF	+	-0.154	-0.390		-0.184	-0.460		-0.471	-1.170		-0.568	-1.310	
FEECONTROLS													
LNASSETS	+	0.135	6.090	***	0.136	6.150	***	0.100	3.570	***	0.108	3.820	***
SQRALLSUBS	+	0.035	2.510	***	0.035	2.550	***	0.030	2.210	***	0.026	1.890	**
FOREIGN	+	0.189	2.080	***	0.190	2.070	***	0.172	1.870	**	0.149	1.580	*
CRATIO	-	-0.028	-1.180		-0.030	-1.260		0.006	0.200		0.013	0.440	
INVREC	+	0.261	1.960	**	0.269	2.010	***	0.285	2.150	***	0.323	2.160	***
SWITCH	-	-0.101	-1.310		-0.085	-1.100		-0.051	-0.650		-0.034	-0.440	
FEERISK	+	0.716	2.440	***	0.674	2.260	***	0.632	2.180	***	0.618	2.140	***
CGEXOGENOUS													
MAJ20	+				0.035	0.690		0.028	0.560		0.030	0.600	
BINDEPENDENT	+				-0.126	-1.160		-0.206	-1.900	**	-0.203	-1.870	**
CGINSTRUMENTALS													
ANALYSTS	+							0.018	2.870	***	0.017	2.670	***
LIABRATIO	+							0.280	1.940	**	0.284	1.970	**
FINEXP	+							0.232	1.230		0.250	1.330	
LITI	+							-0.013	-0.180		-0.003	-0.040	
EMINSTRUMENTALS													
TACF	+										-0.326	-1.000	
ACQ	+										0.022	1.430	
R^2		0.798			0.803			0.825			0.831		
Adjusted R^2		0.777			0.778			0.794			0.797		
F-value		37.960	***		31.980	***		26.600	***		24.090	***	

Significances for F-values: ***significant at the 0.05 level. **significant at the 0.10 level. *significant at the 0.15 level.

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. ABSDACCMJS-CF= Absolute modified Jones discretionary accruals from equation 5. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidiaries to total subsidiaries. CRATIO= Current Ratio, current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in the sample. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. TACF= Cash flow total accruals. ACQ= Number of acquisitions made.

For the hypothesis variables, the Table 8 above shows that the coefficient of variable *COM* is positive and statistically relevant ($p<0.05$) in all of the OLS models. Therefore, the positive

association between the existence of audit committee and audit fees support the complementary view of this corporate governance function. The coefficient of *IAFALL* is positive as hypothesized in almost all models, except in the last model, where the instrumentals for *ABSDACCMJS-CF* are entered in the OLS. However, *IAFALL* is not statistically significant at 0.15 level, which is used as the limit for relevance. Therefore, the OLS models do not provide strong enough evidence for the hypothesis 1, where the existence of the internal audit function was hypothesized to be positively related to audit fees. Also, the final hypothesis variable *ABSDACCMJS-CF* is not statistically relevant ($p>0.15$), while its coefficient interestingly is negative contrary to the hypothesis. This might be due the selected discretionary method and the sensitivity analyses try to overcome this problem by introducing other methods for proxying earnings management. Also, an alternative variable for internal audit and audit fees is used in the sensitivity analyses in section 5.3. Thus, the results from the audit fee OLS models only support the hypothesis 2, where the audit committee was seen to be positively associated to audit fees.

The signs of the control variables are mostly as anticipated and almost all of them are also statistically relevant in the OLS models. Only the *CRATIO* controlling for the financial condition of the company is opposite to the predictions in the OLS models, where the instruments are included. However, this variable is not statistically relevant in any of the OLS models. Also, the control variable *SWITCH* is not statistically relevant in the models.

The first of the exogenous CG variables, *MAJ20*, is not statistically relevant in these models, while the other exogenous variable is. However, contrary to the predictions, the sign of the second exogenous CG variable *BINDEPENDENT* is negative. This implies that the more independent members are in the board, the less work they seem to demand from their auditors. For example, the results of Hay et al. (2008) report that larger number of outside directors is positively associated with the greater demand for external auditing. Also, in their meta-analysis, Hay et al (2006) found this type of variable to be significantly positive in two of the five studies included in the analysis. As these types of variables measure for the more efficient board and thus corporate governance, this is quite unexpected. This may be explained from the supply side of the auditing, the auditors can lower their audit risk, especially control risk, when the boards are more effective in monitoring the company. This should lead to lower their audit fees. For example, similar conclusions have been made by Tsui et al. (2001).

Some of the instrumental variables are relevant (*ANALYSTS* and *LIABRATIO*). There is a possibility that the number of analysts can also control for company size, which can be confirmed by the high correlation (about 0.8) with *LNASSETS* as the correlation matrix in the Appendix 1 shows. Here the *LIABRATIO* is positive as some of the previous audit fee studies have found, contrary to the Hay et al. (2008) argument of mostly being irrelevant in similar studies. Therefore, there might be some indication that some of the selected instrumentals (*ANALYSTS* and *LIABRATIO*) are not valid for the purposes of alleviating endogeneity in the upcoming 2SLS models and these are further analyzed with the tests presented with the results for 2SLS models.

In sum, the audit fee OLS models seem to support the Hypothesis 2, where the audit committee is hypothesized to have a positive association with the audit fees. There is no statistically significant support for the hypotheses 1 and 3. Therefore, the results favour the complementary view when considering the audit committee's effect on audit quality in the corporate governance network. To further study this effect when controlling for endogeneity between the governance actors, the results of the 2SLS models are presented.

Audit fee 2SLS model with exogenous *DACC*

The results from the *2SLS model*, where the discretionary accruals variable is presumed to be *exogenous* in the, are presented in the Table 9 found on the next page. As mentioned previously, this is the more interesting 2SLS, because it has the relevant variables (*IAFALL* and *COM*) treated endogenously. The endogenous association of the magnitude of earnings management (*ABSDACCMJS-CF*) should not be relevant in the context of audit fees and corporate governance.

In rightmost part of the Table 9, the results of the second-stage regression shows that the only statistically relevant and positive hypothesis variable is *COM* as in the OLS models. Also, the results for the *ABSDACCMJS-CF* are similar to the OLS models, where the sign was surprisingly negative and not relevant. Only the *IAFALL* has experienced a change of sign from positive to negative, but also it is not relevant in this model.

In the second-stage equation (Eq.11), almost all of the control variables are as predicted earlier and most of them are significant. The variables that are not significant are *CRATIO*, *SWITCH* and *MAJ20* in the second-stage, but their directions of associations are as expected.

Again, the *BINDEPENDENT* variable is not as expected, having a negative and significant coefficient as with the earlier OLS models.

Table 9 Results from the 2SLS audit fee models, where the *ABSDACCMJS-CF* is exogenous in the 2SLS (n=107)

Model		**First-stage**						**Second-stage**		
Equation		**Eq.9**			**Eq.10**			**Eq.11**		
Dependent variable		***IAFALL***			***COM***			***LNFEEALL***		
	Pred.	**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**	
Intercept		-0.900	-2.680	***	-1.035	-2.980	***	-0.454	-2.000	***
Hypothesis variables										
IAFALL	+							-0.028	-0.090	
COM	+							0.671	2.210	***
ABSDACCMJS-CF	+	0.322	0.470		0.167	0.240		-0.497	-0.960	
FEECONTROLS										
LNASSETS	+	0.184	4.360	***	0.122	2.800	***	0.085	1.660	**
SQRALLSUBS	+	0.023	1.010		0.014	0.590		0.029	1.610	*
FOREIGN	+	-0.093	-0.590		-0.031	-0.190		0.206	1.840	**
CRATIO	-	0.013	0.260		0.102	2.010	***	-0.042	-1.410	
INVREC	+	0.224	1.000		-0.363	-1.570	*	0.442	2.120	***
SWITCH	-	0.224	1.720	**	0.166	1.240		-0.122	-1.160	
FEERISK	+	-0.485	-0.980		-0.565	-1.110		0.856	2.220	***
CGEXOGENOUS										
MAJ20	+	0.034	0.390		-0.059	-0.660		0.063	1.000	
BINDEPENDENT	+	-0.073	-0.400		0.362	1.920	**	-0.336	-1.740	**
CGINSTRUMENTALS										
ANALYSTS	+	-0.004	-0.370		0.004	0.380				
LIABRATIO	+	0.265	1.110		0.617	2.510	***			
FINEXP	+	0.063	0.200		0.397	1.190				
LITI	+	0.289	2.410	***	-0.002	-0.020				
R^2		0.458			0.426			0.670		
F-value		5.550	***		4.890	***		18.900	***	
Partial R^2		0.073			0.068					
Partial F-value		1.800			1.690					
Weak IV (G-D Wald F)								0.927, CritF(0.05)=11.0		
Over-id. test (Sargan)								4.295, Chi-sq(2)=0.117		
Endogeneity test (DWH)								4.861, Chi-sq(2)=0.088		

Significances for t- and F-values: ***sig. at the 0.05 level. **sig. at the 0.10 level. *sig. at the 0.15 level.

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. ABSDACCMJS-CF= Absolute modified Jones discretionary accruals from equation 5. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidiaries to total subsidiaries. CRATIO= Current Ratio, current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in the sample. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise.

The model fits of the first-stage models are quite high (R^2 is more than 0.4 and the F-values are significant at 0.001 level). However, in the *IAFALL* first-stage regression (Eq.9), the only statistically significant instrumental variable is *LITI*. Similarly, in the COM model (Eq.10), there is only one significant instrumental variable, *LIABRATIO*. As the other instrumental

variables are not significant, there might be problems with the powerfulness and the validness of the 2SLS method.

This can be confirmed from the partial R^2 and partial F-values of the first-stage models, where the test statistics show that there is some indication of weak instrumental variables. This is further proved by the low value of the joint test of weak instrumental variables (G-D Wald) 0,927, which is well below the critical value of 11.0 at the selected significance of 0.05. While, the endogeneity test favours the use of 2SLS model instead of OLS (DWH-test statistics is significant at 0.088 level), the Sargan overidentification test suggests otherwise. The null hypothesis of this test is that instruments are uncorrelated with the error term in the structural equation, and that the excluded instruments are correctly excluded from the estimated equation (Baum et al., 2003). Because the reported test statistic is significant at 0.117 level, the null hypothesis is rejected. To further study the weakest instruments separately, the validity of the instruments is tested individually in the upcoming sensitivity analysis.

Overall, the test statistics suggest that it should be safer to rely on the results of the previously presented OLS models than the 2SLS results presented here. However, if not considering the test statistics favouring the use of OLS models, the 2SLS model results are very similar to the previously presented OLS models. Thus with caution, 2SLS model should provide a further proof of the complementary effect on the existence of the audit committee and audit fees when trying to control for self-selection bias and possible endogeneity in the complex corporate governance network.

Audit fee 2SLS model with endogenous *DACC*

The results from the audit fee models, where the discretionary accruals variable is presumed to be *endogenous* in the *2SLS model*, are presented in the Table 10 found on the next page. The presentation of this table is similar to the previous Table 9, but here an additional first-stage egression is used for to obtain predicted values for the *ABSDACCMJS-CF*. Also, the two other first-stage regressions now include the additional instrumental variables to satisfy the overidentification requirements. The results are fairly similar to the previous 2SLS model and, unfortunately, with the presence of weak instruments.

Table 10 Results from the 2SLS audit fee models, where the *ABSDACCMJS-CF* is endogenous in the 2SLS (n=107)

Model		**First-stage**									**Second-stage**		
Equation		**Eq.19**			**Eq.20**			**Eq.21**			**Eq.22**		
Dependent variable		***IAFALL***			***COM***			***ABSDACCMJS-CF***			***LNFEEALL***		
	Pred.	**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**	
Intercept		-0.869	-2.510	***	-0.975	-2.760	***	-0.075	-1.540	*	-0.553	-2.900	***
Hypothesis variables													
IAFALL	+										0.081	0.290	
COM	+										0.486	1.840	**
ABSDACCMJS-CF	+										0.794	0.800	
FEECONTROLS													
LNASSETS	+	0.181	4.240	***	0.119	2.710	***	0.001	0.090		0.090	2.240	***
SQRALLSUBS	+	0.014	0.600		0.002	0.100		-0.004	-1.270		0.036	2.230	***
FOREIGN	+	-0.076	-0.470		-0.006	-0.040		-0.014	-0.610		0.199	1.990	***
CRATIO	-	0.018	0.380		0.105	2.130	***	0.019	2.760	***	-0.041	-1.540	*
INVREC	+	0.181	0.750		-0.448	-1.820	**	0.105	3.070	***	0.288	1.370	
SWITCH	-	0.225	1.740	**	0.176	1.330		-0.027	-1.460	*	-0.071	-0.730	
FEERISK	+	-0.453	-0.920		-0.515	-1.020		-0.025	-0.360		0.807	2.390	***
CGEXOGENOUS													
MAJ20	+	0.044	0.500		-0.047	-0.530		0.004	0.330		0.042	0.730	
BINDEPENDENT	+	-0.098	-0.530		0.328	1.750	**	0.000	0.010		-0.256	-1.490	*
CGINSTRUMENTALS													
ANALYSTS	+	-0.004	-0.370		0.004	0.350		0.001	0.710				
LIABRATIO	+	0.279	1.210		0.610	2.600	***	0.094	2.900	***			
FINEXP	+	0.130	0.410		0.469	1.440		0.076	1.690	**			
LITI	+	0.288	2.410	***	0.002	0.020		-0.016	-0.930				
EMINSTRUMENTALS													
TACF	+	0.153	0.290		0.260	0.490		-0.277	-3.760	***			
ACQ	+	0.030	1.170		0.043	1.650	*	-0.003	-0.780				
R^2		0.466			0.445			0.334			0.734		
F-value		5.280	***		4.860	***		3.050	***		23.650	***	
Partial R^2		0.079			0.084			0.925					
Partial F-value		1.480			1.840			4.550	***				
Weak IV (G-D Wald F)											0.515, CritF(0.05)=12.2		
Over-id. test (Sargan)											5.192, Chi-sq(3)=0.158		
Endogeneity test (DWH)											8.232, Chi-sq(3)=0.042		

Significances for t- and F-values: ***significant at the 0.05 level. **significant at the 0.10 level. *significant at the 0.15 level.

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. ABSDACCMJS-CF= Absolute modified Jones discretionary accruals from equation 5. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidiaries to total subsidiaries. CRATIO= Current Ratio, current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in the sample. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. TACF= Cash flow total accruals. ACQ= Number of acquisitions made.

Similarly to the previous 2SLS model, this 2SLS model, with the endogenous *ABSDACCMJS-CF*, shows that the only statistically relevant and positive hypothesis variable is *COM*. Now, the *IAFALL* and *ABSDACCMJS-CF* have experienced a change of sign from negative to positive as hypothesized, but unfortunately both are not statistically significant. The interpretation of the control and exogenous corporate governance variables are still the same as in the previous models with the exception of *INVREC* becoming not statistically

significant. However, its sign is still positive as predicted. Overall, the signs and the significances are similar as in the previous models.

Here, the Durbin-Wu-Hausman test favours the use of 2SLS and also the over identification test also supports the results of the endogeneity test. However, as in the previous 2SLS model, there is an indication of weak IVs. Thus, as the joint test of weak IV's shows, the results of this model should be interpreted with caution. Therefore, the OLS models' results are more statistically sound and they should be used to draw the final conclusions. But as mentioned earlier, the only statistically significant hypothesis variable still is *COM* and there seems to be evidence that this is the only hypothesis that can be statistically accepted.

In sum, based on the results from the audit fee models, the null of the hypothesis 2 can be rejected, but the null of hypothesis 1 and hypothesis 3 cannot be rejected at the selected 0.15 level. Therefore, the models presented seem to show that the existence of the audit committee is positively associated to audit fees, thus providing additional evidence to the complementary effect of the audit committee and audit fees. These results can be confirmed, with some caution while there are indications of weak instrumental variables, to be robust when controlling for endogeneity. In the next section 5.2, the results related to the earnings management models are presented.

5.2 Results related to effects on earnings management

Similarly to the previous section, this section presents the results of the three different earnings management models. First, the results of the OLS models are presented. Secondly, the results of the 2SLS model, where the audit fees are presumed to be exogenous. Finally, the results of the earnings management 2SLS model are presented, where the audit fees are endogenous.

Earnings management OLS models

The results from the different earnings management *OLS models* are presented in the Table 11 on the next page.

All of the OLS models have a satisfactory model fit as the adjusted R^2 is between 0.3 and 0.4, which is usual for earnings management models. The significance of the F-values is smaller than 0.001 also indicating a good fit. The VIFs of the earnings management models are in the range of 1-5, thus also suggesting no serious multicollinearity between the variables in these models.

For the hypothesis variables, the Table 11 shows that the coefficient of the variable *LNFEEALL* is negative as predicted and statistically relevant ($p<0.05$) in all of the OLS models. Therefore, the null of the hypothesized negative association between the audit fees and discretionary accruals can be rejected at the mentioned level. The sign of the variable *COM* is also negative, in accordance with the predictions, but the sign of the *IAFALL* is positive contrary to predictions. However, these hypothesis variables are not statistically relevant ($p>0.15$) and therefore the hypothesized effects cannot be validated with the OLS models.

