Aalto University
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Development of audit fees in the 21st century – Evidence from the US audit market

Master's Thesis

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Abstract of master's thesis

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Abstract

Since accounting environment changed remarkably in the beginning of 21st century, it raised concerns whether audit fees have increased excessively after that. The main reason for concern was additional regulation know as SOX, introduced in 2002. It tightened the requirements for both, firms preparing financial statements, as well as for auditors reviewing those statements. Besides of additional requirements, SOX also prohibited the providence of certain non-audit related services that auditors offered pre-SOX. This added pressure for auditors, and therefore expectations were that audit fees increased considerably post-SOX. For examining this, the purpose of this research was to study what the relative audit fee ratio has been, and how it has developed over time during years 2000-2017. By this it was possible to observe if audit fees have increased or not, and is there clearly visible long-term trends or changes that occurred only at certain time. In addition to general view of audit fee development, relative audit fees were also examined by controlling client size. This way it could be studied whether relative audit fees have been acting differently between smaller and bigger clients.

Method used in this study was quantitative analysis, where time series analyses over years 2002-2017 were created for audit fees that are in relation to company's sales. Besides this, relative audit fees were also examined by regression analyses that included both, simple regression analysis as well as multiple regression analysis. These were for achieving more accurate results of growth over time. Both methods were used for different samples, such as whole sample, deciles and BIG4 auditors versus non-BIG4 auditors. Especially with deciles the tests concentrated on client size. The data was obtained from Audit Analytics' database, and final sample was comprehensive, including 123,880 firm-year observations. Study's main findings were that audit fees have increased remarkably during the investigation period, and that main growth occurred during SOX adjustments, that is, between years 2001-2005. It was also clearly proved that smaller firms faced relatively higher audit fees, and that fees have also increased more for them than for bigger firms. It was also found that BIG4-premium existed, but only for smaller firms, and that after SOX came into effect, majority of audit firms' fees were coming from audits, not from audit related or non-audit services as was before. As a conclusion, it can be said that audit fees increased considerably during the past two decades, but the relative share was only high for smaller firms. Audit fee ratios for bigger firms were surprisingly low, and rather decreasing than increasing, especially after SOX came into force.

Keywords audit, audit fees, non-audit fees, audit quality, auditor, accounting, SOX, BIG4, BIG4-premium

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Kun taloudellinen ympäristö muuttui merkittävästi 2000-luvun alussa, se herätti kysymyksiä tilintarkastuspalkkioiden tasosta ja siitä, ovatko palkkiot kasvaneet jo liian suuriksi. Pääsyy eri sidosryhmien huolelle oli lakiuudistus nimeltä SOX, joka tiukensi huomattavasti tilinpäätökseen liittyvää lainsäädäntöä. Vaatimukset lisääntyivät niin tilinpäätösten laatijoille, kuin myös tilintarkastajille, ja sääntely myös kielsi tai rajasi tiettyjen tilintarkastuspalvelujen tarjontaa. Etenkin näistä syistä tilintarkastuspalkkioiden pelättiin kasvaneen liiallisiksi SOX-sääntelyn voimaan astumisen jälkeen. Tutkiakseni tätä kehitystä, tutkielman tavoitteena oli tarkastella suhteellisten tilintarkastuspalkkioiden tasoa ja kehitystä yli ajan vuosina 2000-2017. Tämän avulla oli mahdollista tutkia, ovatko tarkastuspalkkiot todella kasvaneet, ja onko pitkäaikaisia trendejä tai muutoksia tiettyinä ajankohtina selkeästi havaittavissa. Lisäksi tarkoituksena oli tutkia suhteellisia tilintarkastuspalkkioita kontrolloimalla asiakkaan kokoa. Näin pystyttiin tarkastelemaan, onko palkkioiden käyttäytymisessä havaittavissa eroavaisuuksia pienten ja suurten yritysten välillä.

Tutkielman metodina käytettiin kvantitatiivista analyysia, jossa liikevaihtoon suhteutetuille tilintarkastuspalkkioille luotiin aikasarja-analyyseja vuosille 2000-2017. Tämän lisäksi suhteellisia palkkioita tutkittiin myös regressioanalyysien avulla, joissa käytettiin niin yksinkertaisia kuin myös moninkertaisia regressioita. Näiden avulla pyrittiin saamaan tarkempia tuloksia koskien yli ajan tapahtuvaa muutosta. Molempia metodeja käytettiin eri otannoille, kuten kokonaisotannalle, eri desiileille ja otannalle, missä vertailtiin BIG4 tarkastajia sekä ei-BIG4 tarkastajia. Data hankittiin Audit Analytics -tietokannasta, ja lopullinen otanta koostui kattavasti 123 880 havainnosta. Tutkimuksen tärkeimpiä löydöksiä oli se, että suhteellisten tilintarkastuspalkkioiden taso oli selkeästi kasvanut tutkimusperiodin aikana, ja että suurin yksittäinen kasvu tapahtui vuosina 2001-2005, jolloin SOX implementointiin ja sen vaikutukset olivat suurimmillaan. Lisäksi oli selkeästi nähtävissä että pienemmät yritykset kohtasivat korkeampia palkkioita, ja että palkkiot myöskin kasvoivat enemmän pienten yritysten kohdalla. Tuloksista oli myös nähtävissä, että BIG4-premium on olemassa, mutta vain pienille firmoille, ja että sen jälkeen kun SOX astui voimaan, suurin osa tilintarkastajien palkkioista tuli puhtaasti tilintarkastuksista, päinvastoin kuten ennen SOX:ia oli. Yhteenvetona voidaankin todeta, että tilintarkastuspalkkiot kasvoivat merkittävästi viimeisen 17 vuoden aikana, mutta suhteellinen taso oli ainoastaan korkea pienille yrityksille. Suurten yritysten palkkiotasot olivat yllättävän matalia, ja enemmänkin laskeneet kuin nousseet, etenkin vuoden 2005 jälkeen.

Avainsanat tilintarkastus, tilintarkastuspalkkio, tilintarkastaja, laskentatoimi, tilinpäätös, SOX, BIG4,

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1. INTRODUCTION

1.1 Motivation for the study

After several major accounting scandals in the beginning of 21st century, there has been discussion whether audit itself, but also audit quality, have met their goals. Audits should ensure that generally accepted accounting principles and standards are complied with, but after Enron and Arthur Andersen scandals, this was widely questioned. Trust among different stakeholders weakened remarkably, and regulators had to act in order to restore their trust. For that reason, Sarbanes-Oxley Act (later SOX) was created in year 2002, which effected accounting and auditing environment considerably. (See e.g. Holm & Zaman 2012). Related to this, it has also been discussed if audit fees have gone up too high. The implement of SOX as well as the uncertainty in the markets should undoubtedly have increased audit fee levels during the past two decades. In addition, also The Great Recession occurred within this time, which also should have had impact on accounting environment and through that to audit fees as well. There has also been doubts whether SOX improved audit quality after all, and that the regulation was too restrictive and excessive. These aspects create an interesting starting point for studying what the actual audit fee levels have been, what are the factors affecting to them and how they have reacted to these changes, such as SOX, during the investigation period.

As mentioned above, there have been discussions whether audit fee levels are too high. For instance, Beattie et al. (2000, 196-197) studied negotiations between audit engagement partners and finance directors (FD), and they found that clients were unsatisfied with fee levels: "One FD expresses his expectation that auditors would stand their ground on everything but fees." and: "The only items are fees and the unacceptable size of them." This study suggested that clients are not satisfied with fee levels, and they also feel powerless during price negotiations when compared to auditor. This raises questions whether especially the position of small companies is not equal with bigger firms during price discussions, and when engaging a new auditor. Smaller firms are not seen as important clients for audit firms as bigger ones are, and they may also include more risk than client with bigger sales. That is why it is worth investigating for whether mentioned events have had more effect on different sized companies, that is, have smaller organizations suffered more from new regulation for example. Hence, this comparison between different sized auditees is included in the study, when it should give more precise results of how the company size affects the final audit fee level.

There are also ethical aspects related to audits and audit fees that concern stakeholders, when for example audit firm concentration in terms of BIG4[1] raise questions of cartel-like behavior and diminished competition. If only four biggest audit firms conduct majority of the audits, it is worth asking for are the markets working as in competitive environment? When the providence of audit services is that centralized, especially among public companies which tend to use BIG4-auditors, it enables higher asking prices. Another ethical issue relating to this is auditor independence. It has raised serious concerns among regulators and other stakeholders, that auditor independence is endangered when the relationship between auditor and client last for a long time, and when achieved economic benefits are considerable. This can lead to reduced audit quality and misleading financial statements, as well as to unequal treatment regarding different clients. These in turn may affect the audit fee levels. According to Hay (2017), there is consistent evidence that audit fees for new engagements are lower, and that non-audit services affect independence in appearance. Therefore, also factors affecting audit quality are reviewed in this thesis, and ethical issues are discussed throughout the whole study.

There are lots of prior studies around this topic, but majority of them concentrate on factors affecting audit fees, or how audit fees correlate to audit quality, but not the actual level of them or their long-term development. Studies regarding how SOX, Enron, Arthur Andersen and Great Recession affected audit fees and audit quality are done frequently. For instance, Chambers and Payne (2011) and Iliev (2010) studied how SOX affected audit fees, Choi et al. (2010) studied how audit quality is compromised when audit fees are high, Asthana et al. (2009) studied how Enron, Arthur Andersen and SOX all together affected US audit markets, and Choi et al. (2008) studied audit pricing regarding BIG4 and BIG4-premiums. All these researches examined audit fees in a certain way, but none of them reviewed long-term audit fee levels and trends. Hence, prior literature has approached audit fees more specifically, when in this study the main purpose is to study general audit fee levels and reasons behind their development over time. That is, there is rather long investigation period, and focus is on actual audit fees and trends evolved from them, rather than post-SOX effects on audit fees for example. One study that has similar approach with this study was done in year 2014 by Audit Analytics. They examined audit fees and non-audit fees with twelve-year trend, and therefore especially this paper is cited and used for comparison later in the study.

[1] The Big4 at the time (2019) consisted of the following audit firms: Deloitte, Ernst & Young (EY), KPMG and PricewaterhouseCoopers (PwC)

1.2 Methodology and scope of the study

The methodology used in this paper is quantitative, using different analytical tools for creating time series analyses and regression analyses. Regression results are for achieving more detailed results of audit fees' development, whereas time series analyses give general overview of how audit fees have been acting during the 21st century. In empirical research, the data will be first analyzed as a complete sample, without any distributions. After that, the data is divided into deciles by revenue and fiscal year. Thus, time series analysis and regression analysis are first created for complete sample, and after that for different deciles. By examining the data this way, differences between different sized firms should become more observable. The data used is obtained from Audit Analytics database, and it includes all fee data disclosed by SEC registrants in electronic filings since first of January 2000, until the end of year 2017. The final sample includes 123,880 firm-year observations. Data was exported from Audit Analytics' database directly to software called SAS (Statistical Analysis System), which is used as a main analytical tool throughout the study. All data adjustments and empirical tests are implemented with SAS, and Microsoft Office tools are used for creating different kinds of graphs mainly. For examining research questions, four different hypotheses are formed and tested with SAS. Hypotheses are tested with both methods, that is, time series as well as regressions are used for achieving comprehensive empirical results. For regression analysis there are several regression models developed, and they include both, simple regression models as well as multiple regression models. These are however introduced more carefully in Chapter 5.

1.3 Research problem and main findings

The main objective in this study is to examine how audit fees in relation to revenue have act during the past 18 years, and further, is there differences between smaller and bigger firms when considering this development. The two main research questions are then following:

1) Have audit fees in relation sales increased considerably during the examination period?

2) Are there differences between smaller and bigger firms? Are smaller companies facing more relative audit fees?

Results from empirical tests managed to answer these two questions rather well. Firstly, both time series analysis and regression analysis proved that in general, relative audit fees have increased during the examination period and this increase can be considered as substantial. Based on time series analysis, audit fees in relation to sales increased by 87 percent during years 2000-2017, and that main growth occurred straight after year 2002 when SOX came into effect. For that reason, SOX can be seen as major influencer behind increased audit fee levels. Regression results supported this, when increase with this method resulted 67 percent growth in 18 years. Difference between these two results come from features related to methods, when percentage considering time series analysis is calculated by comparing first and last observed value, while regression results are based on linearity. In the data audit fee values have sawed back and forth during given time period, and for that reason linear regression model result indicate more steady and linear growth. Although, both methods give same overall conclusion, that is, audit fees in relation to sales have increased considerably between years 2000 and 2017.

Second main finding is that there is clear difference in relative audit fees between small and large companies. When audit fees were reviewed by deciles, Decile 1 including companies with smallest turnover, was facing remarkably higher audit fees than firms in bigger deciles. With Decile 1, the average audit fee ratio from sales was as high as 6 percent at highest, when for Decile 10 for instance it was around 0.06% at the same year. When compared to complete sample, the average audit fee ratio for them was around 0.7 percent. This seems rather low, when less than one percent from firm's revenue is going for audit fees. However, results considering deciles revealed that this doesn't represent the sample that well, when higher ratios for smaller deciles and lower values for bigger deciles distorts the average ratio of complete sample. In addition to this, it was also found that BIG4-premium existed only for smaller deciles, and that bigger deciles got lower audit fees even when audited by BIG4-auditor. This can be seen as third major finding. Fourth important finding was that besides higher audit fee ratio for smaller firms, they also faced more increase in those fees. Hence, all these results suggest that audit fees in relation to sales have increased during the 21st century, and that especially small firms face high relative audit fees and considerable increase in those. All empirical results were also in line with previous studies, when e.g. existence of BIG4-premium for small companies was already suggested by several authors. Additionally, all results were supported by sensitivity analyses.

1.4 Structure of the paper

The paper starts by introducing the basic elements of audit fees and logic behind audit fee pricing in Chapter 2. This should help reader to understand the study better, when causation behind observed trends are clearer. In Chapter 3 audit quality is discussed, when it is essential part of audits and acts as a certain type of measure for them. It also compensates the money spent on audits when considering auditees. That is why it is important to include in the study, so that stakeholders' view can be taken into account as well. In followed chapter, Chapter 4, study's hypotheses and reasoning behind them are presented. In Chapter 5, the methodology of this study is introduced, and it covers data and sampling, as well as methods used in empirical research. In addition, models used in quantitative testing are also introduced in that chapter. After this, empirical tests and results can be presented. In Chapter 6, all empirical tests are conducted, and results discussed. The chapter starts by introducing descriptive statistics of the study, followed by audit fee analyses. As said before, audit fee analyses are first done for the whole sample without any sampling, and after that to different deciles. Lastly, in Chapter 6, a sensitivity analysis is formed for ensuring the robustness of achieved results. Finally, in the end of the thesis, conclusions of this study are presented.

2. PRICING OF AUDIT FEES

When examining audit fee development and its appropriate level, it is important to understand the basic logic behind audit fee pricing. There are several different factors that affect the final audit fee level, but in general audit fees are considered to be based on three factors: client size, complexity of the audit and the riskiness of the client. (See e.g. Firth 1997, 512.) All these factors affect directly the amount of work to be done in the audits, when audit of large, complex and risky firms requires more effort from an auditor. When the basic pricing is on hourly basis, every aspect that increases auditor's effort, increase the audit fee as well. In addition to these, also the size of the auditor along with risks from the audit firm side can affect final audit fee level. These are however seen to have less influence than factors affecting from client's side. There are also several different pricing models available that usually include factors that are important, but at the same time reliably measurable. However, models can differ remarkably from each other, and there's no one, generally accepted method. In this chapter, first client dependent factors affecting audit fees are reviewed, followed by auditor dependent factors. After this, one of the basic pricing models used for audit fee pricing is introduced.

2.1 Client dependent factors

Most of the factors affecting audit fee level are depending on client. As mentioned above, especially customer size, the complexity of an audit as well as customer-related risks are the main aspects to consider when determining appropriate audit fee level. First comes the client size. The smaller the client is, the smaller the number of items in financial statements, at least in general. For example, smaller companies don't usually have lots of impairments or other unusual items in their income statements. In addition, when the client is small, also the amount of entries inside of different items is smaller. For instance, entries in account receivables or in account payables are typically in direct relation to client size. The less turnover, the less account receivables, which in turn decreases the effort required from auditor, and therefore also the fee lowers. Conversely, the bigger the auditee, the bigger the fee. There are several studies supporting this, for instance Pong and Whittington (1994, 1072) stated that: "The results of previous empirical studies of the determination of audit fees all show that, as would be expected, there is a strong correlation between audit fee and size of auditee."

However, there are also factors that usually increase the fee when there's a small client in question. One of these factors is the contribution of internal control. This in turn is directly linked to SOX, which requires to draw attention especially to company's internal control. SOX was created because of several accounting crises in North America, such as Enron and Arthur Andersen scandals, where American energy company Enron went bankrupt, and their auditor, Arthur Andersen (AA), was accused of giving false audit opinions. This naturally weakened investors' and other stakeholders' confidence towards auditing. For restoring markets' trust, the congress of United States set new federal law, where the main objective was to protect investors by improving the accuracy and reliability of corporate disclosures. For example, to improve the independence of auditors and for avoiding auditor conflicts, SOX prohibits auditors from making certain types of assignments to their client companies, such as bookkeeping or giving investment advices. SOX also requires auditor rotation in order to enhance the auditor's independence. Yet, SOX also requires auditors to audit internal control more thoroughly. SOX's section 404 requires management and the external auditor to report on the adequacy of the company's internal control on financial reporting. (Gates et al. 2007; SOX-online, 2018)

From auditor perspective, ensuring the quality of internal control and testing these controls may be as difficult to smaller companies that it is for larger ones. In some cases, it may be even easier to conduct for bigger firm, when usually big companies must pay more attention to internal control in order to meet all the requirements, and they also have more resources to do this. For that reason, in bigger firm internal control may be well designed, reported and documented, and also well monitored by the possible internal auditor of the firm. Better internal control means less difficult audit for external auditors, and therefore also the fee decreases. This assumption is supported by Felix et al. study (2001, 528-530): "Our results indicate that internal audit contribution is a significant determinant of the external audit fee. Specifically, the greater the contribution of the internal auditors to the financial statement audit, the lower the audit fee." On the contrary, smaller firms may not have enough resources to pay attention to internal control sufficiently, and it is extremely rare to have own internal control department in small or medium size companies. According to Ashbaugh-Skaife et al. (2006, 190) for example, it is less expensive for a large company to develop better internal controls than it is for a small company, and their results also indicate that firms with fewer resources to invest in internal control, as proxied by the frequency of losses and greater financial distress, more often disclose problems with their internal controls. Therefore, auditors must take a lot of time in order to ensure, that the internal control is at the adequate level in that firm. This naturally increases the fee

level: "Our results show that audit fees are significantly higher for ICD (internal control deficiency) firms after controlling for size, risk, and profitability. Furthermore, the fee increment is highest for firms that have the most substantial internal control problems." (Hogan & Wilkins 2008, 236). Despite that there is both decreasing and increasing factors affecting audit fee level when considering client's size, usually it is seen as positively correlated. Client size is however important to include in fee calculations, when it has direct influence on required audit work.

Secondly after client size comes the complexity of an audit. If the business, operational environment, processes and the organization itself are complex, it means more audit work for ensuring satisfactory audit quality. For example, if client's processes are long, complicated, and claim lot of resources, it takes time from auditor to ensure if the outcomes of these processes are correctly presented in financial statements. It also requires lot of time to test the controls attached to these processes. Additionally, the complexity of an audit often requires certain type of expertise, which naturally heightens the fee. In some cases there might be need for several experts from different fields, if the client operates in numerous regions for example. Then there must be knowledge of operational environments of different states or even different countries, if the organization operates multinationally. In addition to region knowledge, there should also be expertise about legislation and taxation of these areas. Furthermore, clients may have subsidiaries in different regions, so audit firm must also know about different organizational structures, mergers and acquisitions, as well as transfer pricing for instance. Lastly, one of the most important field of expertise is the industry expertise. Clients usually hope certain knowledge from their auditor considering the industry in which they operate. Gul et al. (2009) suggested that industry-specific knowledge is actually more important than client-specific knowledge, and that numerous audit-related issues are in fact linked to industry:

> *"Though evidence suggests that client-specific knowledge plays an important role in conducting an effective audit, it may be argued that many audit-related issues are industry-specific and have unique industry features e.g. forward sales contracts, off balance sheet financing arrangements, accounting systems, tax rules or specialized reporting requirements in certain industries. Consequently, industry expertise is also likely to play a role in improving audit quality in terms of auditor competence, in addition to the general knowledge base required for all audits."* (Gul et al. 2009, 268)

As said, client size may have either increasing or decreasing effect on audit fee, but the complexity has not. The complexity of an audit has always increasing impact on effort, which means that the more complex audit, the higher the fee. Besides increased effort, from auditor's perspective more complicated audit includes also more risks. Therefore, the fee level must compensate these risks as well. This leads us to third factor affecting audit fees, which is the riskiness of the client. In fact, both client size and complexity affect audit fee eventually because of risk. For instance, if the client size is large and the amount of entries inside of account receivables is also large, it means that there's bigger risk for auditors not to detect something they should have detect. The same goes with complexity. The more there is items to be audited and the more there is complexity attached to these items, the more there is risk for auditors to bypass something important or alarming. That is why the *Audit Risk (AR)* is higher when the client size is bigger and when there's more complexity included in the audit. Audit risk is basically the risk that auditor expresses an inappropriate audit opinion when the financial statements are materially misstated. (See e.g. Eilifsen et al. 2014) For keeping audit risk at tolerable level, it requires more testing from auditors when the client is large and complex (i.e. risky), thus, the effort increases. That is why all factors can be seen to be attached to risk in the end, and therefore influencing audit fee through increased effort.

