Aalto University
School of Business

The Effect of Auditor-Provided Non-Audit Services on Auditor Independence and Sarbanes-Oxley: What Separates Tax Services from Other Non-Audit Services?

Accounting

Master's thesis

Lasse Leino

2013

Department of Accounting
Aalto University
School of Business

Aalto University
School of Business

Aalto University, P.O. BOX 11000, 00076 AALTO
www.aalto.fi

Abstract of master's thesis

Author Lasse Leino

Title of thesis The Effect of Auditor-Provided Non-Audit Services on Auditor Independence and Sarbanes-Oxley: What Separates Tax Services from Other Non-Audit Services?

Degree Master of Science in Economics and Business Administration

Degree programme Accounting

Thesis advisor(s) Lasse Niemi & Hannu Ojala

Year of approval 2013 **Number of pages** 80 **Language** English

Abstract

Objectives of the Study
The Sarbanes-Oxley Act prohibited a large number of individual auditor-provided non-audit services, which were seen to have a negative effect on auditor independence. Tax services were not included in the list, implying that the effects of these services should somehow differ from those of other consulting services. Research on all non-audit services however has yielded contradictory results. This study sets out to illustrate the possible effects of tax services using prior research on all services as a framework, and attempts to shed some light on the issue whether the effects of tax services actually are significantly different from those of the other non-audit services.

Research Method and Data
The methods used in the paper follow the research of Frankel et al. (2002) which approaches independence concerns by examining whether strong economic bonds between auditor and client lead to opportunistic earnings management through the use of discretionary accruals. A modification to the method also allows a separate examination of auditor-provided tax services. The sample used in the models consists of financial statements from 2415 individual North American firms for the financial year 2010.

Findings of the Study
This study provides heteroscedasticity-robust evidence that there is no statistically significant association between auditor-provided tax services and earnings management. The results are robust to differences in auditor fee composition, to the direction of earnings management as well as to audit client firm size. Since the goal of this paper and the methods used in it is not to measure possible knowledge spillovers, one can only speculate whether the absence of such an association could mean that there are no audit-quality improving knowledge spillovers retainable from the provision of tax services, or that the provision of tax services simply does not have an effect on auditor independence.

Keywords Auditor Independence, Auditor-Provided Tax Services, Earnings Management

Aalto-yliopisto
Kauppakorkeakoulu

Aalto-yliopisto, PL 11000, 00076 AALTO
www.aalto.fi

Maisterintutkinnon tutkielman tiivistelmä

Tekijä Lasse Leino

Työn nimi Tilintarkastajan tarjoamien tarkastuksen ulkopuolisten palveluiden vaikutus tarkastajan riippumattomuuteen sekä Sarbanes-Oxley: Mikä erottaa veropalvelut muista konsultointipalveluista?

Tutkinto Kauppatieteiden maisteri

Koulutusohjelma Laskentatoimi

Työn ohjaaja(t) Lasse Niemi & Hannu Ojala

Hyväksymisvuosi 2013 **Sivumäärä** 80 **Kieli** Englanti

Tiivistelmä

Tutkimuksen tavoitteet
Sarbanes-Oxley kielsi suuren määrän yksittäisiä tilintarkastajan tarjoamia tarkastuksen ulkopuolisia palveluita, joilla nähtiin olevan kielteinen vaikutus tilintarkastajan riippumattomuuteen. Veropalveluita ei kielletty, minkä takia lainsäätäjän oletuksena näyttäisi olevan, että veropalveluiden vaikutus eroaa muista tarkastuksen ulkopuolisista palveluista. Tutkimustulokset kaikkien palveluiden osalta ovat kuitenkin ristiriitaisia ja tämän tutkimuksen tavoitteena on tuoda verokonsultoinnin mahdollisia riippumattomuusvaikutuksia kattavasti esille käyttäen hyväksi aiemman kaikkien palveluiden tutkimuksen viitekehystä sekä lisäksi tarkastella sitä, eroaako veropalveluiden vaikutus tosiasiassa konsultointipalveluiden vaikutuksesta.

Tutkimusmenetelmä ja aineisto
Tämän tutkimuksen menetelmät noudattavat lähestymistapaa, jossa tarkastajan riippumattomuutta lähestytään tutkimalla asiakkaan kanssa kehittyneen taloudellisen sidoksen vaikutusta johdon tuloksenohjailuun, jota puolestaan mitataan harkinnanvaraisten jaksotuserien määrällä. (Frankel et al. 2002). Menetelmää muokkaamalla myös veropalveluiden erityisvaikutus voidaan ottaa tarkastelun aiheeksi. Tutkimuksen aineistona on 2415 pohjoisamerikkalaista yritystä tilinpäätösvuodelta 2010.

Tutkimustulokset
Tutkimustulokset osoittavat, että tarkastajan tarjoamille veropalveluilla ei ole tilastollisesti merkitsevää yhteyttä johdon tuloksenohjailuun. Johtopäätökset säilyvät samoina kun huomioon otetaan myös mahdollisesti heteroskedastinen aineisto, tilintarkastajien erilaiset palkkiojakaumat, tuloksenohjailun tulosvaikutuksen suunta sekä asiakasyrityksien eriävät kokoluokat. Koska tutkimuksen tavoitteena ei ollut mitata veropalveluista saatavan tiedon hyötyä, näiden tuloksien valossa voidaan vain spekuloida, eikö veropalveluiden tarjoamisesta saada tarkastuksen laatuun vaikuttavaa tietoa vai eikö tilintarkastajan tarjoamilla veropalveluilla yksinkertaisesti ole vaikutusta tilintarkastajan riippumattomuuteen.

Avainsanat tilintarkastajan riippumattomuus, tarkastuksen ulkopuoliset veropalvelut, tuloksenohjailu

Table of Contents

List of Figures

List of Tables

1) Introduction

1.1 Background

Auditor-provided non-audit services have been examined by accounting researchers for many decades, but during the last decade the topic became subject to an especially heated academic debate. The Enron-crisis and the public trial of its audit firm Arthur Andersen can be seen as the starting point of this new wave of studies. Andersen knowingly ignored Enron's high-risk accounting practices and a common view is that this was due to the fact Andersen had become biased since it also received substantial fees from Enron for performing non-audit services.

Many opponents of auditor-provided non-audit services even demand that they should be banned in general. Their view is that acting both in the role of an auditor as well as a consultant compromises auditor independence and objectivity. Proponents of non-audit services however argue that performing both services improves the effectiveness and efficiency of the audit because of the resulting more comprehensive understanding of the client's business. (Joe et al. 2007)

Non-audit services have also become a topic on the legislative level. One of the most significant legislative changes in the matter has been the Sarbanes-Oxley Act of 2002 (SOX) in the USA. In order to promote auditor independence and increase audit quality, SOX prohibits a number of specific auditor-provided non-audit services. However it did not prohibit tax services, because these were considered to provide benefits to the taxpayer in forms of lower cost of capital and increased after-tax earnings. Regulators continue to debate whether jointly provided audit and tax services impair auditor independence in the same way as other non-audit services do. (Omer et al. 2006)

Auditor independence and non-audit fees therefore remain a current and interesting topic, which was recently brought back to the public's attention by the European Commission's green paper on audit policy after the financial crisis and the resulting

proposal to prohibit auditor-provided non-audit services in public-interest entities. (European Commission, 2011)

1.2 Research Purpose and Structure

Non-audit services are a broadly-researched topic. Prior research has mainly focused on the earlier mentioned controversy of their effects on auditor independence and on the other hand on audit quality and efficiency. In these research papers non-audit services have most of the time been grouped together to a single unit, and separate service types have only scarcely been individually examined. The legislation in place however implies that tax services can be seen as a separate type of service when compared to the other non-audit services.

The above mentioned controversial special status of auditor-provided tax services is the basis of this research paper. The aim is to present a thorough look into the theory and prior research of non-audit services in general, and to fill in the research gap by examining the role of auditor-provided tax services using the same theoretical background and methodological approach. In order to ensure a broad view on the possible effects of tax services as an individual service type, I will first provide a literature review on the prior research on all non-audit services. The purpose of this paper is thus to examine, whether separating auditor-provided tax services from other non-audit services is justifiable when it comes to speculations on their effect on auditor independence. In short, the research purpose can be summarized in the following research question:

- Does the effect of tax services on auditor independence differ from the effect of other non-audit services?

The mentioned justifications have also been re-examined after SOX. In 2006 the Securities and Exchange Commission (SEC) approved new rules on auditor

independence, which limit the types of auditor-provided tax services audit firms can offer their SEC clients. These rules identify circumstances, where the provision of tax services impairs independence, including for example opining in favor of transactions that are based on aggressive interpretations of tax laws and regulations. The fact that there are renewed legislative efforts to restrict auditor-provided tax services implies a need for academic research into this issue. (Robinson, 2008)

The purpose of the study is based on US legislation, which limits the choice of relevant prior research. In order to avoid inconsistencies, only material from the same region is used in the literature review. The structure of the paper is as follows: Chapter 1.3 introduces the legislation relevant for the research purpose and Chapter 1.4 defines auditor independence. Section 2) contains a literature review on the different issues and perspectives examined in prior research. Section 3) transforms the research question into hypotheses based on prior research. Section 4) introduces the research design as well as the data used in the study. Section 5) introduces the empirical results while the sixth and final section summarizes these results in addition to providing conclusions and possible topics for further research.

1.3 Sarbanes-Oxley's Restrictions to Non-Audit Services

The purpose of auditing is to verify the financial reports provided by the management of a firm to the owners (Antle, 1984). From the perspective of the principal-agent problem it is vital that those performing the monitoring are independent of those being monitored (Cohen, 2002). In the wake of the Enron-scandal, the Sarbanes-Oxley Act set new demands for auditor independence. It listed nine auditor-provided non-audit services which were seen to compromise the independence of audit firms. These services are (Gray & Manson, 2008, p. 96):

- bookkeeping and other services related to accounting records or financial statements of the audit client

- financial information systems design and implementation
- appraisal or valuation services, fairness opinions, or contribution-in-kind reports
- actuarial services
- internal audit outsourcing services
- management functions or human resources
- broker or dealer, investment adviser, or investment banking services
- legal services and expert services unrelated to the audit
- any other service that the Board determines, by regulation, is impermissible

The recommendations given by the European Commission are similar, but do not provide restrictions as strict as SOX. A notable fact for accounting professionals outside the USA is that the restrictions of SOX also apply to audit firms which operate outside the US, but whose audit client's parent company is registered in the United States. (Gray & Manson, 2008) Additionally, in several countries outside the USA tax services are defined as a legal service which also complicates the interpretation of the Act (SEC, 2002).

In the eyes of the regulator tax services are therefore not seen to pose the same risk of impairing auditor independence as the other non-audit services. SOX defines tax services as all services performed by the professional staff in the independent accountant's tax division except the ones related to the audit. These would typically, among other things, include services regarding the preparation of tax returns and tax planning, in addition to tax advice related to mergers and acquisitions, employee benefit plans and requests for rulings or technical advice from tax authorities. (SEC, 2002)

The research on non-audit services has however provided contradicting results, even when it comes to all other non-audit services. Some research suggests that performing non-audit services exposes the audit firm to information that is relevant for the auditor's risk assessment, which might lead to a more effective audit (e.g. Joe et al. 2007; Vandervelde, 2006). According to Antle (1984) however the whole idea behind the debate relating to auditor-provided non-audit services is that the fees received by the auditor for the services might be seen to impair auditor independence. Impaired

independence again is often presumed to lead to lower-quality audits and an increased likelihood of financial reporting that violates generally accepted accounting principles (Kinney, 2004).

Regulators argue that the effect of tax services on auditor independence differs from the other non-audit services, because tax services require following detailed laws and accounting firms have also historically provided a large amount of tax services to their audit clients. Nevertheless the regulation regarding tax services and auditor independence has raised considerable debate and received mixed comments from the public. Some are in favor of prohibiting all tax services for clarity reasons while others argue that only specific tax services should be permitted. In contrast to this, the SEC has also received research papers indicating that performing both tax and audit services improves audit quality as well as diminishes instances of financial restatements. The SEC responded to the debate by re-iterating its position that an audit firm can provide tax services without impairing its independence. (SEC, 2002)

On the other hand, also tax services have been at least on some level regulated by SOX. According to its subsequently modified fee disclosure rules the professional fees paid to an audit firm must be reported in the following categories: Audit Fees (1), Audit-Related Fees (2), Tax Fees (3), and All Other Fees (4) (Schneider et al. 2006). Additionally, the SEC admitted that in certain situations the provision of tax services could jeopardize auditor independence. Specifically, representing the client in a tax court or federal court of claims is mentioned as one of these circumstances. The SEC also stated that audit committees should carefully scrutinize the retention of an auditor who has recommended a transaction whose sole purpose may be tax avoidance and whose tax treatment may not be in line with the related regulations. (SEC, 2002)

1.4 Definition of Auditor Independence

According to the International Federation of Accountants' (IFAC) code of ethics for professional accountants it is in the public interest that the members of audit teams, firms and network firms stay independent of audit clients. The concept of independence in the code is divided into independence of mind and independence in appearance, which the code defines as follows (IFAC, 2012, p. 46-47):

- *"Independence of mind: the state of mind that permits the expression of a conclusion without being affected by influences that compromise professional judgment, thereby allowing an individual to act with integrity and exercise objectivity and professional skepticism."*

- *"Independence in appearance: the avoidance of facts and circumstances that are so significant that a reasonable and informed third party would be likely to conclude, weighing all the specific facts and circumstances, that a firm's, or a member of the audit team's, integrity, objectivity or professional skepticism has been compromised."*

The concept of independence in appearance is one of the key issues in the debate on auditor-provided non-audit services. Introducing a "third party" into the definition shows how subjective the concept of auditor independence can be. Even in circumstances where an auditor is convinced that he/she is acting with independence of mind, a third party can always have suspicions about impaired auditor objectivity. This is vital to keep in mind when estimating the effects of auditor-provided tax services on auditor independence, because in addition to the arguments made by regulators, also the perceptions of various stakeholders such as equity holders and lenders have to be taken into consideration.

2) Literature Review

The structure of this section is based on commonly-used theoretical concepts in the study of all non-audit services and auditor independence i.e. both independence of appearance and independence of mind as well as effects on audit efficiency/quality through knowledge spillovers. (Please see Figure 1). Using these same concepts in the approach to tax services enables one to get a similar general view of their possible effects and therefore to create a reference base. The mentioned three concepts of independence in appearance, independence of mind as well as knowledge spillovers also reflect the perspectives of the three stakeholder groups that have usually been considered in previous literature: financial statement users, auditors and managers (Schneider et al. 2006).

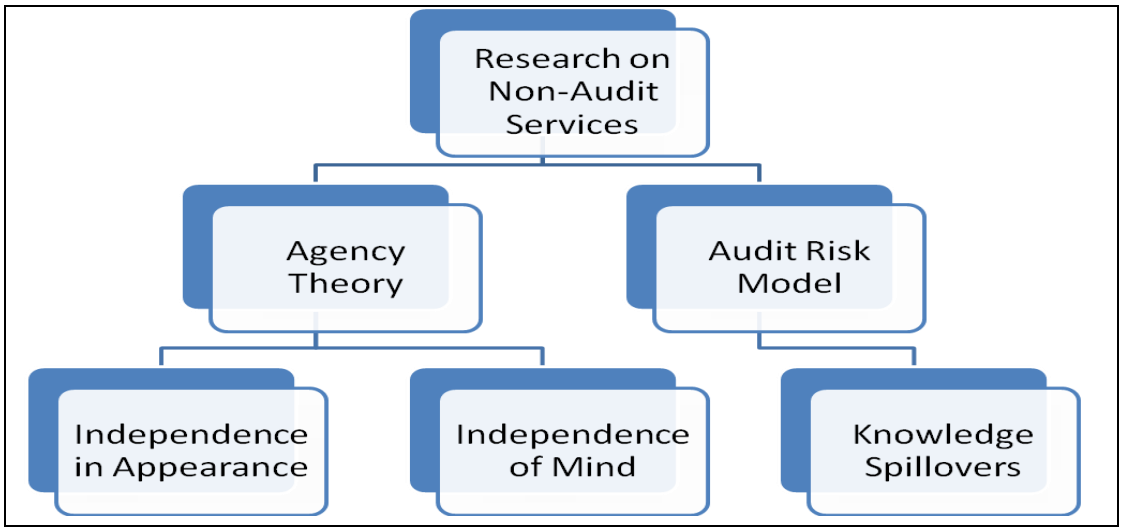

Figure 1 Theoretical Concepts Used in Prior Research of Non-Audit Services

Figure 1 illustrates the theoretical concepts used as a framework in this study. The demand for auditor independence of mind as well as independence in appearance can be seen to arise from agency theory (Gray & Manson 2008, p.9). Information gathered while performing non-audit services on the other hand affects an auditor's risk assessment (Joe et al. 2007), which according to the Audit Risk –model has a positive effect on audit quality and efficiency. This information transfer is referred to as the knowledge spillover effect.

2.1 Non-Audit Services' Effect on Independence in Appearance

2.1.1 Equity Investors' Perceptions of Independence

Non-audit services have also previously been divided into different types based on their effect on auditor independence. In 1984 prohibited services included e.g. actuarial services and services relating to executive recruitment. In this similar situation, Pany et al.'s (1984) survey study directed at stockholders and financial analysts did not find differences in perceptions between the services considered acceptable and the ones being strictly controlled.

In a more recent study Jenkins et al. (2001) examined the perceptions of accounting professionals in addition to the ones of the general public. Their results showed that when it comes to the perceived influence of non-audit services on auditor independence, professionals separate the effect of e.g. tax services to be positive while e.g. legal services are perceived to have a negative effect. The general public however did not separate different service types from one another, but reacted negatively towards all non-audit services in general. Jenkins et al. (2001) point out that there might be an expectation gap between the two groups. Accounting professionals expect the perceptions of the general public to be similar to their own, but in the light of scientific research findings these expectations are not fulfilled. One reason for the differing perceptions might be that accounting professionals are more familiar with the ethical guidelines relating to the audit profession and partially even have auditing experience (Schneider et al. 2006).