The signs of the control variables are mostly as anticipated and almost all of them are also statistically relevant in the OLS models. The control variables opposite to the predictions are *SALESGPCG* and *ZRATIO*. *SALESGPCG* being negative indicates companies with a higher sales growth do not manage earnings as much as the companies with the slower growth. Similar results have been reported by Miettinen (2008). The interpretation may be contradictory to the hypothesized, because of the exceptional financial climate during the sample year. This may also true with the *ZRATIO* controlling for the financial condition of the

company being opposite to the predictions in the OLS models. However, this variable is not statistically relevant in any of the OLS models, where the different instrumental variables are included. Also, *LNMKTCAP* and both exogenous corporate governance variables (*MAJ20* and *BINDEPENDENT*) are not statistically relevant in the earnings management OLS models.

Table 11 Results from the earnings management OLS models (n=107)

Model		**EMCONTROLS**			**EMCONTROLS + CGEXOGENOUS**			**EMCONTROLS + CGEXOGENOUS +CGINSTRUMENTALS**			**EMCONTROLS + CGEXOGENOUS + CGINSTRUMENTALS+ FEEINSTRUMENTALS**		
Equation		**Eq.12**			**Eq.13**			**Eq.14**			**Eq.23**		
Dependent variable		***ABSDACCMJS-CF***			***ABSDACCMJS-CF***			***ABSDACCMJS-CF***			***ABSDACCMJS-CF***		
	Pred.	**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**	
Intercept		0.048	1.910	**	0.060	1.940	**	-0.007	-0.160		-0.035	-0.680	
Hypothesis variables													
IAFALL	-	0.004	0.280		0.004	0.250		0.005	0.320		0.008	0.550	
COM	-	0.000	-0.010		0.001	0.100		-0.004	-0.270		-0.009	-0.570	
LNFEEALL	-	-0.048	-2.330	***	-0.049	-2.350	***	-0.061	-2.740	***	-0.063	-2.790	***
EMCONTROLS													
LNMKTCAP	-	0.004	0.720		0.004	0.820		0.002	0.300		0.003	0.460	
LOSS	+	0.041	2.870	***	0.042	2.860	***	-0.047	-1.370		0.034	2.250	***
OPCYCLE365	+	0.000	3.220	***	0.000	3.200	***	0.033	2.240	***	0.000	3.740	***
MKTRET	?	-0.061	-1.900	**	-0.066	-1.960	**	0.000	3.660	***	-0.043	-1.220	
SALESGPCG	+	-0.069	-2.160	***	-0.070	-2.150	***	-0.068	-2.080	***	-0.075	-2.270	***
ZRATIO	+	-0.004	-1.460	*	-0.004	-1.520	*	-0.001	-0.230		-0.003	-0.730	
SMALLEPSCNG	+	0.029	1.870	**	0.030	1.930	**	0.028	1.660	*	0.026	1.550	*
CGEXOGENOUS													
MAJ20	?				-0.004	-0.360		-0.003	-0.210		-0.002	-0.190	
BINDEPENDENT	-				-0.017	-0.650		-0.028	-1.080		-0.030	-1.120	
CGINSTRUMENTALS													
ANALYSTS	+							0.002	1.090		0.002	1.070	
LIABRATIO	+							0.045	1.380		0.050	1.500	*
FINEXP	+							0.092	2.050	***	0.076	1.650	*
LITI	+							-0.021	-1.260		-0.018	-1.070	
FEEINSTRUMENTALS													
FEERATIO	+										0.045	1.380	
REPORTLAG	+										0.000	0.820	
R^2		0.299			0.302			0.352			0.371		
Adjusted R^2		0.226			0.213			0.237			0.242		
F-value		4.090	***		3.390	***		3.060	***		2.880	***	

Significances for t- and F-values: ***sig. at the 0.05 level. **sig. at the 0.10 level. *sig. at the 0.15 level.

The variables are defined as follows:
ABSDACCMJS-CF= Absolute modified Jones discretionary accruals from equation 5. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNFEEALL= Natural logarithm of all audit fees. LNMKTCAP= The natural logarithm of year end market cap. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. MKTRET= Market adjusted stock return. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS change is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. FEERATIO= Percentage of the audit related fees from the total fees paid to the auditor. REPORTLAG=Days the auditors signed the audit report from fiscal year end.

Some of the instrumental variables are significant and their association is as predicted. The positive and significant influence of the financial expertise to the magnitude of earnings

management can be seen as interesting. This positive association can be interpreted as the greater portion of financial experts in the board and management team, the higher is the magnitude of earnings management. As the management team is included in the variable, they might be more aware of the earnings management techniques, but still the more financially educated board and management should constrain earnings management as hypothesized.

But still, when moving to the 2SLS models, these instrumental variables should have no correlation to the discretionary accruals in the OLS and there might be some indication that the selected instrumentals are not valid for the upcoming 2SLS models. Some of the instrumental variables are relevant (*LIABRATIO* and *FINEXP*). This is not unexpected as the amount of liabilities is often used as variable in such models.

In sum, all of the OLS models seem to be in favour the hypothesis 6, where the auditors were seen to have a constraining effect on the magnitude of earnings management. There was no support for the other hypotheses. Also the different earnings management models are further tested in the sensitivity analysis section, where the different measures for the discretionary accruals are used in the place of the modified Jones cash flow discretionary accruals. In the following sections, the results of the 2SLS earnings management models are presented.

Earnings management 2SLS model with exogenous *LNFEEALL*

The results from the discretionary accruals models, where the *LNFEEALL* is presumed to be *exogenous* in the *2SLS* model, are presented in the Table 12 found on the next page.

The second-stage of the 2SLS, where only the *IAFALL* and *COM* are treated endogenously, suggests that only the audit fees (*LNFEEALL*) is negatively associated to earnings management. The other two hypothesis variables have a positive association contrary to the predictions. Also, the only statistically significant hypothesis variable is *LNFEEALL*, while the other two hypothesis variables are not. Thus, these results implicate that only the null of the hypothesis 6 can be rejected at the 0.15 level.

The significances of the control variables in the second-stage are poor. Only the *OPCYCLE365* and *ZRATIO* are significant at the 0.15 level or better. The poor significance of the control variables can be seen also in the R^2 of the second-stage regression, which is negative and F-value is low (0.900). According to the Stata FAQ, this can be very common in

the 2SLS method and is not a serious problem, because the statistic R^2 has no similar statistical meaning in the context of 2SLS.

Table 12 Results from the 2SLS earnings management models, where the *LNFEEALL* is exogenous in the 2SLS (n=107)

Model		**First-stage**						**Second-stage**		
Equation		**Eq.15**			**Eq.16**			**Eq.17**		
Dependent variable		***IAFALL***			***COM***			***ABSDACCMJS-CF***		
	Pred.	**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**	
Intercept		-0.109	-0.320		-0.408	-1.220		0.099	1.470	*
Hypothesis variables										
IAFALL	-							0.042	0.390	
COM	-							0.256	1.260	
LNFEEALL	-	0.121	0.780		0.454	2.990	***	-0.180	-1.570	*
EMCONTROLS										
LNMKTCAP	-	0.080	1.730	**	0.015	0.340		-0.004	-0.230	
LOSS	+	0.121	1.130		0.104	0.990		0.003	0.070	
OPCYCLE365	+	0.001	0.840		-0.001	-0.930		0.000	2.040	***
MKTRET	?	-0.169	-0.680		-0.213	-0.870		0.010	0.110	
SALESGPCG	+	0.260	1.100		-0.135	-0.580		-0.045	-0.660	
ZRATIO	+	-0.012	-0.510		0.046	2.040	***	-0.013	-1.470	*
SMALLEPSCNG	+	-0.353	-3.060	***	0.123	1.090		0.012	0.280	
CGEXOGENOUS										
MAJ20	?	-0.025	-0.290		-0.133	-1.520	*	0.035	0.880	
BINDEPENDENT	-	-0.055	-0.290		0.398	2.170	***	-0.130	-1.260	
CGINSTRUMENTALS										
ANALYSTS	+	0.013	1.130		0.002	0.180				
LIABRATIO	+	0.265	1.130		0.104	0.450				
FINEXP	+	-0.175	-0.540		0.423	1.330				
LITI	+	0.237	1.970	**	-0.086	-0.730				
R^2		0.438			0.459			-2.037		
F-value		5.130	***		5.570	***		0.900		
Partial R^2		0.072			0.023					
Partial F-value		1.797			0.532					
Weak IV (G-D Wald F)								0.431, CritF(0.05)= 11.0		
Over-id. test (Sargan)								0.142, Chi-sq(2)= 0.932		
Endogeneity test (DWH)								7.034, Chi-sq(2)= 0.030		

Significances for t- and F-values: ***sig. at the 0.05 level. **sig. at the 0.10 level. *sig. at the 0.15 level.

The variables are defined as follows:

ABSDACCMJS-CF= Absolute modified Jones discretionary accruals from equation 5. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNFEEALL= Natural logarithm of all audit fees. LNMKTCAP= The natural logarithm of year end market cap. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. MKTRET= Market adjusted stock return. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS change is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise

The significant exogenous control variables in the first-stage models seem to indicate that the larger the market cap of the company the more likely there is an internal audit function present. Also, the internal audit function is less likely to be present, when EPS growth is near zero. The similar variables seem to suggest that the audit committee is formed, when company is in a good financial condition (*ZRATIO*) and the board has more independent

members (*BINDEPENDENT*). Also, the existence of a major owner (*MAJ20*) seems to have a negative effect on the existence of the audit committee.

The first-stage models with the *IAFALL* and *COM* have similar relevance as in the audit fee models. The R^2 is near the 0.45 as in the audit fees and F-value hovers above five making the fit of the first-stage regression statistically relevant. However, as with the audit fee models, the partial values of these models indicate that the used instruments are still weak. As the first-stage regressions indicate, there is only one statistically significant instrumental variable (*LITI*) in the *IAFALL* regression (Eq.15). The *COM* regression (Eq.16) has no statistically relevant instrumental variables.

The poor significance of the instrumental variables can be further justified by the poor F-value of the joint weak IV test, which is well below the critical F-value threshold of 11.0. However, the over-identification test and endogeneity test are valid and highly significant favouring the use of 2SLS models instead of the previously presented OLS models. But as there is presence of weak variables, the OLS model still should be more consistent for interpretation.

In sum, the results of the 2SLS earnings management model, where the audit fees are treated exogenously, suggests that the auditors constrain earnings management as hypothesized in hypothesis 6. Again, there were no support for the other hypotheses 4 and 5. However, as there are indications of weak IVs, but the results are consistent with the previously presented OLS models. As mentioned earlier, the more interesting of the earnings management 2SLS models is the model were all of the hypothesis variables are treated endogenously, because they should have an effect on the earnings management jointly.

Earnings management 2SLS model with endogenous *LNFEEALL*

The results from the discretionary accruals models, where also the audit fee variable is presumed to be *endogenous* in the *2SLS model*, are presented in the Table 13 in the next page.

Table 13 Results from the 2SLS earnings management models, where the *LNFEEALL* is endogenous in the 2SLS (n=107)

Model		First-stage									Second-stage		
Equation		Eq.24			Eq.25			Eq.26			Eq.27		
Dependent var.		*IAFALL*			*COM*			*LNFEEALL*			*ABSDACCMJS-CF*		
	Pred.	Coeff.	t-value		Coeff.	t-value		Coeff.	t-value		Coeff.	t-value	
Intercept		-0.099	-0.280		-0.763	-2.120	***	-0.478	-2.040	***	0.091	1.740	**
Hypothesis variables													
IAFALL	-										0.040	0.370	
COM	-										0.178	1.180	
LNFEEALL	-										-0.134	-0.850	
EMCONTROLS													
LNMKTCAP	-	0.092	2.210	***	0.083	1.970	**	0.136	4.990	***	-0.004	-0.260	
LOSS	+	0.137	1.310		0.192	1.830	**	0.187	2.720	***	0.012	0.370	
OPCYCLE365	+	0.000	0.770		0.000	0.270		0.001	2.960	***	0.000	2.090	***
MKTRET	?	-0.253	-1.010		-0.219	-0.860		-0.158	-0.960		-0.007	-0.110	
SALESGPCG	+	0.280	1.180		-0.194	-0.810		-0.053	-0.340		-0.053	-1.010	
ZRATIO	+	-0.004	-0.180		0.022	0.880		-0.022	-1.390		-0.010	-1.190	
SMALLEPSCNG	+	-0.335	-2.850	***	0.047	0.390		-0.100	-1.300		0.020	0.630	
CGEXOGENOUS													
MAJ20	?	-0.035	-0.390		-0.113	-1.250		0.020	0.340		0.023	0.730	
BINDEPENDENT	-	-0.053	-0.280		0.267	1.420		-0.227	-1.850	**	-0.094	-1.150	
CGINSTRUMENTALS													
ANALYSTS	+	0.018	1.620	*	0.011	1.000		0.024	3.250	***			
LIABRATIO	+	0.277	1.200		0.339	1.460	*	0.431	2.840	***			
FINEXP	+	-0.048	-0.150		0.286	0.850		0.039	0.180				
LITI	+	0.215	1.760	**	-0.064	-0.520		-0.017	-0.210				
FEEINSTRUMENTALS													
FEERATIO	+	-0.282	-1.250		0.527	2.310	***	0.315	2.120	***			
REPORTLAG	+	-0.001	-0.190		0.000	0.100		-0.003	-1.390				
R^2		0.444			0.439			0.767			-0.861		
F-value		4.850	***		4.750	***		19.950	***		1.230		
Partial R^2		0.106			0.102			0.233					
Partial F-value		1.798			1.721	**		4.598	***				
Weak IV (G-D Wald F)											0.223, CritF(0.05)= 12.2		
Over-id. test (Sargan)											0.625, Chi-sq(3)= 0.891		
Endogeneity test (DWH)											8.818, Chi-sq(3)= 0.032		

Significances for t- and F-values: ***sig. at the 0.05 level. **sig. at the 0.10 level. *sig. at the 0.15 level.

The variables are defined as follows:

ABSDACCMJS-CF= Absolute modified Jones discretionary accruals from equation 5. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNFEEALL= Natural logarithm of all audit fees. LNMKTCAP= The natural logarithm of year end market cap. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. MKTRET= Market adjusted stock return. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS change is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. FEERATIO= Percentage of the audit related fees from the total fees paid to the auditor. REPORTLAG=Days the auditors signed the audit report from fiscal year end.

When all of the hypothesis variables are treated endogenous, none of these variables are statistically relevant. Also, only the endogenous audit fees seem to have the predicted negative association with the discretionary accruals. Contrary to the predictions, the instrumented *IAFALL* and *COM* seem to be positively associated to the magnitude of earnings management as in the previous 2SLS models.

The only control variable statistically significant in the second-stage is *OPCYCLE365*, but its coefficient is close to zero, which indicates no clear direction of association to the absolute discretionary accruals. Also, some of the non-significant control variables (*LNMKTCAP*, *SALESGPCG* and *ZRATIO*) have opposite signs to the predictions. The exogenous corporate governance variables are not significant at the 0.15 level, but their signs are similar to the earlier 2SLS model.

Here again, the models fits of first-stage models are satisfactory, but the partial R^2, partial F and joint test of weak IV indicate that the selected instrumentals variables are weak especially in equations 24 and 25. The only non-significant instrumental variables in any of the first-stage models are *FINEXP* and *REPORTLAG*. For example, the number of analysts following the company (*ANALYSTS*), the percentage of the liabilities (*LIABRATIO*) and the auditor independency variable (*FEERATIO*) seem to have a significant and anticipated effect in multiple first-stage regressions.

The endogeneity test statistics of the 2SLS model seem to favour using this model instead of the OLS models, but there still are indications of weak instrumentals as the Wald test (0.223) is well below the critical value of 12.2. The weak instrumentals may skew the coefficients of the hypothesis variables, but while being not significant, the *LNFEEALL* is still negative as in the OLS models. Therefore, as the overidentification and endogeneity tests favour the use of 2SLS models, but the results of the second-stage model must be interpreted with caution due to the weak IVs.

In sum, based on the previous results of the earnings management *OLS models*, the null of the H6 can be rejected, thus indicating that the greater the amount of audit fees, the smaller the magnitude of discretionary accruals. This can be interpreted so that the higher audit quality can lead to higher financial reporting quality. However, this result can not be confirmed when treating for endogeneity due the weak instrumental variables.

As all of the 2SLS models suffered from weak IVs, they are further studied in the sensitivity analyses coming in the next section. Also, as mentioned before, there are several different discretionary accruals measures available which can be used to test the robustness of the results from these regressions. Further, one of the more recent earnings management proxies (the final quarter earnings reversal, NPPN) is also presented in the next section.