Consequently, risks can be seen as major influencers on audit fees. Auditor must consider risks in every step during the audit, from the client acceptance to the final auditor report. Every risk factor must be identified, as well as the possibility of actualized risk. After proper risk assessment, the estimated risk level determines first the appropriate audit procedures, and then the final audit fee level. Typically, auditors use certain formula, known as **audit risk model (ARM)**, to assess the risk:

Audit Risk (AR) = Risk of Material Misstatement (RMM) * Detection Risk (DR)

where *Risk of Material Misstatement (RMM)* times *Detection Risk (DR)* results *Audit Risk (AR).* RMM indicate the risk that auditee's financial statements are misstated to a material degree, and it can be further divided into two components: *Inherent Risk (IR)* and *Control Risk (CR).* Inherent risk means that there's possible, material misstatement in an account or disclosure, and it is due either error or fraud. Control risk in turn means that if this kind of misstatement occurs, it will not be prevented, detected and corrected by the entity's internal control. Hence, these form the risk that there

is a material misstatement in financial reports, and they are affecting from client's side. Detection risk on the other hand is depending on auditor's behavior, when it basically means the risk that procedures performed by auditor will not detect a misstatement that exists. (Eilifsen et al. 2014; Hogan & Wilkins 2008; Chang et al. 2008; Houston et al. 1999) The alternative presentation for audit risk model is then following:

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

What is worth noticing for, is that RMM and DR has an inverse relationship, which means that the higher the RMM, the lower the DR must be. For example, if the auditor evaluates client's inherent and control risk (i.e. RMM) to be high, it means that the auditor believes internal control to be at poor level, and that there's great possibility for misstatement that could also be material. That is why the detection risk must be at low level, in order to retain the audit risk level (AR) at acceptable level. Low detection risk means that auditor cannot give any space for the possibility that they will not notice if material misstatement exists. For that reason, they must conduct greater amount of *substantive testing*, which means the most accurate testing methods, where actual entries, contracts etc. are examined. This is for ensuring that material misstatements do not occur, or at least they are detected on time. Hence, the lower the detection risk, the more effort audit requires. (Eilifsen et al. 2014; Hogan & Wilkins 2008)

> *"Both inherent risk and control risk are documented by the auditor on the basis of an assessment of the client. In order to maintain overall audit risk at an acceptable level in the face of high inherent risk and / or control risk, auditors must reduce detection risk. Detection risk is reduced by increasing substantive testing."*. (Hogan & Wilkins 2008, 221)

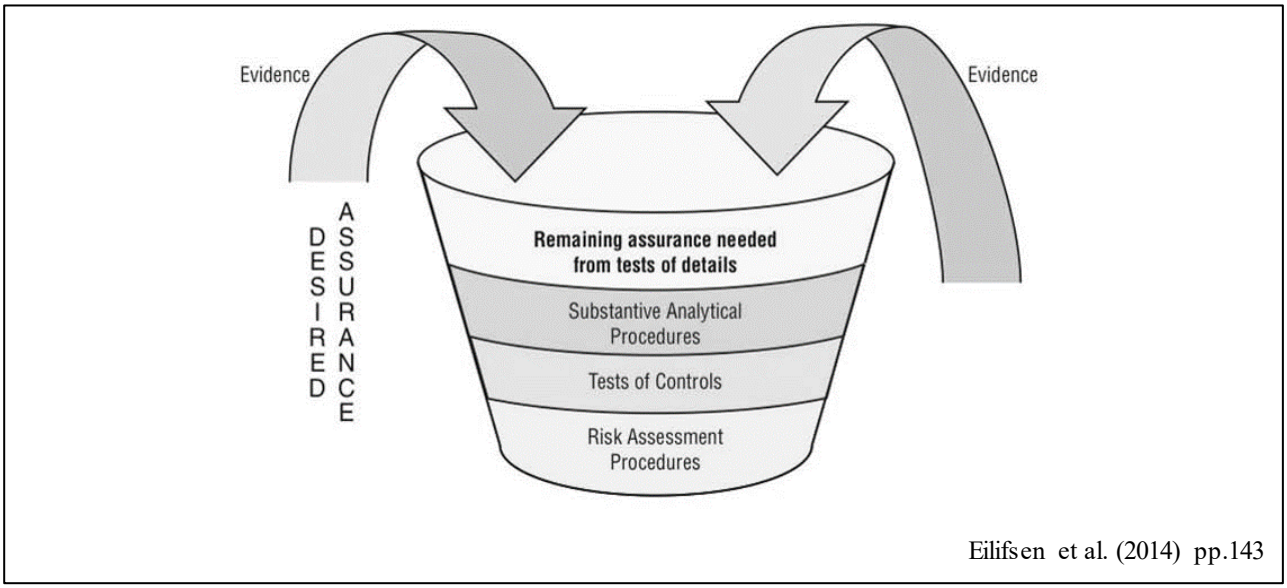
The audit risk model is not intended to be a precise formula that includes all factors affecting the assessment of audit fee, but it captures the basic logic behind planning and scoping of the audit. It helps auditors to assess the adequate level of different audit procedures, because risk levels – especially detection risk level – determines how much testing must be done within an audit. This in turn determines the final audit fee level in terms of required effort. When considering appropriate

detection risk level, it starts from assessing the desired audit risk level. Typically this is set as *very low* or *low*. (See e.g. Eilifsen et al. 2014.) After this, auditor decides what is the risk of material misstatement based on research and tests on client. When these two elements are determined, the equation can be solved for getting the level of detection risk. (Houston et al. 1999, 284) By solving the audit risk model, auditors can determine the needed amount of substantive testing. Substantive tests are a way to gather evidence, because in order to form an opinion that financial statements are not materially misstated, auditor must gather sufficient amount of evidence about client's assertions. Substantive tests are most common way to do that, and detection risk level determines the amount for this testing.

> *"This model (audit risk model) expresses the general relationship of audit risk and the risk associated with the auditor's assessments of risk of material misstatement (inherent risk and control risk) and the risks that substantive tests will fail to detect a material misstatement in a relevant assertion (detection risk)."*
> (Eilifsen et al. 2014, 97)

In Eilifsen et al. (2014, 143) book, evidence gathering and factors affecting to it are illustrated with so called 'assurance bucket' (Figure 1). The bucket must be filled with evidence for achieving the desired assurance level to support the auditor's opinion. The filling starts by risk assessment procedures, where risk levels for audit risk and risk of material misstatement are tentatively determined. After assessing AR and RMM, auditor must test client's controls for ensuring that IR and CR are evaluated right, and for getting the final level of control risk. This happens on second level. After this is done, audit risk model can be solved for getting the final detection risk level. As said above, this risk level is directive and most important factor when considering how much evidence must be gathered, that is, how much substantive testing should be done. So, after first two levels, auditor performs substantive procedures based on assessed risks and results from control testing. Better risk profile and control efficiency means less substantive testing for auditors. Substantive procedures include analytical procedures as well as test of details, and they are performed in that order.

Figure 1. The Assurance Bucket



Eilifsen et al. (2014) pp.143

Third level in the bucket is thus substantive analytical procedures, which basically means that assertion is tested with analytical tools, not with test of details. For example, rent expenses are audited by inspecting rental contract, not by inspecting every invoice from each month. Thus, analytical procedures take less time and effort, but may also be less accurate. After this comes the test of details which means actual sample testing, reviewing invoices, contracts, inventory and so on. Although test of details is often seen as most visible part in auditor's work, it is actually the last phase when achieving desired assurance. The amount of evidence gathered from test of details is just enough to fill the bucket, and with some assertions, there's no need for detail testing at all, when with some assertions the bucket may be primarily filled with test of details. Usually the more risk assertion includes, the more detail testing is required, when it gives least room for professional judgment and subjectivity. It is therefore the most accurate method for gathering evidence, but at the same time it is the most time-consuming method as well. (Eilifsen et al. 2014)

To summarize, main factors affecting audit fee level from client side are size of the customer, complexity of an audit as well as the client's riskiness. These all affect the amount of needed audit work which in turn heightens the audit fee, if increased. This stems from evidence gathering, where auditors must gather sufficient amount of evidence to be able to form opinion of client's financial statements. Auditors must gather more evidence if the size, complexity or the riskiness of the client increases. There are several ways to gather evidence, but usually it begins with risk assessment

procedures and ends with substantive testing. Risks are in fact the most important factor behind audit fee pricing, when they can be seen linked to client size and complexity as well. Auditors should therefore consider risks throughout the whole audit from client acceptance to final opinion. Audit risk model is designed to help auditors to assess all these relevant risks, and adjusting their evidence gathering based on detection risk. Therefore, risk assessment procedure is seen as first and most important phase when performing the audit. However, the final opinion cannot be given before adequate amount of evidence is achieved through control testing and substantive testing, in addition to risk assessment procedures.

2.2 Auditor dependent factors

As was with client dependent factors, risks are also part of the factors affecting audit fees from the auditor's side. When conducting an audit, auditors try to prevent audit risk (AR) from actualizing. However, reason why this concerns auditors is not the audit risk alone, but also the reputation risk, that stems from audit risk. This means that if client's financial reports are materially misstated and auditor do not notice this, it will affect their reputation and liability, which in turn may weaken their financial position. In fact, the existence of reputation risk often guides auditor's behavior and prevents them to please the management and act optimistic. (Uang et al. 2006, 790). Arthur Andersen is an example of actualized reputation risk, when the bankrupt was due mainly because of reputation loss. "Eventually, Arthur Andersen was found guilty of obstruction of justice only for destroying documents related to the Enron audit, and even though this decision was later overturned by the United States Supreme Court, it was already made AA to collapse. (Collins, 2016). In addition to audit risk and reputation risk, there's also auditor's business risk, where auditor is exposed to loss or injury to professional practice from events arising in connection with financial statements audited and reported on. For example, auditor may be sued by the client even though audit is conducted in accordance with auditing standards. (Eilifsen et al. 2014, 97) Auditors must consider these risks and ask for fee that compensate them. However, from auditor perspective, this also means that risk and return go hand in hand. For that reason, audit firms must define their risk profile, and determine how much risk they are willing to take for corresponding return. Small audit firm may be more willing to engage risky clients, when expected profits are at much higher level. Thus, there may be differences in risk profiles between different sized audit firms.

What then comes to auditor size, as was with client size, also here there is both increasing and decreasing factors. For instance, big audit firms have more resources available, which means that they are usually able to enhance and organize their operations in a way, that maximize their efficiency. They don't have to decline clients because of lack of resources, and often there is economies of scale that they can exploit. These aspects tend to decrease the audit fee level. Bigger audit firms are neither depending on one, major client unlike smaller ones may be. According to Gul (1991,163) for example, smaller auditors may be more dependent on a particular client than larger audit firms, because the client's fees are likely to be a larger proportion of a small audit firm's sales than of a large audit firm's sales. Also, bigger audit firms usually have more expertise to offer than smaller ones do, which in turn may increase the fee. According to Francis (2004, 352): "A higher audit fee implies higher audit quality, ceteris paribus, either through more audit effort (more hours) or through greater expertise of the auditor (higher billing rates)". Additionally, bigger audit firms have also their reputation to protect, and therefore client's risks may increase the fee. According to Uang et al. (2006, 795), larger audit firms are more vulnerable for reputational loss because of their high profile and 'deep pockets'.

When larger audit firms, BIG4-firms especially, have lot of resources and expertise, there have been suggestions of so called 'BIG4-premium', where these firms are in position where they are able to price their audit fees higher than non-BIG4 auditors. There are several studies that have examined this phenomenon, but the results are somewhat contradictory. According to Choi et al. (2008, 55): " - - studies have provided mixed evidence on the existence and magnitude of a fee premium associated with audits performed by Big 4 (previously Big 5, 6, or 8)." Francis and Simon (1987) among many others have studied audit pricing and its connection to auditor's size, as well as to client's size. According to them, there's no significant association between audit fees and audit firm size, if the client and the auditor are both big. However, they found that when the auditor belonged in BIG8-group[2] and when the client was small, there was a significant association. That is, the bigger the auditor, and the smaller the auditee, the bigger the relative fee. Hence, Francis and Simon found a BIG8-premium, but only for smaller clients. They also suggested that reasons behind BIG8-premium are coming from product differentiation (i.e. better audit quality) and scale of economics: "Big Eight price premium for small auditees, coupled with the absence of an observed price premium for large auditees, suggests an audit market in which there is Big Eight product differentiation and in

[2] The Big Eight firms at the time (1987) were: Arthur Andersen, Arthur Young, Coopers and Lybrand, Deloitte Haskins and Sells, Ernst and Whinney, Peat Marwick Mitchell, Price Waterhouse, and Touche Ross.

which there are either Big Eight scale economies for large auditees or diseconomies of scale for the non-Big Eight in the audits of large auditees." (Francis & Simon 1987, 148-156).

There are also similar results from other authors, whose studies did find significant positive association between auditor's size and audit fee levels, when the auditor is big, but when the auditee is small. (Francis, 1984; Francis & Stokes, 1986; Palmrose, 1986). For example, Palmrose (1986, 108-109) used approach where she compared pricing across small and large auditees and got similar result than Francis and Simon. She found that BIG8-coefficient was positive and statistically significant for small auditees but not for large. Although these studies are rather old, they get support from more recent studies, such as Choi, Kim, Liu and Simunic's study from year 2008. According to them, there truly is BIG4-premium, but only what comes to small clients: "The coefficient on BIG4, which captures the magnitude of Big 4 premium, is significantly positive for small and medium-size strata at less than the 1 percent level, but it is not significantly different from zero for the large-size stratum. In other words, the Big 4 premium exists only for small and medium-size client segments." (Choi et al. 2008, 84). Studies are also in line with general assumption, where smaller firms pay relatively more audit fees than bigger firms do. This is however argued more thoroughly with hypothesis development in Chapter 4 and examined empirically in Chapter 6.

There are few other factors that have also impact on audit fees, but they are not directly linked to risks or auditor's size. First, the competitive situation on the market naturally affects audit fees. The lack of competition may lead for increased prices, if BIG4 auditors ask for premium over their prices and there's no competition to reduce this. Among BIG4 auditors there could also be cartel-like behavior, when there's only four audit firms that conduct majority of the audits, and when they are often only choice for public companies for example. On the other hand, strict competition among auditors may decrease prices, when every operator in the market try to engage new clients, and at the same time keep the old ones. "Competition has also been linked to size of audit fee since high competition increases the chances of losing a client and hence revenue." (Gul 1991, 163). Also, the persuasion for new clients is often done by decreasing prices, sometimes even below costs. This is known as 'lowballing'. According to O'Keefe's et al. (1994), especially when auditors bid to perform a new engagement, it can lead to lowballing. In addition to competitive situation, any additional regulation usually affects audit fee levels also. For instance, SOX had massive impact on auditors' requirements,

which should very likely to be visible as an increase in audit fees in the beginning of 21st century. This is examined in Chapter 6 as well.

The final factor affecting audit fee from auditor's side is the auditor tenure, which basically means the number of years an auditor is retained by the firm. Lowballing and expertise can be seen to linked to auditor tenure as well. According to Gul et al. (2009, 265) prior studies suggest that auditors with short tenure had lower audit fees because auditor has used lowballing when trying to engage this client, and also because the lack of customer specific knowledge in the beginning of clientship. In addition to this, also learning curve depends on auditor tenure. Learning curve means that at the beginning of client engagement, the client is new to the auditor, and that is why it takes more time and effort to audit the client for the first time. However, as the tenure continues, auditor will learn more and more about its business environment, operations and internal control, and therefore the audit becomes more efficient after first few years. Thus, learning curve arises when client specific knowledge increases. According to Tanyi et al. (2008, 674): "- - effective audits require a thorough understanding of the client's business and processes; such understanding develops over time and there is a steep learning curve that lasts a year or more." Usually learning lowers the audit fee when efficiency is enhanced, but at the same time increases it, when client-specific knowledge increases. However, what should be noted when discussing learning curve is that SOX requires mandatory auditor rotation every five years. According to Raiborn et al. (2006), this increases remarkably the risk of audit failure in the initial years of an audit engagement because of lack of familiarity with the new client: "In all instances of relationship change, there is a high potential for misunderstanding, uncertainty, and ambiguity." (Raiborn et al. 2006, 41).

To summarize, although main factors affecting audit fee levels are coming from the side of the client, there are also several aspects that have impact on audit fees from the auditor's side as explained here. These however are seen to have less impact than client dependent factors, when these factors are often conditional on markets, regulators, competitive situation etc. and they are also not that easily measurable. For that reason, client's size, complexity, and risks are still considered as main factors affecting audit fees. Next, example of basic audit fee pricing model is introduced, where most of the factors presented above are included in the model.

2.3. Audit fee pricing model

As mentioned in the beginning of this chapter, it is important to understand basic logic behind audit fee pricing and factors affecting it. However, there's no single model that would be generally accepted and used when defining audit fee level. There are several models available that are designed to take into account factors listed above, but they may differ noticeably from each other. Additionally, every client has its own aspects that effect auditor's work, and it is impossible to include them all in one, general model. However, most typical factors that are measurable are usually involved. For example, Francis and Simon (1987) created audit fee pricing model that is based on a cross-sectional regression of audit fees on a set of explanatory variables. This model was selected here, because it describes comprehensively different factors affecting audit fee level, while at the same time remaining rather simple. The model explains basic logic behind audit fee pricing with multiple regression analysis, where the dependent variable is the natural logarithm of audit fee. The pricing model is following:

$$LogFEE = b_0 + b_1 LogASSETS + b_2 SQSUBS + b_3 FOREIGN + b_4 INVREC + b_5 OPINION + b_6 AUDITOR + \mathcal{E}$$

where:

b_0 = intercept value

LOGASSETS = natural logarithm of total assets

SQSUBS = square root of the number of consolidated subsidiaries

FOREIGN = the proportion of foreign subsidiaries to total subsidiaries

INVREC = the proportion of assets in inventories and receivables

OPINION= a dummy variable having a value of 1 if the firm received a "subject to" audit opinion

AUDITOR = a dummy variable for auditor size, e.g. having value 1 if the auditor is in BIG4 and 0 otherwise

$\mathcal{E}$ = residual error term

The first explanatory variable is logarithm of total assets. This tries to capture client size factor, when usually amount of total assets in balance sheet gives direction of company's size. Second variable is square root of the number of consolidated subsidiaries. This is for complexity, but also for size factor,

when large number of subsidiaries usually means larger company size. Also, the more subsidiaries, the more complex processes and structure inside the organisation. The third explanatory variable considers also complexity, when it is the proportion of foreign subsidiaries to total subsidiaries. Always when the company operates at foreign regions, it increases the complexity of an audit when it requires additional expertise from auditor in terms of regulation and tax legislation at least. Fourth and fifth variables in turn are linked to client risk. Variable *INVREC* stands for the proportion of assets in inventories and receivables. These are usually defined as risk items, when there are only income expectations, not actual income. For instance, inventory value may include subjective estimates, and even though it would be valued based on lowest-value principle, it may still be overvalued. Also, there's always risk that auditee is not able to realize the value of its inventory if needed, and with receivables, there is always risk of bad dept. The fifth variable is a dummy variable considering previous audit opinion. The variable is having value of 1 if the firm received a "subject to" audit opinion and value 0 otherwise. This is naturally related to risk, when there is remarkable uncertainty if the auditor was not able to give standard audit report previously. The last variable besides residual error term ε is the dummy variable *AUDITOR*. It naturally indicates auditor size, and it can be divided into BIG4-variable and non-BIG4 variable for example. With these variables, it is possible to investigate whether smaller audit firms ask higher prices or does BIG4-premium exists.

According to Francis and Simon, all these variables are expected to be positively related to audit fees. Hence, even though in some cases smaller firm size may mean relatively more effort from auditors and therefore increase the audit fee level, the general assumption is that size and fees are positively, not negatively associated. Besides, even though this model is designed over thirty years ago, it still manages to capture the basic reasons behind audit fee pricing: client size, complexity, risks and auditor size. By running this regression model to certain data, the magnitude of coefficient b_x would tell the given weight for different explanatory variables, that is, what factors have been seen having most impact on audit fees, and what have been given less weight. In Francis and Simon's study, variable *FOREIGN* had highest coefficient of 0.52, while the second highest was *LOGASSETS*. These results indicate that the factor increasing audit fees by the most was complexity coming from foreign subsidiaries, and after that, the client size had second largest impact. (Francis & Simon 1987, 152) This introduction of different factors affecting audit fees and the basic model for audit fee pricing should give a general understanding of aspects behind audit fees. Next, the quality of an audit is brought in, when clients usually demand adequate quality in return for price, and audit fee level and audit quality are often seen to be in connection.

3. AUDIT QUALITY

Audit quality can be seen as certain type measure for audits, ranging from very low to very high audit quality. Yet, it is difficult to measure what is the actualized level of audit quality, because the only observable outcome of the audit is the audit report, which is a generic template and majority of these are standard clean opinions. One common way to measure audit quality is to review audit failure rates. An audit failure occurs when generally accepted accounting principles are not enforced by the auditor (GAAP failure), or when an auditor fails to issue a modified or qualified audit report in the appropriate circumstances (audit report failure). In both cases, the audited financial statements are potentially misleading users. (Francis 2004.) Besides the measurement of audit quality, it is also hard to assess what is the adequate level for that. If both audit fee and audit quality are high, is too much invested in audits? "However, we do not know from research the optimal level of audit quality and therefore whether we currently have 'too little' or 'too much' auditing?" (Francis 2004, 345-346.) It is also worth asking for whether audit fees compensate the quality level, especially if audit fees are substantially high. Next, factors affecting audit quality are introduced, and after that the role, as well as the adequate level of audit quality, are considered.

3.1 Factors associated to audit quality

Several studies suggest that audit fees, auditor tenure and auditor's expertise have positive association to audit quality. This means that higher fees indicate higher effort and better expertise, and that longer tenure increases the efficiency and lowers the audit failure risk. Hence, the audit quality increases. However, there are also suggestions whether the level of audit fees affects negatively to the audit quality, when auditor's independence, objectivity and skepticism can become endangered (see e.g. DeAngelo 1981). According to Hoitash et al. (2007), fees paid to auditors can affect audit quality in two ways: large fees paid to auditors may increase the effort exerted by auditors and by that increase the audit quality. Alternatively, large fees paid to auditors, particularly those that are related to non-audit services (NAS), can make auditors more economically dependent on their clients. Such financial reliance may encourage a relationship where the auditor becomes unwilling to make appropriate inquiries during the audit for fear of losing highly profitable fees. (Hoitash et al. 2007, 762)

Thus, the main concern regarding audit fees' association to audit quality is the loss of auditor's independence, and this is especially emphasized with non-audit services. "Audit quality will always be somewhat suspect if other services are provided that are perceived to potentially compromise the auditor's objectivity and skepticism." (Francis 2004, 345). Choi et al. (2010) found a negative association between abnormal audit fees and audit quality, but this was with fees, that are clearly at higher level than expected (positive abnormal fees). Conversely, Craswell et al. (2001), didn't find association between audit fees and decreased auditor independence. Neither did Lim and Tan (2008), who studied particularly the association of non-audit service fees to audit quality. Frankel et al. (2002) on the other hand found evidence that auditor independence is compromised when clients pay high non-audit fees relative to total fees. Gunny et al. (2007, 30), found that with non-BIG4 auditors, audit fees and total fees, especially abnormal ones, enhanced the likelihood of audit failures, but non-audit fees not. Thus, these contradictory results suggest that high amount of audit fees or non-audit fees do not indicate good audit quality directly, but it cannot be interpreted as a quality-reducing factor either without further investigation.