When dividing non-audit services into separate types one must keep the concept of independence in appearance as well as the agency theory in mind. The perceptions of accounting professionals seem to follow current regulations, but the reaction of equity investors is not that clear-cut. From the agency theory –perspective however the goal of auditing is to enhance the credibility of financial reports prepared by management for the owners, and thus to diminish the risk of flawed reporting stemming from the conflict of interests between the two parties (Eilifsen, 2009). Therefore the theory sets this

agency problem as the basis for the whole audit function. This leads to the question, whether separating tax services from the other non-audit services in light of their influence on auditor independence is justified, if the owners nevertheless seem to react to all services as a whole.

Krishnamurty et al. (2006) studied equity investors' reactions towards non-audit services by examining how the criminal indictment of Arthur Andersen affected the stock market's perception of auditor independence. Their results indicated negative abnormal returns for all Andersen's client companies and more importantly, these abnormal returns were significantly higher in companies where the market perceived auditor independence to be threatened. In their study the ratio of audit fees to total fees as well as the total level of fees is used as a proxy for auditor independence. Krishnamurty et al. (2006, p.484) conclude:"When the auditor provides more non-audit services, the perception of auditor independence is more likely to be impaired, and the market prices this". Because prior research suggests that equity investors react to non-audit services as a whole, these conclusions can also be seen to relate to tax services, which were also included in the study.

On the other hand making generalizations about the effects of non-audit services on auditor independence from Krishnamurty's results is questionable, because the study was conducted in exceptional circumstances. The more non-audit services were offered, the more the share prices dropped. In practice however it is hard to show whether the cause of the lower share prices was the market's perceptions of non-audit services, or the tarnished reputation of Arthur Andersen. Different arguments have been made concerning this question. For example Chaney et al. (2002) did not find evidence to support the idea that Andersen's independence was questioned by the amount of non-audit fees charged to its clients.

The specific effects of tax services on the owners' perceptions of auditor independence have not been established since research taking the equity investors' view usually does not divide non-audit services into different types. In 2003 however, as the disclosure rules on non-audit fees were updated, tax services were also taken into consideration in

the research on non-audit services. Then the services were to be disclosed in three categories: audit related fees (1), tax fees (2) and other fees (3). Mishra et al. (2005) found evidence suggesting that the proportion of shareholders voting against auditor ratification is positively correlated with both the tax fee ratio as well as the "other" fee ratio. Therefore this result does not support the regulator's assumption that investors would not perceive tax services as negatively as the other non-audit services.

Apart from the study mentioned above, the effects of tax services from the shareholders' point of view have not been studied. Fortin et al. (2008) point out that this is a field that future research should shed a light on. Equity investors' perceptions of the auditor's provision of non-audit services in general have usually been studied by investigating investor behavior, market reactions and corporate governance issues such as the shareholders' willingness to ratify auditor selection. All in all the findings on whether the provision of auditor-provided non-audit services in general impairs the equity investors' perceptions of auditor independence are mixed. (Schneider et al. 2006)

2.1.2 Lenders' Perceptions of Independence

The findings relating to the lenders' perceptions of non-audit services in general are also contradictory. Lowe et al. (1999) state that outsourcing a company's internal audit functions to the company's external auditor can be associated with negative perceptions of auditor independence and financial statement reliability. This again can lead to lower loan acceptance rates, especially if the audit firm performs management functions with respect to the internal audit. The independence concerns can however be reduced by separating the audit firm's engagement team providing the internal services from the one providing the external audit. On the other hand a survey study by Pany et al. (1988) involving loan officers and financial analysts found little, if any, evidence supporting the idea that providing non-audit services influences credit granting decisions or perceptions of financial statement reliability and auditor independence.

In the research on lenders' perceptions of non-audit services different service types are more often examined individually than in the previously-introduced research focusing on the investors' point of view. This might be based on a similar expectation gap to the one existing between accounting professionals and the general public. Similarly to accounting professionals, also lenders tend to separate different types of non-audit services from one another more often than equity investors do. This might again be due to differences in experience and expertise.

Tax services have also been examined as a separate type of service in prior literature. Fortin et al. (2008) examined the effects of tax services from the lenders' perspective and found evidence that firms that pay proportionately more tax fees to their audit firm are rewarded by bondholders by a lower yield spread. Because in a competitive debt market borrowing costs are connected to audit quality, this would imply that providing tax services increases the reliability of financial reporting. When considering all non-audit services however, Brandon et al. (2004) could not validate that the amount of non-audit fees has an effect on actual bond ratings assigned to a debt issue by rating analysts. The effect on yield spread found by Fortin et al. (2008) was stronger in firms experiencing worse information asymmetry. These firms include e.g. banks and insurance firms, who are not as transparent to financiers as other firms are and whose risks are harder to assess (Morgan, 2002).

The decision to separate tax services from other non-audit services has hence been supported by the research from the lenders' perspective. Tax services have been found to have a positive connection to debt pricing, while for non-audit services as a whole the debate goes on as to whether they have a negative connection or none whatsoever. However, even though tax services have been found to lower borrowing costs, one cannot jump to the conclusion that they would not impair auditor independence from the lenders' perspective.

In fact, in their study Fortin et al. (2008) assume that tax services have a negative effect on the bondholders' perception of auditor independence. In their conclusions they point out the balance between impaired auditor independence and the benefit of learning more

about the audit client through the provision tax services. In the case of auditor-provided tax services, the results indicate that the positive impact of tax services on improving auditor competence dominates the concurrent negative impact on auditor independence in shaping bondholder perceptions.

2.2 Non-audit Services' Effect on Audit Quality and Efficiency

2.2.1 Non-Audit Services' Effect on Audit Quality

The aforementioned balance between possible benefits in improved audit quality and on the other hand impaired auditor independence has an important role in the examination of the effects of tax services. In the previously introduced literature on independence in appearance the effects of tax services could not be clearly separated from the effects of the other non-audit services. Taking the possibly improved audit quality through the better knowledge of the client into consideration introduces a new factor into the question, and many of the arguments supporting the special treatment of tax services are based on this research.

The study of the effects of non-audit services on audit quality stem from observations made by Simunic (1984), which indicated that performing non-audit services increases audit quality because of a beneficial knowledge spillover between services. His study deals with non-audit services as a whole, which makes it difficult to draw conclusions about the effects of tax services. If information received from different service types is assumed to be equal, the positive effect of non-audit services on audit quality also relates to tax services. On the other hand, it might be that different services provide the auditor with different amounts of information that is valuable for the audit. In this case examining the total benefit does not reveal the contribution of tax services. The total benefit has also been studied by Krishnan et al. (2005), who contradictory to previous results found no evidence supporting the idea that purchasing non-audit services enhances audit quality and could therefore result in a higher earnings response coefficient.

Some evidence suggests that there are differences between the effects of specific service types. Kinney et al. (2004) approached audit and financial reporting quality by examining the connection between non-audit services and restatements of previously issued financial statements. They found a significant negative association between tax services and restatements, implying that the possible economic dependence of an audit firm on a client is more than compensated by the resulting reporting quality benefits. Additionally, tax services have been found to improve earnings quality by curtailing aggressive accounting practices and diminishing the book-tax difference (Choi, 2009).

When balancing the impaired independence resulting from non-audit services with the benefits of having better knowledge of the audit client, in the case of tax services the quality benefits seem to outweigh the independence concerns. In the case of other services, the results indicate a positive association between non-audit fees and restatements consistent with the view that at least for some non-audit services the negative effects on auditor independence offset the quality enhancements. (Kinney, 2004)

One possible explanation for the special status of tax services when it comes to audit quality effects through knowledge spillovers might be that especially firms with high tax and operational complexity use these services (Lassila et al. 2010). In such cases, the information gathered while performing the services is more likely to be vital while conducting the audit. In addition, the strength of a company's corporate governance was found to have a similar effect on the benefits from knowledge spillover. Firms with strong governance structures were less concerned about perceptions of impaired independence and could instead maximize the benefits of the information gathered in the performance of tax services.

The connection between tax services and firms with high operational and tax complexity might also explain the previously introduced research result that tax services seem to lower borrowing costs especially in firms with higher information asymmetries (Fortin et al. 2008). In firms with complex operational and tax structures the information gathered during the provision of tax services could, according to Lassila et

al. (2010), have an especially strong effect on audit quality. The increased audit quality would, according to Fortin et al. (2008), manifest itself in increased financial reporting reliability and lower borrowing costs. Therefore at least from the lenders' perspective, the beneficial knowledge spillovers from tax services in for example investment firms are perceived to outweigh the risk of impaired auditor independence.

Another scenario, in addition to high operational and tax complexity, where the information spillover from tax services could be especially beneficial, develops in poorly performing firms. Robinson (2008) studied the likelihood of an auditor to issue a going-concern opinion in the last audit report prior to the firm filing for bankruptcy. He documents a significant and positive relation between the level of tax service fees and the likelihood of issuing a correct opinion in the last audit report. In addition to the fact that tax services can have a direct effect on income through the maximization of taxable losses resulting in tax refunds, the information received from the services is also beneficial in the assessment of the firm's going-concern risk. Therefore poorly-performing firms might have an enhanced need for at least some types of tax services. (Goldman, 2006)

As prior research suggests that poorly-performing firms are more likely to use tax services than others, interpreting Robinson's (2008) results becomes more difficult. The amount of tax service fees was found to be positively correlated with correctly issuing a going-concern opinion. If however the likelihood of hiring tax services increases as the firm's financial distress grows stronger, one reason behind the relation might be that the firms paying more tax fees were also the ones having clearly noticeable problems. In this scenario the interpretation of the tax services' effect on audit quality is not that straight forward. In general one could say that balancing between effects on audit quality and risks of impaired auditor independence is questionable, since it is challenging to objectively measure the amount of information transferred and the effects that non-audit services have on independence.

2.2.2 Non-audit Services' Effect on Audit Efficiency

In the previously introduced studies the effects of non-audit services on audit quality were compared to the effects on the demand for independence stemming from agency theory. In addition to this, the effects of auditor-provided non-audit services can also be examined from the perspective of the Audit Risk Model. Research results indicate that providing non-audit services can be beneficial in the audit risk assessment (Joe et al. 2007). According to the audit risk model this would allow the auditor to better plan the nature and extent of his tests thus resulting in a more effective audit.

The amount of tax and accounting related non-audit services have been found to increase the amount of audit hours (Davis, 1993). These results could be interpreted in different ways. They could be seen to support the claim that the non-audit services in question do not compromise auditor independence but increase audit effort (Schneider et al. 2006). On the other hand they could also be seen to indicate that providing non-audit services does not lead to knowledge spillovers beneficial for audit efficiency (Davis, 1993). Commonly the results have been seen to provide evidence that the provision of non-audit services does not create circumstances in which auditor independence is jeopardized. This could be seen as a justification for the special status of tax services, were it not for the fact that Davis' results also include accounting-related services which are specifically prohibited in the Sarbanes-Oxley Act.

The study of audit effort measured in audit hours and its relation to the provision of non-audit services included all non-audit services. The special link between tax services and increased audit hours does not necessarily suggest anything about the quality and efficiency of the audit, when recent studies suggest that especially firms with high tax and operational complexity are the ones using these services (Lassila et al. 2010). In these circumstances it might only be natural that auditing these firms requires a larger amount of audit hours.

Examining the effects of non-audit services on audit efficiency, as suggested by the audit risk model, is also complicated by the fact that one has to try to quantify how

knowledge spillovers from the services affect the auditor's risk assessment. Wu (2006) points out that finding empirical evidence for these spillovers is difficult. All in all, prior research findings do not offer a clear picture on the effects of non-audit services as a whole on the auditor's effort choice. The same difficulties relating to measurements and interpretations of prior academic research results also apply to the research on tax services.

2.3 Non-Audit Services' Effect on Independence of Mind

When examining the effects of non-audit services on audit efficiency and quality, prior research has aimed to consider both auditor independence in appearance as well as independence of mind by for example studying the effects of non-audit services on audit effort. This perspective however still often includes a third party, because one was balancing the benefits of knowledge transfers from the services with the risk of impaired auditor independence, which was often based on the perceptions of financial statement users or managers. In the research on auditor independence of mind especially the length of auditor tenure as well as the magnitude of discretionary accruals has been examined in prior research.

2.3.1 Non-Audit Services and Auditor Tenure

One association examined in the study of auditor independence of mind is the one between non-audit services and auditor tenure. An auditor might be inclined to compromise his judgment and sway towards the client's position in order to ensure future non-audit fees and keep up the existing relationship with the client (Schneider et al. 2006). Thus the research focuses on the combined effects of non-audit fees and auditor tenure.

Iyer et al.'s (2004) survey however suggests that in fact, client company respondents (such as controllers and CEO's) in companies with short audit tenures were more likely to perceive that they can persuade the auditor to accept their position in disagreements. This perception was also shared by companies, who believed to be vital clients to the audit partner. The purchase of non-audit services however did not affect the respondents' belief in their ability to persuade the auditor.

The previously mentioned study was conducted from the client's perspective, which makes interpreting the results from the perspective of auditor independence of mind troublesome. Approaching the issue more from the auditor's perspective, Johnson et al. (2002) find evidence suggesting that short relationships between audit firms and audit clients are associated with higher levels of unexpected accruals. This evidence also contradicts the assertion that longer tenure is associated with jeopardized auditor independence.

In the research on tax services, auditor tenure has often not been taken into consideration. Omer et al. (2006) studied changes in the amount of auditor-provided tax services from 2000 to 2002, when the possible prohibition of the services was speculated. Their results indicate that auditor-provided tax services were reduced in short-tenure clients. Services provided by longer-tenure auditors on the other hand were maintained, even though the regulatory environment and atmosphere was against it. These results seem to speak in favor of the special status of tax services, since previous literature associates tax services with higher financial reporting quality (Kinney, 2004) and longer tenures with higher earnings quality (Myers et al. 2003). The results of Omer et al. (2006) can thus be seen to suggest that the main drivers behind the longer joined audit/tax service provision were reporting and audit quality, instead of the possibility of being able to buy the auditor's acquiescence.

2.3.2 Magnitude of Discretionary Accruals and Tax Avoidance

Another branch of auditor-provided non-audit service –research focuses on the question whether the provision of non-audit services affects the auditor's objectivity in the assessment of the magnitude of discretionary accruals and their effect on management meeting its earnings targets. This is based on the idea that if an auditor does not actively restrict opportunistic earnings management, his/her independence could be seen to be impaired (Alaoutinen, 2010). Frankel et al. (2002) found a positive association between non-audit fees and the magnitude of absolute discretionary accruals indicating increased earnings management. Audit fees on the other hand were found to have the opposite effect. Interestingly, combining non-audit fees with audit fees masked these opposite effects and no association could be found between total fees and earnings management.

Reynolds et al. (2004) also report a positive connection between non-audit fees and discretionary accruals. However, they also come to the conclusion that this result is mainly due to sample choice. The sample included high-growth firms, whose rapid growth explains the high fluctuations in the level of accruals relative to their industry, in addition to creating a sudden increase in the need for valuation and other external accounting services not classified as audit services. Chung and Kallapur (2003) come to the same conclusion by controlling for industry effects. Their results suggest no significant relationship between nondiscretionary accruals and the ratio of non-audit to audit fees. When modifying Frankel et al.'s (2002) research with an adjustment for firm performance, the results also indicate no evidence that auditors impair their independence by offering more non-audit services (Ashbaugh et al. 2003).

Previous research has been criticized for not considering the endogeneity of audit-fees, non-audit fees and abnormal accruals. For instance, prior results imply that many of these variables are related to the same factors, such as firm performance in Ashbaugh's (2003) case. By accounting for these interdependencies Antle et al. (2006) find no evidence supporting the claim that fees for non-audit services increase abnormal accruals, instead their results indicate the exact opposite. They conclude that this result might be explained by the knowledge spillover effect.

In prior literature tax services have been dealt with as a part of other non-audit services and all in all, the research results vary. Therefore one cannot even conclude that offering non-audit services impairs auditor independence in a way that is visible in the increased use of discretionary accruals in meeting management earnings targets. When examining tax services however, one has to consider the additional factor that the use of earnings management in this context could also mean managing taxable income in addition to book income. In the US, where book-tax conformity is low, managers could pursue high book income and low taxable income simultaneously (Choi et al. 2009).

Choi et al. (2009) found that the provision of tax services is negatively associated with discretionary accruals and that it diminishes the book-tax difference. This again was found to be a result of knowledge spillovers and an indication of decreased tax avoidance. On a general level these results were seen to show that tax services improve earnings quality by curtailing opportunistic accounting practices. These results contradict the newest restrictions of the SEC, whose main purpose was to restrict aggressive interpretations of tax laws and regulations.

The situation for discretionary accruals and tax avoidance is therefore especially mixed. Prior research disagrees on the effect of non-audit services and only partially supports the assertion that the provision of auditor-provided non-audit services impairs auditor independence. On the other hand according to the latest studies, both non-audit services as a whole as well as tax services separately decrease opportunistic accounting practices and earnings management, but legislators have nonetheless restricted both service types.

2.4 Summary

In the literature review, I illustrated the special status of tax services in the study of auditor-provided non-audit services and relating regulations. My approach utilized the perspectives used in the research on all non-audit services in order to provide a thorough overall view on the possible effects of tax services and to create a wide reference base.

Overall, prior studies do not agree whether tax consulting impairs auditor independence in appearance and independence of mind. Many studies, however, agree that it does improve audit quality, which would support the services' special status in SOX. From the perspective of agency theory and financial statement users, some studies suggest that all non-audit services are perceived to have a negative effect on auditor independence in appearance, regardless of service type and possible academic findings.

The effects relating to independence of mind with specific regard to discretionary accruals are especially unclear, since research findings regarding both all non-audit services and tax services individually are mixed and partially contradict the legislators' view. In this branch of research non-audit services have also often been grouped together. This is questionable since, as was also the case in the influence on restatements i.e. audit quality, the effects of individual service types can vary. In the following empirical sections of this study I try to shed some light on this situation by separately re-examining the effects of non-audit services and tax services on auditor independence of mind measured in discretionary accruals.