5.3 Sensitivity and other additional tests

This section presents various different sensitivity tests and other additional tests to check the robustness of the main models' results in the previous section. Firstly, the instruments used in the main models are separately tested for. Secondly, the same models are tested with different discretionary accruals measures in place of modified cross-sectional cash flow Jones model used in the main models. Thirdly, a new indicator for earnings management, earnings reversal dummy, is tested in same manner as different discretionary accruals methods. Fourthly, the audit quality indicator, total audit fees, is replaced with two additional fee variables. Finally, two additional variables for the existence of the internal audit is used in place of the previous variable including both the outsourced and the company's own internal audit.

Testing the validity of the instrumentals separately

As the Sargan-Hansen test of joint over-identification in the main audit fee models indicated, some of the instrumental variables are not independent from the error term in the structural equation. In the context of the audit fee models and as Larcker & Rusticus (2009) suggested, while IV estimation is the standard textbook solution to endogeneity, it is only reliable if (1) there is an instrumental variable that is strongly correlated with the endogenous variables in the first-stage models and (2) the instrumental variable is uncorrelated with the error term in the second-stage.

The first condition can be checked from the Appendix 1, where the correlation matrix of the endogenous and the instrumental variables is found. For example, the correlation matrix shows that the instrumental variable *ANALYSTS* is strongly correlated with both the *IAFALL* and *COM* (Spearman correlations are just below 0.5). This variable is also highly correlated with the *LNFEEALL*, which can impair the fulfilling of the second condition. This result can also be confirmed from the final audit fee 2SLS model, where this instrumental variable was highly significant in the first-stage (Eq.21). The correlation matrix also shows that there are only few instrumental variables having a strong correlation with the *IAFALL*. Also, there is only two instrumental variables (*TACF* and *LIABRATIO*), which is correlated with the *ABSDACCMJS-CF*.

To study the second condition of the validity of the instrumentals, a GMM distance or C test is used. In Stata software, the *orthog( )* option of the ivreg2 command tests whether a subset

of the model's overidentifying restrictions appear to be satisfied. Under the null, the error term is uncorrelated with the instruments. This is carried out by calculating two Sargan–Hansen statistics: one for the full model and a second for the model in which the listed variables are (a) considered endogenous, if included regressors, or (b) dropped, if excluded regressors. In case (a), the model must still satisfy the order condition for identification. The difference of the two Sargan–Hansen statistics, often termed the GMM distance or C statistic will be distributed X^2 under the null hypothesis that the specified orthogonality conditions are satisfied, with degrees of freedom equal to the number of those conditions.

The Table 14 below presents the results of the main models as in the previous chapters. The table presents all of the instrumental variables used in the four separate 2SLS models and they are tested for their *exogeneity* in the 2SLS models. Also, the overidentification and endogeneity tests are showed in the bottom part of the table. The significances of the test statistics are colour coded for ease of reading, where the green colour indicates the validity of the test statistic and vice versa, red colour indicates that test is not favourable in the 2SLS models.

Table 14 Tests of validity of the instrumental variables as used in the different models (n=107)

Model category	**2SLS Audit fee models**				**2SLS Earnings management models**			
Model	**Eq.11**		**Eq.22**		**Eq.17**		**Eq. 27**	
Endogenous variables	**IAFALL & COM**		**IAFALL, COM & DACC**		**IAFALL & COM**		**IAFALL, COM & LNFEEALL**	
Dependent variable	***LNFEEALL***		***LNFEEALL***		***ABSDACCMJS-CF***		***ABSDACCMJS-CF***	
IV analysis	Statistic	p-value	Statistic	p-value	Statistic	p-value	Statistic	p-value
Orthogonality tests of *CGEXOGENOUS* variables (Instruments valid, if p > 0.15)								
MAJ20	0.086	**0.769**	0.204	**0.651**	0.141	**0.708**	0.158	**0.691**
BINDEPENDENT	2.917	**0.088**	2.438	**0.118**	0.003	**0.959**	0.002	**0.963**
Orthogonality tests of all the instrumental variables (Instruments valid, if p > 0.15)								
ANALYSTS	4.277	**0.039**	4.351	**0.037**	0.069	**0.792**	0.172	**0.678**
FINEXP	0.030	**0.864**	0.008	**0.928**	0.112	**0.738**	0.182	**0.670**
LIABRATIO	0.188	**0.664**	0.666	**0.414**	0.028	**0.868**	0.040	**0.842**
LITI	0.790	**0.374**	1.332	**0.248**	0.139	**0.710**	0.624	**0.430**
TACF			0.069	**0.793**				
ACQ			0.458	**0.499**				
FEERATIO							0.544	**0.461**
REPORTLAG							0.055	**0.814**
Over-id. of all instrumentals	4.295	**0.117**	5.192	**0.083**	0.142	**0.932**	0.625	**0.792**
DWH endogeneity test	4.861	**0.088**	4.141	**0.126**	7.034	**0.030**	8.818	**0.032**

The variables are defined as follows:
LNFEEALL= Natural logarithm of all audit fees. ABSDACCMJS-CF= Absolute modified Jones discretionary accruals from equation 5. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. TACF= Cash flow total accruals. ACQ= Number of acquisitions made. FEERATIO= Percentage of the audit related fees from the total fees paid to the auditor. REPORTLAG=Days the auditors signed the audit report from fiscal year end.

As the Table 14 shows, the main culprit seems to be *ANALYSTS* variable in the audit fee models. While it had a strong correlation with both of the endogenous CG variables, the orthogonality test suggests that it is correlated with the error term. Omitting *ANALYSTS* from the models does improve the overidentification and the endogeneity statistics, making the 2SLS favourable and the results remain similar (not reported). However, as the variable was statistically significant in the models, it cannot be omitted entirely from the models and it has to be therefore included in the 2SLS regressions as an exogenous corporate governance variable. If the *ANALYSTS* variable is used as an exogenous control variable in both stages, the results remain similar as in the main models (not reported).

Also, the surprising result of the exogenous CG variable *BINDEPENDENT* in the audit fee models may be explained by being endogenous in the 2SLS models as the orthogonality test shows. By omitting the variable, the findings were the same as in main models, but the overidentification test became valid. However, as with the *ANALYSTS* variable was significant and therefore it cannot be omitted entirely. Thus, by changing places with an instrumental variable, a one combination fulfilling all the econometric requirements was found (not reported). By using *ANALYSTS* as the exogenous corporate governance variable in both stages and by using *MAJ20* as an instrumental variable made the overidentification and endogeneity test valid in all of the models. The results for the hypothesis variables were the same as with the main models, but the 2SLS models still suffered from weak IVs. However, also the sign of the *BINDEPENDENT* remained the same as well.

For future references, by performing these types of analyses it is possible to interpret and/or find a better set of stronger instrumentals (similar to e.g. *TACF*), which can make the 2SLS models econometrically (and theoretically) robust.

Different discretionary accruals as the earnings management indicator

In order to test the robustness of the main model chosen in this thesis, some of the most popular discretionary accruals methods have been used to replace the modified Jones cash flow model as an earnings management proxy (not reported). Used proxies were the cross-sectional and industry non-modified Jones and modified Jones discretionary accruals. Also, all of the mentioned methods were tested using balance sheet total accruals instead of the cash flow total accruals as used in the main model.

The additional tests performed provided no consistent significant differences for the both main models tested in the previous chapter. For example, the additional *cash flow* discretionary accruals OLS models provided similar results as with the main models earlier. Also, there was still indication of weak IVs in both the additional audit fee and the earnings management 2SLS models. Overall, the results for the audit fee models seem to hold even when the earnings management is measured with different cross-sectional and industry discretionary accruals or with the cash flow and balance sheet total accruals

However, there seemed to be some contradiction with the earnings management models. When using cross-sectional Jones models with the balance sheet total accruals, the independent audit fee variable was not significant. Also, different from the cross-sectional DACCs, the industry DACCs seemed to show that the audit committee is positively related to the earnings management, even in the OLS models. However, there was still evidence that the audit fees are negatively associated, as suggested in Hypothesis 6, also when using the industry DACCs in the earnings management models.

Earnings reversal as the earnings management indicator

The most recent of different earnings management indicators is the last quarter earnings reversal *(NPPN)*. This insightful study has been conducted by Das et al. (2007) with the U.S. sample, where they found support for their hypothesis that companies, which have experienced reversal of earnings in the last quarter may have been managing earnings.

The main idea of the earnings reversal is that the pattern of quarterly earnings may represent possible earnings management behaviour designed to achieve annual earnings targets. One can assume that if a poor performance in interim quarters (Q1-Q3) is followed by a surge in earnings in the last quarter, it may indicate that managers are attempting to obtain a desired level of reported annual earnings. Also, vice versa, if exceptionally good performance in interim quarters is followed by a decline in earnings of the last quarter, it may indicate that the management is trying to save part of the good earnings to build up a bad day reserve, and also, especially in Finnish institutional setting to minimize taxes (e.g. Troberg, 2007).

For example, in her master's thesis, Salminen (2008) have studied the effect of fourth quarter earnings reversal as an indicator of earnings management in Finnish setting. Salminen found some evidence, that Finnish quarterly reversal firms are likely to have managed earnings, but

the result were not as high in explanatory power as the underlying study by Das et al (2007) due the limited data available from Finland. But, as they both recommend, the earnings reversal test is highly applicable as an additional test of earnings management. Encouraged by the suitability for the purpose and ease of calculation of the earnings reversal variable, it is used as a new dummy variable proxying for the earning management.

The calculation of the variable is done by "dividing the observations into three samples according to the presence and nature of a possible earnings reversal pattern found on the changes of the quarterly earnings per shares (EPS)" A firm belongs to the negative-positive (NP) sample if it presents negative earnings change in at least two interim quarters as well as the combined interim quarters, and positive earnings change in the fourth quarter. Conversely, a firm belongs to the positive-negative (PN) sample if it presents positive earnings change in at least two interim quarters as well as the combined interim quarters, and negative earnings change in the fourth quarter. Firms not presenting the reversal effect of either type belongs to sample referred as the group Other. (Salminen, 2008) To illustrate this further, the formation of these samples is shown in the following tables.

Aspo Oyj is used as an example for companies belonging to the NP sample as seen below:

An example of a company belonging to NP sample				
	Q1	**Q2**	**Q3**	**Q4**
Quarterly EPS of year 2008 (t)	0.05	0.12	0.04	0.03
Quarterly EPS of year 2007 (t-1)	0.07	0.40	0.10	0.02
Changes in EPSs	-0.02	-0.28	-0.06	0.01
Direction of change (+/-)	**-**	**-**	**-**	**+**

The quarterly changes of the interim quarters are jointly and separately negative, while the change between the years in the last quarter is suddenly positive. This might indicate a positive earnings manipulation.

An example of the firms belonging to PN-sample, Metso Oyj, is shown below:

An example of a company belonging to PN sample				
	Q1	**Q2**	**Q3**	**Q4**
Quarterly EPS of year 2008 (t)	0.55	0.72	0.69	0.79
Quarterly EPS of year 2007 (t-1)	0.50	0.66	0.68	0.85
Changes in EPSs	0.05	0.06	0.01	-0.06
Direction of change (+/-)	**+**	**+**	**+**	**-**

Here the interim quarters are positive and the annual change in the EPS of the last quarters is negative. There might be a desire to manage earnings downwards to smooth the annual

results. However, the negative change in the last quarters might also be due to the deteriorating financial situation experienced in the end of the 2008. But, there are only six companies in the PN sample, whereas the PN sample has 12 companies, which should indicate that, despite the credit crunch, the earning power of the companies was still high.

And finally, an example of a company (Uponor Oyj), which belongs to the Other –sample:

An example of a company belonging to Other sample				
	Q1	**Q2**	**Q3**	**Q4**
Quarterly EPS of year 2008 (t)	0.18	0.24	0.20	-0.22
Quarterly EPS of year 2007 (t-1)	0.29	0.45	0.36	0.29
Changes in EPSs	-0.09	-0.21	-0.16	-0.51
Direction of change (+/-)	**-**	**-**	**-**	**-**

As all of the quarterly results between the years are negative, there is no last quarter change of sign. Therefore, there is no clear evidence of the last quarter reversal for these kinds of companies and they are included in the Other category.

The new dummy variable, ***NPPN***, is 1 if company belongs to either NP sample of the PN sample. In addition to this variable, the Appendix 4 presents the descriptive statistics for all different additional variables used in the sensitivity and additional analyses.

Table 15, in the next page, presents the summary results for the hypothesis variables for the audit fee models and Appendix 5 presents the more precise results of the audit fee and earnings management models with the *NPPN* as the earnings management indicator.

As the Table 15 shows, the audit fee OLS models have a similar good fit as with the main audit fee models. Here also the audit committee variable is positive and statistically significant. Additionally, the OLS models suggest that the quarterly earnings reversal dummy is significant and positive in the first two models (Eq.6 and Eq.7), where the instrumentals have not been included. Therefore, there is some support for the rejecting the null of the hypothesis 3, where the earnings management was seen to be positively related to audit fees.

There is also additional support for the described results in the 2SLS model, where the *NPPN* is treated exogenously (Eq.11). It supports the hypotheses 2 and 3, while the hypothesis 1 cannot be rejected at the selected level of 0.15. The final 2SLS model, where the audit fees are treated endogenously, has no significant results for the hypothesis variables. However, as

with the previous 2SLS audit fee models the weak instrumental variables statistic, over-identification test and endogeneity test favours using OLS models instead of 2SLS models.

Table 15 Results of the hypothesis variables from the audit fee models with *NPPN* as the proxy for the earning management (n=107)

Dependent variable	***LNFEEALL***			**Model test statistics**					
	Coeff.	t-value		Test	Stat.	Sig.	Test	Stat.	Sig.
OLS: FEECONTROLS (Eq.6.)									
IAFALL	0.026	0.440		Adj. R^2	0.804				
COM	0.176	3.160	***	R^2	0.783				
NPPN	0.114	1.690	**	F-value	39.310	***			
OLS: FEECONTROLS + CGEXOGENOUS (Eq.7)									
IAFALL	0.024	0.390		Adj. R^2	0.809				
COM	0.202	3.500	***	R^2	0.785				
NPPN	0.121	1.780	**	F-value	33.230	***			
OLS: FEECONTROLS + CGEXOGENOUS + CGINSTRUMENTALS (Eq.8)									
IAFALL	0.010	0.170		Adj. R^2	0.826				
COM	0.177	3.000	***	R^2	0.795				
NPPN	0.094	1.330		F-value	26.740	***			
OLS: FEECONTROLS + CGEXOGENOUS + CGINSTRUMENTALS + EMINSTRUMENTALS (Eq.18)									
IAFALL	-0.004	-0.070		Adj. R^2	0.833				
COM	0.170	2.830	***	R^2	0.798				
NPPN	0.076	1.080		F-value	24.300	***			
2SLS: NPPN exogenous (Eq.11)									
$\overline{IAFALL}$	0.017	0.070		R^2	0.770		Weak IV (G-D Wald F)	0.924	CritF(0.05)=11.0
$\overline{COM}$	0.457	1.930	**	F-value	27.040	***	Over-id. test (Sargan)	6.129	Chi-sq(2)=0.047
NPPN	0.121	1.700	**				Endogeneity test (DWH)	2.106	Chi-sq(2)=0.349
2SLS: NPPN endogenous (Eq.22)									
$\overline{IAFALL}$	0.139	0.590		R^2	0.775		Weak IV (G-D Wald F)	0.704	CritF(0.05)=12.2
$\overline{COM}$	0.209	0.950		F-value	27.860	***	Over-id. test (Sargan)	7.957	Chi-sq(3)=0.047
$\overline{NPPN}$	0.371	1.400					Endogeneity test (DWH)	3.701	Chi-sq(3)=0.296

Significances for t-values: ***significant at the 0.05 level. **significant at the 0.10 level. *significant at the 0.15 level.

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter, 0 otherwise

The next paragraphs illustrate the *NPPN* as the dependent variable in the earnings management models. As the dependent variable is dichotomous, probit method has been used instead of the OLS in the previous models, where the earnings management indicator was continuous. Also, the previously used 2SLS is replaced by the two-stage probit method. However, the OLS method is still used in the first-stage to obtain the predictions for *IAFALL* and *COM* of the two-stage probit. Finally, the probit method is used in the second-stage for the *NPPN* with the OLS estimated endogenous variables. The regressions were calculated with Stata and its command ivprobit with the option twostep. By default, ivprobit uses the Maximum Likelihood Estimation. A further light is shed on this method in a book by Wooldridge (2002, pp.472-477). The results from the probit regressions and Two-stage probit regressions are presented in the Table 16 found on the next page.

As can be seen from the Table 16, the results are not statistically significant in the probit models and especially poor in the two-stage probit models. Only the third probit model's Likelihood Ratio (LR) is significant at the 0.15 level. Pseudo R^2 is near the same levels as the OLS models before, but there is no analog for the similar R^2 used in OLS. However, none of the hypothesis variables are still statistically relevant in any probit models. The more detailed results can be found in the Appendix 4. The above probit models were also conducted with OLS and 2SLS method as in the previous models and the results were as similar (not reported).