When considering positive association between audit fees and audit quality, it would mean that higher audit fee indicates good audit quality. This phenomenon is familiar from basic commercial environment, where high quality product is more expensive than product with lower quality. With audits, the basic assumption is that auditees are not willing to pay large audit fees whether the quality is not at adequate level. Conversely, auditors are not able to ask high price if their audit quality does not meet with all the requirements. Hoitash et al. (2007) found a positive and significant association between total fees and different variables describing the audit quality between years 2000-2003. Ashbaugh et al. (2003) examined especially non-audit fees, and they didn't find association at all between non-audit fees and variables that described audit quality. Thus, all these mixed results indicate that there's no clear outcome whether the amount of fees paid to auditors affects audit quality or not. There are results that suggest positive association between fees and quality, but there are also results that indicate negative association, which means that fees impair independence and therefore the audit quality as well. Especially with NAS-fees, the general assumption has been that they are the main problem when considering auditor independence. However, some results suggest that there are situations where NAS-fees do not impair audit quality and in some cases even improves it, when auditor is more committed to auditee.

In addition to fees, auditor tenure is also seen as audit quality indicator. Majority of the studies considering auditor tenure suggest that auditor tenure has not negative association to audit quality. (See e.g. Ghosh & Moon 2006; Gul et al. 2009; Johnson et al. 2002; Francis 2004; Myers et al. 2003.) Moreover, results indicate that it has positive impact on quality, when the client expertise increases year by year, which in turn reduces the possibility of audit failure. "We do not find that long audit firm tenures are associated with a decline in financial reporting quality. -- However, we did find a significant decline in financial reporting quality associated with short audit firm tenures." (Johnson et al. 2002, 655). Myers et al. (2003) got similar results, when they got positive association between audit quality and tenure as well. They also raised the question of SOX's mandatory auditor rotation, when studies suggest that audit firm changes rather decrease the audit quality than increase it, like was with Johnson et al. study. "Specifically, our results suggest that under the current system, increased auditor tenure does not lead to reduced audit and earnings quality. If deteriorating earnings and/or audit quality are the motivation for calls for mandatory rotation, then our results do not support such an argument." (Myers et al. 2003, 796). According to Francis (2004, 357), although the mandatory auditor rotation was created because of Enron and other similar scandals and for improving the quality of audits, the evidence does not support the need for, or the benefit of mandatory auditor rotation. Hence, all these authors are questioning SOX's regulation considering mandatory auditor rotation.

Third and last factor considering audit quality is the auditor's expertise. General assumption is that the more auditor knows about its client and client's industry, the better the quality of an audit will be. "There is also evidence that audited financial statements are of higher quality when audited by an industry expert." (Francis 2004, 355) and: "- - audit quality depends on numerous factors including an auditor's knowledge and understanding of the company being audited and the industry in which it operates" (Gul et al. 2009, 267). The reason for better audit quality according to Gul et al. is that auditors with industry expertise are more likely to detect misrepresentations and irregularities than auditors without industry expertise, especially in the early years of the audit assignment. What comes to tenure and expertise with non-BIG4 audit firms, Gunny et al. (2007, 30) found that also there the auditor tenure and industry expertise had a favorable impact on audit quality by mitigating audit and serious deficiencies. Unlike with fees, the results considering tenure and expertise are clearer, and majority of studies support assumptions that both factors have a positive impact on audit quality. Ironically, SOX has restricted both of these; tenure by mandatory audit rotation, and expertise by restricting tenure, and prohibiting providence of certain non-audit services.

However, when considering expertise, the question of auditor's size comes up inevitably. In general, it is believed that BIG4-auditors are able to offer more expertise than auditors outside of BIG4, hence audits conducted by BIG4 are of better quality. "This implies that, ceteris paribus, the larger the auditor as measured by the number of current clients and the smaller the client as a fraction of the auditor's total quasi-rents, the less incentive the auditor has to behave opportunistically, and the higher the perceived quality of the audit." (DeAngelo 1981, 197). However, as DeAngelo pointed out, the size of a client matters also. If substantial proportion of an audit firm's total revenue comes from a particular client, it may endanger auditor's independence, when the audit firm may be less willing to exert influence on client reporting choices (Chambers & Payne 2011; Francis & Yu 2009). Yet, usually one larger client does not have remarkable status as a client when the auditor is also big. Therefore, there may be increased possibility to impaired independence especially when the auditor is small, but the auditee big.

Sometimes there can also be situation where only BIG4 firms can offer certain expertise considering tax legislation for example, and then there's no other choice for the client than select auditor from BIG4-group. At the same time, this audit firm gets advantage in price discussions, when they have demanded expertise. In Ferguson et al. study (2003, 430) it was stated that: "In both the firm-wide and office-level perspectives, the assumption is that some clients demand a higher level of industry expertise from their auditor and are willing to pay a premium for the expertise." According to Francis (2004, 353), there's also other evidence that support expectation where BIG4 firms have better quality audits: "Big 4 firms are sued relatively less frequently after controlling for clientele size, and Big 4 firms are sanctioned less frequently by the Securities and Exchange Commission." (See also Palmrose 1988). The difference between larger and smaller audit firms was observable even inside the BIG4-auditor group, when Francis & Yu found a systematic association between BIG4 office size and audit outcomes consistent with larger offices producing higher quality audits. (Francis & Yu 2009, 1549). Therefore, results suggest that the bigger the audit firm, the more there are expertise and resources, and then the quality of an audit improves. Better quality audit in turn is reason for higher audit fee.

After reviewing different factors affecting audit quality, auditor tenure and expertise are seen to have positive association on audit quality in general. However, it seems that results considering fees are diverse, and conclusions of audit quality cannot be made directly based on fee level. One explanation for this could be, that better expertise usually increases the fee, but longer tenure decreases it. Better

expertise and longer tenure have positive association to audit quality, but only one of these raises the fee. It was also argued that positive association between fees and quality comes from increased effort, but if the auditor tenure is remained for a long time, it doesn't essentially increase the effort. Because of learning curve, the effort rather decreases than increases when the tenure continues. It is also worth noticing for, that due learning curve, longer tenure increases the client specific expertise as well. This means that all these factors associated to audit quality are connected to each other, and direct conclusions of their impact is hard to make. In addition, studies usually measure audit quality differently, when it is challenging to determine what variables describe audit quality best, and what is high quality audit versus low quality audit. These aspects emphasize the difficulty regarding measurement of audit quality, and why there are debates whether the audit quality is at acceptable level or not. In the beginning of 21st century, the general belief was that audit quality is diminished too much, and therefore additional regulation came into force. However, as already mentioned above, researchers suggest that the new regulation was either unnecessary or excessive. In next section, this aspect will be considered more carefully.

3.2 The role of audit quality

When the audit quality can act as a measure for audits, the role of audit quality is undoubtedly important. Yet, when the quality of an audit is so difficult to measure, how do we know when there is adequate amount of audit quality? Accounting scandals such as Enron and Arthur Andersen implied, that there isn't enough regulation considering audit quality, and that something had to be done for restoring markets' trust. For that reason, SOX as well as PCAOB were formed. "-- many of the provisions of SOX were directed toward improving audit quality by increasing auditor independence, specifically the ban on non-audit services and the implementation of a direct communication channel with the audit committee allowing auditors to bypass management in their discussions of potentially contentious financial reporting and control issues." (Chambers & Payne 2011, 441). However, some researchers say that SOX has unnecessary parts which do not serve their initial purpose, and that there was no problem to begin with. Francis (2004), Myers (2003) and Johnson (2002) all reported that auditor tenure do not reduce audit quality because auditor's independence is not endangered when the tenure continues. They in fact reported that longer tenure has a positive association to audit quality, because it improves client expertise. This raises questions

whether mandatory auditor rotation is actually harmful, when the quality seems to decrease when the auditor must be changed. That would be the opposite purpose of the regulation.

Additionally, also concerns regarding non-audit services seemed to be excessive, when there are no clear results whether high non-audit fee level automatically decreases the audit quality. For example. Kinney et al. (2004, 563) studied audit quality trough audit report restatements: "The regulators' and legislators' reasoning suggests the existence of a positive association between NAS fees and restatements, and particularly lucrative NAS fees. Yet, we know of no systematically obtained empirical evidence from before the SEC and Congressional actions that documents a positive association between NAS fees and restatements." When there are concerns whether SOX has limited auditors' ability to operate unreasonably, it is worth asking for if SOX regulation did improve the audit quality or not. Chambers and Payne (2011) examined audit quality post-SOX within BIG4-audit firms, and they found that audit quality improved after all when measured by the quality of accruals. They also found that the quality improved especially among auditors, that were classified having low independence, that is, they were seen to be at least partly depended on their clients, and therefore willing to make adjustments in audit. These results therefore suggest that SOX was able to improve the audit quality and thus achieved its main objective. However, there are several limitations in this study, when e.g. direct data of audit fees were not available, and therefore fees were derived from sales. In addition to this, also the examination period was rather short after the SOX came into force, when the last year examined was 2007.

This uncertainty around audit quality raises concern whether the whole audit concept is overrated. Is there too much audits with too much of an audit quality with too high audit fees? According to Francis (2004, 345): -- outright audit failure rates are infrequent, far less than 1% annually, and audit fees are quite small, less than 0.1% of aggregate client sales. This suggests there may be an acceptable level of audit quality at a relatively low cost." However, the costs and benefits of an audit should also be reviewed, because if SOX conducted some improvements on audit quality, were they bigger than costs arising from it? "However, in evaluating audit quality it is important to assess both the benefits and costs of auditing. For example, while audit failure rates are low, if audit fees are large, it is possible that too much investment is being made in audit quality relative to the benefits achieved." (Francis 2004, 348). Iliev's study from year 2010 suggested, that when considering especially smaller firms, SOX didn't have any, or only remote benefits when considering audit quality. He got strong

empirical evidence that especially section 404 compliance (internal control) led to a significant increase in costs and lower discretionary earnings. Thus, according to Iliev, these results are consistent with the view that SOX Section 404 proved to be too costly especially for small firms, and that costs exceeded benefits. (Iliev 2010, 1193) This was pointed out already in previous chapter, when proper arrangement of internal control is more difficult and expensive for smaller clients. Because of these aspects together with research results that do not support tenure and NAS restricts, the final conclusion of SOX's benefits remains unclear. Audit quality's role is to secure stakeholders' position, act as a measure for an audit and reduce information asymmetry, but when audit is primarily an assurance service, how much auditors can ask for it? In addition, benefits from an audit and importance of an audit quality is extremely difficult to assess, especially when audit reports are based on generic template, and they are also published together with other financial statements. Therefore, it is challenging to investigate whether investors' reactions for instance were due of auditor report, or due of other information received at the same time.

Although previous studies got mixed results regarding audit quality, and despite the fact that audit is plain assurance service and conducted only annually, it can be argued that audit has some kind of value creation power. Even though it has mandatory nature, it makes investors and other stakeholders to trust financial statements more. Financial reports are a principal means of communicating financial information to those outside an entity, and audits by a third party can enhance the quality of the financial information by reducing information asymmetry and conflicts of interest. Hence, one of the main objectives for audit is to reduce information asymmetry between the client and its stakeholders, and therefore increase the creditability. (See e.g. Johnson et al. 2002; Eilifsen et al. 2014; Eisenhardt et al. 1989). According to Francis (2004, 353), this is also one of the main reasons why auditees are willing to pay more for better quality audits. According to him, especially firms with greater monitoring needs due higher agency costs are more likely to use BIG4-auditors and pay excessive prices. This is most visible with public companies when their agency costs are usually the highest, and for that reason they tend to choose auditor from BIG4-group. Thus, auditees truly believe that better audit quality increases their creditability towards stakeholders, and that BIG4 firm offer the best quality what comes to audits. (See also Beatty 1989.) These results suggest that audits are not overrated, when auditees see them beneficial. They also seem to appreciate good audit quality, when they are willing to pay premium for better quality audits. Therefore, improvements considering audit quality should benefit both sides.

> *"Why do firms voluntarily pay more for a higher quality audit when lower priced and legal alternatives exist? -- Firms with greater inherent uncertainty (and greater information asymmetry between the firm and outsiders) have an incentive to communicate their intrinsic quality by hiring a more credible, high-quality auditor."* (Francis 2004, 353)

To summarize, fees related to audit, auditor tenure as well as auditor's expertise affect the quality of an audit. However, it is not clear whether these have a positive or negative impact on quality, and research results around this topic are somewhat mixed. In addition, there's no consensus how to measure audit quality, or even what is the adequate level of that. Because of several scandals in the beginning of 21st century, regulators start to question whether the audit quality was at too low level, and for improving audit quality, SOX and PCAOB were formed. Still, there are several studies suggesting that the initial purpose of SOX is not achieved, when some of the regulation may rather decrease the audit quality than increase it. Furthermore, even though SOX would improve audit quality in a way, it should be carefully investigated whether costs arising from SOX compliance surpass the benefits. It is not clear to this day if the audit quality has improved post-SOX and what are the final costs of this regulation. SOX had enormous impact on accounting societies at least in the US., and even though audit fee rates were low in the beginning of 21st century according to Francis, it may not be the case a few decades later. The development of audit fees and acceptable level of them, in addition to effects arising from SOX, will be studied more closely in the rest of this study.

> *"While audits are relatively inexpensive and the outright audit failure rate is low, when a corporate failure like Enron occurs there are enormous social and economic consequences. Despite this lack of knowledge, the new US audit requirements in Sarbanes-Oxley are expected to have a large impact on audit fees with expected increases of 50% or more; yet, we have no compelling reason to believe that audit quality will necessarily be improved or that audit failures will be significantly reduced by these more costly audits."* (Francis 2004, 361)

4. HYPOTHESIS DEVELOPMENT

When considering how auditing markets have act during the past 18 years, the general assumption would be that audit fees have risen during the 21st century. There are few clear reasons for that. First are the two major crises affecting accounting environment, first being the Enron and Arthur Andersen scandal in 2002, and second being the global financial crisis during 2007-2009, started by Lehman Brothers and US housing markets. In addition to these, new regulation has been introduced this millennium, when i.a Sarbanes-Oxley Act (U.S.) and BILL 198 (Canada) came into effect in 2002. These had admittedly massive effects on accounting societies in North America, when requirements for both – authors of the financial statements as well as the auditors reviewing those statements – increased remarkably. In addition, also the globalization has changed operational and financial markets within the last decades, and the economic environment is thus more complicated than before. These all factors would support the assumption, that audit fees have increased during this millennium.

However, there's some evidence that audit fees have not increased during the past decade or so, and there have been even suggestions that fees have sometimes been too low, especially at the time when new engagements are formed. According to Hay (2017) for instance, there has been concerns among regulators and other stakeholders whether audit fees are excessively low. Especially ethical issues arise when there are concerns whether overall fees are adequate to perform a proper audit, whether audit firms are providing a competitive market, and whether there is 'lowballing' of new audit engagements. The Code of Ethics noted that the Fundamental Principle of professional competence is threatened if the audit fee is so low that it might be difficult to perform the engagement in accordance with applicable technical and professional standards. (Hay 2017, A4.) So, the major concern comes from low prices, where audit firms push their fee rate that low that they are no longer able to conduct the audit with adequate quality. This is usually result of price competition or price pressure, when audit firms decrease their fees in order to achieve new clients or for keeping the remaining ones. Price competition occurs usually then, when the objective is to get new engagements, but price pressure occurs then, when there's pressure from the market to decrease the fees because of recession for example.

Effects of price pressure should have occurred during The Great Recession, but effect of price competition should be visible especially from 2002 forward, when AA withdrew from the market. That time remaining audit firms would compete over AA's clients, and the earlier mentioned lowballing should happen. However, there isn't that much research results of low audit fees or lowballing, or the results are in dissonance. For example, Asthana et al. (2009) did interesting findings, when in their study was found clear signs that when former Andersen clients switched to a BIG4 auditor, their fees went up by a statistically significant amount – not downwards that would be expected in case of lowballing. However, they also found that with same clients, there was evidence of lowballing, when BIG4 auditors did decrease their fees due of price competition. Yet, they discovered that even tough fees were reduced, there was still evidence of BIG4 premium. These results therefore suggest that remaining BIG4 in fact increased their prices for former AA clients, and that price competition decreased fees only remotely. (Asthana et. al. 2009, 7). In Kohlbeck et.al study (2010), there were similar findings, when they reported that those clients that switched the Andersen audit team and changed it to another BIG4 auditor, paid a premium fee.

> *"With the demise of Andersen, large multinational corporations saw the number of potential audit providers' drop from five to four. Additionally, those four were inundated with former Andersen clients beginning in the spring of 2002. The lack of choice for existing clients means that auditors were able to push through price increases as audit fees were negotiated for 2001 and 2002 audits."*
> (Asthana et. al. 2009, 21)

When there's evidence of increased audit fees even at the time of new engagements, concerns about premium fees, and lack of competition because BIG4 auditors perform majority of all audits, it questions the assumption of low fees. Also, as studies above suggest, even though there could be reductions in audit fees in some situations, even then premium fees seem to appear. When considering these aspects and other evidence of low or decreased audit fees is only minor, the overruling assumption would be that audit fees have increased during the 21st century. For that reason, the initial assumption is that the relative share of audit fees has increased. Hypothesis 1 is then following:

H1: The ratio of audit fees to sales have increased over time.

This assumption is based on several factors which were briefly introduced in the beginning of this chapter. First was the Enron scandal occurring in 2002, where American energy company Enron went bankrupt, and their auditor, Arthur Andersen (AA), was accused of giving false audit opinions. According to New York Times (2002), Arthur Andersen auditors reviewed and approved transactions by Enron-related partnerships that contributed to the company's collapse. The general conclusion was that "despite Enron's poor accounting practices, AA offered its stamp of approval, signing the corporate reports for years" (Segal, 2018). This damaged noticeably the credibility of auditing markets and BIG5 auditors, in which AA at that time belonged. In addition to Enron case, also WorldCom and Tyco International scandals took place during 2002, which increased the market's instability even more. This uncertainty in the markets and withdrawal of one BIG5 audit firm should be shown as an increase in audit fees. (See e.g. Gates et al. 2007, 5-6; Scott 2014, 8-9).

The second reason why people would expect fees to increase is consequence of all above, because due i.a. Enron and Arthur Andersen scandal, United States federal law set expanded, as well as brand-new requirements for all U.S. public company boards, management and public accounting firms. The new regulation was known as SOX (See Chapter 1). "Enron's collapse and the financial havoc it wreaked on its shareholders and employees led to new regulations and legislation to promote the accuracy of financial reporting for publicly held companies." (Segal, 2018). Due SOX, requirements that remaining auditors faced extended remarkably, and auditors must had input more effort than before to reach acceptable audit quality. From auditor's perspective, especially SOX's section 404 increased effort the most, when it requires that auditors pay far more attention on internal control, which is naturally very time-consuming. Internal control can't be ensured by one test for example, and it takes lot of investigation for developing an understanding of internal controls, and after that, plenty of control testing. (Eilifsen et al. 2014; Scott 2014).

> *"In 2004, the average amount of audit fees paid per $1 million of revenue increased from $403 to $592. This increase was due, in large part, to the requirements of Section 404 of the Sarbanes-Oxley Act of 2002 ("SOX 404"), which required management to evaluate the effectiveness of the company's internal controls over financial reporting (IFCRs)."* (Audit Analytics 2014)

The effects of SOX have been studied comprehensively. According to Audit Analytics' research, the loss of the income from prohibited assignments in SOX forced auditors to shift the cost of risks included in those fees over to audit fees. In the same study, it was calculated that audit fees in relation to revenue increased by 46.97 percent in year 2004 when compared to prior year, mainly because of SOX. (Audit Analytics 2014, 3-5). In the same study, it was also shown that overall increase in audit fees between years 2002-2013 was over 30% when measured per million dollars in revenue. Raghunandan and Rama made a similar observation, when they found that audit fees were 86 percent higher in year 2004 than in year 2003 because of SOX. They also argued that this increase is surprisingly large, when internal controls were supposed to be audited even before SOX. In their opinion, auditors either started audit internal controls properly only after SOX, or there was noticeable increase in material weaknesses within companies only in year 2004, latter being highly unlikely. Therefore, they suggested that SOX was the main factor behind fees' increase. (Raghunandan & Rama 2006, 112). In their study the sample however was rather small, including only manufacturing firms, which may explain why the percentage is much higher than with Audit Analytics study.

In addition to SOX, also Dodd–Frank Act (Dodd-Frank Wall Street Reform and Consumer Protection Act) was introduced during examination period, when it came into force in July 2010. It was a comprehensive financial reform legislation, and it was created because of the financial crisis of 2008. Because of this, it was targeted to the sectors of the financial system that were believed to have caused the 2008 financial crisis, including banks, mortgage lenders, and credit rating agencies. Act included over 2,300 pages of new legislation, mainly different kinds of provisions, that should be implemented over a period of several years. This should be most likely visible in audit fee levels at that time, when new regulation creates always implement costs. Also, critics of the law argue that the regulatory burden could make United States firms less competitive than their foreign counterparts. For that reason, in year 2018, US congress passed a new law that rolled back some of Dodd-Frank's restrictions. (Kenton, 2019) Accordingly, massive amount of new regulation and added requirements should most likely increase the workload of auditors, which would eventually rise the audit fee level as well.

Third and final reason why there is expectation of increased audit fees, is the reduced competition after BIG5 transformed to BIG4. When BIG5 was becoming BIG4 after Arthur Andersen's withdrawal, there was sudden increase in demand for auditors that was able to audit large, public

companies. In year 2003, the last year that AA was active, the BIG5 covered around 73% of all audits in our data. During years 2000-2003 when AA still performed audits, it had around 7.3 percent share of all audits within the data. This means that after year 2003, around 7 percent of audits would be run through by some other audit firm – most likely by someone from the BIG4. Even though this change could create some lowballing among auditors when audit firms compete over former AA clients, the more powerful impact should be that sudden increase in demand and reduced supply at the same time should increase the prices. The lowballing could have decreased the fee levels at some level, but the increasing impact should be bigger, as Asthana et al. (2009) results suggested. Also, this situation should enable higher asking pricing when audit firms would have advantage in the fee negotiations. Hence, based on all this reasoning, the general assumption is that audit fees have increased over time.

The second hypothesis considers audit fees by different deciles. Deciles are formed by dividing the data on ten equal size groups based on revenue. Decile 1 has the smallest revenue and Decile 10 the biggest. Based on previous studies, there's an expectation that relative audit fees are higher when considering firms with smaller revenue. The most important research to express this behavior is J.R. Francis' study from year 2004, where Francis examined audit quality in terms of audit's benefits and costs. In the study, audit fees were considered as costs or as a "negative" side of an audit, and they were analyzed using 2002–2003 audit fee disclosure data for 5500 large publicly listed companies from the United States. In the study it was shown that audit fees in fact decreased with bigger deciles: "As expected, average fees as a percentage of sales decrease as firm size becomes larger. For the smallest decile, audit fees average 2% of sales, but for the largest decile audit fees average less than 1/100 of one per cent of sales." (Francis 2004, 348-349).