3) Research Method and Hypotheses

I approach the research question with a quantitative method that tests hypotheses based on previous research introduced in the literature review and particularly in chapter 2.4.2. Following the same reasoning as in prior research, I use discretionary accruals as a measure of auditor-allowed earnings management, and thus also as a proxy for auditor independence. The question of whether non-audit and tax services affect auditor independence is approached by examining the fees paid for these services. Using auditor fees in the analysis of auditor independence is based on a concept introduced by Simunic (1984) called "economic bonding", according to which the joint performance of audit and non-audit services makes the auditor less likely to object to earnings management, since being dismissed as an auditor would most likely also mean losing future revenues from non-audit services. The concept of economic bonding is based on economies of scope, which exist when one service has a positive effect on the other. For example, performing non-audit services could help reduce audit costs because of knowledge spillovers, meaning that the auditor is already familiar with the client's systems. These effects therefore help to create an economic bond between the auditor and client. (Antle et al. 2006)

The theories explaining auditor bias, which can lead to auditor-allowed earnings management in the form of higher discretionary accruals, are often divided into the ones stemming from agency literature and the ones based more strongly on behavioral theories (see for example Frankel et al. 2002 and Antle et al. 2006). Agency theory builds on information asymmetry and the conflicting interests of two parties. Therefore by definition, in agency literature one assumes a conflict between management and the shareholders which, according to Firth (1997), leads to a situation where shareholders need to be concerned about the auditor safeguarding their interests. In doing so, they rely on signals of auditor independence, such as regulatory oversight and auditor reputation. When independence is jeopardized through for example economic bonding, the auditor deliberately agrees with management's representations and interpretations in accounting matters. The agency theory -approach to auditor bias therefore assumes that

the cause of auditor bias is an intentional choice to distort the auditor-approved financial reports in favor of the managements' interests (Frankel et al. 2002).

Behavioral literature takes a different approach to the cause of auditor bias. Psychological research such as for example a study conducted by Moore et al. (2002) suggests that biased information processing is not a choice but a pervasive, unconscious as well as an unintentional choice. The pervasiveness implies that auditors facing conflicts of interests in most cases do not have the option of avoiding bias, even if they are actively trying to do so. In their experiments demonstrating bias in auditors' judgments, they come to a somewhat disturbing conclusion for investors, lenders, shareholders and other stakeholders relying on independent auditing: it might not be enough to consciously counteract potential bias, because auditors may simply be incapable of doing so. They connect their conclusions to a concept called partisanship, where one already by affiliation becomes biased to support for example a specific group, and conclude that the only way to eliminate conflicts of interests is to prevent these partisan allegiances from forming between an auditor and his audit client.

The empirical approach of this study focuses on the independence of mind –aspect introduced in the literature review. The general approaches in empirical research on non-audit services are illustrated in Figure 2. As is also evident from the literature review, prior research on non-audit services focuses on their effects on different measures of audit quality, which again can be affected by auditor independence concerns, or knowledge spillovers that affect auditor competence. The empirical approach of this paper focuses on the effects of auditor-provided non-audit services on audit quality measured in earnings management. The methods used therefore aim to capture the effects of economic bonding on auditor independence, instead of measuring knowledge spillovers.

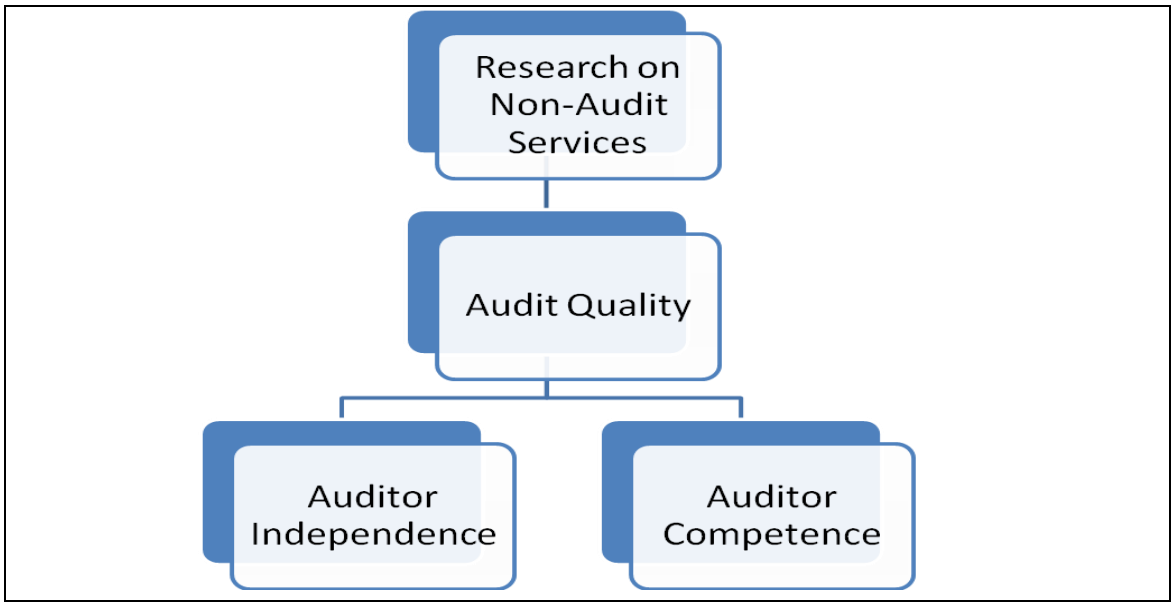

Figure 2 Empirical Approaches to the Effects of Non-audit Services on Audit Quality

As mentioned previously, some prior research provides evidence supporting the idea that non-audit fees increase earnings management, while others reach the exact opposite conclusion. Tax services have also not been separately examined in these studies, even though results indicate that there are differences between the effects of different auditor-provided services when it comes to earnings management and audit quality. Because of these mixed research results of prior studies, the hypotheses in this study are subjected to two-tailed tests, since no clear direction of effects can be assumed. Building on arguments presented in the literature review and this section, my research hypotheses in null form are as follows:

$H_0$1: Auditor-provided non-audit services are not associated with earnings management

$H_0$2: Auditor-provided tax services are not associated with earnings management

$H_0$3: Audit services are not associated with earnings management

4) Data Description and Research Design

4.1 Data Description

The initial sample is retrieved from the COMPUSTAT -database consisting of North American Annual Data. The search for financial statements with data dates between January 2009 and January 2011 yields 18 538 observations for various firm years i.e. roughly 9269 individual firms in total. First I modify the data to represent individual firms by combining firm years into one company specific observation. All statements of financial institutions (SIC codes 6000-6799) are excluded from the sample, because estimating discretionary accruals for these companies would require unique procedures (Frankel et al. 2002). Excluding also companies for which estimating discretionary accruals for the financial year 2010 with the approach introduced in chapter 4.2 (please see equation number 3 on page 30) is not possible because of missing variables leaves one with a sample of 3274 companies from various industries.

The regression model introduced at the end of chapter 4.2 (please see equation number 4 on page 31) also sets additional requirements for the sample data. Observations that lack variables needed to apply the model, such as primarily the percent of shares held by institutions as reported by the Thomson Reuters database, are excluded from the sample reducing its size to 2448 individual companies. Relevant audit fee data for the model is retrieved from the Audit Analytics database, and screening out companies with missing audit fee information leads to a final sample size of 2415.

Table 1 summarizes the steps taken in the sample selection process in Panel A and describes the distribution of observations by industry in Panel B. After removing financial institutions from the sample, nearly half of the sample consists of companies from the manufacturing industry division. The second largest division is the service industry with a share of 19% of the observations followed by the transportation & public utilities division with a share of 12%.

TABLE 1 Sample Selection Process and Sample Firm Distribution by Industry

This table reports the sample selection process in Panel A and the distribution of the sample firms by industry in Panel B.

Panel A: Sample Selection Process

Selection Criteria	Observations
Financial Statements with Data Dates 1/09 - 1/2011 in COMPUSTAT	18538
Less:	
Modification into Firm-Specific Observations	(8601)
Statements of Financial Institutions (SIC codes 60-67)	(3721)
Statements with Missing Data for Discretionary Accrual Estimation	(2942)
Statements with Ownership Data Not Available in Thomson Reuters	(826)
Statements with Audit Fee Data Not Available in Audit Analytics	(33)
Final Sample Size	2415

Panel B: Sample Distribution by Industry

Industry Description	n	%	SIC codes
Agriculture, Forestry and Fishing	14	0,6 %	01-09
Mining	169	7,0 %	10-14
Construction	31	1,3 %	15-17
Manufacturing	1201	49,7 %	20-39
Transportation & Public Utilities	299	12,4 %	40-49
Wholesale Trade	84	3,5 %	50-51
Retail Trade	151	6,3 %	52-59
Services	462	19,1 %	70-89
Public Administration	4	0,2 %	91-99
Total	2415	100,0 %	

Table 2 illustrates that 73% of the sample companies are audit clients of Big 4 audit firms and that Ernst & Young is the largest service provider in this sample, providing audit and non-audit services to 24% of the sample companies. The table also shows the distribution of non-audit, audit and total fees by auditor, where audit firms with less

than 10 clients have been grouped together. It is noticeable that big 4 audit firms receive an overwhelming 95% of the total fees in this sample and that their share of the non-audit fees is an even stronger 97%. Additionally, even though Ernst & Young has the largest clientele in the sample, PricewaterhouseCoopers still receives a slightly larger share of the total fees. This seems to be largely due to their nearly 11 percentage point higher share of billed non-audit services.

TABLE 2 Distribution of Audit Clients, Non-Audit Fees, Audit Fees and Total Fees by Auditor

This table reports the distribution of audit clients, non-audit fees, audit fees and total fees by auditor. All the reported information is from the financial year 2010.

Auditor Name	n	%	Non-Audit Fees	Audit Fees	Total Fees
Ernst & Young	580	24,0 %	26,8 %	26,6 %	26,7 %
PricewaterhouseCoopers	458	19,0 %	37,6 %	30,1 %	31,6 %
Deloitte & Touche	387	16,0 %	20,9 %	21,6 %	21,5 %
KPMG	346	14,3 %	12,0 %	16,6 %	15,7 %
Big 4 Total	1771	73,3 %	97,3 %	94,9 %	95,4 %
Grant Thornton	132	5,5 %	0,7 %	1,7 %	1,5 %
BDO USA	75	3,1 %	0,5 %	1,1 %	1,0 %
McGladrey & Pullen	41	1,7 %	0,4 %	0,3 %	0,3 %
Moss Adams	18	0,7 %	0,1 %	0,1 %	0,1 %
Hein & Associates	18	0,7 %	0,0 %	0,1 %	0,1 %
Marcum	17	0,7 %	0,1 %	0,1 %	0,1 %
Burr Pilger Mayer Inc	12	0,5 %	0,0 %	0,1 %	0,1 %
EisnerAmper	12	0,5 %	0,1 %	0,1 %	0,1 %
JH Cohn	11	0,5 %	0,0 %	0,1 %	0,1 %
UHY	11	0,5 %	0,0 %	0,1 %	0,1 %
Other Auditors with n<10	297	12,3 %	0,8 %	1,4 %	1,2 %
Non-Big 4 Total	644	26,7 %	2,7 %	5,1 %	4,6 %
Total	2415	100 %	100,0 %	100,0 %	100,0 %

Table 3 shows the fee amounts by auditor in Panel A as well as the fee compositions by auditor in Panel B. Panel B reveals that 20% of the fees paid to big 4 auditors were non-audit fees whereas for non-big 4 auditors the corresponding share is 12%. Examining the non-audit fees with respect to auditor grouping shows that 46% of the non-audit fees paid to non-big 4 auditors in the sample are tax fees whereas in the case of big 4 auditors the proportion is a noticeably higher 56%. In fact, also 56% of the total non-audit fees in the sample are reported in the tax fee category, which highlights their economic importance and accordingly also the need to analyze their effects individually.

TABLE 3 Total Fees, Non-Audit Fees, Audit Fees and Fee Composition by Auditor

This table reports auditor-specific total fees, non-audit fees and audit fees in Panel A, auditor-specific total fee and non-audit fee compositions in Panel B as well as big 4 auditor median fee ratios to total fees or to total non-audit fees in Panel C. All reported fee information is from the financial year 2010.

Panel A: Auditor Total Fees, Non-Audit Fees and Audit Fees (USD, thousands)

		Total Fees Divided into:	
Auditor Name	Total Fees	Non-Audit Fees	Audit Fees
Ernst & Young	1 677 705	333 485	1 344 220
PricewaterhouseCoopers	1 985 320	466 821	1 518 499
Deloitte & Touche	1 349 499	259 528	1 089 971
KPMG	988 325	149 748	838 577
Big 4 Total	6 000 849	1 209 582	4 791 267
Grant Thornton	94 442	8 778	85 664
BDO USA	60 044	6 372	53 673
McGladrey & Pullen	18 732	4 399	14 333
Moss Adams	7 455	1 042	6 413
Hein & Associates	5 028	364	4 665
Marcum	8 334	767	7 567
Burr Pilger Mayer Inc	5 464	58	5 406
EisnerAmper	3 724	623	3 101
JH Cohn	3 882	322	3 560
UHY	4 280	390	3 890
Other Auditors with n<10	78 423	10 220	68 203
Non-Big 4 Total	289 808	33 335	256 473
Total	6 290 657	1 242 917	5 047 740

Panel B: Auditor Total Fee and Non-Audit Fee Composition

	Total Fees Divided into:		Non-Audit Fees Divided into:	
Auditor Name	Non-Audit Fees	Audit Fees	Tax Fees	Other Fees
Ernst & Young	19,9 %	80,1 %	60,9 %	39,1 %
PricewaterhouseCoopers	23,5 %	76,5 %	58,6 %	41,4 %
Deloitte & Touche	19,2 %	80,8 %	49,9 %	50,1 %
KPMG	15,2 %	84,8 %	50,6 %	49,4 %
Big 4 Total	20,2 %	79,8 %	56,4 %	43,6 %
Grant Thornton	9,3 %	90,7 %	42,1 %	57,9 %
BDO USA	10,6 %	89,4 %	57,7 %	42,3 %
McGladrey & Pullen	23,5 %	76,5 %	34,1 %	65,9 %
Moss Adams	14,0 %	86,0 %	66,0 %	34,0 %
Hein & Associates	7,2 %	92,8 %	56,1 %	43,9 %
Marcum	9,2 %	90,8 %	32,9 %	67,1 %
Burr Pilger Mayer Inc	1,1 %	98,9 %	0,0 %	100,0 %
EisnerAmper	16,7 %	83,3 %	34,1 %	65,9 %
JH Cohn	8,3 %	91,7 %	72,4 %	27,6 %
UHY	9,1 %	90,9 %	4,3 %	95,7 %
Other Auditors with n<10	13,0 %	87,0 %	46,6 %	53,4 %
Non-Big 4 Total	11,5 %	88,5 %	45,7 %	54,3 %
Total	19,8 %	80,2 %	56,1 %	43,9 %

Panel C: Big 4 Auditor Median Ratios to Total Fees or Total Non-Audit Fees

	Ratio to Total Fees:		Ratio to Non-Audit Fees:	
Auditor Name	Non-Audit Fees	Audit Fees	Tax Fees	Other Fees
Ernst & Young	0,12	0,88	0,68	0,32
PricewaterhouseCoopers	0,16	0,84	0,66	0,34
Deloitte & Touche	0,13	0,87	0,49	0,51
KPMG	0,10	0,90	0,52	0,48

The economic importance of tax services is also visible in the median of the client-specific ratios of tax fees to total non-audit fees by auditor in Panel C. For three of the big 4 firms in this sample the median ratio exceeds 0,5 indicating that these audit firms receive more tax fees than other non-audit fees from at least half of their non-audit

service clients. In total, the sample includes 2061 companies that paid fees for auditor-provided non-audit services in 2010.

4.2 Research Design

My study uses the approach of Frankel et al (2002) with modifications regarding how tax service fees are taken into consideration in the regression model. There has also been a change in the audit fee disclosure categories since Frankel et al.'s original study. Their data has three disclosure categories: Audit Fees (1), Financial Information Systems Design and Implementation Fees (2) and All Other Fees (3). Fees for tax services, pension plan audits, due diligence procedures related to mergers and acquisitions etc. were at the time defined to be a part of other fees. In their model Frankel et al. group the latter two categories together as non-audit fees while the first category represents a measure of audit fees.

The data used in this study however contains 4 categories: Audit Fees (1), Audit-Related Fees (2), Tax Fees (3), and All Other Fees (4). Fees for tax services, pension plan audits and due diligence, which were previously defined as other fees, are now defined as tax fees and audit-related fees. To consistently follow Frankel et al.'s (2002) approach I therefore group the latter three categories together as non-audit fees while the first category again remains a measure of audit fees.

Additionally, the renewed disclosure categories enable a separate examination of the effects of tax service fees on auditor independence. I attempt to analyze these effects by disaggregating the tax service fees from other non-audit fees while still following the discretionary accrual -approach of Frankel et al (2002). The approach, as well as my modifications to it, is described in the following part of this chapter.