Table 16 Results of the hypothesis variables from the earnings management models with *NPPN* as the proxy for the earning management (n=107)

Dependent variable	***NPPN***		**Model test statistics**					
	Coeff.	z-value	Test	Stat.	Sig.	Test	Stat.	Sig.
Probit: EMCONTROLS (Eq.12.)								
IAFALL	-0.284	-0.660	Log lik.hood	-39.944				
COM	-0.196	-0.480	LR	13.800	0.182			
LNFEEALL	0.646	1.070	Pseudo R^2	0.147				
Probit: EMCONTROLS + CGEXOGENOUS (Eq.13)								
IAFALL	-0.281	-0.650	Log lik.hood	-39.391				
COM	-0.305	-0.690	LR	14.910	0.247			
LNFEEALL	0.742	1.190	Pseudo R^2	0.159				
Probit: EMCONTROLS + CGEXOGENOUS + CGINSTRUMENTALS (Eq.14)								
IAFALL	-0.180	-0.400	Log lik.hood	-35.464				
COM	-0.358	-0.780	LR	22.760	0.120			
LNFEEALL	0.350	0.510	Pseudo R^2	0.243				
Probit: EMCONTROLS + CGEXOGENOUS + CGINSTRUMENTALS + FEEINSTRUMENTALS (Eq.23)								
IAFALL	-0.155	-0.330	Log lik.hood	-34.859				
COM	-0.430	-0.900	LR	23.970	0.156			
LNFEEALL	0.514	0.690	Pseudo R^2	0.256				
Two-stage probit: LNFEEALL exogenous (Eq.17)								
$\overline{IAFALL}$	1.337	0.370	F-value	4.010	0.983	Weak IV (G-D Wald F)	0.430	CritF(0.05)=11.04
$\overline{COM}$	7.904	1.120				Over-id. test (A-L-N)	0.634	0.728
LNFEEALL	-3.504	-0.890				Exogeneity test (Wald)	4.720	0.094
Two-stage probit: LNFEEALL endogenous (Eq.27)								
$\overline{IAFALL}$	2.475	0.650	F-value	4.910	0.961	Weak IV (G-D Wald F)	0.223	CritF(0.05)=12.02
$\overline{COM}$	5.735	1.050				Over-id. test (A-L-N)	1.725	0.631
$\overline{LNFEEALL}$	-3.801	-0.680				Exogeneity test (Wald)	3.640	0.303

Significances for z-values: ***significant at the 0.05 level. **significant at the 0.10 level. *significant at the 0.15 level.

The variables are defined as follows:

NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter, 0 otherwise. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNFEEALL= Natural logarithm of all audit fees

The usual tests of the endogeneity, weak instruments and over identification are replaced by those used, when using the probit models. The weak IV test is the same by using the ivreg2 command as performed with the other models, which shows that there is presence of weak instruments. According to the Stata help file, the overidentification test is Amemiya-Lee-

Newey minimum Chi-square statistic. The overidentification test after the ivprobit requests Newey's (1987) minimum-distance (or minimum-chi-squared) for IV probit estimator, respectively. Lee (1992) shows that the minimized distance for this estimator provides a test of overidentifying restrictions. The test statistic is distributed as Chi-squared with (Number of instruments – Number of regressors) degrees of freedom under the null that the instruments are valid. Here, the null cannot be rejected, thus favouring that the instruments are jointly valid.

The test for endogeneity is a Wald test of exogeneity. That is, the test simply asks whether the error terms in the structural equation and the reduced-form equation for the endogenous variable are correlated. In the two-step estimator, in the second stage residuals from the first-stage OLS regression(s) are included as regressors. The Wald test is a test of significance on those residuals' coefficients. As the name of the test suggests, the null of the test is that the instrumented variables are exogenous. Therefore, the results of the Wald test statistics shows that in the first two-stage probit model (Eq.17), the variables are endogenous and in the second model (Eq.27) also the exogeneity cannot be rejected at 0.303 level. However, as seen in the Table 16, none of the hypothesis variables are statistically significant.

In sum, the results of the earnings management models are as poor and none of the hypothesis variables are statistically relevant. Thus unfortunately, earnings reversal variable does not provide any additional proof on the effect of the hypothesis variables in the earnings management models. However, some of the audit fee models with the earnings reversal indicator (*NPPN*) suggest that the earnings management is positively associated to audit fees Also, the existence of the audit committee is still positively associated to the audit fees. Thus, the audit fee models with the *NPPN* variable provide support for the Hypotheses 2 and 3.

Different variables for audit fees

Also, *LNFEEALL* in the models is replaced by additional measures of audit effort, *LNFEE* and *LNNONAUDFEE*. The *LNFEE* is the natural logarithm of the fees only related to the statutory audit. As this variable does not include the fees from the additional services provided by the auditor, it should represent better the relationships of the control variables directly to the audit engagement. On the other hand, the *LNNONAUDFEE* is the natural logarithm of the fees paid to the auditor not related to the audit itself. These fees usually

contain advisory services performed by the same audit company. Therefore this variable represents the consultancy and advisory effort made by the auditors.

The additional tests (not reported) of the different audit fee measures are very similar as in the main models. The audit fee models suggested that the existence of audit committee is positively associated to *LNFEE*. In the earnings management models, the nonaudit fees seem to have a slightly less of a negative impact on the magnitude of earnings management than the purely audit related fees. The overidentification and endogeneity test statistics favoured the using of the 2SLS, in all of the models with the *LNFEE*. However, there still were indications of weak instruments. Thus, the results of these models indicate that the when controlling the effects of the audit related fees, the audit committee has a positive effect on these fees. These results are robust when treating internal audit and audit committee endogenously.

In the *LNNONAUDFEE* models, the results of the fee models were similar as above. The audit committee has a positive effect also to the consultancy and advisory fees performed by the auditors. The test statistics only favoured using the 2SLS, where the discretionary accruals were treated exogenously (Eq. 11). In the earnings management models, the results were very similar to the main model. However, the negative effect of the nonaudit fees was only significant in the final OLS (Eq. 23) and in the 2SLS, where the nonaudit fees were treated exogenously (Eq.17).

Different variables for internal audit

In this additional analysis, the *IAFALL* variable is replaced by other internal audit variables. The first of the additional variables is *IAF*. This dummy variable gets the value of 1, if the company has established its own internal audit function. The second additional variable is *IAFOUT*, which consists of only the outsourced internal audit functions. The purpose of this analysis is to check the robustness of the used variable and if there are differences between outsourcing and establishing an own internal audit function.

The results (not reported) were robust with different internal audit variables showing no significant results for the internal audit variables. The audit fee models' results between the *IAF* and *IAFOUT* models are very similar to the main models and thus no differences are found between the outsourced and established internal audit functions. The existence of audit

committee is still statistically significant and positively associated in all of the audit fee models.

The results (not reported) of the earnings management models with the different internal audit variable provided similar results as the main models. However, one of the earnings management OLS models (Eq.23) suggested that the *IAF* is positively connected to the magnitude of earnings management. But, as mentioned, this is a one-off result and the other earnings management models did not provide any additional support for this association.

In sum, the additional tests indicated that the results of the main models are robust with very slight differences. The last quarter earnings reversal (*NPPN*), used as the indicator for the earnings management, provided additional proof for the positive association with the audit fees (Hypothesis 3) while the other main findings are still robust. Also, some of the balance sheet discretionary accruals showed that the existence of the audit committee was positively associated to the magnitude of earnings management (Hypothesis 5). The different industry discretionary accruals provided similar results as their cross-sectional counterparts. Also, the audit fee and earnings management models were tested using different measures for the audit fees and the existence of internal audit function. Both measures provided fairly similar results as the main models. Unfortunately, the most of results of the additional tests had to be omitted due to space constrains.

6. Conclusions

The final chapter of the main text is divided to two parts. First, there is a brief summary of the thesis and discussion of the results presented above. Also, the final conclusions of this thesis are presented. Secondly, the limitations of this study are discussed and few ideas for the future research are presented.

6.1 Discussion

The purpose of this thesis was to study the joint effects of the internal corporate governance structures, audit fees and earnings management in Finnish listed companies. More precisely, the thesis studied the effect of the internal governance structures firstly to the audit fees and secondly to the magnitude of earnings management. The connective factor between the two presented research directions is the financial reporting quality. The better the quality of the financial reporting by the companies is, the more useful the information is to its users. The audit fees were used to portray the audit effort the auditors have used to lower the audit risk to an acceptable level thus improving the reliability and usability of the disclosed information by the company. Also, the quality of the disclosed information should be more useful to the users of the information, if the magnitude of earnings management is as low as possible making the information more reliable. Usually, these relationships are further affected by the actions of the internal corporate governance structures as well.

In the similar studies conducted earlier, the close relationship of the governance actors has raised a worry of endogeneity problems, which may skew the results. To control for the possible endogeneity problems between these actors, the 2SLS regression method has been used in the empirical part of this thesis to explore the associations between the mentioned internal governance actors, audit fees and earnings management. The internal governance actors studied more accurately in this thesis were internal audit and audit committee.

This thesis had two major research paths. First major path was the audit fee models, where the effects of the internal governance structures and magnitude of earnings management to the level of audit fees were studied. The second major research path was the earnings

management models, where the effects of the internal governance structures and audit fees to the magnitude of earnings management was the main interest.

Firstly, the research on the effects of internal audit and audit committee to the audit fees is mixed. For example, the earlier studies (e.g. Sherer & Kent, 1983 and Felix et al., 2001) have found support for the substitution effect of the governance structures. By intuition, the substitution effect of the governance structures to the audit fees is easy to understand especially in the case of internal audit. Usually, the work of the internal and external auditors is interwoven and thus the work done by the internal auditors should diminish the effort required from the external auditors. But the more recent studies (e.g. Abbott et al., 2003; Knechel & Willekens, 2006 and Hay et al., 2008) have supported the complementary view of these structures. The complementary view on the effect governance structures on the audit fees sees the demand for auditors increase as the additional governance structures require more from the auditors or the auditors need to direct more audit work on these additional structures. The hypotheses of this thesis were formed accordingly to the complementary view on the effects of the internal governance structures to the audit fees found in the more recent studies. Also, the larger magnitude of the earnings management is hypothesized to have a positive effect on the audit fees. This can be justified by the increasing inherent risk of the audit or as the risk of the misrepresentation of earnings information grows, the more audit effort is required from the auditors.

The results of the audit fee models in this thesis found support only for the complementary effect of the audit committee (Hypothesis 2). There were no statistically relevant results on the effect of the internal audit (Hypothesis 1) or the magnitude of the earnings management (Hypothesis 3) in the main models. This result can also be confirmed when controlling for endogeneity of the internal audit and audit committee. However, the results from the 2SLS models should be interpreted cautiously as there were presences of weak instrumentals.

Secondly, the association of the internal governance structures and audit fees were hypothesized to be negative to the magnitude of the earnings management as interpreted in the previous studies. There is some evidence that the internal auditors (e.g. Schneider & Wilner, 1990; Clikeman, 2003 and Prawitt et al., 2006 & 2009) diminish the level of earnings management through supervision or by educating the managers on the dangers of this practise. Similarly, there is a similar connection found with the existence of the audit

committee lowering this fraudulent behaviour (e.g. McMullen & Raghundan, 1996; Davidson et al, 2005 and Janin et al., 2007). The main ideas for this effect are that the audit committee members have a more direct responsibility to review the financial processes of the companies and the members of the audit committee are usually more aware of the consequences as they usually are more financially educated. Also, there are also similar findings on the role of the auditors to constrain the earnings management (e.g. Lin & Hwang, 2010).

This study hypothesized that the more efficient the internal corporate governance structures and the auditors are, the smaller the magnitude of earnings management is, thus improving financial reporting quality. The results of the earnings management models found support only for the negative association between the auditors and earnings management (Hypothesis 6). No statistically relevant results were found on the negative associations of the internal governance structures and earnings management (Hypotheses 4 and 5). The endogeneity tests did favour the using of the 2SLS models, but as with the audit fee models, there were presence of weak instruments also in the earnings management 2SLS models.

Additionally, the secondary purpose of this thesis was to explore the ever more popular 2SLS method used in these types of studies to alleviate the possible endogeneity problems. At the same time, this study seeked to find strong instrumental variables for to use in future research. Thus, the methods used were extensively reported as suggested by Chenhall & Moers (2007a) and Larcker & Rusticus (2009) in their articles on using the 2SLS models and also how to interpret the instrumental variables. As the empirical chapter shows, the goal of finding new strong instrumental variables was not quite reached, because all of the 2SLS models suffered for the weak instrumentals. However, as mentioned, the extensive testing and reporting of the results of the 2SLS method used can help the other researchers to reach this goal. Therefore, the instrumental variables used were also tested separately for their validness in the sensitivity test section. Also, this should further improve the reliability of the conclusions by lowering the possibility of Type I and II errors of this study.

The robustness of the above results were further tested in the sensitivity test using different indicators for the hypothesis variables and these tests further verified the results of the main models. For example, the sensitivity tests used a different discretionary accruals separate for each industry measures replacing the cross-sectional discretionary accrual measure as in the main model. Moreover, some additional tests were performed to further study the

hypothesized effects. These additional tests found that there is also some evidence that earnings management can result in higher audit fees, when using the last quarter earnings reversal as the indicator for earnings management. Additionally, there was some evidence that the positive effect of the audit committee is associated to both audit and nonaudit related fees.

In sum, similarly to the study by Pomeroy & Thornton (2008), the audit committees are more effective at enhancing audit quality (e.g. through averting auditor resignations) than they are at fostering financial statement quality (e.g. by making high quality accruals and avoiding restatements). Also, this study suggested that auditors are the most efficient actors in improving financial reporting quality. There was no evidence on the relationship of the internal auditors to the audit fees or the magnitude of earnings management. For example, similar results have been reported by Davidson et al. (2005) in an Australian setting using a dummy variable for the existence of the internal audit. However, the meaning of internal audit functions in the efficient corporate governance network should not be understated. As Mercer (2004) notes, measuring the efficiency of the internal audit is difficult to evaluate from the publicly available data:

> ***Internal auditors often serve as the first line of defence against disclosure errors, ferreting out unintentional errors caused by weaknesses in a company's internal controls and intentional errors due to fraud. Consequently, if investors can assess internal audit quality, then firms with a strong internal audit department may have higher disclosure credibility. (Mercer, 2004, p.190)***

For example, Holt and DeZoort (2009) provide initial evidence that a publicly available Internal Audit Report as required by SEC describing the composition, activities and responsibilities of internal audit positively affects investor judgement and decision-making. As Gramling et al. (2004) highlight, the perceptions of internal audit function effectiveness depend on the structure of the internal audit function, the types of activities undertaken by the function, and the quality of the work performed by the internal audit function. Therefore, by making this type of information publicly available can be beneficial to both the companies and its interest groups.

6.2 Limitations and future research

But as mentioned before, there were some limitations in this study. The main limitation was the failure to find strong and valid instrumental variables as this can skew the results of the 2SLS models. Therefore, most of the results were interpreted from the OLS models and thus the endogeneity problem was not entirely controlled in this thesis.

This is mostly due that finding strong instrumental variables that are both econometrically and theoretically sound is very hard, because the real corporate relation network is broad and closely tied. As Hay et al. (2008) mentioned the (powerful) instrumental variables have not been greatly explored in the previous audit fee literature. Also, if they are explored, they usually are not justified or their validity is difficult to interpret from the available results. Therefore, as Larcker & Rusticus (2009) mentioned, for such powerful instrumentals to be found and debated in the research community, the equivalent tests and results need to reported and analysed more extensively. However, the lack of extensive reporting and discussion may be easily explained by the space constrains set by the research journals.

Additionally, the fact of not finding powerful instruments may also be explained by the small sample size in this thesis. This problem could be overcome by using additional sample years or using a wider geographical base for the sample. But as Larcker & Rusticus (2009) note in the footnote of page 29 in their article, the weak instruments are not just a small sample problem. There was still evidence of weak instrumentals with the sample size as large as 300,000. However, as there was only one sample year in this thesis, no autocollinearity problems were present.

As the data is from the single year 2008, there might be some unobserved errors in the data due to the rather financially exceptional year. This was the year when the credit crunch was affecting the worldwide economy at its full strength. However, as the companies in the sample are from the same period and the same geographical area, the worldwide economic downturn should affect the sample companies equally. Also, this unusual period may provide an interesting event study for the future research.

Further, as Healy (1996), Bernard & Skinner (1996) and Heninger (2001) point out, the discretionary accruals are a noisy proxy for earnings management. This problem was to some

extent solved by introducing different proxies for the earnings management. For example, the last quarter earnings reversal indicator used in the audit fee models lead to similar results as in the main models. Also, this variable provided some evidence of the positive relationship to audit fees as hypothesized, while the main models did not. The same variable was also in the earnings management models, but the results from these models were not statistically very sound. Therefore, there is still a demand for alternative powerful earnings management indicators.