The second study to support this presumption is made by Audit Analytics, where audit fees were also compared to revenue. However, now the comparison was made in dollars, not in percentages. According the study, in year 2013 total audit fees for smaller reporting companies (SRC) were $332 million, when for larger firms this was around 8 billion. When this was compared to total sales of these groups, Audit Analytics' researchers found that smaller firms paid relatively more. Even though audit fees for bigger firms were over 24 times greater in absolute value, the relative share of audit fees was bigger with SRC. The total revenue amount for SRC in year 2013 was $65.5 billion, compared to $16.9 trillion which was the revenue for bigger firms. When audit fees were divided by this revenue level, it was shown that smaller companies paid around $5,000 in audit fees (on average)

for every $1 million in revenue, whereas larger companies paid only $479 for every $1 million in revenue. That is, smaller companies paid over 10 times more audit fees in relation to sales. (Audit Analytics 2014).

Besides results from previous studies, there's also other factors that support assumption where bigger firms pay relatively less audit fees. This also relates to client size which was discussed in previous chapters. First one is that larger firms benefit more from price pressure and price competition, when they are vital customers for audit firms. Also, especially during economic depression, audit firms are most likely willing to make more concessions considering the fee, when it comes to large, multinational companies. According to Ettredge et al. (2014, 249), especially during the great recession (2007-2009), companies were giving price pressure for auditors when they were expecting auditors to share the economic pain by agreeing to fee reductions. When audit firms don't want to lose their client to another BIG4 auditor for example, and when the revenue is high, the audit fee is still high in absolute value, even though its relative share from the revenue would slightly lower. That is why auditors may be more flexible with bigger firms in terms of audit fees. With smaller firms the situation is usually the opposite. The audit fee is relatively high when compared to revenue because the revenue level is so low. Even though the relative share of audit fee is high, the fee in absolute value may be quite low. Sometimes even too low when compared to needed workload.

Another reason is that in auditing, it can be relatively less expensive to conduct an audit when the firm is bigger, because certain assurance assignment must be done whether the firm is big or not. The CPA Journal (2016) for instance underlines, that auditors must perform all procedures required by Generally Accepted Auditing Standards (GAAS) whether or not the procedures are useful under the circumstances. The SEC, the PCAOB, ERISA, and the Yellow Book add additional steps, but nothing eliminates any. This means that the effort auditors input before, during and after the audit, may not be that much higher with companies that have large turnover. Moreover, the planning of audit, gathering the data, calculating the materiality levels, selecting the sample and testing this sample must be done despite the size of the company. When for example the sample is selected and tested, the increased effort and required time is most likely less than the increase in revenue when comparing bigger and smaller clients. For that reason, audit firms do not have to ask 5 or 6 percent audit fee in relation to client's revenue, when the revenue may be 400 billion for example. With smaller firms, 5-6 percent share might be necessary to perform the audit adequately.

In fact, I suggest that the effort does not increase at all after a certain point, because of the economy of scale. Let's take the auditing for accounts receivables for instance. It doesn't differ that much how accounts receivables are audited whether the firm is big or small, when auditors applicate audit procedures to less than 100 per cent of the items within a population. The biggest difference is only in sample size, when the sample to be tested is naturally in relation to sampling population's book value. With large firms with large revenue, there is more comprehensive sample to be tested, which may require more auditors to perform this testing, or more time from one auditor. However, with smaller firms this also requires at least one auditor. Especially when the book value of accounts receivables is high, the needed effort (i.e. sample size) does not increase with the same scale as turnover, when compared to smaller clients. (See e.g. Eilifsen et.al. 2014, 260, 312). When adding here the role of internal control, small companies usually don't have enough resources do organize their internal controls that well that bigger firms do, so it requires more effort from auditor to audit these controls, or in some cases, evaluate the consequences because of the lack of these controls.

In addition to expected higher relative share of audit fees, there's also an assumption that smaller firms have faced relatively more increase in those fees. For example, costs emerging from compliance regarding SOX and all other GAAP standards are naturally higher for smaller companies. This assumption is supported by Iliev (2010), whose study concentrated in small public companies. According to him, there were significant SOX-specific costs for small firms, and that audit fees increased among small companies by 98% in year 2004. (Iliev 2010, 1166). Moreover, financial crises occurring during 21st century would have most likely more impact on smaller organizations, when they don't have that vast asset base and buffer against changes in economic environment. Based on this reasoning, it is expected with Hypothesis 2, that the ratio of audit fees to sales is bigger for smaller firms, and that the ratio has also increased over time relatively more for smaller firms. The second and the last hypothesis is then divided into two following elements:

$H2_a$: The ratio of audit fees to sales is higher for smaller firms.

$H2_b$: The ratio of audit fees to sales have increased over time relatively more for smaller firms.

5. METHODOLOGY AND DATA

This section will introduce the data used in this research as well as the methodology practiced in empirical tests. The data and sampling section includes sources, characteristics and sampling of the data, while the methodology section presents the models to be tested, and methods used in this testing. In the following chapter, empirical tests and actual results are reviewed.

5.1 Data and sampling

The data used in this research is obtained from Audit Analytics database, which provides detailed research on over 150,000 active audits and more than 10,000 accounting firms.[3] The used dataset contains all fee data disclosed by SEC registrants in electronic filings since January 1, 2000. Thus, the dataset covers years 2000-2017, 2017 being last complete fiscal year. The data includes companies in various countries, sizes and industries, and it was exported from Audit Analytics' database directly to software called SAS (Statistical Analysis System). All the modifications of data and empirical tests are implemented with SAS, which enables advanced analytics, multivariate analyses, data management, and predictive analytics.[4] With SAS, different kind of codes create a procedure, which then performs analysis and reports on datasets to produce statistics, analyses, and graphics. In this research, I'm using SAS instead of Excel because SAS can process large amount of data quickly, and different types of time series and regression analyses are easier to execute. Also, data adjustments with excel would much more likely create errors than with SAS. However, SAS does not offer high-quality graphs or diagrams, and for that reason all graphics and tables are made with Microsoft software such as Excel and Word. The program version used in the study is SAS 9.4.

After the data was exported to SAS, certain modifications were made. For example, variables *BIG4*, *AF2SALES, NAF2SALES* and *TF2SALES* were created, when these were not available directly from Audit Analytics. After these additions, the data was adjusted in order to create the final sample, where all missing values and outliers would be deleted. The initial sample included 216,709 firm-year observations. When variable including audit fees (AF) is used in several models, it was important that

[3] https://www.auditanalytics.com
[4] https://support.sas.com/en/support-home.html

these observations were complete. Therefore, all audit fees that equaled zero or were blank were deleted first. Secondly, all foreign or firms registered in Canada were removed, when the study focuses on U.S. based firms. After this, all observations that had variable TF2SALES over twenty percent, were deleted. In this situation, the total fees, e.g. audit fees and tax fees, are over 20% of company's sales, and it indicates that the firm is most likely in financial distress or the observation is an outlier. For that reason, these observations were removed from the sample. Lastly, all revenue values that were less than 100,000 ($) were deleted. By this, all outlier observations or observations that are probable to be distorted, are omitted. For example, many firms had revenue value of one (1) dollar, which is highly unlikely and probably caused by system errors. After these deductions, the final sample included 123,880 firm-year observations (Table 1).

Table 1. Sample selection criteria

Audit Analytics database	*Firm-year observations*
Initial firm-year observations	216,709
Less:	
Audit fees not available	-1,392
Foreign companies	-17,790
Companies that are registered in Canada	-8,916
Total fees/Revenue >20%	-3,155
Revenue <100,000$	-61,576
Final Sample	123,880

The final sample of 123,880 firm-year observations will be first analyzed as a one group so that overall picture can be formed. However, after this the data is further distributed to deciles by company's revenue and fiscal year. This enables more comprehensive analysis, when differences between smaller and larger firms can be seen more clearly. Also, this way the final results should be more comparable to J.R. Francis' study, where the data was also analyzed first in one group, and then by deciles. The distribution to deciles is also done by SAS. As a result, ten roughly same size units are formed (Appendix A). The small variation in unit sizes comes from distribution, where the data is divided into deciles within every fiscal year, not the whole data set by once. This way we can get deciles that have same amount of observation from each year in relation to the final sample. If the distribution would have been done by dividing the whole sample in ten groups, there would be relatively less observations from the earlier years than later ones. For example, year 2000 had only

3,969 observations while year 2017 had 5,473 observations (See Appendix B). Now, when the separation to deciles is done inside every fiscal year, there is no uneven distribution between different years within deciles.

5.2 Methodology

The methodology employed in this study is quantitative analysis, using time series and regression analyses, and further, studying the development of different variables over time. Empirical tests start by observing the whole data set as a one, single sample. Firstly, time series analysis for audit fees is formed. This is conducted by using mean (average) values of audit fees in relation to firms' sales over 18-year period. Time series analyses are presented with general graphs for creating an overview of audit fees' development in the 21st century. After time series analyses, regression analyses between relative audit fees and different fiscal years are run for examining the variables' behavior over time. Results regarding complete sample are presented in section 6.2. After these comes the time series analysis and regression analysis for deciles. Deciles' regressions are done by using cross-sectional regressions, where different coefficients are examined within every decile. With deciles, multiple regression model is also used for achieving more accurate results regarding different sized firms' development over time. These results are presented in section 6.3. Lastly, a sensitivity analysis is formed for ensuring the robustness of the results. These are presented in section 6.4 in the end of Chapter 6.

5.1.1 Model development

What comes to methodology of regression analyses, the main objective of this study is to examine how audit fee rates in relation to company's revenue have changed over time. This means that there's only one dependent variable – time (trend). For that reason, I will use mainly the simple regression model instead of multiple regression model, when in simple regression model, there is only one dependent variable, and one independent variable. Therefore, the simple regression model is perfectly adequate for the main purpose of this study. The dependent variable can also be named as explained

variable or "y", and the independent variable as explanatory variable or "x" (see e.g. Wooldridge, 2012). The basic form for simple regression model is then following:

$$y_{it} = \beta_0 + \beta_1 x_{it} + u$$

where:

y_{it} is the dependent variable for observation i on time t

β_0 is the intercept

β_1 is the slope parameter

x_{it} is the independent variable for observation i on time t

u is the error term

Thus, in simple regression model the main focus is to study the relationship between two variables while all other relevant factors are held fixed. This is usually considered as a weakening factor, when it is extremely difficult to create ceteris paribus conclusions about how x affects y (see e.g. Wooldridge, 2012). In addition to this, naturally there's usually more than one explanatory variable that explains the y. However, as said, when studying the relation of audit fees and revenue over time, the simple regression model is suitable for this purpose because we are only interested in dependent variable's coefficient, and how it acts during the given time. In the first model, the objective is to study what is the average (mean) proportion of audit fees from company's sales, and how this variable develops during the examination period. Variable *TREND* is formed for describing the change over time, and it is an ordinal time variable where year 2000 gets value of 0 and 2017 gets value of 17. The first model covers all observations without any distributions to deciles. The first model is then following:

$$mean(\frac{AF}{Sales}) = \alpha_0 + \alpha_1 TREND_{FY-2000} + u \quad (1)$$

where $mean(\frac{AF}{Sales})$ indicates the average share of audit fees to sales for all companies, and the variable $TREND_{FY-2000}$ is the ordinal time variable, where *FY* indicates fiscal year (N=18). The coefficient α_1 is the parameter estimate (regression coefficient) that we are interested in. The coefficient is slope for *TREND*-variable in this linear regression model, and it tells directly how much the relation between audit fees and sales increases or decreases when one year is added. If the coefficient is positive, it means that the higher the fiscal year, the higher also the fee, that is, audit fees have increased during investigation period. In the rest of the model, α_0 is the intercept of the model and *u* indicates all other relevant information in this association. Model (1) will be conducted first to the whole dataset without any scaling, and it should test Hypotheses H0 and H1. After this, same regression will be driven for every decile. Model (2) indicates deciles' simple regression model when considering average (mean) values of AF2SALES. It's very similar to model (1), now there's only variable *D* indicating different deciles (D=1-10). Model (2) is following:

$$mean(\frac{AF}{Sales})_D = \beta_0 + \beta_D TREND_{FY-2000} + u \quad (2)$$

where $mean(\frac{AF}{Sales})_D$ indicates the average of audit fees' share of revenue for decile *D*. The slope β_D is the regression coefficient of decile *D* for variable *TREND*. Hence, β_1 is the regression coefficient for Decile 1 etc. Rest of the model is same as above. This model will be driven in SAS resulting 180 different regression in total, when there are eighteen fiscal years under examination (N=18), and ever decile has its own coefficient β (N=10). Model (2) is for testing hypothesis $H2_a$. Unlike models above, the third and final model is based on multiple regression instead of simple regression. This is for achieving better results considering Hypothesis $H2_b$. For studying have smaller companies' relative audit fees increased more over time when compared to bigger firms, variable *TREND*DECILE* is added besides variables *TREND* and *DECILE*. This variable takes into account over time -concept simultaneously with decile factor. If variables are only evaluated separately, it doesn't tell whether trend variable for example is positive because of firm size, or because of other factors. It is expected that coefficient a_3 for variable *TREND*DECILE* is negative, when bigger decile should mean relatively descending fees over time. Model (3) is following:

$$mean(\frac{AF}{Sales}) = a_0 + a_1 TREND + a_2 DECILE + a_3 TREND * DECILE + u \quad (3)$$

The model and its elements remain rather same than above, now there's only two explanatory variables more, and each of these explanatory variables has its own regression coefficient *a*. Additionally, there are few other models used in sensitivity analysis, but they are all based on models introduced here, only the sample changes. For that reason, additional models are not presented here, and they are only reviewed along with sensitivity analysis.

6. EMPIRICAL TESTS AND RESULTS

In this chapter, I will first introduce the descriptive statistics of the sample used in empirical tests. Then, time series analyses and regressions will be conducted for both datasets, first to the whole sample without any distributions, and then for different deciles. Results for complete sample are presented in section 6.2. and for deciles in section 6.3. After this, a sensitivity analysis is carried out for creating comparison and improving the credibility and quality of this study. This is covered in section 6.4. Final conclusions considering the results are disclosed in the next chapter.

6.1 Descriptive statistics

Descriptive statistics of the sample are presented in Table 2 below. As mentioned in previous chapter, variables *AF2SALES, NAF2SALES* and *TF2SALES* were created with data adjustments. In *AF2SALES*-variable, company's audit fees are divided by sales. In *NAF2SALE*-variable non-audit fees are divided by sales and in *TF2SALES* total fees. As we can see, the amount of observations for every variable is 123,880 firm-year observations, which matches the size of final sample (Table 1). This means that after data adjustments, all data is useable and have zero blank values. In addition, outlier observations were removed for reducing variation in the sample, as well as improving the usefulness of results. These are visible in the minimum and maximum values of *Revenue* and *TF2SALES*. It is also visible from the table, that *Audit fees* and *Non-audit fees* create *Total fees* values when summed up together. In fact, audit fees include only the bare audit fee for annual audit service, while non-audit fees contain all the other payments identified as fees. Non-audit fees include e.g. tax fees and SIC fees, but also audit related fees, unlike the variable name suggests. The last variable in descriptive statistics is *BIG4* which is a dummy variable based on auditor key -variable, where it gets value 1 if the auditor key is 1-4 (BIG4), and value 0, if it's not. From the table we can see that 66.3 percent of all auditors in the data belong to BIG4. The percentage is surprisingly low, especially when the data includes only listed companies, and those usually tend to use auditors from BIG4 as explained previously. Yet, this implies that the data is diverse, and that comparison between these two groups, BIG4 and non-BIG4, can be prepared. This is done in sensitivity analysis.

Table 2. Descriptive statistics for variables used in this study.

Variable	*N*	*Mean*	*Std Dev*	*Minimum*	*Median*	*Maximum*
Revenue	123,880	1,939,493,066	10,466,398,978	100,000	125,472,500	485,873,000,000
Audit Fees	123,880	1,231,224	3,600,030	0,370	312,912	203,375,000
Non-Audit Fees	123,880	431,660	2,093,672	0.000	48,800	131,000,000
Total Fees	123,880	1,662,884	5,086,603	0,375	422,000	203,375,000
Audit fees/Sales	123,880	0.009	0.021	0.000	0.0024	0.199
Non-audit fees/Sales	123,880	0.002	0.006	0.000	0.0004	0.157
Total fees/Sales	123,880	0.011	0.024	0.000	0.0032	0.199
BIG4	123,880	0.663	0.473	0.000	1.0000	1.000

Descriptive statistics include variable name, number of observation (N), mean, standard deviation (std dev), minimum, median and maximum values of the sample. The number of firm-year observation is 123,880 after deleting following: (1) audit fees that are not available, (2) foreign companies, (3) companies that are registered in Canada, (4) companies that had total fees over 20% of revenue and (5) companies that had revenue under 100,000$. Variable Audit fees/Sales is audit fees divided by sales, later referred as AF2SALES. Non-audit fees/Sales is non-audit fees divided by sales, later referred as NAF2SALES. Total fees/Sales is total fees divided by sales, later referred as TF2SALES. BIG4 is a dummy variable equal to 1 if the auditor belongs to BIG4 and 0 otherwise.

6.2 Audit fee analysis by complete sample

6.2.1 Time series analysis for complete sample

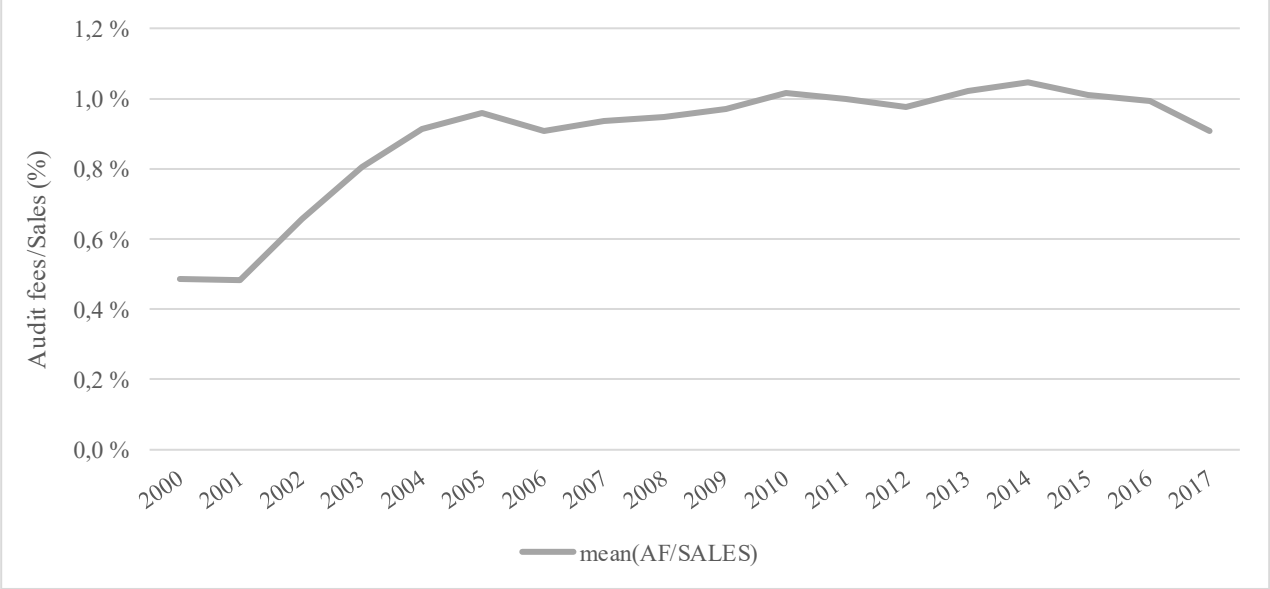
When starting to examine audit fee levels and behavior during investigation period, a general time series analysis can be formed. In this analysis, the time series is drawn between fiscal year (x-axis), and audit fees divided by company's sales (y-axis). Now, results are first introduced for complete sample and they cover whole 18-year period. In Table 3 below are presented mean values of AF2SALES by complete sample, in which time series graphic is based on. Mean of AF2SALES is the average value of division where that year's audit fee is divided by company's annual sales. The division is first calculated for every observation and the average is then computed for every fiscal year. Values are presented as percentages:

Table 3. Yearly mean values of audit fees by complete sample. Percentage of sales.

Year	*N*	*Mean for AF2SALES (%)*
2000	3,969	0.487
2001	6,161	0.483
2002	8,201	0.659
2003	8,934	0.802
2004	9,003	0.916
2005	8,944	0.959
2006	8,374	0.909
2007	7,394	0.938
2008	7,410	0.950
2009	6,895	0.971
2010	6,557	1.014
2011	6,202	1.000
2012	5,931	0.977
2013	5,927	1.020
2014	5,951	1.046
2015	6,416	1.010
2016	6,138	0.991
2017	5,473	0.910
Total	123,880	0.891

Figure 2 below is a line chart graphic of audit fees' development based on values from Table 3. It is easy to see that the average rate of audit fee in relation to company's sales has increased remarkably in the 21st century. In the beginning of examination period audit fee rate was quite low, when on average around 0.5 percent of firms' revenue was spent on audit fees. However, after first two years, the increase in audit fees has been radical, and when coming to year 2005, the AF2SALES was as much as 0.96 percent. The growth from year 2000 to year 2005 was 0.47 percentage points, which is almost 97 percent. Audit fee in relation to revenue had therefore almost doubled in few years. Nevertheless, the actual peak for audit fee rate was not until year 2014, when on average audit fees were 1.05 percent of companies' revenue. This proportion is rather large, especially when considering how much it would eventually be from company's result. Also, this rate reflects only the average values where smaller and larger firms compensate those peaks. Maximum and minimum values of AF2SALES should therefore be even more distinct, when viewing different deciles separately. This will be however considered more closely in following chapter.

Figure 2. Audit fees' development in relation to sales during 2000-2017 (%).



There're actually two clear reasons why the increase starting from year 2001 forward is so massive. First one is the accounting scandals happening 2002 that included Enron, AA, WorldCom and Tyco International. Naturally, scandals like these had effects on accounting and auditing societies around the world and increased market's uncertainty. Especially when AA withdrew from the market, the increase in demand among auditees explains the sudden growth in some extent, but the increase seems still rather steep, especially when taking into account that there was plenty of other auditors in the market besides the remaining BIG4. Also, clients of former AA may have wanted to select auditor outside the BIG4 due decreased confidence. In the data, BIG4 covered 66.3 percent of auditors (See Table 2), which means that over a third of auditors were outside of BIG4. In addition to this, AA's bankruptcy should have result price competition at some level, when every operator on the market tries to engage some of the AA's clients. This should have decreased the audit fees, not increase them. This was also suggested by Asthana et al., but on the contrary, they also found that BIG4 auditors asked premium prices from former AA clients. (Asthana et al. 2009). This should thus increase the initial fee level as well.