According to the cross-sectional modified Jones (1991) model total accruals (TA) are equal to:

$$TA = \text{net income} - \text{cash from operations.} \quad (1)$$

Total accruals can however be estimated with the following model at an industry-specific level, which provides one with industry-specific estimates for coefficients α, β_1, and β_2:

$$TA_{ijt}/A_{ijt-1} = \alpha*(1/A_{ijt-1}) + \beta_1*(\Delta REV_{ijt}/A_{ijt-1}) + \beta_2*(PPE_{ijt}/A_{ijt-1}) + \varepsilon_{ijt} \quad (2)$$

Where A_{ijt-1}= total assets in firm i in industry j for year t-1

ΔREV_{ijt} = change in net revenues in firm i in industry j for year t

PPE_{ijt} = gross property plant & equipment in firm i in industry j for year t

This study examines the financial year 2010 making t in the regression model equal to 2010. The industry-specific coefficients α, β_1, and β_2 are estimated by dividing the sample into groups based on two-digit SIC codes and estimating the coefficients separately for each group. The amount of discretionary accruals (DACC) can then be calculated using these coefficient estimates a_{jt}, b_{1jt} and b_{2jt} in the following:

$$DACC = TA_{ijt}/A_{ijt-1} - [a_{jt}*(1/A_{ijt-1}) + b_{1jt}*((\Delta REV_{ijt}-\Delta REC_{ijt})/A_{ijt-1}) + b_{2jt}*(PPE/A_{ijt-1})] \quad (3)$$

Where ΔREC_{ijt} = change in net receivables in firm i in industry j for year t

The empirical model to examine the association between non-audit services / tax services and the absolute value of discretionary accruals (ABSDACC) is shown below in Equation 4. All regression variables used in the following sections are defined in Table 4. The regression model is run 5 times using a different variable or combination of variables in the place of FEEVAR in the equation each time. The first three follow Frankel et al.'s (2002) approach, with respect to the renewed fee disclosure categories,

and the latter two FEEVAR-options aim to additionally disaggregate the effects of tax services from all other non-audit services. In addition to the absolute value of discretionary accruals, the model is also separately run for income increasing (DACC+) and income decreasing (DACC-) accruals as the dependent variable.

$$ABSDACC = \alpha + \beta_1*FEEVAR + \beta_2*BIGFOUR + \beta_3*AUDTEN + \beta_4*CFO + \beta_5*ABSCFO + \beta_6*ACC + \beta_7*ABSACC + \beta_8*LEVERAGE + \beta_9*LITRISK + \beta_{10}*M/B + \beta_{11}*LOGMVE + \beta_{12}*\%INST + \beta_{13}*LOSS + \beta_{14}*FIN/ACQ + \varepsilon \quad (4)$$

TABLE 4 Regression Variable Definitions

This table defines all dependent (Group A), fee (Group B) and control variables (Group C) used in the following sections.

Group A	***Dependent Variables***
Variable Name	Variable Definition
ABSDACC	Absolute value of discretionary accruals
DACC	Discretionary accruals
DACC+	Income increasing discretionary accruals
DACC-	Income decreasing discretionary accruals

Group B	***Fee Variables***
Variable Name	Variable Definition
FEEVAR	The fee variable category (FEEVAR) consists of five fee variable combinations:
(1) FEERATIO	Ratio of audit-related, tax and other fees to total fees
(2) RANKNON	Percentile rank of audit-related, tax and other fees, by auditor &
RANKAUD	Percentile rank of audit fees, by auditor
(3) RANKTOT	Percentile rank of total fees, by auditor
(4) TAXFEERATIO	Ratio of tax fees to total fees
(5) RANKTAX	Percentile rank of tax fees, by auditor &
RANKOTH	Percentile rank of audit-related and other fees, by auditor &
RANKAUD	Percentile rank of audit fees, by auditor

Group C	***Control Variables***
Variable Name	Variable Definition
BIGFOUR	1 if the firm's auditor is a Big 4 firm, and 0 otherwise
AUDTEN	Number of years that the auditor has audited the firm's financial statements
CFO	Cash from operations, deflated by average total assets
ABSCFO	Absolute value of cash from operations deflated by average total assets
ACC	Total accruals, equal to net income minus cash from operations, deflated by average total assets
ABSACC	Absolute value of total accruals, equal to net income minus cash from operations, deflated by average total assets
LEVERAGE	Ratio of total liabilities to total assets
LITRISK	1 if the firm is in a high litigation risk industry identified by Francis et al. (1994) (SICs 2833–2836, 3570–3577, 7370–7374, 3600–3674, 5200, 5961), and 0 otherwise
M/B	Market-to-book ratio
LOGMVE	Natural log of MVE (Market Value of Equity)
%INST	Percent of shares held by institutions (as reported by Thomson Reuters)
LOSS	1 if the firm reported a net loss in the year 2010, and 0 otherwise
FIN/ACQ	1 if the firm issued securities or acquired another company in the year 2010, and 0 otherwise

4.3 Model Specifications

The model's primary dependent variable (the absolute value of discretionary accruals i.e. ABSDACC) aims to identify earnings management using the absolute value of discretionary accruals as its proxy (Frankel et al. 2002). As introduced in the literature review, the idea behind examining earnings management in this context is the thought that an auditor's independence can be seen to be impaired when he allows opportunistic earnings management.

The model's first explanatory variable (FEEVAR) includes 5 different auditor fee specifications. In the first regression approach the variable is defined as the ratio of non-audit fees to total fees (FEERATIO) which prior literature and the SEC suggest to be relevant in the assessment of auditor independence. Frankel et al. (2002) point out that this ratio is affected by the cross-sectional variation of both non-audit and audit fees and that it does not capture the scale of the fees or the economic importance of the client to the auditor. The economic importance, in line with the concept of economic bonding, is taken into account in the second fee variable (FEEVAR) combination; the client-specific percentile ranks of non-audit fees and audit fees by auditor (RANKNON and RANKAUD). For example, the client that pays the highest (lowest) amount of non-audit fees to a specific auditor receives a RANKNON value of 100 (1). This fee variable specification consists of two parts, enabling a separate analysis of the importance of the client as a non-audit and audit service customer, while still mitigating omitted variable bias since prior research suggests a positive correlation between audit and non-audit fees. The third and final specification of the original study of Frankel et al. (2002) is the client-specific percentile rank of total fees by auditor (RANKTOT). This variable is again affected by the cross-sectional variation of both audit and non-audit fees and, since it is an aggregate measure for both fee categories, assumes similar incentive effects.

The last two fee variables are modifications to the original model. The fourth fee variable is defined as the ratio of tax fees to total fees (TAXFEERATIO). The ratio is subject to the same cross-sectional variations and limitations of measuring economic importance as FEERATIO. It aims to measure the proportional amount of tax services purchased by each client and thus separating their effect from others. The fifth fee variable (FEEVAR) combination is defined as the client-specific percentile ranks of tax fees, other non-audit fees and audit fees (RANKTAX, RANKOTH and RANKAUD). This again eliminates the variation from the other service categories and captures the economic importance of the client with respect to specific service categories. The variable consists of three parts in order to enable a clearer disaggregation of effects while still mitigating omitted variable bias.

Additionally, the model controls for several other factors that might affect the amount of discretionary accruals. The findings of for example Francis et al. (1999) suggest that big 4 auditors could be less likely to allow earnings management in the form of estimated discretionary accruals, suggesting that these auditors might be more active in constraining opportunistic accrual reporting. Prior literature also suggests a possible association between long audit tenures and diminished auditor independence (Schneider et al. 2006). These factors are controlled for in the model with a dummy variable equal to 1 when the auditor is a big 4 firm (BIGFOUR) and with a variable measuring the number of years the audit firm has been auditing the company's financial statements (AUDTEN). Prior research also suggests that discretionary accruals are associated with leverage and firm performance. Therefore the model also includes the ratio of total liabilities to total assets (LEVERAGE) and the following measures of firm performance which are all deflated by total assets: cash from operations (CFO), the absolute value of cash from operations (ABSCFO), total accruals (ACC) as well as the absolute value of total accruals (ABSACC). (Frankel et al. 2002)

Another factor connected to the amount of discretionary accruals is management's need to meet earnings benchmarks, and therefore their incentives to manage earnings. These incentives have found to be stronger in firms with high litigation risk, growth expectations and institutional ownership. The model takes these factors into account with a dummy variable equal to 1 if the company operates in a high-litigation-risk industry (LITRISK), a variable measuring growth prospects through the company's market-to-book ratio (M/B) and with a variable defined as the percentage of shares held by institutions (%INST) as reported by Thomson Reuters. Incentives for earnings management also arise when a company reports losses. This factor is controlled in the model by a dummy variable (LOSS) equal to 1 if a company reported a loss in 2010. (Frankel et al. 2002)

The model controls for firm size with the natural log of the market value of equity (LOGMVE). Additionally, since acquisition activities have been found to be connected to the amount of non-audit fees, the model includes a dummy variable (FIN/ACQ) equal

to 1 if the firm issued securities or made an acquisition during 2010 as reported by COMPUSTAT. (Frankel et al. 2002)

Frankel et al.'s (2002) model finally includes an additional measure of firm performance defined as the percentage compounded monthly return for the year examined adjusted for the CRSP value-weighted market index. However, because of unavailable data, this additional measure is left out of the model in this study.

Like any other research model, the approach chosen in this study is subject to some limitations and possible criticism. One argument recently brought up in a working paper by Coulton et al. (2012) is that the association between accounting quality (measured by e.g. unexpected accruals) and audit fees cannot be reliably captured by single-period models such as this one, because fee amounts from different years are not independent. In their study, they show that single- and multi-period models can lead to opposite conclusions about the effect of fees on accounting quality and therefore also auditor independence. Another problem arises from using ratios such as FEERATIO and TAXFEERATIO. Antle et al. (2006) show that using a ratio of non-audit fees to audit fees masks the opposite effects of the individual components. Conclusions from the coefficients of feeratio –variables might therefore leave room for interpretation.

4.4 Expected Results

Frankel et al. (2002) found statistically significant positive coefficients for the ratio of non-audit fees to total fees (FEERATIO) and the economic importance of a non-audit service client to an auditor (RANKNON), while on the other hand the coefficient for RANKAUD measuring the economic importance of an audit service client was significantly negative. The total economic importance of a client (RANKTOT) had a positive coefficient, which was not statistically significant. Therefore their findings suggests that as the ratio of non-audit fees to total fees increases, or when an audit client becomes a vital income source through the provision of non-audit services, also the

proxy for impaired auditor independence increases. In contrast to this effect, when the audit client is an important income source through the provision of audit services, the use of discretionary accruals decreases. Additionally, their results on RANKTOT show how combining the variables into a single measure hides these differing effects.

The problem with interpreting such aggregate effects is the foundation of this study. In Frankel et al.'s (2002) research tax fees were not examined separately but included in the category non-audit fees. My approach to use three variables measuring the effects of tax services (RANKTAX), other non-audit services (RANKOTH) and audit services (RANKAUD) as the fee variable (FEEVAR) further disaggregates the effects while avoiding omitted variable bias. Previous studies point to the expected result that tax fees are also associated with discretionary accruals, meaning that the coefficients for TAXFREERATIO and RANKTAX should be statistically significant. It would be interesting to find negative associations indicating that when the ratio of tax fees to total fees, or the economic importance of the client as a tax service customer increases, the use of discretionary accruals in return decreases. These results would justify the legislator's decision to provide special treatment for tax services in relation to other non-audit services.

5) Empirical Tests and Results

5.1 Descriptive Statistics

Table 5 contains descriptive statistics on the total sample and reports the results of t-tests comparing regression variable means when the sample is partitioned into two subsamples at the median value of the ratio of non-audit fees to total fees (FEERATIO) and the ratio of tax fees to total fees (TAXFEERATIO). The respective median values are 0,110 and 0,038 as is also evident from the table. The large sample size guarantees normality of the means around the true population mean due to the central limit theorem, making t-tests applicable without checking for the normality of individual sample variables. The t-tests indicate that at a significance level of 0,01 firms with an above-median FEERATIO are financially more important to their auditors when measured in non-audit, total, tax and other non-audit fees (RANKNON, RANKTOT, RANKTAX and RANKOTH). Contrary to Frankel et al.'s (2002) findings, the t-test failed to reveal a statistically significant difference between the mean values of the client's importance measured in audit fees (RANKAUD), the absolute value of discretionary accruals (ABSDACC), cash from operations and the absolute value of cash from operations (CFO and ABSCFO), the litigation risk dummy and institutional ownership percentage (LITRISK and %INST) in the two subsamples. Additionally the results show that above-median firms are more likely to have a big-4 auditor, have longer audit tenures and higher market values of equity in addition to being less likely to endure a loss and being more likely to engage in financing and acquisition activities. Following the same logic to analyze the effects of tax services instead of all non-audit services, I also divide the sample at the median value of TAXFEERATIO. This results in similar p-values, except that in this case firms with an above-median TAXFEERATIO are also found to be economically more important audit-service clients to their auditors as measured by RANKAUD. Additionally no statistically significant difference between the mean values of FIN/ACQ in the two subsamples can be found. This indicates that the null hypothesis of equal probabilities to engage in financing and acquisition activities within both subsamples cannot be rejected at a 0,01 significance level.

TABLE 5 Sample Descriptive Statistics and Comparison of Means for Regression Variables

This table reports total sample descriptive statistics on the regression variables as well as results from their comparison of means, when the sample is divided into two subsamples at the median value of the ratio of non-audit fees to total fees (FEERATIO) or at the median value of the ratio of tax service fees to total fees (TAXFEERATIO). For variable definitions please see Table 4 on pages 31-32.

	Total Sample Statistics			p-values of t-test in Comparison of Means			
Variable Name	Mean of Total Sample	Median of Total Sample	Standard Deviation of Total Sample	Sample Divided at Median FEERATIO	Mean for Above-Median Firms is:	Sample Divided at Median TAXFEERATIO	Mean for Above-Median Firms is:
ABSDACC	0,354	0,131	1,748	0,855	higher	0,237	higher
FEERATIO	0,145	0,110	0,140	-	-	<0,01	higher
RANKNON	49,149	50,000	32,449	<0,01	higher	<0,01	higher
RANKAUD	51,680	51,400	31,163	0,072	higher	<0,01	higher
RANKTOT	51,710	51,400	31,150	<0,01	higher	<0,01	higher
TAXFEERATIO	0,081	0,038	0,104	<0,01	higher	-	-
RANKTAX	44,015	46,200	35,437	<0,01	higher	<0,01	higher
RANKOTH	45,623	48,900	34,973	<0,01	higher	<0,01	higher
RANKAUD	51,680	51,400	31,163	0,072	higher	<0,01	higher
BIGFOUR	0,733	1,000	0,442	<0,01	higher	<0,01	higher
AUDTEN	12,462	8,000	16,640	<0,01	higher	<0,01	higher
CFO	0,069	0,085	0,226	0,032	higher	0,123	higher
ABSCFO	0,136	0,098	0,193	0,046	lower	0,590	lower
ACC	-0,086	-0,052	0,901	0,279	higher	0,443	lower
ABSACC	0,126	0,061	0,896	0,057	lower	0,978	higher
LEVERAGE	0,666	0,485	5,486	0,359	lower	0,300	higher
LITRISK	0,313	0,000	0,463	0,397	lower	0,397	higher
M/B	1,950	2,002	89,125	0,452	lower	0,807	lower
LOGMVE	6,401	6,466	2,104	<0,01	higher	<0,01	higher
%INST	0,651	0,646	3,676	0,563	lower	0,700	lower
LOSS	0,274	0,000	0,446	<0,01	lower	<0,01	lower
FIN/ACQ	0,243	0,000	0,429	<0,01	higher	0,151	higher

Table 6 illustrates correlations between the regression variables with Pearson (Spearman) correlation coefficients below (above) the diagonal. The results show positive and statistically significant correlations between most of the fee variables. The only exception is the coefficient between the ratio of tax fees to total fees (TAXFEERATIO) and the economic importance of an audit service client (RANKAUD), which is also positive but not significant at a 0,05 level. Supporting the findings from the median ratio analysis of tax fees to all non-audit fees in Table 3 Panel

C, there is a high and significant correlation between the client's importance as a tax service client and as a non-audit service client (RANKTAX and RANKNON), which again illustrates that tax services constitute a large share of the non-audit services offered in the sample. In line with prior research (e.g Simunic 1984 and Frankel et al. 2002) and the concepts of economic bonding and economies of scope, the correlation between the client's importance as a non-audit service client and as an audit service client (RANKNON and RANKAUD) is statistically significant and positive. All of the fee variables are positively correlated with firm size. Contrary to Frankel et al.'s (2002) findings however, none of them are significantly correlated with the absolute value of discretionary accruals (ABSDACC). Therefore the results offer no evidence to support a rejection of the null hypotheses $H_0$1, $H_0$2 and $H_0$3.

ABSDACC however does have a significant negative Pearson's r with the performance measures cash from operations (CFO), total accruals (ACC) and the natural logarithm of market value of equity (LOGMVE). Both firm size as well as cash from operations are also positively correlated with the fee variables, which illustrates quite well how the variables in discretionary accrual analyses are often related to the same factors, as pointed out by Antle et al. (2006). Examining correlations of ABSDACC with the ordinal scale variables reveals a statistically significant negative Spearman's rho for BIGFOUR and FIN/ACQ, indicating a connection between lower discretionary accruals and having a big 4 auditor as well as financing and acquisition activity.

The table shows a strong negative correlation (Pearson's r of -0,934) between LEVERAGE and ACC and accordingly also a strong positive correlation (Pearson's r of 0,938) between LEVERAGE and the absolute value of total accruals (ABSACC). This suggests a possible case of multicollinearity within the model, which could lead to unreliable coefficient estimates with high standard errors for these variables. However, since the coefficients of these control variables are not of primary interest in the regression analysis, and the fee variables of interest are not highly correlated with any of the control variables (the highest Pearson's r is 0,44), this should not be problematic for the reliability of fee variable coefficient estimates. An examination of their variance inflation factors (VIF) is however called for to make sure this is actually the case.

TABLE 6 Pearson and Spearman Correlation Matrix for Regression Variables

This table reports the correlation matrix for the main regression model's variables: Pearson (Spearman) correlation coefficients are reported below (above) the diagonal. For variable definitions please see Table 4 on pages 31-32.