As the corporate governance mosaic presented in the beginning showed, there are other viable internal and external actors in the governance network. This study only included audit committee, internal audit and auditors as the main interests of this study. The endogenously controlled effect of other actors (e.g. board members and management) in the governance network may also be interesting for future research to study.

As mentioned earlier, the corporate governance dummy variables used in this study might not capture the efficiency of the corporate governance structures. The composition of the variables is partly due to the fact, that there is no more detailed data publicly available in Finland. Especially, this is the case with the internal audit, as there is very little research on the subject in the Finnish setting. Thus, there should be growing demand for a more detailed publicly available data on the various corporate governance actors also for research purposes.

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Appendices

Appendix 1 Correlation matrix of the regression variables

Appendix 1. Correlation matrix of regression variables (Pearson correlations above the diagonal, Spearman correlations below the diagonal), continued on the next page

	LNFEEALL	IAFALL	LNASSETS	FOREIGN	INVREC	FEERISK	MKTRET	OPCYCLE365	ZRATIO	MAJ20
	ABSDACCMJS-CF	COM	SQRALLSUBS	CRATIO	SWITCH	LNMKTCAP	LOSS	SALESGPCG	SMALLEPSCNG	BINDEPENDENT
LNFEEALL		-0.143 * 0.543 *** 0.555 *** 0.842 *** 0.756 *** 0.237 ***	-0.222 *** 0.056	-0.035	0.511 *** 0.754 ***	-0.326 *** 0.093	0.116	-0.086	-0.242 *** -0.173 ** 0.019	0.184 **
ABSDACCMJS-CF	-0.067	-0.078 -0.050 -0.161 ** -0.223 *** 0.011	0.096	0.169 ** -0.212 ***	-0.109	-0.207 *** -0.123	0.303 *** 0.308 ***	-0.275 *** 0.070	0.146 * 0.084	-0.072
IAFALL	0.523 *** -0.098	0.327 *** 0.626 *** 0.501 *** 0.093	-0.123	0.037	0.089	0.249 *** 0.524 ***	-0.261 *** 0.024	0.075	0.005 -0.184 **	-0.328 *** -0.051	0.135
COM	0.545 *** -0.027	0.327 ***	0.544 *** 0.415 *** 0.032	-0.069	-0.150 * 0.063	0.185 ** 0.462 ***	-0.225 *** 0.160 *	0.002	-0.083 0.011	0.005	-0.160 * 0.354 ***
LNASSETS	0.866 *** -0.058	0.609 *** 0.530 ***	0.741 *** 0.109	-0.203 ***	-0.056 -0.006	0.457 *** 0.907 ***	-0.308 *** -0.045	0.049	-0.010 -0.269 ***	-0.259 *** -0.050	0.237 ***
SQRALLSUBS	0.712 *** -0.225 ***	0.511 *** 0.333 *** 0.713 ***	0.219 ***	-0.224 ***	-0.006 -0.012	0.491 *** 0.717 ***	-0.191 *** -0.051	-0.002	0.083 -0.247 ***	-0.142 * -0.014	0.206 ***
FOREIGN	0.212 *** -0.015	0.094 0.032 0.087 0.159 *	0.157 *	0.253 ***	0.024 0.112	0.115 -0.151 *	0.024	0.245 *** -0.133	0.143 * 0.009	0.087	0.076
CRATIO	-0.181 ** -0.024	-0.106 -0.122 -0.212 *** -0.189 ** 0.235 ***	0.041	0.037	-0.155 * -0.099	0.137	0.066	0.317 *** -0.195 ***	0.871 *** 0.120	-0.016	-0.101
INVREC	0.020	0.038 0.010 -0.191 *** -0.053 -0.038	0.294 *** 0.228 ***	0.035	-0.022	-0.149 * -0.063	-0.114	0.498 *** 0.002	-0.197 *** -0.101	-0.023	-0.035
SWITCH	-0.050	-0.283 *** 0.089 0.063 -0.028 0.029	0.019 0.051	0.040	0.095	0.029 0.046	-0.056	0.023	0.177 ** -0.078	-0.034	-0.102	0.132
FEERISK	0.717 *** -0.116	0.457 *** 0.315 *** 0.663 *** 0.668 ***	0.251 *** -0.174 **	0.091	-0.081	0.391 *** -0.090	0.080	0.039	-0.068 -0.180 **	-0.085	0.143 *	0.106
LNMKTCAP	0.789 *** -0.147 *	0.522 *** 0.455 *** 0.903 *** 0.710 ***	0.135 -0.133	-0.138	0.012	0.590 *** -0.140	-0.172 **	-0.011	0.055 -0.154 *	-0.159 *	-0.093	0.286 ***
MKTRET	-0.346 *** -0.196 ***	-0.258 *** -0.214 *** -0.288 *** -0.175 **	-0.183 ** 0.097	-0.119	0.076	-0.233 *** -0.135	-0.092	-0.060	0.175 ** 0.144 *	0.328 ***	-0.197 ***	-0.104
LOSS	0.049	0.278 *** 0.024 0.160 * -0.067 -0.103	0.001 -0.026	-0.094	-0.056	0.021 -0.186 **	-0.175 **	0.072	-0.211 *** 0.150 *	0.102	0.136	-0.058
OPCYCLE365	0.135	0.138 0.134 0.031 0.090 0.003	0.308 *** 0.385 ***	0.556 ***	0.067 0.153 *	0.011 -0.165 **	0.103	-0.220 ***	0.157 * 0.026	0.016	-0.013
SALESGPCG	0.039	-0.236 *** -0.036 -0.036 0.052 0.185 **	0.012 -0.124	-0.005	0.088	-0.036 0.075	0.154 *	-0.238 *** -0.231 ***	-0.189 ** 0.089	-0.191 ***	0.060
ZRATIO	-0.232 *** -0.041	-0.183 ** -0.087 -0.309 *** -0.208 ***	0.206 *** 0.761 ***	-0.022	-0.024	-0.268 *** -0.197 ***	0.160 **	-0.005	0.124 0.023	0.232 ***	0.017	-0.112
SMALLEPSCNG	-0.196 *** 0.073	-0.328 *** 0.005 -0.281 *** -0.183 **	0.021 0.025	-0.088	-0.034	-0.202 *** -0.203 ***	0.282 ***	0.102	-0.013 0.065	0.188 **	0.024	0.024
MAJ20	-0.042	-0.019 -0.051 -0.160 * -0.083 -0.059	0.089 -0.030	-0.010	-0.102	0.015 -0.132	-0.172 **	0.136	-0.006 -0.210 ***	-0.020	0.024	-0.294 ***
BINDEPENDENT	0.264 *** -0.028	0.130 0.352 *** 0.257 *** 0.221 ***	0.048 -0.104	-0.023	0.121	0.051 0.300 ***	-0.059	-0.070	0.065 0.075	-0.099	0.021	-0.275 ***
ANALYSTS	0.790 *** -0.123	0.494 *** 0.479 *** 0.802 *** 0.641 ***	0.188 ** -0.124	-0.012	0.040	0.527 *** 0.803 ***	-0.241 ***	-0.077	0.036 -0.013	-0.184 **	-0.126	-0.095	0.314 ***
FINEXP	0.220 *** 0.073	0.113 0.221 *** 0.165 ** 0.152 *	-0.189 ** -0.214 ***	-0.201 ***	-0.022	0.035 0.151 *	-0.016	-0.014	-0.148 * 0.082	-0.221 ***	-0.225 ***	-0.282 ***	0.263 ***
LIABRATIO	0.276 *** 0.178 **	0.143 * 0.203 *** 0.171 ** 0.135	0.009 -0.539 ***	0.140	-0.247 ***	0.278 *** -0.017	-0.382 ***	0.236 ***	-0.015 -0.001	-0.411 ***	0.050	0.108	0.054
LITI	-0.177 ** -0.055	-0.012 -0.096 -0.269 *** -0.172 **	0.156 * 0.226 ***	-0.078	-0.001	-0.298 *** -0.176 **	0.168 **	-0.071	0.066 -0.016	0.373 ***	0.142 *	-0.179 **	-0.020
TACF	0.151 * -0.516 ***	0.106 0.067 0.102 0.127	0.060 0.156 *	0.333 ***	0.147 *	0.096 0.144 *	-0.046	-0.351 ***	0.116 0.057	-0.026	-0.117	-0.071	0.099
ACQ	0.381 *** -0.131	0.349 *** 0.340 *** 0.380 *** 0.351 ***	0.041 -0.202 ***	0.035	-0.083	0.226 *** 0.324 ***	-0.193 ***	0.002	-0.083 0.142 *	-0.153 *	0.085	0.033	0.162 **
FEERATIO	0.252 *** 0.010	-0.058 0.358 *** 0.113 0.123	0.017 0.012	-0.189 **	-0.048	0.037 0.173 **	-0.092	-0.041	-0.223 *** 0.132	0.100	0.078	-0.178 **	0.217 ***
REPORTLAG	-0.366 *** 0.135	-0.192 *** -0.243 *** -0.344 *** -0.362 ***	-0.279 *** -0.045	-0.215 ***	-0.154 *	-0.340 *** -0.354 ***	0.149 *	0.089	-0.154 * -0.019	0.022	-0.033	0.061	-0.262 ***
LNFEE	0.949 *** -0.077	0.569 *** 0.456 *** 0.869 *** 0.715 ***	0.207 *** -0.203 ***	0.067	-0.028	0.723 *** 0.779 ***	-0.333 ***	0.053	0.187 ** 0.029	-0.283 ***	-0.272 ***	-0.009	0.199 ***
LNNONAUDFEE	0.893 *** -0.057	0.398 *** 0.612 *** 0.739 *** 0.628 ***	0.187 ** -0.111	-0.019	-0.047	0.611 *** 0.717 ***	-0.300 ***	0.019	0.042 0.073	-0.133	-0.123	-0.072	0.296 ***
ABSDACCJS-BS	-0.001	0.460 *** -0.129 0.119 -0.078 -0.060	-0.083 -0.116	-0.199 ***	-0.083	-0.027 -0.159 *	-0.046	0.197 *** 0.021	-0.136 -0.084	0.048	0.097	0.067
ABSDACCJS-CF	-0.027	0.934 *** -0.089 0.018 -0.039 -0.193 ***	-0.014 -0.045	-0.035	-0.281 ***	-0.069 -0.126	-0.145 *	0.324 *** 0.136	-0.168 ** -0.056	0.131	-0.041	0.004
ABSDACCMJS-BS	-0.035	0.472 *** -0.133 0.084 -0.118 -0.084	-0.092 -0.093	-0.158 *	-0.062	-0.055 -0.197 ***	-0.063	0.221 *** 0.035	-0.190 ** -0.082	0.018	0.091	0.050
ABSDACCJS-BS_ind	0.054	0.267 *** -0.094 0.157 * -0.060 -0.020	-0.030 -0.130	-0.155 *	0.069	-0.044 -0.143 *	-0.034	0.282 *** 0.019	0.082 -0.037	0.212 ***	0.082	0.033
ABSDACCJS-CF_ind	0.077	0.590 *** 0.021 0.019 0.064 -0.091	-0.005 0.067	-0.066	-0.110	0.027 -0.047	-0.065	0.295 *** 0.131	-0.112 -0.073	0.067	0.131	-0.046
ABSDACCMJS-BS_ind	0.065	0.339 *** -0.090 0.172 ** 0.012 -0.030	-0.131 -0.193 ***	-0.212 ***	0.035	0.003 -0.086	-0.094	0.260 *** -0.060	0.005 -0.106	0.188 **	0.096	0.051
ABSDACCMJS-CF_ind	0.083	0.611 *** 0.016 0.054 0.060 -0.067	-0.002 0.067	-0.053	-0.120	0.073 -0.051	-0.081	0.308 *** 0.140	-0.113 -0.065	0.072	0.104	-0.020
NPPN	-0.039	0.165 ** -0.092 -0.022 -0.085 -0.039	-0.266 *** 0.004	-0.037	-0.073	-0.188 ** -0.073	-0.043	0.002	-0.194 *** 0.151 *	0.113	0.095	0.046	0.073
IAF	0.547 *** -0.039	0.875 *** 0.390 *** 0.683 *** 0.575 ***	0.096 -0.068	0.006	0.018	0.519 *** 0.636 ***	-0.204 ***	0.054	0.144 * -0.057	-0.189 **	-0.267 ***	-0.077	0.136
IAFOUT	-0.028 -0.120	0.288 *** -0.111 -0.124 -0.107	0.000 -0.080	0.010	0.146 *	-0.103 -0.203 ***	-0.118	-0.057	-0.015 0.040	0.005	-0.135	0.050	-0.007
TABS	0.048 -0.290 ***	0.069 -0.114 -0.011 0.024	-0.053 0.246 ***	0.194 ***	-0.007	-0.036 0.064	0.065	-0.215 ***	-0.004 0.035	0.169 **	-0.044	-0.023	-0.013

***Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.10 level (2-tailed). *Correlation is significant at the 0.15 level (2-tailed).

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. ABSDACCMJS-CF= Absolute discretionary accruals from the Modified Jones cash flow model. IAFALL= Dummy variable, 1 if internal audit function exist in the company or it has outsourced it, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidaries to total subsidaries. CRATIO= Current Ratio, Current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in sample. LNMKTCAP= The natural logarithm of year end market cap. MKTRET= Market adjusted stock return. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS chnage is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. TACF= Cash flow total accruals. ACQ= Number of acquisitions made in the sample year. FEERATIO= Percentage of the audit related fees from the total fees paid to the auditor. REPORTLAG=Days the auditors signed the audit report from fiscal year end. LNFEE= Natural logarithm of audit related fees. LNNONAUDFEE= Natural logarithm of fees paid to auditor not related to audit. ABSDACCJS-BS= Absolute discretionary accruals from the Jones balance sheet model. ABSDACCJS-CF= Absolute discretionary accruals from the Jones cash flow model. ABSDACCMJS-BS= Absolute discretionary accruals from the Modified Jones balance sheet model. ABSDACCJS-BS_ind= Absolute discretionary accruals from the Jones balance sheet industry model. ABSDACCJS-CF_ind= Absolute discretionary accruals from the Jones cash flow industry model. ABSDACCMJS-BS_ind= Absolute discretionary accruals from the Modified Jones balance sheet industry model. ABSDACCMJS-CF_ind= Absolute discretionary accruals from the Modified Jones cash flow industry model. NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter. IAF=

Appendix 1. Correlation matrix of regression variables (Pearson correlations above the diagonal, Spearman correlations below the diagonal), continued from the previous page