After Enron and other similar scandals, companies were most likely doubting the audit quality and were less willing to pay more for auditing, but still audit fees almost doubled. The second reason to explain observed growth is SOX, which was mainly due of those scandals. SOX's main objective was to increase the credibility of financial statements, and the act created lot of additional requirements, especially for financial statement providers, but also for auditors. This would naturally

be visible in the amount of fees. However, it should be noticed that the ratio between audit fees and sales does not tell, if the increase in audit fees is actually coming from increase in prices, or from the increase in required auditing work – or from both of them. Thus, mean values cannot directly explain whether the increase in audit fees is coming from increase in prices because audit firms wanted to raise fees, or is it coming from added requirements and audit work. For auditors, the regulators' concern of audit quality increased their workload by the most. But was the audit quality improved after SOX came into force? According to The Financial Executives International's (FEI) study, SOX had improved investor confidence in financial reporting, which after all, was the primary objective of the legislation. (FEI, 2007). Chambers and Payne (2011), also found that audit quality improved post-SOX especially among BIG4 auditors, as introduced in Chapter 3. These results then suggest that at least part of the increase starting from year 2001 may be due of improved audit quality, when better audit quality requires more effort from the auditor, and it is also a reason for asking higher price. Therefore, improved audit quality would increase the fee level.

So, after Enron scandal fees started to increase, and they didn't turn down until the year 2006. From year 2006 onwards, there has been slight, steady growth in audit fees until year 2010, when fees started to decline again. Between years 2006-2010, fees improved by 11.6 percent, which may be consequence from financial crisis which began 2007. The crisis was most likely predictable already in year 2006, especially among auditors who followed financial markets closely. The US housing bubble also broke in year 2006, and auditors may have been preparing to the uncertain future by raising audit fees (See e.g. Acharya et al 2009, 89). This development is somewhat surprising, when according to Ettredge et al. (2014), organizations were giving pressure on audit firms to reduce audit fees due the great recession. It was acknowledged in the study that this kind of fee pressure existed during great recession, and it concerned regulators in terms of audit quality: "The Recession imposed significant financial pressure on many companies. Regulators expressed concerns that audit fee pressure from clients might have had negative effects on audit quality during the Recession." (Ettredge et al. 2014, 249.) However, it was argued in the same study that the main pressure came from clients that were in financial distress or had other accounting issues and was thus more likely to have accounting misstatements. This may explain why the fee pressure is not showing in Figure 2 that well, because companies that were deeply in financial distress were omitted from the data. When fees seemed to increase, it was natural cause when economic situation was globally unstable and difficult, and the amount of financially distressed companies may have increased. However, it is also interesting that after year 2010 fees seem to decrease, when the expectation would be the opposite

due the Dodd-Frank act. This may indicate that Dodd-Frank didn't had impact on audit fees because the regulation considered mainly client side, including banks and mortgage lenders. This should complicate clients' situation, but not auditors' in that scale, that it would be visible in audit fees as well. On the contrary, SOX had direct influence on auditors along with auditees, and therefore fees reacted more on SOX.

Overall, mean values have saw back and forth quite much, and starting from year 2014, fees begun to reduce over again. In fact, after year 2014 the decline has been quite deep, which may indicate that client companies started to think that fees have gone up too high, and that they are not willing to pay demanded prices anymore. On the other hand, the decline can also be result from learning curve, but this would of course require that majority of the engagements have been lasting after year 2002. Additionally, learning curve would be showing with SOX also, when firms would have had enough time to adjust for SOX requirements and other changes on their market, such as for change from BIG5 to BIG4. Hence, auditors would have been able to cut back their expenses and improve efficiency, which would mean that audits would be possible to execute with less effort, but with adequate quality. This would be showing as decrease in audit fees. In general, results here are similar than in Francis (2004) study, when he got relative audit fee share to be only 0.1% from sales in the beginning of millennium. Also here the starting fee level was rather low, 0.5%. He also predicted that SOX should increase this ratio remarkably, which was also visible in the figure.

When viewing time series for AF2SALES in general, fees have increased during last 18 years, but after different crises during 2002 and their repercussions, the growth has been quite moderate. The overall increase in mean values of AF2SALES has however been significant, when audit fees have grown from year 2000 to year 2017 by 86.81 percent. Yet, it is worth noticing for that inflation is a natural explanatory factor for a part, and when audit fee rates for years 2000 and 2001 are distinctly low, it may distort these results, especially when there's no data before year 2000. In addition, the fact that fees have increased mainly during years 2001-2005 implicate, that the fee increase is because of SOX, and furthermore, most likely because of improved audit quality. After the quality improvements and adoption of new regulation, the increase is not that visible, when there has been no pressure for audit firms to increase their fees. When in Chapter 3 a question was raised whether too much is invested in audits, results here suggest that this may not be the case. It seems that even though the increase was massive in the beginning of 21st century, it is mainly coming from audit

quality improvements. In addition, according to Francis (2004) between years 2002-2003 the audit failure rate was low, which also indicates good audit quality. Therefore, these results suggest that after year 2001 audit quality was at least partly improved. Afterwards fees have not increased relatively that much, and after year 2014 even declined. Next, the same trend is examined with regression models for creating more detailed results.

6.2.2. Regression results for complete sample

In Table 3 were presented the mean values of AF2SALES for years 2000-2017. These were derived from model (1), where the regression is formed between mean value of AF2SALES and trend-variable. Regression results for Model (1) are presented in the Table 5 below. First in the table is the analysis of variance where the general results of how the model works are presented. Below that are the actual regression results. It can be seen that the model has used all 18 observations available (Table 3), and that the F-value is relatively high. Also, p-value of F is less than 0.05, which means that results can be considered as statistically significant. The p-value indicates the probability that the same result will occur by chance. The lower the p-value, the better the result because this means that results are not created randomly. R-square and Adjusted R-square (R^2) support this presumption, when the R^2 for instance is 0.549. This means that model can explain approximately 55% of the regression for mean values. This can be interpreted as good result, when the model can explain over half of the results. Furthermore, when recalling the Hypothesis 1, it would require low F-values, low R-square and Adjusted R-square values, and high p-value for the hypothesis not to be true. As we can see from the results, they are just the opposite. The model works fine and there is clear association between audit fees and sales over time. Therefore, the first hypothesis seems to be true.

Table 4. Regression results for mean values of AF2SALES. Complete sample.

Model: $mean(\frac{AF}{Sales}) = \alpha_0 + \alpha_1 TREND_{FY-2000} + u$ (1)

		Parameter estimate	*T-value*	*Pr > |t|*
Number of observations used	18			
Model's F-value	21.67			
R-Square	0.575			
Adjusted R-Square (R^2)	0.549			
Intercept		0.0066	11.51	<.0001
Trend		0.0002	4.66	0.0003

When considering actual regression results, we will study closer models' parameter estimates. These estimates are formed for intercept and for trend-variable, which is a variable for yearly change, that is, the coefficient a_1 in model (1). From the results we can see that the intercept is 0.0066, that is, average relation between audit fees and company's sales is around 0.7 percent over investigation period. That percentage of companies' revenue is then going for audit fees. Furthermore, when considering the parameter estimate for mean's trend-variable, the estimate is positive with value of 0.0002. This indicates that the share from audit fees/sales is increasing by 0.02 percentage point in every year. In ten years, the growth would be 0.2 percentage points, and when this is converted to actual percentage, we get that the increase in ten years is over 37 percent.[5] When we add eight more years to the calculation made above, we get that the average growth during the whole 18-year examination period would be over 67 percent. That can be considered as a massive increase. We can also see that standard error values are rather low, and conversely, T-values quite high, especially with intercept. This indicates that the size of variation is moderate, and that the regression coefficient (parameter estimate) is statistically distinct from zero. However, the greater the T-value the better, so T-value with trend-estimate could be even higher in optimal situation. Still, p-value with both factors is below 0.05, which is considered as a limit for statistical significance. Therefore, all results are statistically significant and suitable for generalization. When parameter estimate for trend-variable indicates that the rise in audit fees in ten years would be over a third, and results are statistically significant, prove these results together with time series analysis that the Hypothesis 1 is true. The relative share of audit fees increased during 2000-2017. Next, same analyses as above are formed for different deciles.

6.3 Audit fee analysis by deciles

As said, the general assumption of audit fees' development is that fees have risen during the last two decades. It was also clearly visible in analysis made above regarding complete sample. In Chapter 4 it was also suggested with hypothesis development, that smaller firms pay relatively more audit fees, and that their fees have also increased more when compared to bigger firms. For investigating this

[5] 10-year aspect = (((intercept + parameter estimate)/intercept) - 1)*100*10
= (((0.00658-0.00024582)/0.00658) - 1)*100*10 = 37.36 %

progress more closely, audit fee analysis will be created for data that has been divided into deciles. As was with complete sample, first the time series analysis is formed and after that, regression analysis.

6.3.1 Time series analysis for deciles

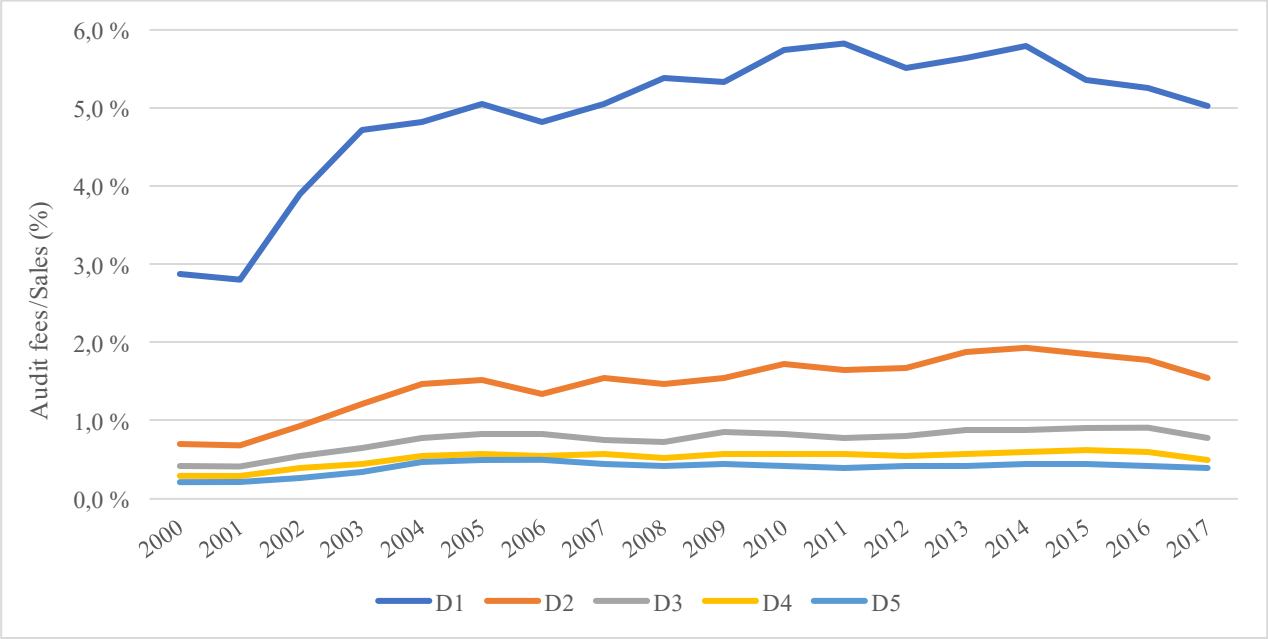
In this section with deciles, the mean of variable AF2SALES is calculated for every fiscal year as was with complete sample, but now the same must be calculated to every decile as well. Table 4 below is composed of mean values of AF2SALES for every decile:

Table 5. Yearly mean values of audit fees divided by sales. Deciles 1-10 (%).

Year	*D1*	*D2*	*D3*	*D4*	*D5*	*D6*	*D7*	*D8*	*D9*	*D10*
2000	2.865	0.693	0.414	0.294	0.213	0.147	0.104	0.069	0.050	0.028
2001	2.804	0.684	0.414	0.301	0.214	0.150	0.110	0.074	0.051	0.028
2002	3.912	0.922	0.536	0.395	0.269	0.209	0.141	0.093	0.073	0.040
2003	4.725	1.207	0.639	0.444	0.342	0.242	0.174	0.119	0.086	0.048
2004	4.821	1.458	0.791	0.554	0.478	0.374	0.276	0.203	0.128	0.082
2005	5.064	1.510	0.826	0.574	0.497	0.399	0.294	0.211	0.142	0.079
2006	4.815	1.354	0.823	0.559	0.499	0.359	0.285	0.195	0.131	0.074
2007	5.053	1.543	0.742	0.566	0.454	0.387	0.267	0.181	0.121	0.072
2008	5.382	1.477	0.729	0.525	0.430	0.353	0.248	0.176	0.115	0.066
2009	5.342	1.544	0.860	0.563	0.442	0.352	0.243	0.178	0.122	0.068
2010	5.745	1.715	0.829	0.566	0.413	0.318	0.226	0.164	0.110	0.063
2011	5.826	1.638	0.783	0.561	0.391	0.302	0.196	0.146	0.105	0.058
2012	5.523	1.684	0.815	0.552	0.411	0.280	0.201	0.144	0.107	0.058
2013	5.634	1.887	0.890	0.569	0.422	0.285	0.210	0.151	0.098	0.059
2014	5.789	1.932	0.889	0.592	0.443	0.286	0.211	0.160	0.102	0.058
2015	5.349	1.852	0.903	0.624	0.439	0.342	0.242	0.168	0.121	0.067
2016	5.256	1.779	0.910	0.603	0.432	0.317	0.266	0.161	0.121	0.067
2017	5.025	1.553	0.785	0.506	0.406	0.293	0.218	0.144	0.108	0.063

Figure 3 shows mean_AF2SALES values tabled above for deciles 1-5. As we can see from the picture, the same trend that was visible in Figure 2, is also visible here, especially with Decile 1 which includes companies with the smallest turnover. In every line the influences of 2002's incidents are visible, but with larger deciles they are harder to detect because of the smaller scale. Decile 3 has the closest values when compared to mean values in Figure 2, when the audit fee rate is starting approximately from 0.5% and stays just below 1%. However, the most important observation from Figure 3 is that the audit fee rate in relation to company's turnover is remarkably higher with Decile 1 than with other deciles. Difference between the first and second decile is already massive, let alone when compared to deciles with bigger revenue. On average, the audit fee rate with Decile 1 is 3.5 percentage points higher than with Decile 2, and around three times the fee of Decile 3. In addition to this, in peak year 2011, 5.8% of company's revenue inside of Decile 1 was going for audit fees. When almost 6 percent of firm's revenue is going for fees that don't have any expectations of income formation back to the firm, it is alarming. Audit fee is a sunk cost, and it doesn't create future income same way as investments for example do.

Figure 3a. Audit fees' development in relation to sales during 2000-2017. Deciles 1-5.



Natural explanation for higher fee level with smallest decile is that it can be relatively more expensive to conduct audit for smaller firm that it is for bigger firm, as explained before. Especially the level of internal control may be low in small companies, and with bigger firms there may be benefits from

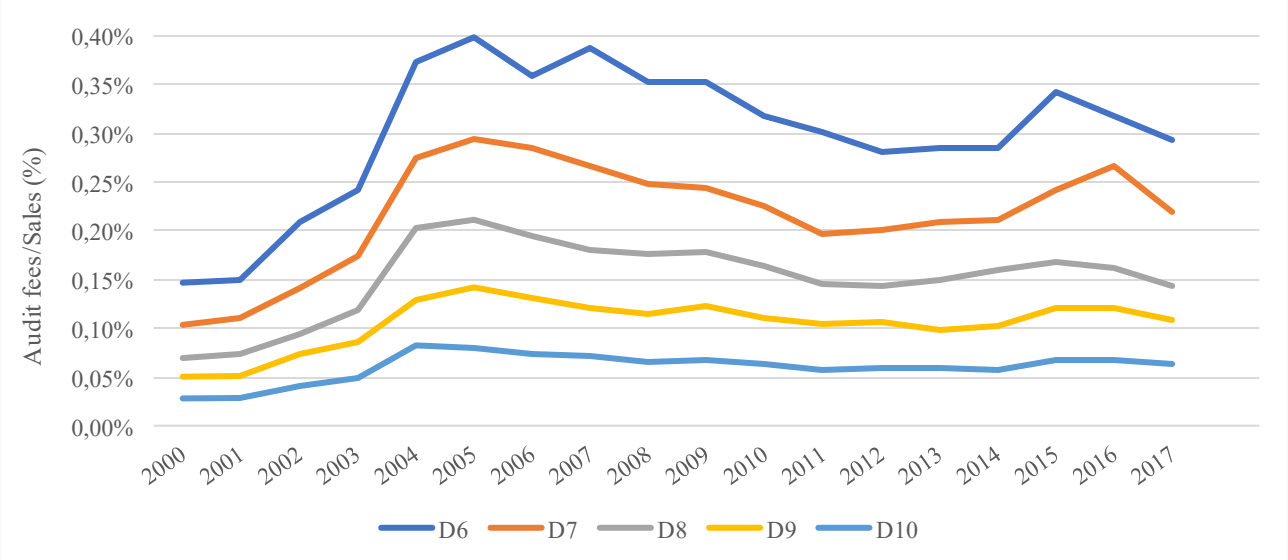
economy of scale. Also, firms that have small amount of sales doesn't directly mean that the firm itself is small, when sales can be only temporarily low. Therefore, Decile 1 may include firms that have financial and other problems with their business, and sales are low because of that. Hence, fees may seem to be high because Decile 1 includes most of the companies with financial problems. It should also be noted that observations with low sales level obviously heightens the relative audit fee rate for Decile 1. Some companies had revenue such as 100,000$, which would result six percent audit fee rate if the fee is around $6,000. This may not be unreasonable, especially if the firm has complicated business environment, it is in financial distress, or if the business is quite vast, but the revenue is only temporarily low. Still, when the level of Decile 1's audit fee is that much higher than the next smallest decile's, it raises concerns of remaining outliers in the data. For ruling possible distortion out, additional tests were conducted where revenue was adjusted to $500,000 at minimum instead of $100,000. This should remove observations where sales are that low, that it distorts the audit fee rate. This however didn't have noticeable impact, and results with modified sample gave same overall result.

Even though audit creates creditability that income statement and balance sheet give the true and fair view of company's financial position, yet six percent from company's revenue is unreasonably high, especially when we are considering firms with low revenue level. When the audit fee would be compared to firm's profit or net income, it could possibly to reach that level, where companies would turn from unprofitable to profitable if audit fees would be removed. There were actually 9,596 companies (7.7% from initial sample) that weren't represented through the whole examination period, that is, they have either shut down their business, went bankrupt or unlisted themselves from stock exchange (go dark or go private) before year 2017. Majority of these companies have unlisted themselves probably because of other reasons than financial distress, but the average AF2SALES percentage for these companies was around 1.8%, which is rather high. However, there was some variation in this sample, and for that reason, 25 percent of companies from this separate sample that had *highest* AF2SALES values, were selected for closer review. These should be the best representative for companies that may had been in financial distress or had high audit fee costs for some other reasons. Average audit fee ratio for those was 6.1%, which is around the same ratio that was with Decile 1 in figure above in peak year 2011. This supports the assumption that Decile 1 includes firms with biggest financial problems. However, most likely that high audit fee ratio could speed up the financial distress and eventually lead the firm to bankruptcy, especially if the financial situation was already difficult even without high audit fees. Also, it should be remembered that firms

with TF2SALES higher than 20%, were omitted from the data, which means that so called 'basket case' companies shouldn't exist.

What is interesting to notice, is that with deciles from five to ten (Figure 3b), the highest point is actually around 2005, not in 2014 or 2011 that was with smaller deciles or with complete sample. In fact, after the year 2005, audit fees seem to decline. So, even companies with the biggest revenue couldn't avoid the Enron, AA and SOX effects, but after that, changes have been only minor, and the fee ratio has declined during most of the examination period. Also, as expected, Decile 10, the one that has biggest turnover, has the smallest relative audit fee rate and it also faces less fluctuation in those fees. With this decile, audit fees represent only around 0.06 percent of company's revenue after the peak year 2004. Decile 10 is also only decile that has stayed below 0.1% the whole period. This result is similar with J.R. Francs' study: "- - for the largest decile audit fees average less than 1/100 of one per cent of sales." (Francis 2004, 349). When recalling that the maximum revenue value in the Table 2 was almost 486 billion dollars (Walmart Inc. 2017) and that in average the audit fee rate for year 2017 was 0.00063 for Decile 10, the actual audit fee would still be over 308 million. This actually seems to be too high, especially when it is assurance service in question. When checking the actual audit fee amount for Walmart for year 2017, it was $19,394,000. That is, over 19 million audit fee had audit fee rate only of 0.00004. When on average the audit fee rate is around 0.06% inside the Decile 10, with Walmart it is 15 times smaller (0.004%). This emphasize the difference between the smallest and biggest companies, when even inside the largest decile differences can be that large.

Figure 3b. Audit fees' development in relation to sales during 2000-2017. Deciles 6-10.



After all, the conclusion is that the bigger the revenue, the smaller the relative fee. It is clearly visible in Figure 3a and 3b that deciles with smaller revenue scale tend to pay noticeably more audit fees. They also face more fluctuation in those fees. It was also observable in the graph that with deciles 1-5, the trend was rather upward than downward, while with decile 6-10 it was the opposite, at least after year 2004. All deciles from five to forward have descending trend line when considering the time after Enron crisis. This observation is supported by audit Analytics' study, where it was shown that: "Since 2004, accelerated filers (i.e. large companies) have experienced a downward trend in audit fees despite the fact that the percentage of companies that were required to adhere to SOX 404 increased during the same time period." (Audit Analytics 2014, 4). In addition, when addressing the question of fairness of audit fee levels that smaller companies are facing, it should be remembered that the data is comprised of public companies. It means that there is no private entrepreneurs, bogus firms or firms that have ended the business but that still formally exist. Thus, these firms were quite large to beginning with even though the minimum revenue value was 100,000 dollars. So only few observations had truly small turnover. Therefore, these results are rather alarming when even with this scale the differences are that massive, not to mention what it would be between all firms despite their sales or if they are publicly traded or not. For achieving additional evidence of this development, regression analysis for deciles is formed next.

6.3.2. Regression results for deciles

In Table 4 were presented mean values of audit fees for years 2000-2017 by different deciles. These were derived from model (2), where the regression is formed between mean value of AF2SALES and decile in addition to trend variable. After determining deciles (Appendix A) and mean values (Table 4), we can draw regression between these and the examination period. Table 6 below is showing the regression results from model (2):

Table 6. Regression results for mean values of AF2SALES. Deciles 1-10.