	ABS-DACC	FEE-RATIO	RANK-NON	RANK-AUD	RANK-TOT	TAXFEE-RATIO	RANK-OTH	RANK-TAX	BIG-FOUR	AUD-TEN	CFO	ABS-CFO	ACC	ABS-ACC	LEVE-RAGE	M/B	LOG-MVE	%INST	LOSS	FIN/ ACQ
ABSDACC		,017	,014	,019	,023	,019	,000	,023	-,075**	-,036	-0,01	,100**	-0,01	,166**	0,009	-,002	-,116**	-,083**	,042*	-,090**
FEERATIO	,007		,781**	,073**	,208**	,743**	,571**	,668**	,208**	,159**	,079**	,002	,041*	-,083**	,073**	,063**	,227**	,165**	-,116**	,128**
RANKNON	,003	,695**		,474**	,579**	,570**	,741**	,729**	,017	,111**	,077**	-,039	,073**	-,120**	,129**	,042*	,335**	,162**	-,153**	,144**
RANKAUD	,010	,042*	,474**		,974**	,071**	,397**	,341**	-,099**	,070**	,072**	-,086**	,093**	-,154**	,196**	-,010	,436**	,188**	-,175**	,136**
RANKTOT	,012	,201**	,580**	,974**		,157**	,469**	,413**	-,100**	,068**	,075**	-,079**	,090**	-,153**	,197**	-,004	,437**	,189**	-,175**	,154**
TAXFEE-RATIO	,011	,704**	,501**	,027	,132**		,141**	,884**	,262**	,218**	,095**	,019	,030	-,083**	,057**	,072**	,227**	,202**	-,121**	,039
RANKOTH	-,012	,501**	,734**	,391**	,462**	,071**		,302**	,074**	,123**	,060**	-,042*	,060**	-,109**	,143**	,051*	,344**	,173**	-,118**	,181**
RANKTAX	,009	,572**	,725**	,334**	,406**	,718**	,298**		,144**	,185**	,085**	-,020	,060**	-,112**	,099**	,050*	,313**	,202**	-,146**	,075**
BIGFOUR	-,036	,143**	,025	-,092**	-,093**	,180**	,093**	,161**		,533**	,164**	,024	-,004	-,113**	,187**	,153**	,578**	,506**	-,175**	,134**
AUDTEN	-,022	,087**	,155**	,163**	,161**	,106**	,176**	,171**	,335**		,178**	,061**	,022	-,133**	,108**	,117**	,462**	,396**	-,212**	,087**
CFO	-,273**	,046*	,092**	,093**	,092**	,058**	,093**	,072**	,140**	,079**		,646**	-,295**	,153**	-,080**	,229**	,351**	,279**	-,521**	,000
ABSCFO	,402**	-,034	-,066**	-,117**	-,114**	-,032	-,081**	-,064**	-,105**	-,063**	-,432**		-,376**	,347**	-,111**	,330**	,140**	,082**	-,175**	-,105**
ACC	-,502**	,025	,045*	,046*	,046*	,015	,040	,023	,051*	,022	,465**	-,578**		-,703**	-,119**	-,026	,060**	-,001	-,345**	,002
ABSACC	,671**	-,037	-,065**	-,046*	-,048*	-,027	-,059**	-,040*	-,086**	-,041*	-,478**	,576**	-,839**		,064**	,027	-,199**	-,100**	,294**	-,072**
LEVERAGE	,599**	-,019	-,036	-,028	-,028	-,011	-,032	-,014	-,043*	-,009	-,496**	,561**	-,934**	,938**		,000	,182**	,065**	,040*	,084**
M/B	-,001	,005	,013	,002	,004	-,008	,022	,000	-,013	,006	-,013	,018	-,005	,006	-,002		,327**	,160**	-,074**	-,011
LOGMVE	-,041*	,178**	,344**	,442**	,442**	,149**	,360**	,314**	,578**	,391**	,264**	-,100**	,095**	-,117**	-,076**	-,004		,610**	-,391**	,205**
%INST	-,010	-,001	,013	,007	,005	-,003	,030	-,006	,013	,007	,020	-,016	,005	-,009	-,003	-,013	,045*		-,296**	,150**
LOSS	,055**	-,088**	-,155**	-,177**	-,178**	-,110**	-,121**	-,147**	-,175**	-,185**	-,386**	,067**	-,108**	,087**	,052*	,033	-,390**	-,039		-,069**
FIN/ACQ	,003	,120**	,146**	,140**	,158**	,016	,182**	,076**	,134**	,057**	,041*	-,102**	,019	-,036	-,015	,005	,200**	,002	-,069**	

**. Correlation is significant at the 0.01 level (2-tailed).

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

5.2 Regression Results

Table 7 reports summary statistics on the regression results from all five regressions with different fee variable (FEEVAR) combinations. The coefficients of the ratio of non-audit fees to total fees (FEERATIO), the economic importance of a client measured in non-audit, audit and total fees (RANKON, RANKAUD and RANKTOT) as well as the ratio of tax fees to total fees (TAXFEERATIO) are all positive and statistically significant at a 0,1 level, but only RANKTOT remains significant even at the 0,01 level. The economic importance of a client measured in tax service fees (RANKTAX) and in other non-audit fees (RANKOTH) are also positive but statistically insignificant. These results are quite different from previous findings of Frankel et al. (2002). The results indicate that an increase in the ratio of non-audit fees to total fees (FEERATIO) or tax fees to total fees (TAXFEERATIO) is positively associated with the magnitude of discretionary accruals (ABSDACC). The economic importance of a client also has a positive association with earnings management, regardless of which services the fees are paid for. The findings show that examining the association between individual service types and earnings management might lead to misleading conclusions. On a 0,01 significance level, none of the variables measuring the economic importance of a client within an individual service category (RANKNON, RANKAUD, RANKTAX, RANKOTH) seem to have a statistically significant association with earnings management, whereas the variable measuring the total economic importance of a client (RANKTOT) instead shows a significant positive association.

The adjusted R-squared for all five regression models is approximately 0,47 which is nearly identical to the findings of Frankel et al. (2002). Since the models include different amounts of explanatory variables, these consistent goodness-of-fit measures show that the choice of different fee variables has a similar effect on the model's explanatory power. The chosen fee variables seem to be relevant in the sense that none of them has a significantly negative effect on the model's adjusted R-squared.

TABLE 7 Summary of Results from Regressions with the Absolute Value of Discretionary Accruals as the Dependent Variable

This table reports summary statistics from regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable and the sample size equal to 2415. For variable definitions please see Table 4 on pages 31-32.

	Regression 1		Regression 2		Regression 3		Regression 4		Regression 5	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	-0,221	0,035	-0,256	0,015	-0,234	0,025	-0,219	0,036	-0,245	0,020
FEERATIO	0,332	0,080								
RANKNON			0,002	0,039						
RANKAUD			0,002	0,067						
RANKTOT					0,003	< 0,01				
TAXFEERATIO							0,487	0,057		
RANKTAX									0,001	0,127
RANKOTH									0,000	0,771
RANKAUD									0,002	0,040
BIGFOUR	0,038	0,605	0,162	0,055	0,161	0,055	0,028	0,701	0,140	0,096
AUDTEN	-0,001	0,721	-0,001	0,577	-0,001	0,629	-0,001	0,690	-0,001	0,579
CFO	0,568	< 0,01	0,588	< 0,01	0,592	< 0,01	0,566	< 0,01	0,591	< 0,01
ABSCFO	0,762	< 0,01	0,819	< 0,01	0,829	< 0,01	0,767	< 0,01	0,830	< 0,01
ACC	0,502	< 0,01	0,502	< 0,01	0,505	< 0,01	0,504	< 0,01	0,504	< 0,01
ABSACC	1,574	< 0,01	1,582	< 0,01	1,572	< 0,01	1,572	< 0,01	1,576	< 0,01
LEVERAGE	0,023	0,314	0,022	0,353	0,023	0,317	0,024	0,305	0,023	0,333
LITRISK	-0,106	0,064	-0,090	0,116	-0,091	0,114	-0,109	0,056	-0,093	0,107
M/B	0,000	0,715	0,000	0,701	0,000	0,718	0,000	0,731	0,000	0,715
LOGMVE	0,023	0,178	-0,011	0,609	-0,008	0,700	0,025	0,147	-0,008	0,704
%INST	-0,002	0,817	-0,001	0,859	-0,001	0,872	-0,002	0,819	-0,001	0,877
LOSS	0,198	< 0,01	0,193	< 0,01	0,191	< 0,01	0,203	< 0,01	0,194	< 0,01
FIN/ACQ	0,109	0,081	0,099	0,113	0,103	0,099	0,120	0,053	0,107	0,089
Adjusted R^2	0,468		0,470		0,469		0,468		0,469	

The variables controlling for firm performance (CFO, ABSCFO, ACC, and ABSACC) have a statistically significant positive effect on earnings management in all five regressions. A significant positive association is also found between the firm reporting a loss (LOSS) and the magnitude of discretionary accruals (ABSDACC).

In order to ensure that the ordinary least square (OLS) regression results are not misleading, I test how the data meets some underlying OLS assumptions. The OLS estimator has good properties when the following Gauss-Markov conditions are met (Verbeek, 2012, p.15):

$$E\{ \varepsilon_i \} = 0, \qquad i = 1,\ldots,N \tag{5}$$

$$\{\varepsilon_1 ,\ldots, \varepsilon_N\} \text{ and } \{x_1 ,\ldots, x_N\} \text{ are independent} \tag{6}$$

$$Var\{ \varepsilon_i \} = \sigma^2, \qquad i = 1,\ldots,N \tag{7}$$

$$Cov\{\varepsilon_i, \varepsilon_j\} = 0, \qquad i, j = 1,\ldots,N, i \neq j \tag{8}$$

Equation 5 implies that the mean of the error term is zero. Equation 6 requires that the distributions of the observations in x and the distribution of the error terms in ε are independent, and finally equations 7 and 8 constitute the assumptions of homoscedasticity and no autocorrelation. In the following sections I test the data for violations of these assumptions and other problematic aspects that might make the regression results unreliable.

Influential Outliers

Since a linear model can be sensitive to a few outliers, I use Cook's distance to isolate influential data points (i.e. observations with a Cook's distance > 1). Table 8 shows the fee variable (FEEVAR) coefficient estimates with influential data points removed from the analysis. Most fee variable coefficients remain positive and significant at the 0,1 level, but the outlier-free models lose some of the original models' explanatory power. Another noticeable difference in the fee variables is that the economic importance of a client as an audit service customer (RANKAUD) in regression number five becomes statistically significant also at the 0,01 level.

TABLE 8 Fee Variable Coefficient Estimates from Outlier-Clean Regressions with the Absolute Value of Discretionary Accruals as the Dependent Variable

This table reports fee variable (FEEVAR) coefficient estimates from regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable and with outliers with a Cook's Distance > 1 removed from the sample. For variable definitions please see Table 4 on pages 31-32.

	Nr. of Outliers Removed	Variable Name	Coefficient	p-value
Regr. 1	3	FEERATIO	0,337	0,072
Regr. 2	3	RANKNON	0,002	0,049
		RANKAUD	0,003	0,012
Regr. 3	3	RANKTOT	0,004	<0,01
Regr. 4	3	TAXFEERATIO	0,515	0,042
Regr. 5	3	RANKTAX	0,010	0,100
		RANKOTH	0,000	0,842
		RANKAUD	0,003	<0,01

Normally Distributed Residuals

The presence of outliers suggests that the residuals of the model might not be normally distributed. Table 9 reports summary statistics on model's residuals. Based on the Kolmogorov-Smirnov and Shapiro-Wilk tests, the null hypothesis of normally distributed residuals can be rejected at the 0,01 significance level. The OLS coefficient estimates however still remain the best linear unbiased estimators of the regression coefficients, because the expected value of the error term E $\{\varepsilon_i\}$ i.e. the residual mean is zero in all five regressions. The non-normality however can have a negative effect on the reliability of the coefficient estimate p-values, because t-tests require normality. This however is compensated by the large sample size used in all five regressions.

TABLE 9 Normality and Expected Value of Regression Residuals with the Absolute Value of Discretionary Accruals as the Dependent Variable

This table reports summary statistics on the expected values and normality of residuals from regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable and the sample size equal to 2415.

		Kolmogorov-Smirnof			Shapiro-Wilk		
	$E(\varepsilon_i)$	Statistic	df	p-value	Statistic	df	p-value
Regr. 1	0,00E+00	0,31	2415	<0,01	0,177	2415	<0,01
Regr. 2	0,00E+00	0,309	2415	<0,01	0,179	2415	<0,01
Regr. 3	0,00E+00	0,310	2415	<0,01	0,178	2415	<0,01
Regr. 4	0,00E+00	0,309	2415	<0,01	0,178	2415	<0,01
Regr. 5	0,00E+00	0,308	2415	<0,01	0,179	2415	<0,01

Homoskedasticity and Linearity

Figure 3 shows scatter plots of the standardized residuals (y-variable) and the standardized predicted values (x-variable). The plots are centered on 0 as is the case when the error term has a mean of zero, but they are not randomly distributed around its center in a sphere as would be the case with a normally distributed error term. The spread of the residuals is quite even throughout the plot suggesting no major violations of linearity, but the fact that the scatter patterns have a systematic shape on the lower left side might suggest some concern of heteroscedasticity. Additionally, the previously found outliers are visible on the right side of the plot. The systematic pattern is most likely caused by the non-normally distributed error terms. This is connected to the previous conclusion from above: the non-normal distribution of the error term, noticeable also in the plot, does not make the coefficient estimates biased, but might have a negative impact on the reliance of the t-tests through biased standard errors.

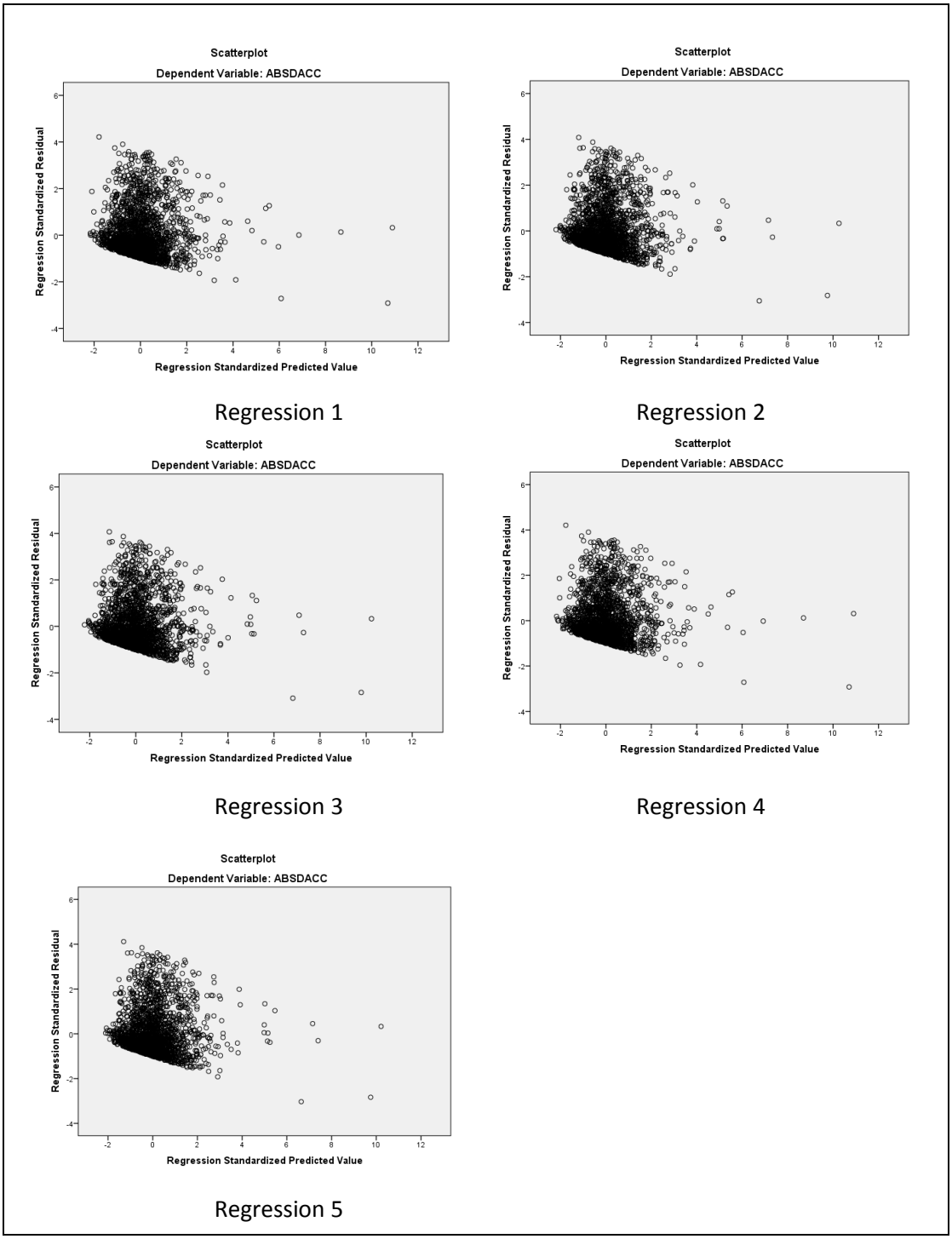

Figure 3 Visual Examination of Possible Heteroscedasticity

Multicollinearity and Independence of Residuals

The correlation matrix in Table 6 revealed possible multicollinearity between the control variables LEVERAGE, ACC and ABSACC. It however also showed that the fee variables of interest did not have strong correlations with any of the control variables. In order ensure that the variances of the fee variable (FEEVAR) coefficient estimates are not affected by multicollinearity issues, I report their variance inflation factors in Table 10. These factors indicate how much the coefficient estimate variances are inflated by collinearity with another variable. When an estimate is not affected by collinearity with another regressor, its VIF value is equal to 1. The table shows that the fee variables are not subject to multicollinearity problems since all VIF values are below 2 and, as a rule of thumb, a value of 5 can be seen as a threshold for possible problems.

Table 10 also shows the Durbin-Watson statistic of the regressions, which is used to detect possible autocorrelation. This statistic's values lie between 0 and 4, where values differing from 2 are indicators of autocorrelation. The table shows that the Durbin-Watson of all five regressions are approximately equal to 2 indicating that there is no violation of the fourth Gauss-Markov assumption present in the models.

TABLE 10 Variance Inflation Factors and Durbin-Watson Statistics from Regressions with the Absolute Value of Discretionary Accruals as the Dependent Variable

This table reports variance inflation factors (VIF) of the fee variable (FEEVAR) coefficient estimates as well as the Durbin-Watson statistics from regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable and the sample size equal to 2415. For variable definitions please see Table 4 on pages 31-32.