	ANALYSTS		LIABRATIO		TACF		FEERATIO		LNFEE		ABSDACCJS-BS		ABSDACCMJS-BS		ABSDACCJS-CF_ind		ABSDACCMJS-CF_ind		IAF		TABS
		FINEXP		LITI		ACQ		REPORTLAG		LNNONAUDFEE		ABSDACCJS-CF		ABSDACCJS-BS_ind		ABSDACCMJS-BS_ind		NPPN		IAFOUT	
LNFEEALL	0.770 ***	0.154 *	0.127	-0.207 ***	0.119	0.432 ***	0.148 *	-0.318 ***	0.973 ***	0.917 ***	-0.116	-0.150 *	-0.120	-0.068	-0.019	-0.058	-0.009	-0.039	0.597 ***	-0.085	0.080
ABSDACCMJS-CF	-0.123	0.213 ***	0.036	-0.043	-0.296 ***	-0.122	-0.013	0.211 ***	-0.162 **	-0.106	0.402 ***	0.983 ***	0.405 ***	0.199 ***	0.547 ***	0.207 ***	0.546 ***	0.065	-0.025	-0.108	-0.210 ***
IAFALL	0.516 ***	0.060	0.112	-0.012	0.174 **	0.301 ***	-0.071	-0.201 ***	0.540 ***	0.465 ***	-0.144 *	-0.085	-0.147 *	-0.056	-0.028	-0.097	-0.013	-0.092	0.875 ***	0.288 ***	0.057
COM	0.479 ***	0.112	0.215 ***	-0.096	0.123	0.307 ***	0.345 ***	-0.160 **	0.506 ***	0.535 ***	0.135	-0.031	0.102	0.203 ***	0.090	0.197 ***	0.113	-0.022	0.390 ***	-0.111	-0.101
LNASSETS	0.816 ***	0.017	0.153 *	-0.270 ***	0.172 **	0.338 ***	0.078	-0.300 ***	0.832 ***	0.711 ***	-0.110	-0.154 *	-0.130	-0.085	-0.009	-0.031	0.001	-0.097	0.700 ***	-0.122	0.016
SQRALLSUBS	0.668 ***	0.061	0.107	-0.181 **	0.139	0.421 ***	0.072	-0.324 ***	0.746 ***	0.670 ***	-0.080	-0.224 ***	-0.086	-0.089	-0.129	-0.085	-0.114	-0.020	0.576 ***	-0.128	0.085
FOREIGN	0.170 **	-0.031	-0.155 *	0.165 **	-0.073	0.099	-0.057	-0.236 ***	0.226 ***	0.235 ***	-0.074	0.005	-0.079	-0.039	-0.084	-0.146 *	-0.097	-0.306 ***	0.096	-0.004	-0.078
CRATIO	-0.153 *	-0.499 ***	-0.253 ***	0.239 ***	0.066	-0.158 *	0.071	0.159 *	-0.217 ***	-0.191 ***	0.021	0.093	0.036	-0.041	0.054	-0.076	0.061	0.030	-0.071	-0.108	0.155 *
INVREC	-0.069	0.093	-0.157 *	-0.095	0.339 ***	0.124	-0.184 **	-0.182 **	0.072	0.040	-0.177 **	0.127	-0.149 *	-0.196 ***	-0.003	-0.226 ***	-0.016	-0.054	0.029	0.016	0.163 **
SWITCH	0.002	-0.210 ***	-0.017	-0.001	0.092	-0.087	-0.061	-0.149 *	0.011	-0.098	-0.013	-0.218 ***	-0.008	0.035	-0.119	0.025	-0.137	-0.073	0.018	0.146 *	-0.066
FEERISK	0.376 ***	0.125	0.008	-0.171 **	0.021	0.174 **	-0.058	-0.256 ***	0.542 ***	0.415 ***	-0.059	-0.103	-0.052	0.004	0.040	0.024	0.047	-0.124	0.297 ***	-0.085	0.107
LNMKTCAP	0.823 ***	-0.136	0.133	-0.182 **	0.175 **	0.299 ***	0.140 *	-0.317 ***	0.743 ***	0.634 ***	-0.185 **	-0.200 ***	-0.205 ***	-0.178 **	-0.052	-0.090	-0.043	-0.075	0.639 ***	-0.208 ***	0.051
MKTRET	-0.201 ***	-0.270 ***	-0.097	0.201 ***	-0.031	-0.191 ***	-0.093	0.113	-0.298 ***	-0.309 ***	-0.075	-0.083	-0.093	0.046	0.012	0.022	-0.002	-0.054	-0.205 ***	-0.122	0.035
LOSS	-0.055	0.281 ***	0.004	-0.071	-0.327 ***	-0.075	-0.032	0.196 ***	0.099	0.101	0.176 **	0.317 ***	0.180 **	0.225 ***	0.272 ***	0.232 ***	0.281 ***	0.002	0.054	-0.057	-0.190 ***
OPCYCLE365	-0.010	-0.019	-0.151 *	0.085	0.051	-0.022	-0.198 ***	0.114	0.149 *	0.066	0.061	0.310 ***	0.062	0.017	0.068	-0.118	0.064	-0.155 *	0.083	-0.013	-0.015
SALESGPCG	-0.048	-0.103	0.110	-0.055	0.012	0.164 **	0.100	-0.044	-0.107	-0.056	-0.048	-0.232 ***	-0.085	0.049	0.064	0.163 **	0.056	0.217 ***	-0.056	0.120	-0.127
ZRATIO	-0.184 **	-0.272 ***	-0.233 ***	0.325 ***	-0.045	-0.120	0.190 **	0.240 ***	-0.261 ***	-0.179 **	0.095	0.075	0.098	0.034	-0.013	-0.005	-0.001	0.102	-0.160 *	-0.057	0.108
SMALLEPSCNG	-0.071	0.144 *	-0.211 ***	0.142 *	-0.167 **	-0.004	0.110	0.023	-0.170 **	-0.172 **	0.092	0.176 **	0.064	0.212 ***	0.161 **	0.227 ***	0.141 *	0.095	-0.267 ***	-0.135	-0.094
MAJ20	-0.034	0.128	-0.275 ***	-0.179 **	-0.135	-0.049	-0.168 **	0.141 *	0.066	-0.050	0.026	0.059	0.042	0.031	0.168 **	0.081	0.157 *	0.046	-0.077	0.050	0.060
BINDEPENDENT	0.300 ***	0.027	0.270 ***	-0.006	0.107	0.156 *	0.238 ***	-0.231 ***	0.165 **	0.148 *	0.043	-0.060	0.016	0.080	-0.007	0.054	0.005	0.045	0.140 *	-0.005	-0.007
ANALYSTS		-0.027	0.110	-0.089	0.081	0.330 ***	0.173 **	-0.375 ***	0.750 ***	0.662 ***	-0.132	-0.110	-0.149 *	-0.017	0.034	0.025	0.043	-0.084	0.590 ***	-0.124	-0.001
FINEXP	0.156 *		1.000 ***	0.079	-0.048	-0.011	0.262 ***	-0.094	0.103	0.134	0.150 *	0.019	0.152 *	0.137	0.060	0.089	0.058	0.096	0.022	0.182 **	-0.047
LIABRATIO	0.037	1.000 ***		-0.175 **	-0.040	0.138	-0.149 *	0.043	0.136	0.163 **	-0.011	0.215 ***	-0.028	0.102	0.057	0.091	0.061	0.197 ***	0.041	0.041	0.050
LITI	-0.093	-0.201 ***	0.073		-0.073	-0.147 *	0.031	-0.045	-0.202 ***	-0.181 **	-0.056	-0.028	-0.064	-0.009	-0.146 *	-0.151 *	-0.149 *	-0.059	-0.055	0.083	0.042
TACF	0.096	0.035	-0.103	-0.050		0.150 *	-0.033	-0.134	0.137	0.069	-0.320 ***	-0.323 ***	-0.307 ***	-0.242 ***	-0.196 ***	-0.274 ***	-0.210 ***	0.061	0.146 *	0.063	0.532 ***
ACQ	0.393 ***	0.222 ***	-0.017	-0.127	0.126		0.156 *	-0.150 *	0.412 ***	0.415 ***	-0.067	-0.129	-0.079	0.003	-0.016	0.047	-0.016	0.043	0.327 ***	-0.041	0.025
FEERATIO	0.267 ***	-0.076	0.256 ***	0.012	-0.054	0.260 ***		-0.104	-0.022	0.369 ***	0.204 ***	-0.013	0.198 ***	0.214 ***	0.209 ***	0.298 ***	0.213 ***	0.137	-0.046	-0.051	-0.102
REPORTLAG	-0.469 ***	0.006	-0.014	-0.054	-0.161 **	-0.103	-0.188 **		-0.306 ***	-0.292 ***	0.110	0.216 ***	0.102	0.123	0.189 **	0.095	0.187 **	0.136	-0.284 ***	0.157 *	-0.065
LNFEE	0.737 ***	0.317 ***	0.199 ***	-0.200 ***	0.157 *	0.308 ***	-0.004	-0.314 ***		0.810 ***	-0.156 *	-0.171 **	-0.155 *	-0.115	-0.071	-0.118	-0.065	-0.077	0.594 ***	-0.086	0.108
LNNONAUDFEE	0.758 ***	0.165 **	0.264 ***	-0.142 *	0.082	0.437 ***	0.611 ***	-0.400 ***	0.750 ***		-0.071	-0.111	-0.079	-0.012	0.042	0.005	0.055	0.014	0.513 ***	-0.077	0.042
ABSDACCJS-BS	-0.094	0.036	0.187 **	-0.041	-0.346 ***	-0.053	0.171 **	0.109	-0.064	0.060		0.418 ***	0.985 ***	0.669 ***	0.337 ***	0.682 ***	0.335 ***	0.124	-0.171 **	0.047	-0.585 ***
ABSDACCJS-CF	-0.065	0.195 ***	0.061	-0.013	-0.588 ***	-0.132	-0.006	0.140 *	-0.041	-0.040	0.463 ***		0.397 ***	0.285 ***	0.621 ***	0.290 ***	0.625 ***	0.057	-0.013	-0.144 *	-0.251 ***
ABSDACCMJS-BS	-0.120	-0.008	0.197 ***	-0.057	-0.323 ***	-0.075	0.174 **	0.086	-0.096	0.040	0.966 ***	0.428 ***		0.593 ***	0.267 ***	0.612 ***	0.264 ***	0.137	-0.193 ***	0.085	-0.540 ***
ABSDACCJS-BS_ind	0.041	0.107	0.116	-0.030	-0.349 ***	0.055	0.181 **	0.082	-0.008	0.099	0.733 ***	0.379 ***	0.667 ***		0.619 ***	0.896 ***	0.606 ***	0.115	-0.143 *	0.170 **	-0.458 ***
ABSDACCJS-CF_ind	0.021	0.087	0.097	-0.165 **	-0.488 ***	-0.035	0.059	0.169 **	0.063	0.072	0.440 ***	0.686 ***	0.378 ***	0.494 ***		0.685 ***	0.993 ***	0.129	0.020	-0.096	-0.229 ***
ABSDACCMJS-BS_ind	0.078	0.118	0.092	-0.171 **	-0.376 ***	0.070	0.198 ***	0.067	0.003	0.117	0.708 ***	0.445 ***	0.651 ***	0.904 ***	0.518 ***		0.682 ***	0.188 **	-0.106	0.014	-0.530 ***
ABSDACCMJS-CF_ind	0.007	0.102	0.090	-0.165 **	-0.484 ***	-0.050	0.050	0.128	0.072	0.078	0.458 ***	0.716 ***	0.396 ***	0.485 ***	0.979 ***	0.525 ***		0.150 *	0.041	-0.107	-0.233 ***
NPPN	-0.154 *	0.108	0.109	-0.059	0.052	-0.019	0.094	0.130	-0.079	0.005	0.084	0.119	0.116	0.060	0.070	0.111	0.083		-0.088	-0.012	0.198 ***
IAF	0.556 ***	0.108	0.029	-0.055	0.054	0.349 ***	-0.041	-0.320 ***	0.569 ***	0.438 ***	-0.164 **	-0.012	-0.195 ***	-0.154 *	0.053	-0.109	0.059	-0.088		-0.213 ***	0.048
IAFOUT	-0.102	0.075	0.170 **	0.083	0.106	0.014	-0.037	0.246 ***	0.022	-0.064	0.064	-0.155 *	0.116	0.114	-0.064	0.034	-0.084	-0.012	-0.213 ***		0.019
TABS	-0.002	0.016	-0.074	0.028	0.552 ***	-0.054	-0.088	-0.131	0.077	-0.003	-0.598 ***	-0.335 ***	-0.554 ***	-0.542 ***	-0.291 ***	-0.536 ***	-0.299 ***	0.230 ***	0.068	0.005	

***Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.10 level (2-tailed). *Correlation is significant at the 0.15 level (2-tailed).

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. ABSDACCMJS-CF= Absolute discretionary accruals from the Modified Jones cash flow model. IAFALL= Dummy variable, 1 if internal audit function exist in the company or it has outsourced it, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidaries to total subsidaries. CRATIO= Current Ratio, Current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in sample. LNMKTCAP= The natural logarithm of year end market cap. MKTRET= Market adjusted stock return. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS chnage is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. TACF= Cash flow total accruals. ACQ= Number of acquisitions made in the sample year. FEERATIO= Percentage of the audit related fees from the total fees paid to the auditor. REPORTLAG=Days the auditors signed the audit report from fiscal year end. LNFEE= Natural logarithm of audit related fees. LNNONAUDFEE= Natural logarithm of fees paid to auditor not related to audit. ABSDACCJS-BS= Absolute discretionary accruals from the Jones balance sheet model. ABSDACCJS-CF= Absolute discretionary accruals from the Jones cash flow model. ABSDACCMJS-BS= Absolute discretionary accruals from the Modified Jones balance sheet model. ABSDACCJS-BS_ind= Absolute discretionary accruals from the Jones balance sheet industry model. ABSDACCJS-CF_ind= Absolute discretionary accruals from the Jones cash flow industry model. ABSDACCMJS-BS_ind= Absolute discretionary accruals from the Modified Jones balance sheet industry model. ABSDACCMJS-CF_ind= Absolute discretionary accruals from the Modified Jones cash flow industry model. NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter. IAF= Dummy variable, 1 if company has an own internal audit function, 0 otherwise. IAFOUT= Dummy variable, 1 if internal audit function is outsourced, 0 otherwise.

Appendix 2 Detailed descriptive statistics of board, executive and audit committee data

Appendix 2 Detailed descriptive statistics of board, executive and audit committee data classified by OMX size category

OMX size category	Data item	Mean	Median	Std Dev	Min	Max
All (n=107)	Board size	6.084	6.000	1.518	3.000	10.000
	- of financially educated %	0.439	0.429	0.214	0.000	1.000
	- of independent %	0.680	0.667	0.241	0.167	1.000
	Executive group size	7.617	8.000	3.027	2.000	19.000
	- of financially educated %	0.410	0.400	0.184	0.000	0.833
	Board and exec. group size in total	13.701	14.000	3.842	5.000	26.000
	- of financially educated %	0.417	0.417	0.140	0.000	0.778
	AC size	1.505	0.000	1.622	0.000	5.000
	- of independent %	0.868	1.000	0.172	0.500	1.000
LARGE (n=25)	Board size	7.400	7.000	1.555	5.000	10.000
	- of financially educated %	0.432	0.429	0.173	0.143	0.800
	- of independent %	0.774	0.800	0.177	0.333	1.000
	Executive group size	9.520	9.000	2.931	5.000	19.000
	- of financially educated %	0.461	0.444	0.163	0.167	0.833
	Board and exec. group size in total	16.920	17.000	3.214	13.000	26.000
	- of financially educated %	0.438	0.444	0.108	0.214	0.588
	AC size	3.040	3.000	1.136	0.000	5.000
	- of independent %	0.841	0.750	0.160	0.600	1.000
MEDIUM (n=31)	Board size	6.258	6.000	0.893	5.000	8.000
	- of financially educated %	0.491	0.500	0.208	0.000	0.857
	- of independent %	0.699	0.800	0.289	0.167	1.000
	Executive group size	8.452	8.000	2.656	3.000	15.000
	- of financially educated %	0.408	0.400	0.190	0.000	0.800
	Board and exec. group size in total	14.710	15.000	2.866	9.000	21.000
	- of financially educated %	0.434	0.438	0.138	0.182	0.733
	AC size	1.419	0.000	1.544	0.000	4.000
	- of independent %	0.906	1.000	0.169	0.500	1.000
SMALL (n=51)	Board size	5.333	5.000	1.337	3.000	8.000
	- of financially educated %	0.411	0.400	0.233	0.000	1.000
	- of independent %	0.622	0.600	0.224	0.167	1.000
	Executive group size	6.176	6.000	2.590	2.000	15.000
	- of financially educated %	0.387	0.375	0.190	0.000	0.750
	Board and exec. group size in total	11.510	11.000	3.270	5.000	22.000
	- of financially educated %	0.396	0.364	0.154	0.000	0.778
	AC size	0.804	0.000	1.357	0.000	5.000
	- of independent %	0.872	1.000	0.196	0.500	1.000

Appendix 3 Detailed descriptive statistics of variables classified by OMX size category

Appendix 3.1 Descriptive statistics of regression variables in Large OMX size category (n=25)