Model: $mean(\frac{AF}{Sales})_D = \beta_0 + \beta_D TREND_{FY-2000} + u$ (2)

Decile	*N*	*F-value*	*R-Square*	*Adjusted R-Square (R^2)*	*Parameter estimate*		*Standard error*		*T-value*		*Pr > |t|*	
					Intercept	Trend *(β)*	Intercept	Trend *(β)*	Intercept	Trend *(β)*	Intercept	Trend *(β)*
Decile 1	18	20.25	0.559	0.531	0.0375	0.0013	0.0030	0.0003	12.432	4.500	<.0001	0.0004
Decile 2	18	43.77	0.732	0.717	0.0090	0.0006	0.0010	0.0001	9.132	6.616	<.0001	<.0001
Decile 3	18	26.75	0.626	0.602	0.0054	0.0002	0.0005	0.0000	11.126	5.172	<.0001	0.0001
Decile 4	18	17.62	0.524	0.494	0.0039	0.0001	0.0003	0.0000	11.602	4.198	<.0001	0.0007
Decile 5	18	5.87	0.269	0.229	0.0032	0.0001	0.0004	0.0000	8.578	2.424	<.0001	0.0276
Decile 6	18	2.68	0.144	0.090	0.0025	0.0000	0.0003	0.0000	7.230	1.638	<.0001	0.1209*
Decile 7	18	3.22	0.167	0.115	0.0018	0.0000	0.0003	0.0000	6.752	1.793	<.0001	0.0918*
Decile 8	18	2.56	0.138	0.084	0.0013	0.0000	0.0002	0.0000	6.520	1.600	<.0001	0.1292*
Decile 9	18	4.43	0.219	0.168	0.0008	0.0000	0.0001	0.0000	7.313	2.105	<.0001	0.0515*
Decile 10	18	3.49	0.179	0.128	0.0005	0.0000	0.0001	0.0000	6.891	1.868	<.0001	0.0801*

The table includes parameter estimate (regression coefficient), standard error, T-value and p-value (Pr > |t|) for two variables: Intercept and Trend (β). Coefficients are for deciles 1-10, where Decile 1 (10) includes firms with the smallest revenue (largest). Asterisk (*) indicates that the result *is not* statistically significant, when the limit for statistical significance is 0.05.

Now every decile (N=10) has 18 observations, totaling 180 regression results. Thus, every decile includes compilation of all fiscal year values, and the regression model was able to create association for every fiscal year under examination period. However, from F-values we can see that this association is declining when moving to deciles with bigger revenue value. The F-value is high with Deciles 1-4, when e.g. Decile 2 has F-value of 43.77, but after that values decrease. Moreover, when viewing p-values of those values, we can interpret that only with Deciles 1-5 the F-value is statistically significant, that is, p-value is below 0.05. R-square and Adjusted R-square support this observation, when for Deciles 5-10 these explanatory levels are noticeably lower than with Deciles 1-4. When comparing Deciles 2 and 8 for example, we can see that the model's explanatory power for Decile 2 is over 71.5%, while with Decile 8 it is only 8.4%. These results indicate that association between audit fees and trend variable is lower from Decile 5 forward.

When moving on to parameter estimates in which we are most interested in, we can see that results support conclusions made before. Based on time series analysis in previous section, we made an assumption that smaller deciles were paying relatively more when audit fees were compared to company's revenue. Now we can see that intercept parameter estimate is 0.0375 for Decile 1, which basically means that on average, 3.75 percent of company's revenue is going for audit fees. As was argued with time series analysis, this proportion is huge especially when we are talking about firms with low sales. Nevertheless, it was visible in the Figure 3 that decile one was remarkably above others. This is also visible here, when intercept values become more even from Decile 2 onwards. For example, Decile 3 has an intercept value of 0.0054, which means that averagely audit fees are only 0.54 percent of sales within this decile's companies. Furthermore, it seemed that Decile 10 was paying clearly the least, and when intercept with Decile 10 is remarkably lower, averagely only 0.05% (0.0005) of companies' revenue, it is in line with previous observation. Decile 1's audit fee ratio is then over 78 times higher. All these results thus support observations from Figure 3.

The second conclusion made earlier was that larger firms suffer relatively less increase in audit fees when moving forward in the 21st century. This development we can investigate more closely by comparing coefficient β for trend variable. We can see that values with Deciles 1 and 2 are considerably higher than with other deciles. Decile 1's trend coefficient is 0.0013 and Decile 2's 0.0006. Even with these two deciles, the coefficient has almost halved, and the transition to other deciles is even more remarkable. When moving from smaller deciles to larger, the trend coefficient

moves steadily closer to zero, and t-values as well as p-values become worse. Deciles 6-10 are not statistically significant anymore what comes to trend coefficients. When looking again Decile 1, we see that audit fees increase in relation to revenue by 0.13 percentage points when one year is added. When adding the 10-year aspect that was already discussed in the previous section, we get that the increase in ten years would be over 33%. This is in line with previous results, where the increase in ten years was over a third even though it covered whole sample without any distributions. It is also directly visible in the table, that deciles 7-10 have so minor growth in their audit fees, that when coefficients are presented to four decimal places, the coefficient is zero. For example, coefficient for Decile 7 is 0.00004. So, on average, the audit fees grow by 0.004 percentage points when one year is added.

When comparing these results to Francis' study, we notice that in his research, the data consisted of 5,500 large, U.S. based companies. That is remarkably lower sample, when in fact that is only around half of the sample that we have within every decile. However, it was interesting to notice that Francis got aggregate audit fees for those 5,500 companies to be around $3.4 billion, which meant that audit fees represented averagely only 0.04% of sales. (Francis 2004, 349). This is quite close to Decile 10's intercept value, which is 0.05% of sales. When the data included only 5,500 large companies versus our 123,880, those companies most likely would be located in Decile 10, when it consisted of 12,382 firms. Although these results are in line with conclusions made earlier and give us a view of audit fees' development, it should be noted that the results for deciles 6-10 are not statistically significant when considering coefficient β. The p-value is above of 0.05 and the T-value is low. The intercepts however are statistically significant for every decile and those also have good T-values. Even though standard error values are low with every decile, the p-value indicates that the association between audit fees and different fiscal year is difficult to detect. It was visible in the previous section, that deciles 6-10 had extremely low values and they remained rather same after year 2004. Also, it was previously noted that even inside the deciles there may be large differences and variation.

For achieving more accurate evidence considering Hypothesis 2_a and 2_b, additional regression model is conducted. Table 6 gave an assumption that smaller deciles pay relatively more audit fees (higher intercept value), and that also the increase is faster for them (higher regression coefficient). To examine this even more closely, a multiple regression where variables *DECILE, TREND* and combination of these two are the explanatory variables. Multiple regression model used is model

number (3), which was introduced in previous chapter. Table 7 below summarize the results of this regression.

Table 7. Regression results for mean values of AF2SALES. Deciles 1-10. Multiple regression.

Model: $mean(\frac{AF}{Sales}) = a_0 + a_1 TREND + a_2 DECILE + a_3 TREND * DECILE + u$ (3)

Variable	*Parameter estimate*	*Standard Error*	*T-value*	*Pr > |t|*
Intercept	0.0194	0.000187	103.56	<.0001
Trend	0.0007	0.000020	33.10	<.0001
Decile	-0.0027	0.000035	-77.76	<.0001
Trend*Decile	-0.0001	0.000004	-25.54	<.0001

From results tabled above, we get supportive evidence of those two hypotheses to be true. Parameter estimate for variable *TREND* indicates, that general trend in audit fees is slightly increasing with value of 0.0007. This supports our previous conclusions. The second parameter estimate for variable *DECILE* is negative with value of -0.0027. It indicates that when decile grows, audit fee lowers. This is also in line with previous results ja support assumption of Hypothesis 2_a. Both of the results are also statistically significant. The third variable where these two variables are combined, describes the deciles' size impact over time best. Now the parameter estimate is negative, with value of -0.0001. This means that the bigger the decile the lower the fee when one year is added, that is, no increase over time for bigger firms. It supports the assumption of Hypothesis 2_b. It has high T-value and low p-value, which indicate that the result is statistically significant. Based on these results, as well as on time-series analysis and other regression results considering model (2), we can draw a solid conclusion that Hypotheses 2_a and 2_b are true. That is, firms with lower revenue are paying relatively more of audit fees than companies with bigger revenue do, and the ratio of audit fees to sales have increased over time relatively more for smaller companies.

6.4. Sensitivity analyses

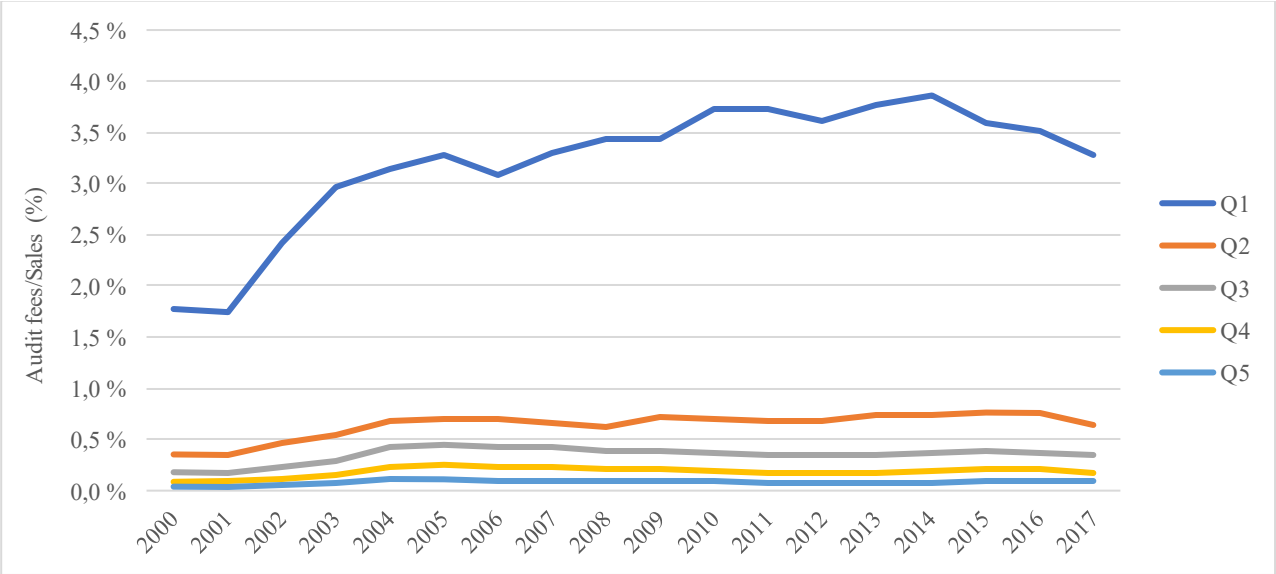
Now, after main results are presented and discussed, a sensitivity analysis can be formed. The purpose of these tests is to analyze, whether the observed phenomena truly exists, or is it only visible with limited data and other restrictions. In optimal situation, these tests will give additional information about audit fees' development and behavior under examination period, and support previous results and conclusions at the same time. Additionally, we can hopefully rule out the possibility for distorted results. To get supportive evidence, the first sensitivity analysis is time series analysis for quintiles, which means that the data is divided into five equal size groups instead of ten that was done with deciles. After this, time series as well as regression analysis for median values of audit fees are formed. Besides these, analyses are also made for total fees as was done for audit fees. That is, both time series analysis and regression analysis are conducted for total fees also. This enables us to consider if the same behavior and trends are also visible with total fees, and we can also draw some conclusions of non-audit fees, when these are included in total fees, but not in audit fees. In addition to these, there's also comparison between BIG4 auditors and non-BIG4 auditors in order to detect whether pricing differs between these two groups and if so called BIG4 premium exists. Lastly, it is examined whether same trends in audit fees are visible in Canada and in other foreign countries that they are in US.

6.4.1. Quintiles

When forming sensitivity analysis for quintiles, it should even the differences between the smallest and largest groups, and therefore results may become more comparable. In Figure 4 is presented the audit fee ratio over time for different quintiles. The time series is based on mean values of audit fees. The distribution to quintiles and mean values of variable AF2SALES for this sample are presented in appendixes C and D, which can be found at the end of this study. It is clearly visible in the picture, that also with quintiles, the group with the smallest revenue scale is paying relatively more. Now the ratio for Quintile 1 doesn't naturally reach to almost six percent that was with Decile 1, but it is still considerably higher when compared to Quintiles 2-5. While the difference between Deciles 1 and 2 was around 3.5 percentage points, now with Quintiles 1-2 it is around 2.6 percentage points. The average ratio for Quintile 1's audit fees is 3.2 percent. For a single fee, a three percent share from company's revenue can be considered as substantial. Although, it should be noticed that the Quintile

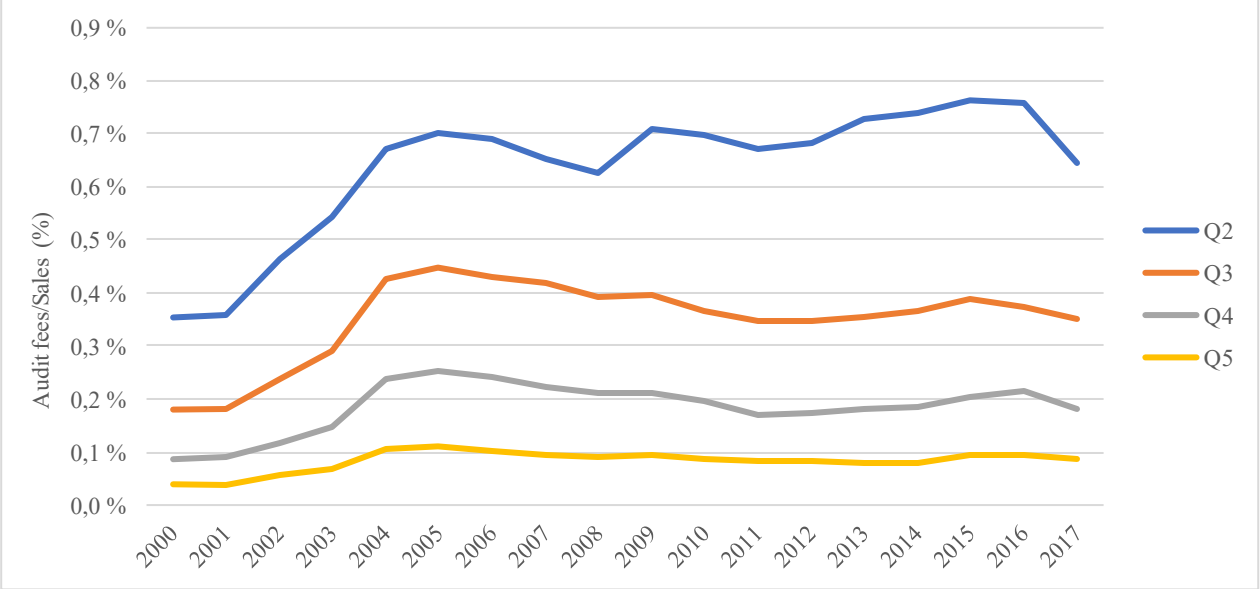
1 includes Deciles 1 and 2 – the two deciles that had clearly the highest audit fee ratio. For that reason, the observation where Quintile 1 is noticeably higher than the others, was expected.

Figure 4. Mean values of audit fees in relation to sales. Quintiles 1-5.



Also, as earlier, the bigger the revenue goes the lower the audit fee ratio decreases. Quintiles 2-5 are all noticeably below one percent and seem to remain their level rather same during the whole 21st century. As was with the whole sample and with different deciles, the events of year 2002 are visible also here with every quintile. Nevertheless, the smallest quintile has faced a lot more intensive increase in audit fees than the others. For examining Quintiles 2-5 more closely, the first quintile has been left out from next figure. Now we can see better, that even bigger quintiles have suffered fees' increase after year 2002, but the increase is just in smaller scale. With Quintile 1 the increase from year 2001 to year 2005 was around 1.5 percentage points when with Quintile 2 it was around 0.35 percentage points. With Quintile 5 the same number was around 0.07 percentage points. Interestingly, especially with Quintiles 3-5, fees seem to slowly decrease after year 2005. This was also observable with Deciles 5-10. Thus, these results give very similar outcome that was presented in sections 6.3.1 and 6.3.2. Smallest group seems to pay relatively more audit fees and faces more increase in those as well. For larger firms, relative fees are at remarkably lower level and descending over time.

Figure 5. Mean values of audit fees in relation to sales. Quintiles 2-5.

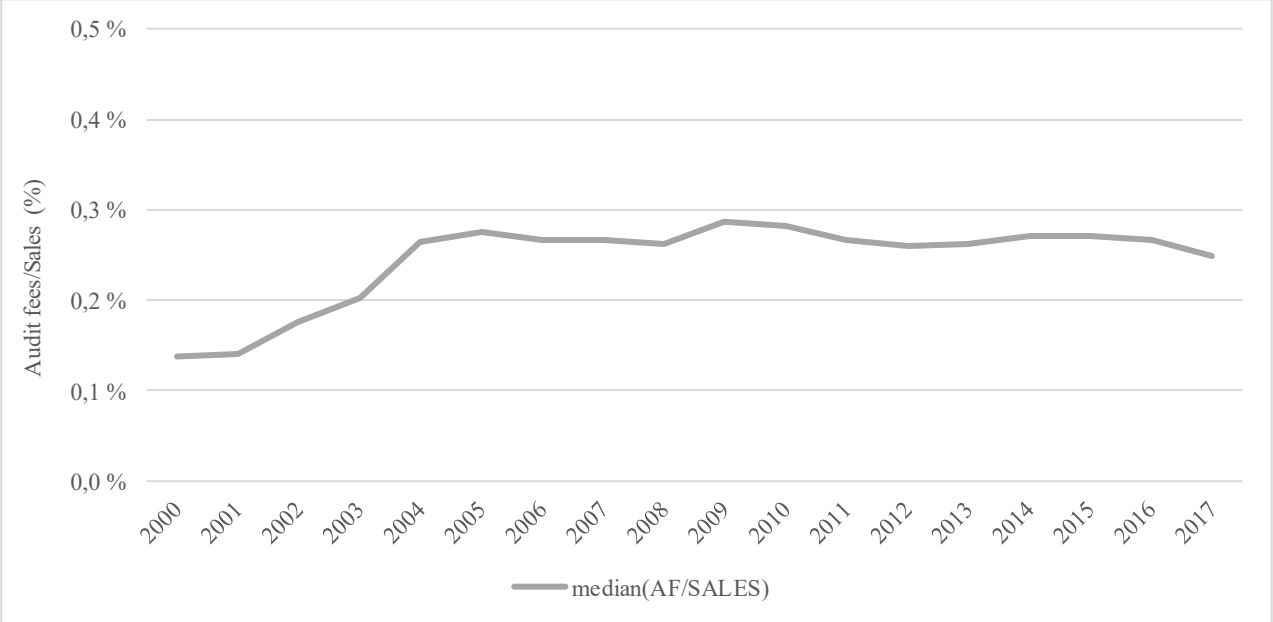


6.4.2. Median values

Previously in this study audit fees have only been studied through mean (average) values. For achieving additional evidence, also median values are set under review. Figure 6 below represents median values of audit fees in trend line graph. Median values for audit fees are presented in Appendix E, and they are based on Model (1) but only with median values instead of mean values. Even though median values have remained at the same level almost through whole examination period, even there the increase due year 2002 crises are undoubtedly observable. In fact, with median values the increase between years 2000-2005 was even greater that was with mean values in Figure 2, when it rose to 100.1 percent. With mean values the increase was 97 percent. This means that for median company, the audit fee actually doubled during those six years. Usually with median values the effects affecting from outside do not have same impact that is with average values, when median is just one observation in the middle of data. Yet, even with median values, the beginning of 2000's was observable. However, what is more surprising is that median values are that much below average values. On average, median audit fee in relation to firm's sales was 0.65 percentage points lower than with average company. Median company seems to pay significantly less audit fees than average companies do. Furthermore, they suffer less fluctuation, especially what comes for years after Enron and Arthur Andersen case. When reversing to Table 2, we can see that median company's revenue is

$125,472,500. When on average the ratio between audit fees and revenue for median company is 0.24% (cf. 0.89% with mean), it means that around 301,134 dollars are spent on audit fees. When the turnover is over 125 million, the rate seems reasonable after all.

Figure 6. Audit fee development by median values of AF2SALES during 2000-2017 (%).



When moving on to regression results, Table 8 presents the analysis of variance as well as parameter estimates for median values. When viewing analysis of variance, we see that all 18 observations are used, and that F-value is reasonable high. Additionally, standard error values are rather low, and conversely, T-values quite high, especially with intercept. P-value with both factors is below 0.05, so results are statistically significant. With parameter estimates, the intercept indicates that median company spends approximately 0.19 percent of its revenue for audit fees, and that the yearly increase is around 0.06 percentage points. Hence, the increase in ten years for median company would be over 31 percent (cf. 37% for mean). These results indicate that median company not only pay less different kind of fees, but it also faces less increase in those fees, which was already suggested previously. After all, no matter if we are considering mean or median values, the rise in audit fees' share of revenue in ten years would be over a third. Also, all results are in line with results considering mean values of complete sample, and there's no incoherence between these two.

Table 8. Regression results for median of AF2SALES.