	Variable Name	Variance Inflation Factor		Durbin-Watson
Regr. 1	FEERATIO	1,045	≈1	2,004
Regr. 2	RANKNON	1,347	≈1	2,000
	RANKAUD	1,862	< 2	
Regr. 3	RANKTOT	1,691	< 2	2,001
Regr. 4	TAXFEERATIO	1,044	≈1	1,996
Regr. 5	RANKTAX	1,219	≈1	1,997
	RANKOTH	1,305	≈1	
	RANKAUD	1,842	< 2	

In summary, examining the underlying assumptions of the ordinary least square regression revealed that the model's fee variable (FEEVAR) coefficient estimates remain positive even when outliers are removed from the data and that their variances are not affected by multicollinearity problems. Because the outliers did not bias the FEEVAR coefficient estimates and removing them resulted in loss of explanatory power, I will keep using the total sample in further analyses. Additionally, no signs of autocorrelation were detected, which is not surprising, given that the model does not use time series data. The analysis did, however, reveal that the model results with this sample might suffer from heteroscedasticity in addition to a non-normal error term distribution, which could lead to unreliable standard error estimators for the coefficient estimates, thus affecting the reliability of their p-values.

I address these problems by also reporting heteroscedasticity-consistent standard error estimators and p-values. Frankel et al.'s (2002) results are reported using White's (1980) robust standard error estimates. The estimates used in this study however are derived by an algorithm written by Hayes et al. (2007) for IBM SPSS Statistics, which computes heteroscedasticity-robust test statistics using the methods defined by MackKinnon and White (1985). In their experiments MacKinnon et al. (1985) found that their modified version of the heteroscedasticity-consistent estimator outperforms the original one from White (1980), in addition to enabling more reliable inferences even if there in fact is no heteroscedasticity present and the sample size is small. This is why all the following results in this paper will be reported with the robust estimators, which should significantly lower the risk of getting unreliable and misleading p-values. Table 11 summarizes the ABSDACC regression results with heteroscedasticity consistent p-values, while the code used to compute the robust standard error estimators and further information on the method can be found in Appendix A.

TABLE 11 Summary of Heteroscedasticity-Consistent Results from Regressions with the Absolute Value of Discretionary Accruals as the Dependent Variable

This table reports heteroscedasticity-consistent summary statistics from regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable and the sample size equal to 2415. For variable definitions please see Table 4 on pages 31-32.

	Regression 1		Regression 2		Regression 3		Regression 4		Regression 5	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	-0,221	0,231	-0,256	0,183	-0,234	0,207	-0,219	0,2440	-0,245	0,194
FEERATIO	0,332	0,040								
RANKNON			0,002	0,017						
RANKAUD			0,002	0,097						
RANKTOT					0,003	0,026				
TAXFEERATIO							0,487	0,239		
RANKTAX									0,001	0,225
RANKOTH									0,000	0,796
RANKAUD									0,002	0,081
BIGFOUR	0,038	0,060	0,162	0,092	0,161	0,093	0,028	0,689	0,140	0,122
AUDTEN	-0,001	0,624	-0,001	0,466	-0,001	0,516	-0,001	0,595	-0,001	0,579
CFO	0,568	0,224	0,588	0,213	0,592	0,230	0,566	0,227	0,591	0,461
ABSCFO	0,762	0,146	0,819	0,130	0,829	0,125	0,767	0,145	0,830	0,212
ACC	0,502	0,173	0,502	0,170	0,505	0,162	0,504	0,163	0,504	0,166
ABSACC	1,574	< 0,01	1,582	<0,01	1,572	< 0,01	1,572	< 0,01	1,576	< 0,01
LEVERAGE	0,023	0,875	0,022	0,890	0,023	0, 883	0,024	0,873	0,023	0,886
LITRISK	-0,106	0,033	-0,090	0,053	-0,091	0,053	-0,109	0,034	-0,093	0,065
M/B	0,000	0,817	0,000	0,832	0,000	0,823	0,000	0,829	0,000	0,835
LOGMVE	0,023	0,381	-0,011	0,716	-0,008	0,786	0,025	0,358	-0,008	0,792
%INST	-0,002	0,996	-0,001	0,997	-0,001	0,997	-0,002	0,996	-0,001	0,997
LOSS	0,198	0,158	0,193	0,164	0,191	0,166	0,203	0,160	0,194	0,171
FIN/ACQ	0,109	0,226	0,099	0,253	0,103	0,242	0,120	0,197	0,107	0,264
Adjusted R^2	0,468		0,470		0,469		0,468		0,469	

Since the coefficient estimates were unbiased, the coefficients in Table 11 remain identical to the previous approach, still providing no evidence that the effects on earnings management and auditor independence would be different for the individual fee categories. All fee variables remain positive and the coefficient estimates of the ratio of non-audit fees to total fees (FEERATIO), the client's economic importance as a non-audit and audit service client (RANKNON and RANKAUD) as well as in total (RANKTOT) are statistically significant at the 0,1 level. From the table it is noticeable that robust p-values of the performance measures such as CFO, ABSCFO and ACC are no longer significant at the 0,01 level as was consistently the case with the non-robust results. The coefficient estimates for the ratio of tax fees to total fees (TAXFEERATIO) and the economic importance of a client as a tax service customer (RANKTAX) also became insignificant at the 0,1 significance level indicating that there is no statistically significant association between tax services and the magnitude of discretionary accruals.

The positive associations found for FEERATIO, RANKNON, RANKAUD and RANKTOT are in line with the conclusions from the non-robust model. It seems that the economic importance of a client measured in non-audit (RANKNON), audit (RANKAUD) and total fees (RANKTOT) as well as the ratio of non-audit fees to total fees (FEERATIO) are associated with an increase in earnings management. The fact that also RANKAUD has a positive coefficient contradicts the findings of Frankel et al. (2002) who found that the economic importance of a client as an audit service customer not only restricts, but decreases the use of discretionary accruals in earnings management. The opposite findings of this study are in line with the behavioral theory – approach to auditor bias introduced by Moore et al. (2002). It seems that regardless of the context (i.e. type of service) in which the auditor affiliates with the audit client, the auditor can become biased due to partisanship problems. Therefore positive associations are found for both non-audit as well as audit services.

The results of generally positive fee variable coefficients are also rather intuitive when one approaches the concepts using only common sense. Speculation on whether non-audit services jeopardize auditor independence is built on the argument that they might,

through economies of scope, deepen the economic bond between the auditor and the audit client. It seems logical that an economic bond generally becomes stronger when a client becomes financially more important to the audit firm, regardless of what the fees are paid for. This reasoning is consistent with the results of this study, except for the fact that for example the client's importance measured in tax service fees (RANKTAX) is not statistically significant at the 0,05 level, whereas the total economic importance of a client is.

The total importance is measured by RANKTOT, which has one of the most statistically significant coefficients also in the robust results (p-value of 0,026), showing that while the total economic importance of a client has a significant association with the amount of auditor-allowed earnings management on a 0,05 level, this does not seem to be the case for most individual service categories. This might simply be due to the differences in the absolute fee amounts. The model's fee variables aim to capture the economic importance of a client to his auditor, but it is clear that the total fees the auditor receives will be larger than the fees received for performing individual services. This might make the client's total economic importance more important to the auditors' decision making than the service type –specific one, thus leading to more significant associations between RANKTOT and earnings management than is the case for the other fee variables.

Even though in this sample the share of non-audit fees from total fees is approximately 20%, whereas for Frankel et al. (2002) the share of non-audit fees for big 4 auditors ranged from 67% to 75%, the positive coefficient estimates for the ratio of non-audit fees to total fees (FEERATIO) and the client's economic importance as a non-audit service customer (RANKNON) are significant at the 0,05 level. This contradicts the previous argument that individual fee types would not be as significantly associated with earnings management as total fees are, simply because of their lower absolute amounts. Their significance could suggest that the agency –theory approach to auditor bias (see for example Simunic 1984) has some explanatory power: because of the economic rents received from providing both non-audit and audit services, the auditors providing more non-audit services might make the conscious decision to allow earnings

management through discretionary accruals in order to remain as the auditor, and to ensure the future economic rents stemming from the simultaneous provision of both services. Taken together, the results on FEERATIO and RANKNON imply that null hypothesis 1 ($H_0$1) can be rejected at the 0,05 significance level, indicating that there is a positive statistically significant association between non-audit services and earnings management.

The heteroscedasticity-robust results show that tax services, measured in both the ratio of tax service fees to total fees (TAXFEERATIO) as well as the economic importance of a client as a tax service customer (RANKTAX), do not seem to have a statistically significant association with earnings management even at a significance level of 0,1. This contradicts the findings of Choi et al. (2009), who found a statistically significant negative association, which they believed to be a product of knowledge spillovers. The coefficient estimates of this study are positive and statistically insignificant, providing no evidence to support the rejection of null hypothesis 2 ($H_0$2). Since the aim of this thesis is not attempt to measure knowledge spillovers, one can only conclude that no statistically significant association between tax services and earnings management was found, which in itself does not provide solid evidence on the possible absence or presence of knowledge spillovers.

The economic importance of a client as an audit customer (RANKAUD) has a positive coefficient estimate that is statistically significant only at the 0,1 level, which indicates that there is a 10% risk that the positive coefficient, resulting from the model with this data, is just a product of chance. With this sample size one would expect a significance level lower than 0,1 which is why null hypothesis 3 ($H_0$3) cannot be rejected on the basis of these results. Audit services therefore do not seem to have a statistically significant association with earnings management.

Before drawing final conclusions about the research hypotheses, I examine the robustness of the results following Frankel et al.'s (2002) example. As was the case with their sample, also the sample used in this study revealed large differences between auditor-specific fee compositions. Additionally, there might be a difference in the

propensity of an auditor allowing income increasing versus income decreasing discretionary accruals. There might also be a link between the size of the audit client and the incentive effects of the auditor. The following chapter aims to control for these differences in order to determine, how robust the inferences made from the total sample regressions are to changes in the before mentioned factors.

5.3 Sensitivity Analysis

Auditor Fee Composition

The data description revealed that there are noticeable differences between the individual auditor fee compositions. For example Table 3 Panel B showed that non-audit fees constitute 20% of the total fees for big 4 auditors, whereas the corresponding share for all non-big 4 auditors was a considerably lower 11,5%. Even within the big 4 auditors this share ranges from 15% to 23%. It seems reasonable that when an audit firm receives a large amount of its fees from non-audit services that are in most part made up by tax services, the economic importance of a specific non-audit or tax service client is highlighted, leading to a possibly stronger association between the model's fee variables (e.g. RANKNON and RANKTAX) and auditor-allowed earnings management. I test the robustness of the results across different audit fee compositions by running the regressions separately for firms with different auditors. Specifically the individual big 4 auditors are of interest, because of their higher shares of non-audit fees and the fact that they received 95% of the samples total fees. Non-big 4 auditors are grouped together in this analysis to examine what the association between the fee variables and earnings management is for auditors with typically lower shares of non-audit fees. Table 12 reports the summary statistics on the fee variable (FEEVAR) coefficient estimates from auditor-specific regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable.

The results remain largely similar to the total sample case. In almost all cases the fee variables have a positive association with earnings management, and the only

coefficient estimate that is statistically significant at the 0,01 level is the one measuring the total economic importance of a client (RANKTOT) for PricewaterhouseCoopers. In two of the auditor-specific regressions RANKTOT has a p-value of approximately 0,01. These two auditors are PricewaterhouseCoopers and Ernst & Young, which also have the highest total fees in addition to the largest shares of non-audit fees in the sample. PricewaterhouseCoopers (PwC) illustrates the previously introduced argument that the measures of economic importance of a client might be connected with the underlying absolute fee amounts. PwC not only has the highest share of non-audit fees to total fees (23,5%), but also the highest absolute value of total fees in the whole sample (approximately 1 985 Million USD, equal to 32% of all total fees). It seems logical that the financially most important client of PwC as measured in total fees (RANKTOT) might have a stronger influence on the auditor's decision making than the most important client of one of the non-big 4 auditors, where the absolute fee values are smaller. This logic is also supported by the results in the table. For all big 4 auditors the p-value of RANKTOT is close to or below 0,1 whereas the corresponding value for non-big 4 auditors is 0,378. The same applies to the economic importance of a client as an audit service customer (RANKAUD): KPMG, which has the highest share of audit fees to total fees of all big 4 auditors, has a positive RANKAUD coefficient estimate significant at the 0,05 level.

For both PwC as well as E&Y also the economic importance of a client as a non-audit service customer (RANKNON) has a positive coefficient significant at the 0,1 level which can also be connected to the fact that these firms receive the highest amounts of non-audit fees in the sample. Ernst & Young also provides insight into the effect of tax fees, since its non-audit fees are composed of 61% tax service fees. The economic importance of a tax service client (RANKTAX) and the ratio of tax fees to total fees (TAXFEERATIO) are positively associated with earnings management, but have statistically insignificant coefficient estimates. This can also be seen to be reversely connected to the argument about absolute values: when one divides total fees into smaller parts and the economic importance of specific services, the strength of the association seems to diminish along with the absolute fee values in question.

TABLE 12 Summary of Fee Variable Coefficient Estimates from Auditor-Specific Regressions with the Absolute Value of Discretionary Accruals as the Dependent Variable

This table reports summary statistics on fee variable (FEEVAR) coefficient estimates from auditor-specific regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable and the sample sizes equal to the amount of clients per auditor or auditor group. For variable definitions please see Table 4 on pages 31-32.

		E&Y		PwC		Deloitte		KPMG		Non-Big 4		Total Sample	
		Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Regr. 1	FEERATIO	0,254	0,509	0,224	0,102	0,608	0,338	0,449	0,509	0,027	0,095	0,332	0,040
	Adj. R^2	0,061		0,107		0,003		0,370		0,920		0,468	
	n	580		458		387		346		644		2415	
Regr. 2	RANKNON	0,040	0,055	0,002	0,031	0,007	0,197	0,000	0,864	0,001	0,436	0,002	0,017
	RANKAUD	0,003	0,210	0,001	0,288	0,008	0,135	0,005	0,015	0,001	0,398	0,002	0,097
	Adj. R^2	0,073		0,119		0,008		0,347		0,920		0,470	
	n	580		458		387		346		644		2415	
Regr. 3	RANKTOT	0,006	0,014	0,002	< 0,01	0,120	0,113	0,005	0,088	0,001	0,378	0,003	0,026
	Adj. R^2	0,071		0,116		0,008		0,350		0,920		0,469	
	n	580		458		387		346		644		2415	
Regr. 4	TAXFEERATIO	0,536	0,309	0,039	0,729	2,266	0,326	-0,419	0,311	0,038	0,870	0,487	0,239
	Adj. R^2	0,063		0,094		0,010		0,345		0,920		0,468	
	n	580		458		387		346		644		2415	
Regr. 5	RANKTAX	0,002	0,142	0,000	0,435	0,009	0,255	-0,001	0,429	0,000	0,640	0,001	0,225
	RANKOTH	0,000	0,832	0,001	0,086	-0,006	0,427	0,001	0,657	0,001	0,164	0,000	0,796
	RANKAUD	0,004	0,111	0,001	0,163	0,008	0,139	0,005	0,023	0,001	0,403	0,002	0,081
	Adj. R^2	0,069		0,115		0,012		0,345		0,92		0,47	
	n	580		458		387		346		644		2415	

Put together, the analysis across auditors with different fee compositions shows that the inferences about the effects of non-audit (FEERATIO, RANKNON) and audit services (RANKAUD) are sensitive to auditor fee composition, whereas tax services (RANKTAX, TAXFEERATIO) remain robustly insignificant across the auditor spectrum. Previous conclusions about $H_0$1 and $H_0$3 are therefore to be viewed skeptically, whereas conclusions about $H_0$2 remain robust.

Income Increasing and Decreasing Discretionary Accruals

In addition to examining whether the fees and economic importance of a client affects the magnitude of earnings management allowed by an auditor, I also examine whether this effect is different for income increasing and income decreasing earnings management. This is done by running the regression separately on firms with income increasing discretionary accruals (DACC+) and firms with income decreasing discretionary accruals (DACC-) using the real values of these positive/negative accruals as the dependent variable. The summary statistics on the fee variable (FEEVAR) coefficient estimates from these regressions are presented in Table 13.

The signs of the coefficients are consistent with the results of the main model. Fee variables for the 1416 firms with income increasing discretionary accruals (DACC+) are mostly positive, indicating that the share of fees and the economic importance of a client are positively associated with earnings management. The coefficients have however lost some of their statistical significance and only the ratio of non-audit fees to total fees (FEERATIO), the total economic importance of a client (RANKTOT) and the economic importance of a client as an audit service customer (RANKAUD) have p-values close to 0,1. It is also noticeable that the association between RANKTOT is more significant for big 4 auditors, which again shows that the overall economic importance of a client has a stronger effect on auditor-allowed earnings management with auditors receiving higher fees. Because big 4 auditors also receive higher shares of their total fees from non-audit services than non-big 4 auditors do, their coefficient estimate for the economic importance of a client as a non-audit service customer (RANKNON) is

also more significant than it is for non-big 4 auditors. The opposite applies to RANKAUD: non-big 4 firms receive nearly 90% of their fees from audit services, which results in a more significant RANKAUD coefficient estimate for non-big 4 auditors.

The 999 firms with income decreasing discretionary accruals (DACC-) also have mostly negative coefficient estimates, showing that the share of fees and the economic importance of a client are positively associated with an increase in the amount of income decreasing accruals. For big 4 firms with income decreasing accruals, the coefficient estimates for the client's economic importance measured in non-audit, audit and total fees (RANKNON, RANKAUD and RANKTOT) are statistically significant at the 0,1 level. The coefficient estimates for RANKNON and RANKTOT are again statistically more significant for big 4 auditors than for non-big 4 auditors, as was also the case in the DACC+ regressions, but interestingly enough, the significance levels of RANKAUD are arranged in the opposite way to the previous case: for income decreasing accruals the coefficient estimate seems to be more significant for big 4 auditors. This indicates that while there was no association to be found between RANKAUD and positive accruals for big 4 firms, for negative accruals there seems to be an association between the economic importance of a client measured in audit service fees and the amount of negative discretionary accruals. Big 4 firms therefore seem to have a stronger tendency to allow income decreasing discretionary accruals (DACC-) in their audit service clients than non-big 4 firms do. For income increasing accruals (DACC+) the opposite statement applies.

Since the purpose of this sensitivity analysis however is to find out whether auditors have a tendency to allow more income increasing versus income decreasing earnings management with the use of discretionary accruals, one can only focus on the results for all firms with positive accruals and all firms with negative accruals.