Variable	Mean	Median	Min	Max	Std Dev	Std Error	Sum	Skewness	Kurtosis
LNFEEALL	1.168	1.065	0.284	1.887	0.446	0.089	29.200	-0.100	2.040
ABSDACCMJS-CF	0.049	0.039	0.004	0.147	0.042	0.008	1.219	1.070	3.000
IAFALL	0.960	1.000	0.000	1.000	0.200	0.040	24.000	-4.695	23.042
COM	0.880	1.000	0.000	1.000	0.332	0.066	22.000	-2.339	6.470
LNASSETS	7.934	7.986	6.353	10.036	1.048	0.210	198.343	0.362	2.429
SQRALLSUBS	8.147	8.660	2.828	12.288	2.842	0.568	203.667	-0.192	1.803
FOREIGN	0.681	0.755	0.114	0.929	0.215	0.043	17.021	-1.142	3.472
CRATIO	1.589	1.397	0.515	3.744	0.741	0.148	39.735	1.465	5.016
INVREC	0.363	0.336	0.078	0.736	0.181	0.036	9.080	0.539	2.561
SWITCH	0.120	0.000	0.000	1.000	0.332	0.066	3.000	2.339	6.470
FEERISK	0.111	0.088	0.008	0.690	0.136	0.027	2.776	3.265	14.344
LNMKTCAP	7.283	7.300	6.111	9.673	0.994	0.199	182.077	0.882	3.134
MKTRET	-0.008	-0.010	-0.240	0.290	0.131	0.026	-0.200	0.237	2.630
LOSS	0.160	0.000	0.000	1.000	0.374	0.075	4.000	1.855	4.440
OPCYCLE365	140.050	131.866	40.854	278.097	64.294	12.859	3 501.251	0.642	2.488
SALESGPCG	0.057	0.053	-0.222	0.344	0.145	0.029	1.434	-0.106	2.559
ZRATIO	147.509	151.247	93.561	186.502	25.166	5.033	3687.731	-0.158	2.117
SMALLEPSCNG	0.080	0.000	0.000	1.000	0.277	0.055	2.000	3.096	10.587
MAJ20	0.400	0.000	0.000	1.000	0.500	0.100	10.000	0.408	1.167
BINDEPENDENT	0.774	0.800	0.333	1.000	0.177	0.035	19.346	-0.571	2.785
ANALYSTS	15.680	15.000	0.000	29.000	6.927	1.385	392.000	-0.019	3.062
FINEXP	0.437	0.440	0.210	0.590	0.109	0.022	10.930	-0.481	2.260
LIABRATIO	0.573	0.585	0.339	0.743	0.111	0.022	14.326	-0.194	2.245
LITI	0.120	0.000	0.000	1.000	0.332	0.066	3.000	2.339	6.470
TACF	-0.026	-0.026	-0.131	0.107	0.061	0.012	-0.653	0.079	2.390
ACQ	1.920	1.000	0.000	10.000	2.722	0.544	48.000	1.831	5.610
FEERATIO	0.393	0.382	0.061	0.803	0.166	0.033	9.828	0.110	3.101
REPORTLAG	37.600	36.000	23.000	56.000	6.238	1.248	940.000	0.542	4.978
Variables used in the additional analysis									
LNFEE	0.853	0.833	0.176	1.655	0.389	0.078	21.313	0.142	2.390
LNNONAUDFEE	0.629	0.588	0.077	1.361	0.363	0.073	15.736	0.413	2.284
ABSDACCJS-BS	0.061	0.046	0.003	0.216	0.052	0.010	1.517	1.235	4.358
ABSDACCJS-CF	0.049	0.038	0.002	0.137	0.041	0.008	1.232	0.860	2.502
ABSDACCMJS-BS	0.059	0.042	0.001	0.230	0.055	0.011	1.482	1.403	4.757
ABSDACCJS-BS_ind	0.077	0.058	0.007	0.436	0.086	0.017	1.916	3.074	13.371
ABSDACCJS-CF_ind	0.069	0.045	0.001	0.460	0.090	0.018	1.737	3.474	15.783
ABSDACCMJS-BS_ind	0.075	0.060	0.001	0.512	0.100	0.020	1.885	3.503	15.885
ABSDACCMJS-CF_ind	0.073	0.046	0.005	0.490	0.095	0.019	1.813	3.567	16.276
NPPN	0.160	0.000	0.000	1.000	0.374	0.075	4.000	1.855	4.440
IAF	0.960	1.000	0.000	1.000	0.200	0.040	24.000	-4.695	23.042
IAFOUT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
TABS	-0.030	-0.037	-0.157	0.213	0.076	0.015	-0.747	1.373	5.671

Appendix 3.2 Descriptive statistics of regression variables in Medium OMX size category (n=31)

Variable	Mean	Median	Min	Max	Std Dev	Std Error	Sum	Skewness	Kurtosis
LNFEEALL	0.420	0.291	0.053	1.606	0.364	0.065	13.026	1.727	5.606
ABSDACCMJS-CF	0.070	0.050	0.008	0.356	0.067	0.012	2.177	2.757	11.923
IAFALL	0.419	0.000	0.000	1.000	0.502	0.090	13.000	0.327	1.107
COM	0.516	1.000	0.000	1.000	0.508	0.091	16.000	-0.065	1.004
LNASSETS	6.027	5.941	3.797	8.412	1.180	0.212	186.825	0.009	2.088
SQRALLSUBS	4.500	4.243	2.000	10.050	1.714	0.308	139.512	1.144	4.810
FOREIGN	0.566	0.625	0.000	1.000	0.319	0.057	17.537	-0.411	1.978
CRATIO	1.554	1.209	0.442	4.709	0.969	0.174	48.183	1.624	5.426
INVREC	0.337	0.306	0.040	0.913	0.208	0.037	10.456	0.776	3.197
SWITCH	0.065	0.000	0.000	1.000	0.250	0.045	2.000	3.545	13.569
FEERISK	0.032	0.016	0.003	0.122	0.034	0.006	0.983	1.390	3.700
LNMKTCAP	5.344	5.422	4.269	6.437	0.577	0.104	165.676	-0.191	2.050
MKTRET	0.041	0.020	-0.250	0.510	0.181	0.032	1.280	0.384	2.634
LOSS	0.194	0.000	0.000	1.000	0.402	0.072	6.000	1.551	3.407
OPCYCLE365	117.661	108.915	29.720	282.685	69.064	12.404	3 647.484	0.722	2.711
SALESGPCG	0.069	0.073	-0.271	0.344	0.112	0.020	2.137	-0.293	4.831
ZRATIO	144.941	151.980	62.748	188.924	34.221	6.146	4493.166	-0.931	3.151
SMALLEPSCNG	0.194	0.000	0.000	1.000	0.402	0.072	6.000	1.551	3.407
MAJ20	0.452	0.000	0.000	1.000	0.506	0.091	14.000	0.194	1.038
BINDEPENDENT	0.699	0.800	0.167	1.000	0.289	0.052	21.664	-0.479	1.881
ANALYSTS	6.548	7.000	0.000	15.000	3.623	0.651	203.000	-0.077	2.750
FINEXP	0.434	0.440	0.180	0.730	0.137	0.025	13.450	0.100	2.668
LIABRATIO	0.565	0.609	0.192	0.765	0.150	0.027	17.521	-0.999	3.241
LITI	0.097	0.000	0.000	1.000	0.301	0.054	3.000	2.728	8.440
TACF	-0.026	-0.044	-0.183	0.360	0.101	0.018	-0.815	1.879	8.430
ACQ	0.710	0.000	0.000	7.000	1.395	0.251	22.000	3.227	14.582
FEERATIO	0.346	0.351	0.029	0.759	0.205	0.037	10.721	0.141	2.185
REPORTLAG	43.290	42.000	29.000	58.000	7.435	1.335	1 342.000	0.680	2.849
Variables used in the additional analysis									
LNFEE	0.297	0.166	0.025	1.065	0.279	0.050	9.211	1.510	4.339
LNNONAUDFEE	0.182	0.095	0.007	1.192	0.240	0.043	5.634	2.691	11.235
ABSDACCJS-BS	0.085	0.068	0.001	0.302	0.076	0.014	2.641	1.100	3.648
ABSDACCJS-CF	0.073	0.053	0.013	0.360	0.070	0.012	2.253	2.521	10.543
ABSDACCMJS-BS	0.082	0.065	0.006	0.268	0.070	0.013	2.533	0.916	3.023
ABSDACCJS-BS_ind	0.110	0.081	0.000	0.392	0.097	0.017	3.424	0.971	3.431
ABSDACCJS-CF_ind	0.089	0.061	0.005	0.370	0.086	0.015	2.770	1.438	4.926
ABSDACCMJS-BS_ind	0.111	0.093	0.007	0.382	0.095	0.017	3.429	0.951	3.357
ABSDACCMJS-CF_ind	0.087	0.059	0.007	0.369	0.087	0.016	2.710	1.432	4.701
NPPN	0.161	0.000	0.000	1.000	0.374	0.067	5.000	1.842	4.392
IAF	0.387	0.000	0.000	1.000	0.495	0.089	12.000	0.464	1.215
IAFOUT	0.032	0.000	0.000	1.000	0.180	0.032	1.000	5.295	29.033
TABS	-0.084	-0.072	-0.344	0.112	0.091	0.016	-2.603	-0.751	4.061

Appendix 3.3 Descriptive statistics of regression variables in Small OMX size category (n=51)

Variable	Mean	Median	Min	Max	Std Dev	Std Error	Sum	Skewness	Kurtosis
LNFEEALL	0.150	0.120	0.024	0.956	0.146	0.020	7.668	3.642	19.659
ABSDACCMJS-CF	0.075	0.052	0.000	0.347	0.069	0.010	3.840	1.817	7.098
IAFALL	0.235	0.000	0.000	1.000	0.428	0.060	12.000	1.248	2.558
COM	0.294	0.000	0.000	1.000	0.460	0.064	15.000	0.904	1.817
LNASSETS	4.017	4.027	1.363	6.827	1.019	0.143	204.875	-0.053	3.651
SQRALLSUBS	2.987	2.828	1.414	5.831	1.121	0.157	152.356	0.395	2.363
FOREIGN	0.551	0.500	0.000	1.000	0.274	0.038	28.112	-0.380	2.593
CRATIO	1.918	1.549	0.417	5.247	1.166	0.163	97.836	1.233	3.977
INVREC	0.365	0.351	0.023	0.707	0.178	0.025	18.615	0.093	2.092
SWITCH	0.137	0.000	0.000	1.000	0.348	0.049	7.000	2.108	5.445
FEERISK	0.024	0.006	0.001	0.569	0.080	0.011	1.241	6.384	43.833
LNMKTCAP	3.254	3.340	0.944	4.958	0.870	0.122	165.964	-0.547	3.204
MKTRET	0.109	0.100	-0.240	0.650	0.212	0.030	5.560	0.677	3.000
LOSS	0.294	0.000	0.000	1.000	0.460	0.064	15.000	0.904	1.817
OPCYCLE365	121.987	106.656	22.541	365.000	70.215	9.832	6 221.353	1.690	6.605
SALESGPCG	0.048	0.050	-0.513	0.830	0.233	0.033	2.456	0.673	5.125
ZRATIO	137.909	140.231	-16.061	453.133	64.763	9.069	7033.368	1.947	12.491
SMALLEPSCNG	0.275	0.000	0.000	1.000	0.451	0.063	14.000	1.011	2.021
MAJ20	0.529	1.000	0.000	1.000	0.504	0.071	27.000	-0.118	1.014
BINDEPENDENT	0.622	0.600	0.167	1.000	0.224	0.031	31.746	0.100	2.284
ANALYSTS	2.412	2.000	0.000	8.000	2.410	0.337	123.000	0.685	2.417
FINEXP	0.396	0.360	0.000	0.780	0.155	0.022	20.200	0.136	2.913
LIABRATIO	0.560	0.556	0.175	1.909	0.270	0.038	28.578	2.387	13.243
LITI	0.235	0.000	0.000	1.000	0.428	0.060	12.000	1.248	2.558
TACF	-0.066	-0.046	-0.342	0.129	0.080	0.011	-3.346	-0.919	5.192
ACQ	0.373	0.000	0.000	4.000	0.799	0.112	19.000	2.799	11.516
FEERATIO	0.340	0.300	0.000	0.777	0.225	0.031	17.329	0.450	2.186
REPORTLAG	47.392	43.000	22.000	90.000	14.886	2.085	2 417.000	1.243	4.461
Variables used in the additional analysis									
LNFEE	0.095	0.068	0.015	0.589	0.095	0.013	4.855	3.444	16.907
LNNONAUDFEE	0.064	0.035	0.000	0.587	0.093	0.013	3.283	3.835	21.000
ABSDACCJS-BS	0.099	0.071	0.005	0.430	0.092	0.013	5.043	1.710	5.902
ABSDACCJS-CF	0.075	0.052	0.000	0.348	0.070	0.010	3.834	1.733	6.690
ABSDACCMJS-BS	0.100	0.071	0.007	0.422	0.092	0.013	5.103	1.660	5.539
ABSDACCJS-BS_ind	0.120	0.083	0.005	0.609	0.130	0.018	6.143	2.175	7.694
ABSDACCJS-CF_ind	0.081	0.056	0.001	0.544	0.091	0.013	4.142	3.076	14.862
ABSDACCMJS-BS_ind	0.108	0.085	0.001	0.649	0.119	0.017	5.525	2.400	10.353
ABSDACCMJS-CF_ind	0.081	0.054	0.000	0.531	0.091	0.013	4.150	2.868	13.367
NPPN	0.157	0.000	0.000	1.000	0.367	0.051	8.000	1.887	4.561
IAF	0.118	0.000	0.000	1.000	0.325	0.046	6.000	2.373	6.633
IAFOUT	0.118	0.000	0.000	1.000	0.325	0.046	6.000	2.373	6.633
TABS	-0.065	-0.056	-0.434	0.208	0.125	0.017	-3.323	-0.476	4.049

Appendix 4 Descriptive statistics of the regression variables used in the additional analyses

Appendix 4 Descriptive statistics of the regression variables used in the additional analyses									
Variable (set)	**Mean**	**Median**	**Min**	**Max**	**Std Dev**	**Std Error**	**Sum**	**Skewness**	**Kurtosis**
FEE (Audit fee variables)									
LNFEE	0.331	0.128	0.015	1.655	0.390	0.038	35.379	1.496	4.278
LNNONAUDFEE	0.230	0.091	0.000	1.361	0.319	0.031	24.653	1.865	5.786
DACC (Earnings management variables)									
ABSDACCJS-BS	0.086	0.066	0.001	0.430	0.080	0.008	9.201	1.735	6.538
ABSDACCJS-CF	0.068	0.048	0.000	0.360	0.065	0.006	7.319	2.111	8.983
ABSDACCMJS-BS	0.085	0.061	0.001	0.422	0.080	0.008	9.118	1.684	6.247
ABSDACCJS-BS_ind	0.107	0.072	0.000	0.609	0.113	0.011	11.483	2.195	8.541
ABSDACCJS-CF_ind	0.081	0.056	0.001	0.544	0.088	0.009	8.649	2.720	12.314
ABSDACCMJS-BS_ind	0.101	0.071	0.001	0.649	0.108	0.010	10.840	2.320	10.110
ABSDACCMJS-CF_ind	0.081	0.052	0.000	0.531	0.090	0.009	8.673	2.665	11.801
NPPN	0.159	0.000	0.000	1.000	0.367	0.036	17.000	1.866	4.483
CGHYPOTHESIS (Hypothesis variables)									
IAF	0.393	0.000	0.000	1.000	0.491	0.047	42.000	0.440	1.194
IAFOUT	0.065	0.000	0.000	1.000	0.248	0.024	7.000	3.515	13.356
EMINSTRUMENTALS (Variables used as instrumentals in the audit fee 2SLS model)									
TABS	-0.062	-0.047	-0.434	0.213	0.107	0.010	-6.672	-0.441	4.845

The variables are defined as follows:

LNFEE= Natural logarithm of audit related fees. LNNONAUDFEE= Natural logarithm of fees paid to auditor not related to audit. ABSDACCJS-BS= Absolute discretionary accruals from the Jones balance sheet model. ABSDACCJS-CF= Absolute discretionary accruals from the Jones cash flow model. ABSDACCMJS-BS= Absolute discretionary accruals from the Modified Jones balance sheet model. ABSDACCJS-BS_ind= Absolute discretionary accruals from the Jones balance sheet industry model. ABSDACCJS-CF_ind= Absolute discretionary accruals from the Jones cash flow industry model. ABSDACCMJS-BS_ind= Absolute discretionary accruals from the Modified Jones balance sheet industry model. ABSDACCMJS-CF_ind= Absolute discretionary accruals from the Modified Jones cash flow industry model. NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter. IAF= Dummy variable, 1 if company has an own internal audit function, 0 otherwise. IAFOUT= Dummy variable, 1 if internal audit function is outsourced, 0 otherwise. TABS= Balance sheet total accruals.

Appendix 5 Results from the audit fee models with the earnings reversal dummy

Appendix 5.1 Results from the audit fee OLS models with the NPPN as the EM indicator (n=107)

Model	**FEECONTROLS**			**FEECONTROLS + CGEXOGEGNOUS**			**FEECONTROLS + CGEXOGENOUS+ CGINSTRUMENTALS**			**FEECONTROLS + CGEXOGENOUS+ CGINSTRUMENTALS+ EMINSTRUMENTALS**		
Equation	**Eq.6**			**Eq.7**			**Eq.8**			**Eq.18**		
Dependent variable	***LNFEALL***			***LNFEEALL***			***LNFEEALL***			***LNFEEALL***		
	Coeff.	t-value		Coeff.	t-value		Coeff.	t-value		Coeff.	t-value	
Intercept	-0.764	-6.750	***	-0.695	-5.240	***	-0.710	-3.300	***	-0.671	-3.050	***
Hypothesis variables												
IAFALL	0.026	0.440		0.024	0.390		0.010	0.170		-0.004	-0.070	
COM	0.176	3.160	***	0.202	3.500	***	0.177	3.000	***	0.170	2.830	***
NPPN	0.114	1.690	**	0.121	1.780	**	0.094	1.330		0.076	1.080	
FEECONTROLS												
LNASSETS	0.139	6.340	***	0.141	6.420	***	0.104	3.730	***	0.108	3.860	***
SQRALLSUBS	0.031	2.310	***	0.032	2.340	***	0.029	2.130	***	0.023	1.650	*
FOREIGN	0.242	2.540	***	0.250	2.590	***	0.214	2.190	***	0.230	2.330	***
CRATIO	-0.032	-1.360		-0.035	-1.480	*	-0.013	-0.440		-0.016	-0.530	
INVREC	0.245	1.890	**	0.248	1.920	**	0.260	1.990	***	0.206	1.540	*
SWITCH	-0.087	-1.180		-0.069	-0.930		-0.040	-0.520		-0.021	-0.270	
FEERISK	0.761	2.620	***	0.735	2.490	***	0.702	2.380	***	0.668	2.270	***
CGEXOGENOUS												
MAJ20				0.022	0.440		0.017	0.330		0.018	0.360	
BINDEPENDENT				-0.152	-1.400		-0.215	-1.980	**	-0.227	-2.100	***
CGINSTRUMENTALS												
ANALYSTS							0.017	2.730	***	0.016	2.680	***
LIABRATIO							0.175	1.190		0.164	1.120	
FINEXP							0.149	0.790		0.177	0.950	
LITI							-0.002	-0.030		-0.001	-0.020	
EMINSTRUMENTALS												
TABS										0.253	1.100	
ACQ										0.022	1.470	*
R^2	0.804			0.809			0.826			0.833		
Adjusted R^2	0.783			0.785			0.795			0.798		
F-value	39.310	***		33.230	***		26.740	***		24.300	***	

Significances for F-values: ***significant at the 0.05 level. **significant at the 0.10 level. *significant at the 0.15 level.