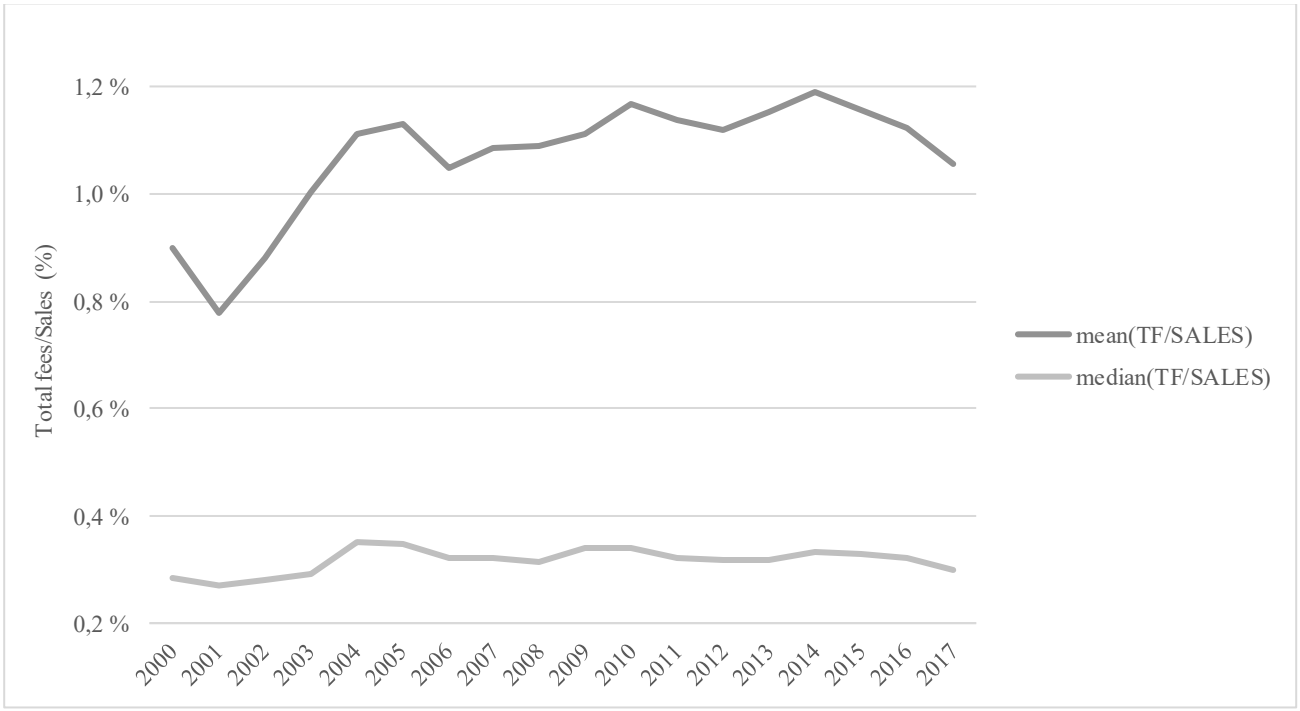
Model: $median(\frac{AF}{Sales}) = \alpha_0 + \alpha_1 TREND_{FY-2000} + u$

	AF2SALES (median)	*Parameter estimate*	*Standard error*	*T-value*	*Pr > |t|*
Number of observations used	18				
Model's F-value	13.29				
R-Square	0.4538				
Adjusted R-Square (R^2)	0.4196				
Intercept		0.00188	0.000177	10.66	<.0001
Trend		0.00006	0.000016	3.65	0.0022

6.4.3. Total Fees

For creating deeper analysis of audit fees behavior during the past 18 years, audit fees are next compared to total fees. Now, total fees include audit fees, but also audit related fees, non-audit fees as well as other fees such as tax fees. Audit fees then represent the pure fee for annual audit, but total fees include all possible fees that companies are facing. As was with audit fees, first the time series analysis is formed and after that the same two regressions that were driven for audit fees, are run for total fees (Models 1 and 2). Now also the median values are included. From Appendix F you can find mean and median values for variable TF2SALES (total fees divided by sales) for every fiscal year under examination period. The time series in Figure 7 is based on those values in Appendix F. As we can see from the picture, it is also almost identical with figures 2 and 7. Now the lines are naturally higher, when the absolute values are also higher than with bare audit fees. When comparing mean values of audit fees and total fees, we get that total fees are only around 0.2 percentage points higher than audit fees. Hence, audit fees alone covered around 80% of all fees. When other fees include i.a. audit related fees, benefit plan related fees, FISDI fees, tax related fees, compliance fees and other misc. fees, the proportion for these is surprisingly low. However, this development was clearly seen in Audit Analytics' study as well, when they reported that after year 2002 when SOX was implied, audit fees went up, and non-audit fees down, and they also got audit fees representing around 80% of all companies' fees post-SOX.

Figure 7. Total fees' development in relation to sales during 2000-2017. Complete sample.



When moving on to regression results of total fees, they are similar to audit fees, but certain differences can also be seen. For instance, regression results of median_TF2SALES are not statistically significant, when F-value is quite low, p-value is over 0.05 and the explanatory power is only 15.9 percent with R-square and only 10.65 percent with adjusted R-square (Table 9). When compared to mean values of TF2SALES, the F-value for example is much higher and statistically significant with p-value of 0.001. When the regression is formed between mean of TF2SALES and trend variable, the explanatory power is around 50 percent which is noticeably higher than with model where median values are the independent variable. The mean_TF2SALES can thus explain around 50% of the regression, while median_TF2SALES reach only to 10 percent. When considering results of median_AF2SALES, it was able to explain considerably more the phenomena with adjusted R-square value of 42%. However, median may not represent the whole sample that well, and mean results should be given more weight, especially now, when the results considering median values are that weak. Now the intercept parameter estimates are naturally higher than with audit fees, when the absolute amount of fees is also higher. On average, 0.9 percent of company's revenue goes to different kind of fees, when the audit fees' share of that was 0.7 percent. That is, around 20% is then coming from other fees than audit fees, which was already assigned previously. For median firm the intercept is 0.3%, which is interesting, because it is only about a third of average firm's fees. Thus, it seems

that median firms are paying much less both audit fees and other fees. For both intercepts, mean and median, the p-value is less than 0.05 and the results are therefore statistically significant. T-values are also high for both of them, and on the contrary, standard error values are low. All these factors indicate that intercept values are significant and generalizable, and therefore reliable results.

Table 9. Regression results for TF2SALES. Mean and median.

Models:

$$mean(\frac{TF}{Sales}) = \alpha_0 + \alpha_1 TREND_{FY-2000} + u$$

$$median(\frac{TF}{Sales}) = \alpha_0 + \alpha_1 TREND_{FY-2000} + u$$

Analysis of variance	*Mean TF2SALES*		*Median TF2SALES*	
Number of observations used	18		18	
Model's F-value	16.78		3.03	
R-Square	0.5119		0.1590	
Adjusted R-Square (R^2)	0.4813		0.1065	
Parameter estimates	*Parameter estimate*	*Standard error*	*T-value*	*Pr > |t|*
Mean_TF2SALES				
Intercept	0.00927	0.00039	23.53	<.0001
Trend	0.00015	0.00004	4.10	0.0008
Median_TF2SALES				
Intercept	0.00300	0.00011	27.54	<.0001
Trend	0.00002	0.00001	1.74	0.1011*

Asterisk (*) indicates that the result is not statistically significant.

When comparing parameter estimates for trend-variables, those are actually lower than with audit fees. Now the average increase for total fee mean is 0.015 percentage points by every year, when with audit fees it was almost 0.025 percentage points. Hence, audit fees increase faster than total fees, and the increase in total fees is actually increase in audit fees. This also indicates that non-audit fees have neither increased, when total fees are sum of audit fees and non-audit fees. This result may stem from SOX, when SOX placed several restrictions for audit firms offering non-audit services such as consultancy. Fees from these assignments would be located in non-audit fees as well as in total fees. When it was no longer possible for audit firms to offer these kinds of services, they would transfer the profit from decreased fees into audit fees. This was already suggested by audit Analytics' researchers in Chapter 4. This would be showing as an increase in audit fees, but not in total fees in the same scale when non-audit fees decrease. This assumption is in line with these results. There is

also difference between average and median companies, when the yearly increase for median firm is around 0.002 percentage points in total fees, versus average firm's 0.015. When these are converted to percentages and added with 10-year examination period that was used with audit fees also, we get that the increase in ten years for mean_TF2SALES is 16.1, percent, but only 5.8 percent for median_TF2SALES. This supports the conclusion made earlier, that median companies not only pay less different kind of fees, but they also face less increase in those fees.

When viewing T- and p-values, all other results can be interpreted as statistically significant except the trend parameter estimate for median_TF2SALES. For that reason, the calculated 5.8 percent increase over ten years may indicate of some differences between average and median companies, but the result is not statistically significant. P-value for mean_TF2SALES trend's parameter estimate is 0.0008 which is less than 0.05, but higher than intercepts' p-values. The T-value 4.10 is also quite weak, because the slope is only remotely rising but at the same time the standard error is rather high. Therefore, results regarding total fees were very similar with audit fees, but in general, audit fees' results provided better predictability and were more often statistically significant. To summarize, it was observable from the results that median company paid less both audit fees and total fees and was also facing less increase in those. It was also visible that audit fees in relation to firm's revenue have increase remarkably more than total fees, when considering the whole dataset as a single sample. On average, audit fees have risen over 37% in 10 years, when with total fees the same percentage was only around 16%. From this it was also possible to draw conclusion that the increase in total fees was actually coming mostly from audit fees. Total fees or non-audit fees weren't increased with same pace.

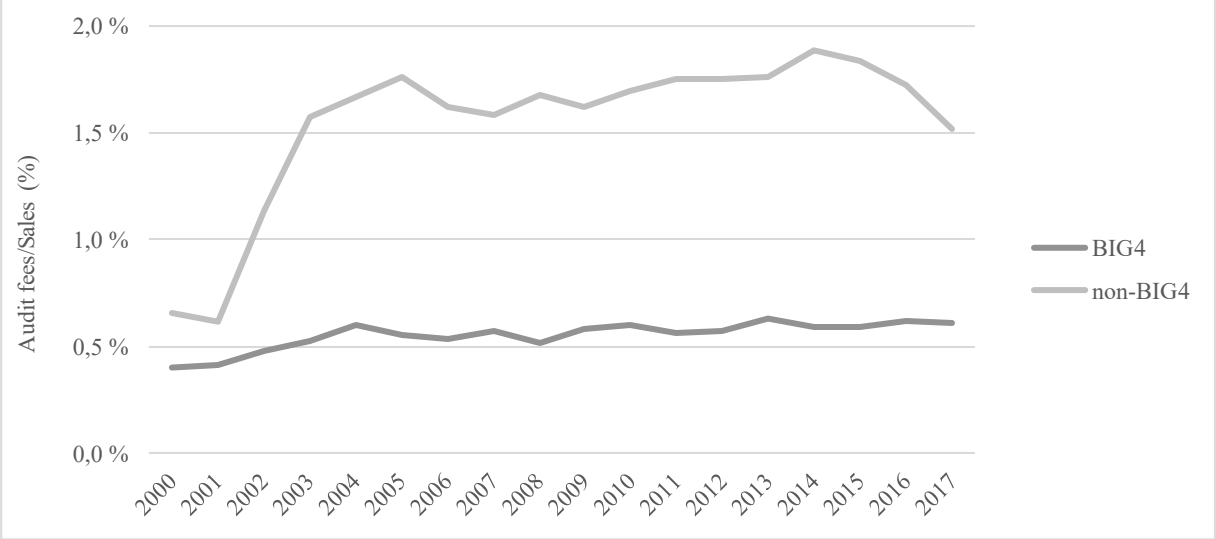
6.4.4. BIG4-auditors

When discussing audit fees and their appropriate level, it should be noted that majority of all possible audits are done by four different audit firms. When the amount of big, globally known audit firms is that small, it raises questions about 'BIG4-premium'. This may emerge e.g. from appreciate of their experience and know-how, or their vast resources, but it can also come from lack of competition or lack of certain expertise that only BIG4 auditors can provide. When previously in the study it was shown that audit fees have increased during 2000-2017 and that the increase has been sometimes even rapid, it should be studied whether this increase comes from BIG4 auditor prices, or is the trend

considering all auditors in general. For doing this, 'BIG4' dummy-variable was formed (See Descriptive Statistics). It is also worth noticing for, that in order to examine audit fees from auditor perspective, other than bare audit fees should be brought up, when usually audit firms tend to provide audit related and non-audit related services besides traditional audit. For that reason, in this section also non-audit fees (NAF) are examined in addition to audit fees and total fees. The structure of this section is however same as before, first the time series analyses are formed, and then regression results are disclosed. In the end of this section, regression is run for Deciles 1 and 10 also, in order to examine whether BIG4-premium exists only for smaller firms, as suggested in Chapter 2.

The time series analysis for BIG4 and non-BIG4 auditors is based on mean values of audit fees (AF), non-audit fees (NAF) and total fees (TF). All figures 8-10 are based on mean values which are found in Appendixes G and H. In Figure 8 below are bare audit fees for BIG4 and non-BIG4 auditors. As we can see from the picture, audit fees in relation to revenue have been higher for non-BIG4 auditors during the whole 21st century. That was expected, when BIG4 auditors usually have clients with bigger sales, which naturally lowers the relative share of audit fees. Non-BIG4 audit firms on the other hand have typically smaller clients, and they may also have more challenging clients, when they try to get clean audit report by selecting auditor outside the BIG4 group. This suggestion is supported by Beatty (1989, 707) for example: "Larger and less risky clients were audited by Big Eight firms." Also, it was shown previously that most visible changes considered the smallest auditees, so the higher level of non-BIG4 fees was expected. However, especially when taking into account that the data includes only public companies, the gap between these two groups is quite large. Additionally, firms that had total fees in relation revenue over 20 percent were removed, which means that the data shouldn't include companies that are seriously financially distressed. Considering these factors, the fact that non-BIG4 audit firms' fees are that much higher when compared to BIG4, is slightly surprising. After year 2003, the difference between these two groups has been around 1.1 percentage points.

Figure 8. Mean values of audit fees for BIG4 and non-BIG4 auditors.

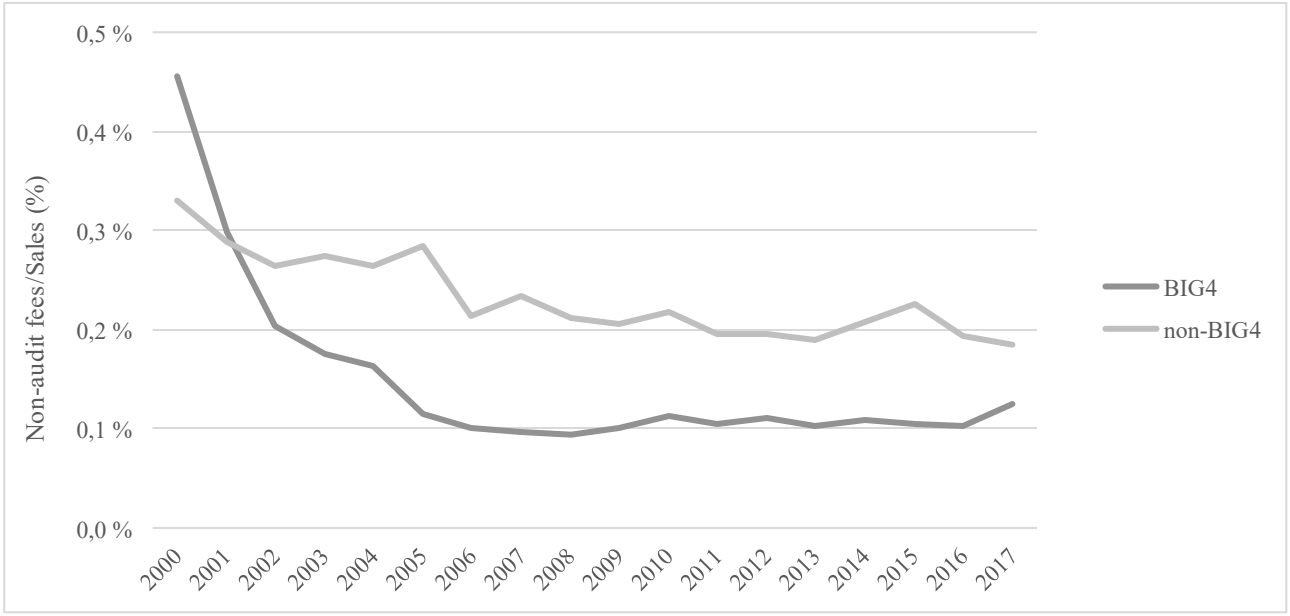


As was with previous analyses, also here the general trend where fees increased radically after year 2002 is visible. However, it is only clearly observable with non-BIG4 firms. With BIG4, the increase from year 2001 to year 2003 was only 0.1 percentage points, when for non-BIG4 it was 1.0 percentage points. That is, audit fees increased ten times more with non-BIG4 auditors. This is interesting notice, when the bankrupt of Arthur Andersen and additional SOX requirements should increase the fee level noticeably for both auditor groups, not just for non-BIG4. Yet, the explanation for minor increase may come from competitive situation, if remaining BIG4 firms started to fight over AA's clients, and tried to persuade clients with lower audit fee levels. Then the AA's withdrawal wouldn't decrease the competition but increase it. Another explanation is that applying all the SOX requirements insisted relatively more effort from non-BIG4 firms. BIG4 firms may have had their operations closer to SOX requirements before it came into effect, and therefore they were able to apply SOX without increasing their fee level remarkably. This is also supported by the fact that before SOX, the gap between BIG4 and non-BIG4 was much smaller. When considering audit fees' development in general by comparing Figure 2 and Figure 8, we can see that the behavior of mean values of AF in Figure 2 is almost identical with non-BIG4 auditors' line. From that we can draw a conclusion that the increase in audit fees with complete sample was actually coming mostly from non-BIG4's audit fees and that BIG4 firms retained their audit fee level rather same during the whole examination period.

As mentioned above, when comparing different auditor groups, the role of non-audit services may be essential, and especially here, when AF included only bare audit fee. For that reason, also non-audit

fees should be compared between these two groups. In Figure 9 there's non-audit fees in relation to sales for years 2000-2017. Like above, also here the fee level for non-BIG4 firms is higher than with BIG4, but the difference between these two is much smaller. Now the non-audit fee rate is only 0.1 percentage points higher on average. Additionally, the trend here is the opposite when compared to audit fees, when lines for both groups are descending, and in the beginning of examination period the fee level for BIG4 firms was higher than with non-BIG4 firms. Here what is surprising, is that non-audit fees were descending with both groups way before SOX came into force and limited the providence of these services. With BIG4 firms, the decrease was actually deeper before year 2002, and it slowed down post-SOX, continuing downwards until year 2006. This is the opposite from expected. What is also worth noticing for, is that with BIG4 firms, averagely NAF is around 0.1%, when audit fees are around 0.5% from client's revenue post-SOX. However, in year 2000 when SOX didn't apply yet, audit fees and non-audit fees were almost at the same level, and non-audit fees were actually higher than pure audit fees. In year 2000, non-audit fees were 0.46% from revenue when audit fees were only 0.40%. This underlines the importance of non-audit services for BIG4 audit firms before SOX. With non-BIG4 firms, the decrease is not that radical, which suggests that maybe non-BIG4 firms didn't offer non-audit services that much at the first place.

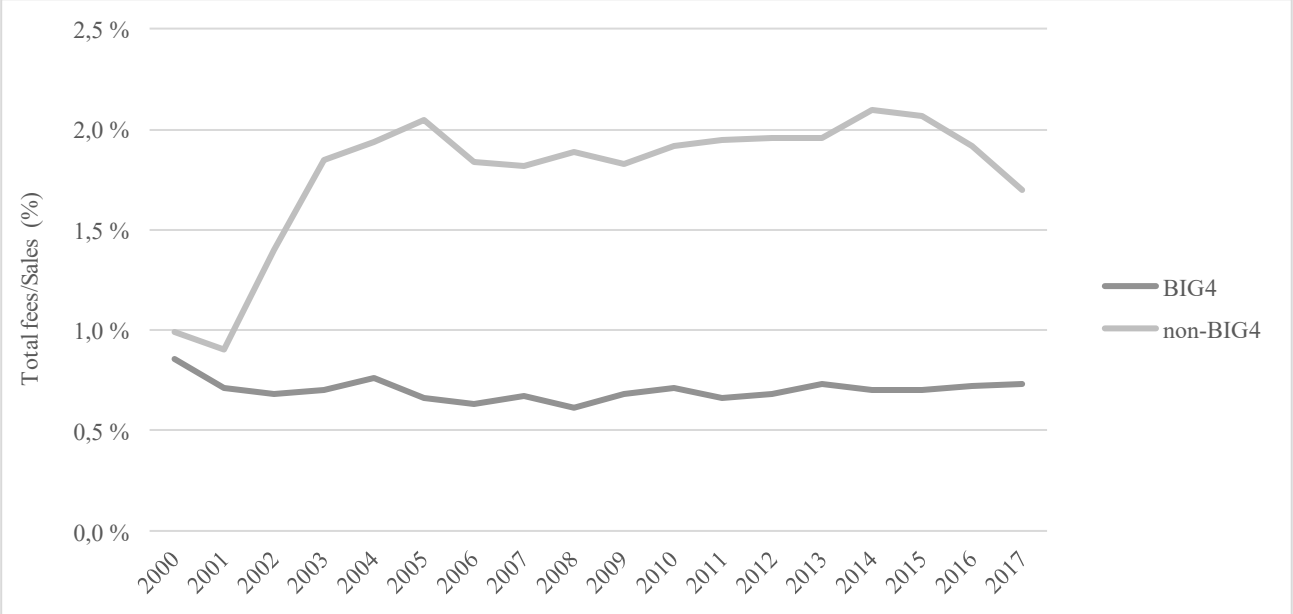
Figure 9. Mean values of non-audit fees for BIG4 and non-BIG4 auditors.



When adding audit fees and non-audit fees together, we get total fees. In Figure 10 below is presented total fees in relation to sales by these two auditor groups. Now the picture is naturally a combination

of those two pictures above. The trend in total fees, especially with non-BIG4, is similar to audit fees' trend, when changes in non-audit fees were much smaller. Figure 10 also supports previous conclusions, when fee levels are higher with non-BIG4 auditors and the increase in total fees is purely coming from audit fees' increase. Furthermore, increase in audit fees is mainly coming from non-BIG4 auditors' fees. From total fees we can also see that the events of 2002 are clearly more visible with non-BIG4 auditors, and that total fee level for BIG4 firms has remain rather stable throughout the whole 21st century. Audit fees had increased slightly, but at the same time non-audit fees decreased. For that reason, total fees have been around 0.6-0.7 percent the whole time for BIG4. These results are somewhat surprising, when there were suggestions of 'BIG4-pemium' and when the general belief is that BIG4 can price their fees higher because of their expertise and resources for instance. Yet, at least relative fees are higher with smaller auditors than with BIG4. However, it should be noted that relative fees do not tell directly is the fee's absolute value higher, or are these results due of differences in customer portfolios for example. In addition, it was also believed that SOX restricted the providence of NAS, but results here implicate that auditors reduced these services already before SOX came into effect.

Figure 10. Mean values of total fees for BIG4 and non-BIG4 auditors.



Next, regression analysis is formed in order to examine this development more closely. In Table 10 below are now all regression results considering variables AF, NAF and TF. As we can see from the

table, the average share of audit fees from revenue (intercept) is much higher for non-BIG4 firms. In bare audit fees, only around 0.5 percent from client's revenue is going for audit fees when the auditor is in BIG4. Conversely, the same share is around 1% for non-BIG4 firms, so audit fees are twice as much than with BIG4. When the main reason to select non-BIG4 auditor might be that there's assumption of lower audit fee levels, it is interesting to see that these results together with time series analysis suggest that the relative share of audit fees might actually be lower with BIG4 firms, not the other way around. However, these results do not give straight answer to that, when audit fees' relative share is dependent on client portfolios, client's revenue scale and above that, audits are priced based on risk levels as was explained in Chapter 2. For that reason, far-reaching conclusion about BIG4 premium cannot be made based on relative values and without controlling those factors.

Table 10. Parameter estimates for mean values of AF, NAF and TF. BIG4 and non-BIG4.