TABLE 13 Summary of Fee Variable Coefficient Estimates from Regressions with Income Increasing/Decreasing Discretionary Accruals as the Dependent Variable

This table reports summary statistics on fee variable (FEEVAR) coefficient estimates from regressions with income increasing/decreasing discretionary accruals (DACC+/DACC-) as the dependent variable and the sample sizes specific to the auditor groups shown below. For variable definitions please see Table 4 on pages 31-32.

		DACC+ Regressions by Auditor Group						DACC- Regressions by Auditor Group					
		Big 4		Non-Big 4		All Auditors		Big 4		Non-Big 4		All Auditors	
		Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Regr. 1	FEERATIO	0,441	0,108	0,037	0,760	0,294	0,122	-0,129	0,616	-0,252	0,389	-0,133	0,508
	Adj. R^2	0,026		0,925		0,195		0,150		0,936		0,742	
	n	1026		390		1416		745		254		999	
Regr. 2	RANKNON	0,003	0,089	-0,001	0,164	0,001	0,240	-0,003	0,064	-0,002	0,210	-0,002	0,025
	RANKAUD	0,001	0,694	0,001	0,067	0,002	0,014	-0,005	0,040	-0,000	0,952	-0,002	0,299
	Adj. R^2	0,025		0,927		0,196		0,163		0,936		0,744	
	n	1026		390		1416		745		254		999	
Regr. 3	RANKTOT	0,003	0,071	0,001	0,102	0,003	<0,01	-0,007	0,016	-0,001	0,790	-0,003	0,153
	Adj. R^2	0,026		0,926		0,196		0,163		0,935		0,744	
	n	1026		390		1416		745		254		999	
Regr. 4	TAXFEERATIO	0,832	0,239	-0,087	0,621	0,649	0,249	-0,021	0,928	-0,220	0,712	0,059	0,773
	Adj. R^2	0,028		0,925		0,197		0,150		0,935		0,742	
	n	1026		390		1416		745		254		999	
Regr. 5	RANKTAX	0,003	0,256	-0,001	0,332	0,001	0,342	-0,002	0,121	-0,000	0,729	-0,001	0,611
	RANKOTH	-0,003	0,401	0,000	0,802	-0,001	0,427	-0,002	0,202	-0,002	0,225	-0,002	0,057
	RANKAUD	0,002	0,321	0,001	0,081	0,002	0,019	-0,005	0,031	-0,000	0,901	-0,003	0,268
	Adj. R^2	0,026		0,926		0,196		0,163		0,935		0,744	
	n	1026		390		1416		745		254		999	

Generally it is noticeable that the coefficient estimates for the ratio of non-audit fees to total fees (FEERATIO), the economic importance of a client as an audit service customer (RANKAUD), the total economic importance of a client (RANKTOT), the ratio of tax service fees to total fees (TAXFEERATIO) as well as the importance of a client as a tax service customer (RANKTAX) are statistically more significant in the income increasing discretionary accrual (DACC+) regressions. From these RANKAUD and RANKTOT are statistically significant at the 0,1 level, which they are not in the DACC- regressions. This implies that the effect of the economic importance measured by these variables tends to have a stronger association with earnings management in the case of income increasing accruals.

The DACC- regressions on the other hand show a stronger association between the economic importance of a client as a non-audit service customer (RANKNON) and earnings management than is the case for income increasing accruals. RANKTAX and TAXFEERATIO remain consistently above a statistically insignificant p-value of 0,1 in all of the regressions.

Taken together the sensitivity tests concerning income increasing and income decreasing accruals provide evidence that inferences made about the association of non-audit services and earnings management ($H_0$1) and the association between audit services and earnings management ($H_0$3) are sensitive to the direction of earnings management, whereas conclusions about the association between tax services and earnings management ($H_0$2) remain robust.

Effects of Firm Size

Frankel et al. (2002) also control for possible nonlinearities between the size of the firms and the incentive effects of auditor fees. I examine the same effects by partitioning the sample into quartiles based on the variable controlling for size (LOGMVE i.e. the natural logarithm of market value of equity). It may be the case that the incentive effects of the fee variables differ for different sized firms, so the

regressions are run for each quartile and for firms above/under the median LOGMVE value. Following Frankel et al. (2002), I leave LOGMVE as an explanatory variable also in these models to control for cross-sectional variation of firm size within the quartiles and partitioned sample. Table 14 reports summary statistics on the fee variable (FEEVAR) coefficient estimates from the regressions for each firm-size quartile as well as the sample partitioned at the median value of LOGMVE. All regressions have the absolute value of discretionary accruals (ABSDACC) as the dependent variable.

The coefficient estimates remain consistently positive as in the main model, but some patterns emerge from the p-values. For the two smallest firm size quartiles, none of the fee variables are statistically significant at the 0,1 level but the models' adjusted R-squared values are consistently large. This indicates that the model's control variables explain the variance of ABSDACC quite well, and that the association between the ratio of non-audit (FEERATIO) and tax service fees to total fees (TAXFEERATIO) as well as the economic importance of a client measured in non-audit fees (RANKNON), audit fees (RANKAUD) and tax fees (RANKTAX) are not statistically significant. For firms in the upper two quartiles the p-values of the fee variables all in all tend to be smaller indicating a stronger association between them and earnings management.

The coefficients of the total economic importance of a client (RANKTOT) and the importance measured in audit fees (RANKAUD) have p-values close to or below 0,01 in the largest quartile. This might be the case simply because larger firms pay larger fees, which highlights the incentive of the auditor to allow earnings management. In fact, when one examines the correlation between total/audit fees and LOGMVE in the sample, strong and statistically very significant positive correlations with Spearman's rhos of 0,826 and 0,824 are found. Spearmans rho for total fees and audit fees again is an even stronger 0,987.

TABLE 14 Summary of Fee Variable Coefficient Estimates from Firm-Size-Specific Regressions with the Absolute Value of Discretionary Accruals as the Dependent Variable

This table reports summary statistics on fee variable (FEEVAR) coefficient estimates from regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable and the sample divided into quartiles based on the natural logarithm of market value (LOGMVE) and into two subsamples at the LOGMVE median. For variable definitions please see Table 4 on pages 31-32.

		Sample Partitioned at LOGMVE Quartiles								at LOGMVE Median			
		Quartile 1		Quartile 2		Quartile 3		Quartile 4		Below		Above	
		Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Regr. 1	FEERATIO	0,126	0,273	0,155	0,375	0,586	0,165	0,153	0,692	0,193	0,063	0,524	0,139
	Adj. R^2	0,963		0,746		0,034		0,159		0,888		0,046	
	n	604		603		604		604		1207		1208	
Regr. 2	RANKNON	0,000	0,299	0,000	0,501	0,005	0,150	0,003	0,155	0,001	0,319	0,005	0,043
	RANKAUD	0,000	0,851	0,001	0,424	0,007	0,151	0,010	0,012	0,000	0,786	0,008	0,012
	Adj. R^2	0,963		0,746		0,041		0,187		0,887		0,062	
	n	604		603		604		604		1207		1208	
Regr. 3	RANKTOT	0,000	0,848	0,002	0,260	0,009	0,078	0,012	0,012	0,001	0,226	0,012	< 0,01
	Adj. R^2	0,963		0,747		0,041		0,186		0,887		0,061	
	n	604		603		604		604		1207		1208	
Regr. 4	TAXFEERATIO	0,000	0,991	0,295	0,129	1,453	0,306	-0,093	0,628	0,174	0,166	0,923	0,245
	Adj. R^2	0,963		0,746		0,038		0,159		0,887		0,048	
	n	604		603		604		604		1207		1208	
Regr. 5	RANKTAX	0,000	0,658	0,001	0,129	0,004	0,345	0,001	0,584	0,001	0,219	0,003	0,267
	RANKOTH	0,001	0,268	0,000	0,663	-0,003	0,518	0,002	0,179	0,001	0,204	0,000	0,882
	RANKAUD	0,000	0,812	0,001	0,523	0,008	0,120	0,011	< 0,01	0,000	0,850	0,010	0,010
	Adj. R^2	0,963		0,747		0,041		0,185		0,887		0,059	
	n	604		603		604		604		1207		1208	

The rising incentives are also clearly visible in the regressions run with a sample partitioned at the median value of LOGMVE. For below-median sized firms, only the ratio of non-audit fees to total fees (FEERATIO) is significant on the 0,1 level, whereas for above-median sized firms the economic importance of a client as a non-audit service customer (RANKNON) and audit customer (RANKAUD) become significant at the 0,1 level and the total economic importance of a client (RANKTOT) is of high statistical significance (p-value < 0,01).

In summary, the results on sensitivity tests regarding firm size revealed that the association between the total economic importance of a client and earnings management becomes stronger, the larger the client firm is. This again could relate to the fact that the absolute fees received by the auditor most likely also increase along with client firm's size (LOGMVE). The results also show that conclusions about the association between non-audit services and earnings management ($H_0$1) and about the association between audit services and earnings management ($H_0$3) are sensitive and specific to firm size. The inferences about tax services and earnings management ($H_0$2) remain robust across different LOGMVE quartiles.

6) Summary and Conclusions

This paper examined the effects of auditor-provided non-audit services and tax services on auditor independence. The question of whether non-audit services jeopardize auditor independence has been the topic of a heated debate in accounting literature since the Enron-crisis and academics as well as regulators have not seemed to come to a common conclusion about the effects the different non-audit services have on auditors. The Sarbanes-Oxley Act however prohibited a large number of specific services, which were seen to have a negative effect on auditor independence. Tax services were not included in the list, implying that the effects of these services should somehow differ from the ones of other consulting services. Research on all consulting services however has yielded contradictory results and this paper set out to illustrate the possible effects of tax services using prior research on all services as a framework, as well as to shed some light on the issue whether the effects of tax services actually are significantly different from the other non-audit services.

The literature review illustrated the possible effects of non-audit and tax services using agency theoretical and audit risk model based arguments as a framework. Prior research had divided auditor independence into independence in appearance as well as independence of mind, which were found to be linked to the provision of non-audit services and different audit quality measures. The joint provision of both audit as well as non-audit services can be seen to have a negative effect on auditor independence, but on the other hand the audit risk model implies that knowledge spillovers from performing these services could also lead to enhanced audit quality. A look into prior literature indicated that equity holders do not separate the different non-audit service types from another but fear that all non-audit services could jeopardize auditor independence. Their view contradicts the special treatment of tax services in current legislation. Additionally the review showed that equity holders' perceptions on auditor-provided tax services have thus far not been examined, indicating a need for future research into the topic. Contrary to equity holders, research from lenders' perspectives seemed to favor the knowledge spillover effects of non-audit services, although evidence on their effects on audit quality and efficiency were also mixed. Tax services

were in some cases pointed out as a special type of service that can lead to positive audit quality effects without considerably adding to auditor independence concerns. Research on the effects of auditor tenure and the possible link between non-audit services and increased earnings management were especially mixed. Generally the literature review showed that tax services have nearly always been grouped together with the other services, even though the evidence suggests that the effects of different service types can differ from another (see e.g. Frankel et al. 2002).

The empirical part of the study aimed to shed light on this issue by disaggregating tax services from other service types in order to find out their individual effects on auditor independence. Generally speaking, the competing arguments to explain auditor bias are the ones based on agency theory (e.g. Simunic 1984), where the auditor makes a decision to use his judgment in the favor of the management's interest, and the ones based on behavioral literature (e.g. Moore et al. 2002), where auditor bias is the result of unconscious partisanship purely due to affiliation with the client. The methods used in the paper followed the research of Frankel et al. (2002) which approaches independence concerns by examining whether strong economic bonds between and auditor and a client lead to opportunistic earnings management with the use of discretionary accruals. A modification to the method also allowed a separate examination of tax services. The methods used therefore aimed to capture auditor independence effects instead of measuring effects on auditor competence or the magnitude of knowledge spillovers.

The three empirical null hypotheses of the paper were as follows: $H_0$1: Auditor-provided non-audit services are not associated with earnings management, $H_0$2: Auditor-provided tax services are not associated with earnings management and finally $H_0$3: Audit services are not associated with earnings management. The sample used in the models consisted of 2415 individual North American firms (firm year 2010) of which 73% were audited by a big 4 auditor. Descriptive statistics on the sample showed that there are significant differences between auditor fee compositions and the amount of fees paid for individual auditors. For example, big 4 firms received 95% of the total fees and 97% of the total non-audit fees in the sample while only auditing 73% of the sample companies. The descriptive statistics also indicated that tax service fees are a

significant income source for big 4 auditors, in most cases constituting over half of the billed non-audit services. The empirical model used the cross-sectional modified Jones (1991) model to estimate discretionary accruals (as a proxy for earnings management), which were then regressed against a modified model of Frankel et al. (2002). Table 15 Panel A summarizes the expected and actual research results on the non-audit and other fee variables used in the model. Panel B reports a summary on the hypothesis test results and their sensitivity analysis.

After checking for outliers, normally distributed residuals, the assumption about homoscedasticity, multicollinearity and autocorrelation, a regression with heteroscedasticity-robust results yields the coefficient estimates and p-values reported in the table. The ratio of non-audit fees to total fees (FEERATIO) and the economic importance of a client measured in non-audit fees (RANKNON) are statistically significant at the 0,05 level indicating that there seems to be a positive association between non-audit services and earnings management, which leads to a rejection of null hypothesis 1 ($H_0$1). The other null hypotheses ($H_0$2 and $H_0$3) cannot be rejected at this significance level given that the coefficient estimates for the economic importance of a client measured in audit and tax service fees (RANKAUD and RANKTAX) as well as the ratio of tax service fees to total fees (TAXFEERATIO) have p-values larger than 0,05. The fact that all fee variable (FEEVAR) coefficient estimates have positive signs is in line with the behavioral literature's explanation for auditor bias. Additionally, the positive coefficient estimates might imply that an economic bond increases auditor bias, regardless of what service the fees creating the bond are paid for.

TABLE 15 Summary of Expected and Actual Fee Variable Coefficient Estimates from Regressions with the Absolute Value of Discretionary Accruals as the Dependent Variable and a Look at the Sensitivity Analysis of the Results

Panel A of this table reports a summary of the expected and actual results for the fee variable (FEEVAR) coefficient estimates from regressions with the absolute value of discretionary accruals (ABSDACC) as the dependent variable and the sample size equal to 2415. Panel B provides an overview of the hypothesis test results based on the significance levels of the fee variable (FEEVAR) coefficient estimates, in addition to illustrating their sensitivity to the several robustness tests performed in this study. The three empirical hypotheses of this study in null form were as follows: $H_0$1: Auditor-provided non-audit services are not associated with earnings management, $H_0$2: Auditor-provided tax services are not associated with earnings management and finally $H_0$3: Audit services are not associated with earnings management. For variable definitions please see Table 4 on pages 31-32.

Panel A: Expected and Actual Results for Fee Variable Coefficient Estimates

	Expected Results			Actual Results	
Variable Name	Coeff. Sign	Coeff. p-value	Based on e.g.	Coeff. Sign	Coeff. p-value
FEERATIO	+	<0,01	Frankel et al. (2002)	+	0,040
RANKNON	+	<0,01	Frankel et al. (2002)	+	0,017
RANKAUD	-	<0,01	Frankel et al. (2002)	+	0,097
RANKTOT	+	<0,01	Frankel et al. (2002)	+	0,026
TAXFEERATIO	-	?	SOX by Implication	+	0,239
RANKTAX	-	?	SOX by Implication	+	0,225
RANKOTH	+	?	Frankel et al. (2002)	+	0,796
RANKAUD	-	<0,01	Frankel et al. (2002)	+	0,081

Panel B: Hypothesis Test (α=0,05) & Sensitivity Analysis Results

		Sensitivity to Robustness Tests (Yes/No)		
Hypothesis Number	Original Result	Auditor Fee Composition	Accrual Income Effect	Firm Size Effect
$H_0$1 - Non-Audit	Rejected	Yes	Yes	Yes
$H_0$2 - Tax	Accepted	No	No	No
$H_0$3 - Audit	Accepted	Yes	Yes	Yes

The total economic importance of a client (RANKTOT) has a statistically significant coefficient at the 0,05 level, which is not the case for all variables measuring the economic importance of a client within specific service categories. These results might simply have to do with the fact that the absolute fee values behind the total economic importance are significantly higher, which could lead to the total importance variable having a stronger influence on auditors' decision making. The argument of higher values behind the importance measure is however contradicted by the also significant coefficient estimates for the non-audit fee variables measuring the ratio of non-audit fees to total fees (FEERATIO) and the economic importance of the client as a non-audit service customer (RANKNON). These results could be explained by the agency theory –approach to auditor bias: auditors providing also non-audit services might make a conscious decision to allow earnings management in order to ensure receiving future economic rents from the joint provision of audit and non-audit services.

All results were subjected to an additional sensitivity analysis which examined whether the individual auditor fee composition, the fact whether the client uses income increasing or decreasing discretionary accruals, or the different sizes of the clients affect the associations between the fee variables examined and auditor-allowed earnings management. The results of these robustness tests are summarized in Table 15 Panel B. The analysis of the effects of auditor fee composition revealed that inferences on null hypotheses 1 and 3 were largely affected by the fact whether the auditors' total fees were mainly composed of non-audit or audit fees. Results concerning null hypothesis 2 were robust throughout the auditor spectrum. Generally the results showed that in the examination of the economic importance of a client, one cannot ignore the underlying absolute fee values since it seems to be the case that the economic importance variables that have larger fee sums behind them in absolute terms tend to also have a stronger association with earnings management.

The discretionary accruals regressions, which took their income effects into consideration, showed that the economic importance of an audit service client (RANKAUD) has a stronger association with earnings management when it comes to income increasing discretionary accruals, for non-audit fee variables (e.g. RANKNON)

the association seemed to be stronger in the case of income decreasing accruals. The significance of the tax service variables (TAXFEERATIO and RANKTAX) remained robust. The test therefore showed that the original inferences about $H_0$1 and $H_0$3 are sensitive to the sign of the discretionary accruals whereas conclusions about $H_0$2 remain the same regardless of the accrual sign.