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter, 0 otherwise. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidiaries to total subsidiaries. CRATIO= Current Ratio, Current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in the sample. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. TABS= Balance sheet total accruals. ACQ= Number of acquisitions made.

Appendix 5.2 Results from the 2SLS audit fee models, where the NPPN is exogenous in the 2SLS

Model	**First-stage**						**Second-stage**		
Equation	**Eq.9**			**Eq.10**			**Eq.11**		
Dependent variable	***IAFALL***			***COM***			***LNFEEALL***		
	Coeff.	t-value		Coeff.	t-value		Coeff.	t-value	
Intercept	-0.939	-2.790	***	-1.076	-3.100	***	-0.585	-3.370	***
Hypothesis variables									
IAFALL							0.017	0.070	
COM							0.457	1.930	**
NPPN	-0.094	-0.780		-0.112	-0.910		0.121	1.700	**
FEECONTROLS									
LNASSETS	0.179	4.230	***	0.117	2.680	***	0.109	2.740	***
SQRALLSUBS	0.025	1.080		0.017	0.730		0.029	1.960	***
FOREIGN	-0.135	-0.810		-0.083	-0.480		0.258	2.590	***
CRATIO	0.028	0.570		0.118	2.290	***	-0.042	-1.680	**
INVREC	0.243	1.100		-0.353	-1.550	*	0.330	1.960	***
SWITCH	0.216	1.680	**	0.163	1.230		-0.085	-1.010	
FEERISK	-0.549	-1.100		-0.640	-1.250		0.841	2.620	***
CGEXOGENOUS									
MAJ20	0.045	0.510		-0.048	-0.540		0.036	0.680	
BINDEPENDENT	-0.064	-0.350		0.375	1.990	***	-0.266	-1.690	**
CGINSTRUMENTALS									
ANALYSTS	-0.003	-0.300		0.005	0.430				
LIABRATIO	0.350	1.460	*	0.699	2.830	***			
FINEXP	0.130	0.410		0.457	1.390				
LITI	0.279	2.350	***	-0.009	-0.080				
R^2	0.460			0.431			0.770		
F-value	5.600	***		4.980	***		27.040	***	
Partial R^2	0.078			0.086					
Partial F-value	1.950			2.180					
Weak IV (G-D Wald F)							0.924, CritF(0.05)=11.0		
Over-id. test (Sargan)							6.129, Chi-sq(2)=0.047		
Endogeneity test (DWH)							2.106, Chi-sq(2)=0.349		

Significances for t- and F-values: ***sig. at the 0.05 level. **sig. at the 0.10 level. *sig. at the 0.15 level.

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter, 0 otherwise. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidiaries to total subsidiaries. CRATIO= Current Ratio, Current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in the sample. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise.

Appendix 5.3 Results from the 2SLS audit fee models, where the NPPN is endogenous in the 2SLS

Model	**First-stage**									**Second-stage**		
Equation	**Eq.19**			**Eq.20**			**Eq.21**			**Eq.22**		
Dependent variable	***IAFALL***			***COM***			***NPPN***			***LNFEEALL***		
	Coeff.	t-value		Coeff.	t-value		Coeff.	t-value		Coeff.	t-value	
Intercept	-0.875	-2.540	***	-1.142	-3.270	***	-0.224	-0.750		-0.697	-3.250	***
Hypothesis variables												
IAFALL										0.139	0.590	
COM										0.209	0.950	
NPPN										0.371	1.400	
FEECONTROLS												
LNASSETS	0.184	4.360	***	0.122	2.860	***	-0.040	-1.100		0.132	2.730	***
SQRALLSUBS	0.014	0.580		0.009	0.360		0.032	1.570	*	0.020	1.270	
FOREIGN	-0.079	-0.490		-0.083	-0.510		-0.436	-3.120	***	0.374	2.390	***
CRATIO	0.017	0.350		0.126	2.520	***	0.099	2.310	***	-0.045	-1.760	**
INVREC	0.197	0.870		-0.325	-1.410		-0.049	-0.250		0.214	1.310	
SWITCH	0.229	1.780	**	0.169	1.300		0.030	0.270		-0.071	-0.800	
FEERISK	-0.473	-0.960		-0.462	-0.920		-0.700	-1.640	*	0.919	2.880	***
CGEXOGENOUS												
MAJ20	0.041	0.470		-0.037	-0.420		0.082	1.090		-0.001	-0.010	
BINDEPENDENT	-0.094	-0.510		0.349	1.890	**	0.116	0.740		-0.199	-1.420	
CGINSTRUMENTALS												
ANALYSTS	-0.004	-0.400		0.003	0.240		0.002	0.250				
LIABRATIO	0.271	1.170		0.650	2.780	***	0.554	2.770	***			
FINEXP	0.121	0.380		0.463	1.450		0.397	1.450	*			
LITI	0.287	2.400	***	0.026	0.210		-0.046	-0.440				
EMINSTRUMENTALS												
TABS	0.088	0.220		-0.605	-1.540	*	0.426	1.260				
ACQ	0.031	1.200		0.043	1.660	*	0.012	0.530				
R^2	0.465			0.457			0.258			0.775		
F-value	5.280	***		5.110	***		2.100	***		27.860	***	
Partial R^2	0.088			0.128			0.114					
Partial F-value	1.470			2.230			1.940	***				
Weak IV (G-D Wald F)										0.704, CritF(0.05)=12.2		
Over-id. test (Sargan)										7.957, Chi-sq(3)=0.047		
Endogeneity test (DWH)										3.701, Chi-sq(3)=0.296		

Significances for t- and F-values: ***sig. at the 0.05 level. **sig. at the 0.10 level. *sig. at the 0.15 level.

The variables are defined as follows:

LNFEEALL= Natural logarithm of all audit fees. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter. LNASSETS= Natural logarithm of total assets. SQRALLSUBS= Square root of total subsidiaries. FOREIGN= The ratio of foreign subsidiaries to total subsidiaries. CRATIO= Current Ratio, Current assets divided to current liabilities. INVREC= Inventories and receivables divided by total assets. SWITCH= Dummy variable, 1 if auditor has been changed from the last year. FEERISK= Percentage of audit fees of the particular audit firm's total revenue in the sample. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. TABS= Balance sheet total accruals. ACQ= Number of acquisitions made.

Appendix 5.4 Results from the earnings management probit models (n=107)

Model	**EMCONTROLS**			**EMCONTROLS + CGEXOGEGNOUS**			**EMCONTROLS + CGEXOGENOUS+ CGINSTRUMENTALS**			**EMCONTROLS + CGEXOGENOUS+ CGINSTRUMENTALS+ FEEINSTRUMENTALS**		
Equation	**Eq.12**			**Eq.13**			**Eq.14**			**Eq.23**		
Dependent variable	***NPPN***			***NPPN***			***NPPN***			***NPPN***		
	Coeff.	z-value		Coeff.	z-value		Coeff.	z-value		Coeff.	z-value	
Intercept	-0.985	-1.300		-1.485	-1.580	*	-4.710	-2.580	***	-5.543	-2.700	***
Hypothesis variables												
IAFALL	-0.284	-0.660		-0.281	-0.650		-0.180	-0.400		-0.155	-0.330	
COM	-0.196	-0.480		-0.305	-0.690		-0.358	-0.780		-0.430	-0.900	
LNFEEALL	0.646	1.070		0.742	1.190		0.350	0.510		0.514	0.690	
EMCONTROLS												
LNMKTCAP	-0.103	-0.640		-0.132	-0.810		-0.109	-0.510		-0.112	-0.500	
MKTRET	-1.426	-1.410		-1.337	-1.260		-0.170	-0.140		-0.273	-0.230	
LOSS	-0.052	-0.110		-0.054	-0.110		-0.518	-0.960		-0.620	-1.110	
OPCYCLE365	-0.004	-1.500	*	-0.005	-1.550	*	-0.003	-1.010		-0.004	-1.090	
SALESGPCG	2.331	2.380	***	2.313	2.350	***	2.646	2.450	***	2.565	2.330	***
ZRATIO	0.151	1.820	**	0.169	1.940	**	0.312	2.640	***	0.294	2.290	***
SMALLEPSCNG	0.256	0.590		0.185	0.420		-0.158	-0.280		-0.100	-0.170	
CGEXEGENOUS												
MAJ20				0.128	0.360		0.185	0.480		0.170	0.430	
BINDEPENDENT				0.812	1.040		0.381	0.460		0.564	0.660	
CGINSTRUMENTALS												
ANALYSTS							0.018	0.360		0.018	0.350	
LIABRATIO							2.724	1.930	**	2.636	1.920	**
FINEXP							2.676	1.720	**	2.490	1.580	*
LITI							-0.541	-1.010		-0.411	-0.750	
FEEINSTRUMENTALS												
FEERATIO										0.232	0.210	
REPORTLAG										0.019	1.060	
Log likelihood	-39.944			-39.391			-35.464			-34.859		
Likelihood Ratio	13.800			14.910			22.760	*		23.970		
Pseudo R^2	0.147			0.159			0.243			0.256		

Significances for z- and LR-values: ***sig. at the 0.05 level. **sig. at the 0.10 level. *sig. at the 0.15 level.

The variables are defined as follows:

NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNFEEALL= Natural logarithm of all audit fees. LNMKTCAP= The natural logarithm of year end market cap. MKTRET= Market adjusted stock return. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS change is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. FEERATIO= Percentage of the audit related fees from the total fees paid to the auditor. REPORTLAG=Days the auditors signed the audit report from fiscal year end.

Appendix 5.5 Results from the Two-stage probit EM models, where the LNFEEALL is exogenous (n=107)

Model	**First-stage (OLS)**						**Second-stage**	
Equation	**Eq.15**			**Eq.16**			**Eq.17**	
Dependent variable	***IAFALL***			***COM***			***NPPN***	
	Coeff.	t-value		Coeff.	t-value		Coeff.	z-value
Intercept	-0.109	-0.320		-0.408	-1.220		-0.151	-0.070
Hypothesis variables								
IAFALL							1.337	0.370
COM							7.904	1.120
LNFEEALL	0.121	0.780		0.454	2.990	***	-3.504	-0.890
EMCONTROLS								
LNMKTCAP	0.080	1.730	**	0.015	0.340		-0.443	-0.840
MKTRET	-0.169	-0.680		-0.213	-0.870		1.441	0.460
LOSS	0.121	1.130		0.104	0.990		-1.431	-0.950
OPCYCLE365	0.001	0.840		-0.001	-0.930		0.001	0.070
SALESGPCG	0.260	1.100		-0.135	-0.580		3.236	1.410
ZRATIO	-0.012	-0.510		0.046	2.040	***	-0.099	-0.330
SMALLEPSCNG	-0.353	-3.060	***	0.123	1.090		-0.433	-0.310
CGEXOGENOUS								
MAJ20	-0.025	-0.290		-0.133	-1.520	*	1.380	1.020
BINDEPENDENT	-0.055	-0.290		0.398	2.170	***	-2.900	-0.820
CGINSTRUMENTALS								
ANALYSTS	0.013	1.130		0.002	0.180			
LIABRATIO	0.265	1.130		0.104	0.450			
FINEXP	-0.175	-0.540		0.423	1.330			
LITI	0.237	1.970	**	-0.086	-0.730			
Adjusted R^2	0.353			0.376				
F-value	5.130	***		5.570	***		4.010, Chi-sq(12)=0.983	
Partial R^2	0.072			0.023				
Partial F-value	1.797	*		0.532				
Weak IV (G-D Wald F)							0.430, CritF(0.05)=11.04	
Over-id. test (A-L-N)							0.634, Chi-sq(2)= 0.728	
Exogeneity test (Wald)							4.720, Chi-sq(2)= 0.094	

Significances for t-values, z-values and F-values: ***sig at the 0.05 level. **sig at the 0.10 level. *sig at the 0.15 level.

The variables are defined as follows:

NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNFEEALL= Natural logarithm of all audit fees. LNMKTCAP= The natural logarithm of year end market cap. MKTRET= Market adjusted stock return. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS change is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise.

Appendix 5.6 Results from the Two-stage probit EM models, where the LNFEEALL is endogenous (n=107)

Model	**First-stage (OLS)**									**Second-stage**	
Equation	**Eq.24**			**Eq.25**			**Eq.26**			**Eq.27**	
Dependent variable	***IAFALL***			***COM***			***LNFEEALL***			***NPPN***	
	Coeff.	t-value		Coeff.	t-value		Coeff.	t-value		Coeff.	z-value
Intercept	-0.099	-0.280		-0.763	-2.120	***	-0.478	-2.040	***	-0.988	-0.530
Hypothesis variables											
IAFALL										2.475	0.650
COM										5.735	1.050
LNFEEALL										-3.801	-0.680
EMCONTROLS											
LNMKTCAP	0.092	2.210	***	0.083	1.970	**	0.136	4.990	***	-0.276	-0.530
MKTRET	-0.253	-1.010		-0.219	-0.860		-0.158	-0.960		0.576	0.250
LOSS	0.137	1.310		0.192	1.830	**	0.187	2.720	***	-1.039	-0.920
OPCYCLE365	0.000	0.770		0.000	0.270		0.001	2.960	***	0.000	-0.050
SALESGPCG	0.280	1.180		-0.194	-0.810		-0.053	-0.340		2.523	1.360
ZRATIO	-0.004	-0.180		0.022	0.880		-0.022	-1.390		-0.053	-0.190
SMALLEPSCNG	-0.335	-2.850	***	0.047	0.390		-0.100	-1.300		0.135	0.120
CGEXOGENOUS											
MAJ20	-0.035	-0.390		-0.113	-1.250		0.020	0.340		1.131	1.000
BINDEPENDENT	-0.053	-0.280		0.267	1.420		-0.227	-1.850	**	-1.942	-0.680
CGINSTRUMENTALS											
ANALYSTS	0.018	1.620	*	0.011	1.000		0.024	3.250	***		
LIABRATIO	0.277	1.200		0.339	1.460	*	0.431	2.840	***		
FINEXP	-0.048	-0.150		0.286	0.850		0.039	0.180			
LITI	0.215	1.760	**	-0.064	-0.520		-0.017	-0.210			
FEEINSTRUMENTALS											
FEERATIO	-0.282	-1.250		0.527	2.310	***	0.315	2.120	***		
REPORTLAG	-0.001	-0.190		0.000	0.100		-0.003	-1.390			
Adjusted R^2	0.353			0.347			0.728			-	
F-value	4.850	***		4.750	***		19.950	***		4.910, Chi-sq(12)=0.961	
Partial R^2	0.106			0.102			0.233				
Partial F-value	1.798	*		1.721	*		4.598	***			
Weak IV (G-D Wald F)										0.223, CritF(0.05)=12.02	
Over-id. test (A-L-N)										1.725, Chi-sq(3)= 0.631	
Exogeneity test (Wald)										3.640, Chi-sq(3)= 0.303	

Significances for t-values, z-values and F-values: ***sig at the 0.05 level. **sig at the 0.10 level. *sig at the 0.15 level.

The variables are defined as follows:

NPPN= Dummy variable, 1 if company has had an earnings reversal in the last quarter. IAFALL= Dummy variable, 1 if internal audit function exist or has been outsourced, 0 otherwise. COM= Dummy variable, 1 if audit committee exist in the company, 0 otherwise. LNFEEALL= Natural logarithm of all audit fees. LNMKTCAP= The natural logarithm of year end market cap. MKTRET= Market adjusted stock return. LOSS= Dummy variable, 1 if net income is negative, 0 otherwise. OPCYCLE365= Operation cycle of the company capped to 365 days. SALESGPCG= The percentage of sales growth. ZRATIO= Financial distress ratio. SMALLEPSCNG= Dummy variable, 1 if absolute EPS change is between 0-5, 0 otherwise. MAJ20= Dummy variable, 1 if the company has a major shareholder having more than 20% of the voting rights, 0 otherwise. BINDEPENDENT= Percentage of independent board members. ANALYSTS= Number of analysts following the company. LIABRATIO= Total liabilities to total assets. FINEXP= Percentage of financial educated the board members and executives from the whole group. LITI= Dummy variable, 1 if company is in the litigation risk industry, 0 otherwise. FEERATIO= Percentage of the audit related fees from the total fees paid to the auditor. REPORTLAG=Days the auditors signed the audit report from fiscal year end.