The final robustness test examined whether associations between the fee variables and jeopardized auditor independence remain constant for different sized firms. The test revealed that the audit fee (RANKAUD) and non-audit fee (RANKNON) variables are more significant for larger firms, indicating again unreliability in the conclusions originally made about $H_0$1 and $H_0$3. The economic importance of a client as a tax service customer (RANKTAX) and the ratio of tax service fees to total fees (TAXFEERATIO) remain consistently statistically insignificant throughout different sized client firms indicating that conclusions about $H_0$2 are once again robust.

In summary this study showed results indicating a statistically significant positive association between non-audit services and jeopardized auditor independence in the terms of auditor-allowed earnings management. The coefficient estimates for both the ratio of non-audit fees to total fees (FEERATIO) as well as the economic importance of the client as a non-audit service customer (RANKNON) are both positively associated with the use of discretionary accruals at a 0,05 significance level. However, these results are not robust across different sized firms, the income effect of the earnings management or auditor fee composition. For audit services (RANKAUD), no association was found for the total sample, but it seems that these results are also not robust. Generally the results also indicate that auditor bias in the form of auditor-allowed earnings management can also be based on an economic dependency between an auditor and the client resulting purely out of audit fees, as long as the underlying financial importance in absolute terms is significant enough for the auditor.

To address the underlying research question about the individual effects of tax services (measured by RANKTAX and TAXFEERATIO), one can state the following: This paper provides heteroscedasticity-robust evidence that there is no statistically significant

association between auditor-provided tax services and earnings management. The results are robust to differences in auditor fee composition, the direction of the earnings management as well as to audit client firm size. Since the goal of this paper and the methods used in it was not to measure possible knowledge spillovers, one can only speculate whether the absence of such an association could mean that there are no audit-quality improving knowledge spillovers retainable from the provision of tax services, or that the provision of tax services simply has no effect on auditor independence.

References

Articles and Working Papers:

Antle, Rick, 1984, "*Auditor Independence*", Journal of Accounting Research, Vol. 22 No. 1 p1-20

Antle, Rick; Gordon, Elizabeth; Narayanamoorthy, Ganapathi; Zhou, Ling. 2006, "*The joint determination of audit fees, non-audit fees, and abnormal accruals*", Review of Quantitative Finance & Accounting, Vol. 27 Issue 3, p235-266

Ashbaugh, Hollis; LaFond, Ryan; Mayhew, Brian W. 2003, "*Do Nonaudit Services Compromise Auditor Independence? Further Evidence*" The Accounting Review, Vol. 78 Issue 3, p611-639

Brandon, Duane M.; Crabtree, Aaron D.; Maher, John J. 2004, "*Nonaudit Fees, Auditor Independence, and Bond Ratings*", Auditing: A Journal of Practice & Theory, Vol. 23 Issue 2, p91-105

Chaney, P.K.; Philipich, K.L. 2002, "*Shredded Reputation: The Cost of Audit Failure*", Journal of Accounting Research, Sep2002, Vol. 40 Issue 4, p1221-1245

Choi, Won-Wook; Lee, Ho-Young; Jun, Byung Wook, 2009, "*The Provision of Tax Services by Incumbent Auditors and Earnings Management: Evidence from Korea*", Journal of International Financial Management & Accounting, Vol. 20 Issue 1, p79-103

Cohen, Jeffrey; Krishnamoorty, Ganesh.; Wright, Arnold M., 2002, "*Corporate Governance and the Audit Process*", Contemporary Accounting Research, Vol. 19 No. 4 p573-94

Coulton, Jeff; Livne, Gilad; Pettinicchio, Angela; Taylor, Stephen, 2012, "*Audit Fees and Accounting Quality: Inferences from Single-Period versus Multi-Period*

Perspectives", Working Paper [read on 17.2.2013], Available at: http://www.business.uts.edu.au/accounting /pdfs/conf13taylor.pdf

Davis, Larry R.; Ricchiute, David N. 1993, "*Audit Effort, Audit Fees, and the Provision of Nonaudit Services to Audit Clients*", The Accounting Review, Vol. 68 Issue 1, p135-150

Firth, Michael, 1997, "*The Provision of Nonaudit Services by Accounting Firms to their Audit Clients*", Contemporary Accounting Research, Vol. 14 Issue 2, p1-21

Fortin, Steve; Pittman, Jeffrey A. 2008, "*The Impact of Auditor-Related Tax Services on Corporate Debt Pricing*", Journal of the American Taxation Association, Vol. 30 Issue 2, p79-106

Francis, J. D. Philbrick D. K. Schipper. 1994, "*Shareholder litigation and corporate disclosures*", Journal of Accounting Research, Vol. 32, p137–164

Francis, Jere R.; Maydew, Edward L.; Sparks, H. Charles, 1999, "*The Role of Auditors in the Credible Reporting of Accruals*", Auditing, Vol. 18 Issue 2, p17-34

Frankel, Richard M.; Johnson, Marilyn F.; Nelson, Karen K. 2002, "*The Relation between Auditors' Fees for Nonaudit Services and Earnings Management*", The Accounting Review, Supplement, Vol. 77 Issue 4, p71-105

Goldman, D. 20*06. "Interview comments on information spillover through auditor-provided tax services"*

In the article: Robinson, Dahlia, 2008, "*Auditor Independence and Auditor-Provided Tax Service: Evidence from Going-Concern Audit Opinions Prior to Bankruptcy Filings*", Auditing: A Journal of Practice & Theory, Vol. 27, No. 2, p33

Hayes, A. F., & Cai, L. 2007, "*Using heteroscedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation*", Behavior Research Methods, Vol. 39, p709-722

Hyeesoo Chung; Kallapur, Sanjay. 2003, "*Client Importance, Nonaudit Services, and Abnormal Accruals*", The Accounting Review, Vol. 78 Issue 4, p931-955

Iyer, Venkataraman M.; Rama, Dasaratha V. 2004, "*Clients' Expectations on Audit Judgments*", Behavioral Research in Accounting, Vol. 16, p63-74

Jenkins, J. Gregory; Krawczyk, Kathy. 2001, "*The Influence of Nonaudit Services on Perceptions of Auditor Independence*", The Journal of Applied Business Research, Vol. 17 Issue 3, p73

Joe, Jennifer R.; Vandervelde Scott D. 2007, "*Do Auditor-Provided Nonaudit Services Improve Audit Effectiveness*?", Contemporary Accounting Research, Vol. 24 No. 2 p467-487

Johnson, Van E.; Khurana, Inder K.; Reynolds, J. Kenneth. 2002, "*Audit-Firm Tenure and the Quality of Financial Reports*", Contemporary Accounting Research, Vol. 19 Issue 4, p637-660

Jones J. J. 1991, "*Earnings Management during import relief investigations*", Journal of Accounting Research, Vol. 29, p193-228

Kinney JR, William R.; Palmrose, Zoe-Vonna; Scholz, Susan, 2004, "*Auditor Independence, Non-Audit Services, and Restatements: Was the U.S. Government Right?*", Journal of Accounting Research, Vol. 42 No. 3 p561-588

Krishnamurty, S.; Zhou, Jian; Zhou, Nan, 2006, "*Auditor Reputation, Auditor Independence, and the Stock-Market Impact of Andersen's Indictment on Its Client Firms*", Contemporary Accounting Research, Vol. 23 No. 2, p465-90

Krishnan, Jayanthi; Sami, Heibatollah; Yinqi Zhang, 2005, ”*Does the Provision of Nonaudit Services Affect Investor Perceptions of Auditor Independence*? “, Auditing: A Journal of Practice & Theory, Vol. 24 Issue 2, p111-135

Lassila, Dennis R.; Omer, Thomas C.; Shelley, Marjorie K.; Smith, L. Murphy, 2010, ”*Do Complexity, Governance, and Auditor Independence Influence whether Firms Retain Their Auditors for Tax Services?*”, Journal of the American Taxation Association, Vol. 32 Issue 1, p1-23

Lowe, Jordan D.; Geiger, Marshall A.; Pany, Kurt. 1999, “*The Effects of Internal Audit Outsourcing on Perceived External Auditor Independence*”, Auditing: A Journal of Practice & Theory, Vol. 18 Issue 2, p7-26

MacKinnon, J.; G., & White, H. 1985, “*Some heteroskedasticity-consistent covariance matrix estimators with improved finite sample properties*”, Journal of Econometrics, Vol, 29, p305-325

Mishra, Suchismita; Raghunandan, K.; Rama, Dasaratha V. 2005,” *Do Investors' Perceptions Vary with Types of Nonaudit Fees? Evidence from Auditor Ratification Voting*”, Auditing: A Journal of Practice & Theory, Vol. 24 Issue 2, p9-25

Moore M, Loewenstein G, Bazerman M, 2002, “*Auditor independence, conflict of interest, and the Unconscious Intrusion of Bias*”, p32, Working Paper [read on 10.5.2013], Available at: http://scholar.google.de/scholar?q=auditor+independence+conflicts+of+interest+and+the+unconscious+intrusion+of+bias&btnG=&hl=de&as_sdt=0%2C5&as_vis=1

Morgan, Donald P. 2002, ”*Rating Banks: Risk and Uncertainty in an Opaque Industry*“, American Economic Review, Vol. 92 Issue 4, p874-888

Myers, J.; L. Myers; T. Omer, 2003, ”*Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation?”*, The Accounting Review, Vol. 78 No. 3, p779–799

Omer, Thomas C.; Bedard, Jean C.; Falsetta, Diana, 2006, “*Auditor-Provided Tax Services:The Effects of a Changing Regulatory Environment*”, The Accounting Review, Vol. 81 No. 5, p1095-1117

Pany, Kurt; Reckers, Philip M.J. 1984, “*Non-Audit Services and Auditor Independence - A Continuing Problem*”, Auditing: A Journal of Practise & Theory, Vol. 3 No 2, p89-97

Pany, Kurt; Reckers, Philip M. J. 1988, “*Auditor Performance of MAS: A Study of Its Effects on Decisions and Perceptions*”, Accounting Horizons, Vol. 2 Issue 2, p31-38

Reynolds, J. Kenneth; Deis, Jr., Donald R.; Francis, Jere R. 2004, ”*Professional Service Fees and Auditor Objectivity*”, Auditing: A Journal of Practice & Theory, Vol. 23 Issue 1, p29-52

Robinson, Dahlia, 2008, “*Auditor Independence and Auditor-Provided Tax Service: Evidence from Going-Concern Audit Opinions Prior to Bankruptcy Filings*”, Auditing: A Journal of Practice & Theory, Vol. 27, No. 2, p31–54

Schneider, Arnold; Church, Bryan K.; Ely, Kirsten M. 2006 “*Non Audit Services and Auditor Independence: A Review of the Literature*”, Journal of Accounting Literature, Vol. 25, p196-211

Simunic, Dan A. 1984, ”*Auditing, Consulting, and Auditor Independence*”, Journal of Accounting Research, Vol. 22 Issue 2, p679-702

Vandervelde, Scott D. 2006, “*The Importance of Account Relations when Responding to Ititerim Audit Testing Results*”, Contemporary Accounting Research, Vol. 23 No. 3 p789-821

White, H. 1980, "*A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity*", Econometrica, Vol. 48, p817–838

Wu, Martin G. H. 2006, "*An Economic Analysis of Audit and Nonaudit Services: The Trade-off between Competition Crossovers and Knowledge Spillovers*", Contemporary Accounting Research, Vol. 23 Issue 2, p527-554

Books:

Eilifsen, A.; Messier, William F.; Glover, Steven M.; Prawitt, Douglas W. 2009, "*Auditing & assurance services - Second International Edition"*, Maidenhead: McGraw-Hill Education, p7, p76-78

Gray, Iain; Manson, Stuart, 2008, *"The Audit Process – 4th Edition"*, London: Thomson Learning, p9, p96-97

Verbeek, Marno, 2012, "*A Guide to Modern Econometrics – Fourth Edition*", Padstow: John Wiley & Sons Ltd., p.15

Master's Theses and Other Sources:

Alaoutinen, Sini, 2010, *"Neuvontapalkkiot tilintarkastajan riippumattomuuden mittarina Suomessa"*, Helsinki: Helsingin Kauppakorkeakoulu

European Commission, 2011, *"Proposal for a Regulation of the European Parliament and of the Council on Specific Requirements Regarding Statutory Audit of Public-Interest Entities"*, 2011/0359 (COD), Brussels 30.11.2011, [read on 07.02.2013], Available at: http:// ec.europa.eu/internal_market/auditing/docs/reform/regulation _en.pdf

Securities and Exchange Commission (SEC), 2002, "*Strengthening the Commission's Requirements Regarding Auditor Independence*", (Release Nos. 33-8183A; 34-47265A; 35-27642A; IC-25915A; IA-2103A; FR-68; File No.: S7-49-02; March 26, 2003), [read on 12.02.2013], Available at: http:// www.sec.gov/rules/final/33-8183.htm#footnote_57

International Federation of Accountants (IFAC), 2012, "*Handbook of the Code of Ethics for Professional Accountants*", Published Jul 30, p. 46-47, [read on 12.02.2013], Available at: http://www. ifac.org/sites/default/files/publications/files/2012-IESBA-Handbook.pdf

Appendix A: Macro for Heteroscedasticity-Robust Regression

The following code written by Hayes et al. (2007) creates a macro named HCREG that computes heteroscedasticity-consistent p-values, when the function is called in the IBM SPSS Statistics syntax. To get p-values and standard error estimators as defined by MacKinnon and White (1985), one needs to input "method = 3" in the syntax of the HCREG command. Additional details on the other command options and the methods used can be found in the paper of Hayes et al. (2007).

Code to create the HCREG macro in IBM SPSS Statistics:

```
DEFINE hcreg (dv =!charend ('/')/iv =!charend ('/')
        /test = !charend('/') !default (0)
        /const = !charend('/') !default(1)
        /method = !charend ('/') !default (3)
        /covmat = !charend('/') !default(0)).
PRESERVE.
set length = none.
SET MXLOOP = 100000000.
MATRIX.
GET x/file = */variables = !dv !iv/names = dv/missing = omit.
compute y=x(:,1).
compute x=x(:,2:ncol(x)).
compute iv5 = x.
compute pr = ncol(x).
compute n = nrow(x).
compute L = ident(pr).
compute tss=cssq(y)-(((csum(y)&**2)/n)*(!const <> 0)).
do if (!const = 0).
  compute iv = t(dv(1,2:ncol(dv))).
  compute df2 = n-pr.
else.
  compute iv = t({"Constant", dv(1,2:ncol(dv))}).
```

```
  compute con = make(n,1,1).
  compute x={con,x}.
  compute df2 = n-pr-1.
  compute L1 = make(1,pr,0).
  compute L = {L1;L}.
end if.
compute dv=dv(1,1).
compute b = inv(t(x)*x)*t(x)*y).
compute k = nrow(b).
compute invXtX = inv(t(x)*x).
compute h = x(:,1).
loop i=1 to n.
  compute h(i,1)= x(i,:)*invXtX*t(x(i,:)).
end loop.
compute resid = (y-(x*b)).
compute mse = csum(resid&**2)/(n-ncol(x)).
compute pred = x*b.
compute ess= cssq(resid).
 do if (!method = 2 or !method = 3).
  loop i=1 to k.
    compute x(:,i) = (resid&/(1-h)&**(1/(4-!method)))&*x(:,i).
  end loop.
 end if.
 do if (!method = 0 or !method = 1).
  loop i=1 to k.
    compute x(:,i) = resid&*x(:,i).
  end loop.
 end if.
 do if (!method = 5).
   loop i=1 to k.
    compute x(:,i) = sqrt(mse)&*x(:,i).
  end loop.
 end if.
do if (!method = 4).
 compute mn = make(n,2,4).
```

```
 compute pr3 = n-df2.
 compute mn(:,2) = (n*h)/pr3.
 compute ex=rmin(mn).
  loop i=1 to k.
    compute x(:,i) = (resid&/(1-h)&**(ex/2))&*x(:,i).
  end loop.
 end if.
compute hc = invXtX*t(x)*x*invXtX.
do if (!method = 1).
  compute hc = (n/(n-k))&*hc.
end if.
compute F = (t(t(L)*b)*inv(t(L)*hc*L)*((t(L)*b)))/pr).
compute pf = 1-fcdf(f,pr,df2).
compute r2 = (tss-ess)/tss.
compute pf = {r2,f,pr,df2,pf}.
do if (!method <> 5).
print !method/title = "HC Method"/format F1.0.
end if.
print dv/title = "Criterion Variable"/format A8.
print pf/title = "Model Fit:"/clabels = "R-sq" "F" "df1" "df2" "p"/format F10.4.
compute sebhc = sqrt(diag(hc)).
compute te = b&/sebhc.
compute p = 2*(1-tcdf(abs(te), n-nrow(b))).
compute oput = {b,sebhc, te, p}.
do if (!method <> 5).
print oput/title = 'Heteroscedasticity-Consistent Regression Results'/clabels
      = "Coeff" "SE(HC)" "t" "P>|t|"/rnames = iv/format f10.4.
else if (!method = 5).
print oput/title = 'OLS Regression Results Assuming Homoscedasticity'/clabels
      = "Coeff" "SE" "t" "P>|t|"/rnames = iv/format f10.4.
end if.
compute iv2 = t(iv).
do if (!covmat = 1).
print hc/title = 'Covariance Matrix of Parameter Estimates'/cnames =
     iv/rnames = iv2/format f10.4.
```

```
end if.
do if (!test > 0 and !test < pr).
 compute L2 = make(pr-!test+!const,!test,0).
 compute L = {L2;L((pr+1-!test+!const):(pr+!const),(pr-!test+1):(pr))}.
 compute F = (t(t(L)*b)*inv(t(L)*hc*L)*((t(L)*b)))/!test).
 compute pf = 1-fcdf(f,!test,df2).
 compute pf = {f,!test,df2,pf}.
 print pf/title = "Setwise Hypothesis Test"
    /clabels = "F" "df1" "df2" "p"/format F10.4.
 compute iv = t(iv((pr+1-!test+!const):(pr+!const),1)).
 print iv/title = "Variables in Set:"/format A8.
end if.
END MATRIX.
RESTORE.
!END DEFINE.
```

Syntax of the HCREG command, MacKinnon and White (1985) p-values set as default:

```
HCREG dv = "variable_name"
/iv = "variable_name1" "variable_name2", etc.
/const = 1
/method = 3
/covmat = 1
/test = 1
```