Models:

$$mean\left(\frac{AF}{Sales}\right) = \alpha_0 + \alpha_1 TREND_{FY-2000} + u$$

$$mean\left(\frac{NAF}{Sales}\right) = \alpha_0 + \alpha_1 TREND_{FY-2000} + u$$

$$mean\left(\frac{TF}{Sales}\right) = \alpha_0 + \alpha_1 TREND_{FY-2000} + u$$

	BIG4		*non-BIG4*	
	Intercept	Trend	Intercept	Trend
Audit Fees/Sales (AF2SALES)	0.005	0.00010	0.011	0.00047
Non-Audit Fees/Sales (NAF2SALES)	0.003	-0.00011	0.003	-0.00007
Total Fees/Sales (TF2SALES)	0.007	-0.00002*	0.014	0.00040

Asterisk (*) indicates that the result is not statistically significant.

Second observation from regression results is that the trend parameter estimates are positive for audit fees, but negative for non-audit fees for both auditor groups. This means that in general audit fees increase slightly every year, but non-audit fees decrease. This was already pointed out in previous figures. Also, the relative share of NAS-fees is surprisingly low, and for both groups the relative share of audit fees exceeds the share of non-audit fees as was also before. This is interesting to notice, when usually non-audit fees are seen as an important income source for audit firms, and auditors are more than willing to offer non-audit services, when they usually have higher income expectations than bare audit fees. According to Kinney et. al. (2004, 565) for example: "NAS fees are believed by many to yield higher profit rates than do audit fees. – Regulators also express concern that some audit fees are

too low because auditors may lowball audit fees to obtain lucrative consulting contracts." While audit is strictly regulated and limited service, non-audit services on the other hand include large range of different consultancy services for example. There were even suggestions that auditors are willing to sacrifice their independence in exchange for retaining clients that pay large non-audit fees (DeFond et. al. 2002, 1248). However, as was mentioned previously, SOX had huge impact on services that auditors can provide, and especially non-audit related services were restricted. It can be suggested that SOX had such far-reaching effects that over 18-year period the trend variable for NAF is in fact negative. Also, as was visible in Figure 9, non-audit fees were already descending before SOX with both groups, and it only continued post-SOX.

Previous results also indicated that the increase in total fees was mainly coming from audit fees, while non-audit fees decreased. Regression results support this partly, when audit fees' trend coefficients are clearly positive whereas non-audit fees' coefficients are negative. With non-BIG4 the results are simpler, when the total fees' trend coefficient is also positive. This means that increase in total fees is purely coming from audit fees' increase while non-audit fees decreased. However, with BIG4 auditors the trend coefficient for total fees is actually negative, when the increase in audit fees has been small, whereas the decrease in non-audit fees has been large. This can be explained by suggestion made above, where increase in total fees was coming from audit fees, but especially from non-BIG4 firms' audit fees. That is why the overall trend coefficient for total fees is positive with non-BIG4 and negative with BIG4 firms.

These regression results thus support the assumption that audit fees have increased in general, but additional information was that with BIG4-auditors, the increase have been only minor. The parameter estimates for both trend variables were positive, but with BIG4 firms the increase in one year is only around 0.01 percentage points when with non-BIG4 firms it is 0.05 percentage points. When comparing intercepts of total fee variable, we get that when the auditor is in BIG4, total fees represent around 0.7 percent share from revenue, but with non-BIG4 auditor it is doubled, around 1.4 percent. These results also suggest that there's no 'BIG4-premium', when audit fees, non-audit fees and total fees are all at lower level with BIG4 than with non-BIG4 auditors. Even though relative shares are not optimal measure for this, results implicate that when the audit fees are compared to revenue, BIG4 firms can offer lower fees. However, BIG4-premium can be seen to be in correlation with client size like introduced in Chapter 2. According to Francis and Simon (1987) and other

studies, BIG4-premium exists, but only for smaller clients. Even though results above suggest that BIG4-premium doesn't exist, it handled data as a whole. For achieving results that are more accurate, same regression is run for different deciles. Table 11 below summarizes results for the smallest and for largest decile. This enables us to investigate whether results support the assumption that BIG4-premium only exists with smaller clients. Now the used data includes only BIG4-auditors.

Table 11. Regression results for AF, NAF and TF for deciles 1 and 10. Only BIG4-auditors.

Variable	*Decile 1*		*Decile 10*	
	Intercept	Trend	Intercept	Trend
Audit Fees (AF)	0.038	0.0013	0.0005	0.00001*
Non-Audit Fees (NAF)	0.015	-0.0005	0.0005	-0.00002
Total Fees (TF)	0.053	0.0008*	0.0010	-0.00001

Asterisk (*) indicates that the results are not statistically significant.

As we can see from the table, all intercept and trend estimates are higher when considering Decile 1 versus Decile 10, and that results differ noticeably from results in Table 10, where auditors were examined regardless the client size. Intercept values in Table 10 indicated that fees charged by BIG4-auditors were less than with non-BIG4 auditors, when intercept for AF for instance was 0.5 percent. However, from this table we can see that the audit fee intercept is as high as 3.8 percent for smaller firms, and that the reason why whole sample got average audit fee to be 0.5 percent, is because with largest deciles the ratio is so low. With biggest firms the average percentage for audit fee ratio is only 0.05 percent. The same goes with non-audit fees and total fees, when the relative share of biggest firms lowers the whole sample's ratio reported before. For example, now the total fee trend-estimate is actually positive for Decile 1, when in Table 10 it was negative for whole sample. This means that total fees are decreased only for bigger firms, and that smaller firms suffered from increase.

From trend variables it can also be seen that only audit fees have slightly increased when considering Decile 10, and that increase in both, audit fees and total fees, is remarkably higher with Decile 1. Although, it should be noted that non-audit fees have been decreasing more with Decile 1 than with Decile 10, and that two of the trend-variables are not statistically significant. This may indicate that the providence of non-audit services is reduced primarily from small clients. These results however support other studies introduced in Chapter 2. It seems that BIG4-premium is not observable when

fees are examined without client-size control. When clients are investigated as a whole, bigger firms lower average ratios when their relative results are distinctly lower than with smaller firms. However, when BIG4 auditors' smallest clients are compared to biggest clients, the difference is easy to observe. The smallest client group, Decile 1, had over twice as much fees charged versus the average values from Table 10. Between Deciles 1 and 10 differences are naturally even larger. The average proportion of audit fees from revenue was 76 times higher for Decile 1 than for decile 10 (0.038 vs. 0.0005). This is similar to result from 6.3.2, where auditor size was not controlled. There audit fees for Decile 1 was 78 times higher than for Decile 10.

When the difference between the smallest and largest deciles is that large, it raises question whether there are differences regarding the auditor, and are premium fees asked by the half of non-BIG4 auditors as well? For investigating this more closely, a separate sample where only companies from Decile 1 were included. These were then compared between BIG4 and non-BIG4 auditors using actual audit fee values, not regression model. For every observation inside this sample a ratio between audit fees and revenue was calculated, and an average value was derived from those. As expected, results implicate that it is more common for a small firm to be audited by auditor outside of BIG4. That is, the amount of companies audited by non-BIG4 was almost twice as the size of BIG4 auditees inside the Decile 1. However, it was surprising that there wasn't that much difference in average audit fee ratio between these two auditor groups. When the auditor belonged in BIG4, the average audit fee from sales represented around 4.7 percent. In turn, when the auditor was non-BIG4, the average ratio was 5.0 percent. That is, smaller audit firms ask higher relative audit fees, but for both the audit fee ratio is substantially high. This result indicates that premium over basic audit fee is asked by both auditor groups – not by BIG4 auditors only.

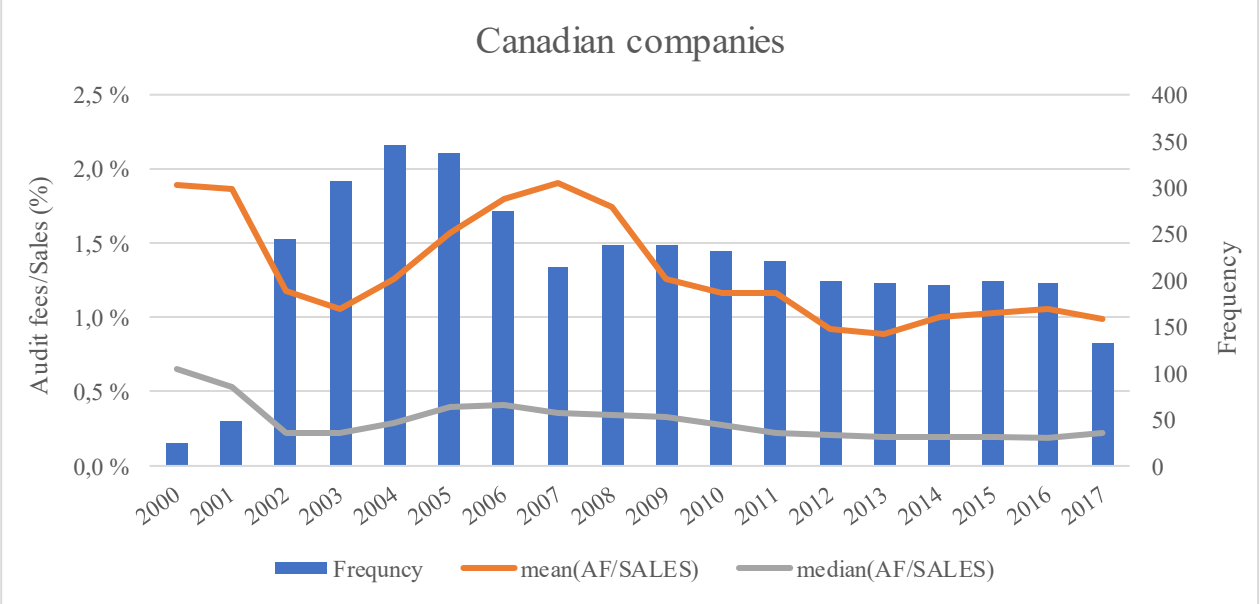
6.4.5. Canada and other foreign countries

To this point, the whole study has been concentrated on U.S. markets and firms operating there. For creating comparison between the US and foreign countries, an analysis of audit fees in other regions is made. The initial sample included observations from US, Canada and other foreign countries, and Canada as well as foreign regions were removed in data adjusting. In Table 1 was presented the sample selection criteria, and how many foreign or Canadian companies were ruled out. In this analysis, all the other limitations presented in Table 1 are valid, so observation where revenue is less

than 100,000 dollars, the total fee ratio to revenue is over 20%, or the audit fee is not available are removed, just as was previously. In Table 1 there were 17,790 foreign companies. However, this number still included companies that had revenue below 100k, or total fees in relation to sales exceeded 20%. That is why now the sample size for foreign countries is only 12,467 firms. Same goes for Canadian companies, when initially there were 8,916 firms, but after all three deductions, there were only 3,846 companies left. Now, the time series analysis is first created for Canada and after that to foreign countries. Descriptive statistics for these datasets are presented in appendixes I and J at the end of this study.

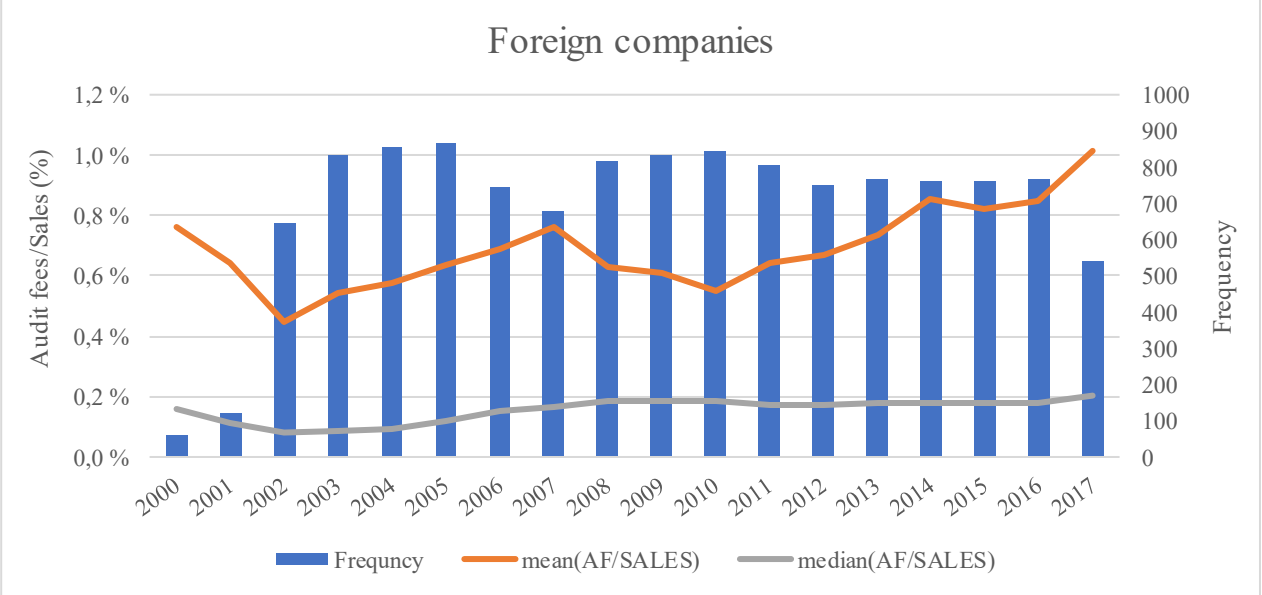
In Figure 11 below are presented the mean and median values of audit fees for sample including only Canadian companies. The figure is based on values presented in appendix K. Now, what is interesting to observe, is that in Canada the audit fee development is almost the perfect opposite when compared to U.S. Now the starting level for average audit fees is rather high, with almost 2 percent audit fee ratio, when for US companies it was only around 0.5 percent. What is even more surprising, is that during the Enron and Arthur Andersen crisis, audit fees actually decreased rather than increased. This is even visible with median values. It is understandable that those cases affected mostly in United States and that SOX applies only to firms in US., but the instability in the market should have been most likely visible in Canada as well, when markets for the whole North America are rather homogenous. Also, despite the SOX applies only in US, Canada has its own regulation called 'Bill 198' also known as C-SOX, and it was created in year 2002 as SOX was. According to Canadian tax attorneys (2015), it is quite equivalent to SOX, and that company that is publicly traded in Canada has to ensure compliance with Bill 198 requirements. They also added that technically, SOX cannot be enforced outside the United States, but this is only the case in certain scenarios. For companies that are publicly traded in Canada and are also listed on NYSE or NASDAQ, or cross listed, have to ensure compliance with SOX and BILL 198. (Prowse Chowne LLP Team, 2015). Nevertheless, it seems that the audit fee ratio started to rise from year 2003 onwards, which may indicate that the chaos in the US markets reached Canada only few years later. Even though the development of audit fees is almost the opposite when compared to U.S., the average audit fee rate however seems to stabilize close to 1% for both datasets, when coming to the last years of examination period. This may indicate that with U.S., the starting level was too low, and with Canada it was too high, and that audit fee level that satisfies both parties, is around 1 percent from the revenue.

Figure 11. Audit fees in relation to sales during 2000-2017. Canadian companies.



It is also visible in the picture that peak years for Canadian companies in average values were 2000 and 2007, when audit fee ratio was 1.9 percent. It is higher than with original sample, but the ratio turned down from year 2007 forward. When with US companies the overall trend during whole examination period was upward, here it is the opposite. In general view, audit fees in relation to revenue have decreased especially after year 2007. This is unexpected, when at that time the great recession started, and fees should have therefore increased. The actual audit fee ratio from year 2007 to 2017 is almost halved, when the ratio is decreased by 48 percent. With median company changes are much harder to detect, but even with median values the general trend has been downwards. This is interesting observation, when the initial assumption was that audit fee development should be similar to US markets when these two regions have many similarities. When moving on to time series analysis for foreign regions, it wouldn't be that surprising if the audit fee development differs from US, when e.g. Europe is far more different environment than Canada when compared to U.S. For example, European Union has unique tax legislation and custom system while Asian countries for instance have very different operating environment with low labor costs and concentration on export. Also, regulation is naturally diverse in different countries. The initial expectation would be that Enron and SOX didn't have that much influence on foreign countries, when those took place mainly in US. Conversely, the global economic crisis 2007 onward should be visible, when it had massive impact globally. Figure 12 below characterizes audit fee development in foreign countries during 2000-2017. The graph is based on mean and median values introduced in Appendix L.

Figure 12. Audit fees in relation to sales during 2000-2017. Foreign companies.



As it is visible from the picture, audit fee development in foreign countries is far more similar to US companies than Canadian, and there's also much more observations from this sample. The beginning level of audit fees is closer to US, when with foreign companies the starting level is around 0.8 versus 0.5 in US. In Canada the starting level was as high as 1.9 percent. The general trend is also upwards that was with US companies. However, it is surprising that crises in 2002 had great impact in foreign countries also, and that the global economic crisis didn't increase the fees but in fact decreased them. These observations are basically the opposite for initial assumptions made above. The biggest difference between foreign and US companies is that the changes in the figure above are much more significant, and that the audit fee ratio has sawed back and forth much more. With US companies the decline was much more moderate, and after year 2007 there has been increase, not decrease. In US the decrease was actually few years before 2007, which is much more logical than the development here. Also, the latest trend in US markets were downwards, when audit fees started decline in year 2014. Here the trend is converse, when the trend is steeply upwards during last examination years. However, it is worth noticing for that also here the audit fee ratio is close to 1.0 % when coming to year 2017, as was with US and Canadian companies. In summary, results considering foreign companies are similar to results with US companies, but results from Canadian time series analysis differ noticeably from results considering US and foreign countries. Regression results considering these two regions gave the same overall conclusion, when there were no differences or incoherence between these two methods. Therefore, regression results are not presented here.

7. CONCLUSIONS

When the discussion around audit fees has been vivid during the whole 21st century because of major accounting scandals in the beginning of this millennium, it gave motivation to study whether audit fee levels are unreasonably high nowadays, especially for smaller firms. Therefore, the main objective of this study was to examine the development of relative audit fees over 18-year period, and whether there are differences between smaller and bigger auditees. A lot of research has been done in this millennium, and during the past two decades audit fees have been examined by several means. However, only few of the studies concentrated on audit fees' long-term development. In turn, majority of the studies focused on examining one certain incident and its impact on audit fees, or what factors affect audit fees in general. Hence, an opposite approach was selected here, and the main objective was to examine how audit fees in relation to sales have been acting over time, and if there is clear trends, changes or anomalies, what are the reasons behind them. Second main objective was to examine these trends by controlling the client size. The two main research questions were derived from these.

For making empirical tests and results more understandable, most common factors affecting audit fees and the basic logic behind audit fee pricing were introduced in the beginning of this study. The quality of an audit is also crucial element, when stakeholders usually demand audit quality in return for spent audit fees, and because it is strongly attached to SOX. For these reasons, audit quality and its role were considered in the third chapter as well. The methodology used in the study was quantitative analysis, including time series analyses and regression analyses. Time series analyses consisted of graphs that presented audit fee development in relation to sales during examination period, and they described the overall development of fees and emerged trends. Regression analyses in turn included results from simple and multiple regression models, and they offered more accurate results considering four hypotheses developed and reasoned in Chapter 4. Empirical tests started by observing the whole data set as a one, single sample and after that by different deciles. The data used was obtained from Audit Analytics database, and all modifications of the data and empirical tests were implemented with program called SAS.

The first research question handled audit fees as a whole, and expectation was that in general, relative audit fees have increased during the past 18 years. This was proved comprehensively, when all results considering complete sample indicated that relative audit fees were increased remarkably during the examination period. Both, mean and median values, resulted the final increase in ten years to be over a third, which can be considered as substantial. Furthermore, the main reason behind this development was SOX, when audit fees increased mainly during years 2001-2005. Based on time series analysis audit fees increased by 99% that time, and after that the increase was only moderate. For example, The Great Recession had only minor effect on audit fees, when the increase was only around 12% during years 2006-2010. With regressions, the overall increase was also considerable, 67 percent, even though it represented linear growth. However, it cannot be told from the results whether fees increased because of added requirements and additional effort due SOX, or because of improved audit quality. In addition, it was also interesting to notice that with complete sample, audit fees started to decline from year 2014 forward, and the decline was rather steep. There wasn't one clear reason for this, but possible explanation is that pressure from unsatisfied clients became that strong, that audit firms were forced to lower their fees. Although, it may also indicate that there has been enough time for auditors to adjust to new regulation, and due learning curve fees have decreased. Also, it should be noted that there haven't been significant changes or new regulation introduced in a long time, and the general economic environment is thus more stable at this day. This could lead to decreasing audit fee levels.

With deciles, the general assumption was that smaller auditees have weaker position and therefore they are facing higher relative audit fees. Results from deciles' empirical tests supported this assumption, when the first main finding was that even though the increase was substantial with complete sample, with deciles the increase was observable only for Deciles 1-4. With Deciles 5-10 changes were only minor, and the overall trend was rather declining than increasing, especially after year 2004. This means that only smaller firms suffered from audit fees' increase, and that the increase with complete sample was mainly coming from smaller firms. As said, with bigger companies the level of relative audit fees was rather steady until year 2004, but after that fees started to decline. The main increase for deciles occurred during SOX implements within years 2001-2005 as was with complete sample. Second important finding regarding deciles was that fees for Decile 1 were remarkably higher that they were for bigger firms. With Decile 1 the relative audit fee ratio was almost 6 percent in peak year 2011. With largest decile the ratio was just one-hundredth from that at the same year, and even between Decile 1 and 2 the difference was already notable. It was also proved

that smaller firms face more increase those fees as well, with is in line with the observation where audit fees for larger firms were decreasing after year 2004. That is, from all empirical results it was clearly visible that the bigger the firm, the smaller the relative audit fee. All results thus supported the initial assumption made with hypothesis development, where smaller firms were expected to face higher audit fees as well as more increase in those fees over time.

From sensitivity analysis few important observations emerged as well. Firstly, when total fees and non-audit fees were reviewed besides pure audit fees, it was clearly observable that only audit fees were increased. Non-audit fees were mostly decreased, which means that if total fees were increased, it was mainly coming from audit fees. Natural explanation for decreased non-audit fees would be SOX, because it restricted the providence of non-audit services. However, it was interesting to notice that especially with BIG4-auditors, non-audit fees started to decline way before SOX was implied, and non-audit fees reduced only minorly post-SOX. In addition, before SOX came into force, BIG4-firms offered as much audit services as non-audit services, when the fee ratios were almost at same level. After SOX, the portion of non-audit services was at low level, and audit fees represented majority of audit firms' fees. Yet, if SOX prohibited to offer non-audit services and the proportion decline because of that, why non-audit fees reduced already before SOX came into effect? I wasn't able to find one simple explanation for that. Furthermore, SOX seemed to have had much more impact on non-BIG4 auditors than to BIG4-auditors. In fact, with BIG4 audit fees and total fees remained rather stable during the whole investigation period, and only non-audit fees declined, but even them pre-SOX. On the contrary, audit fees and total fees increased remarkably for non-BIG4 auditors during 2001-2005, and non-audit fees declined, but clearly less than with BIG4 firms. This result indicated that the increase that was observable with complete sample, was coming from non-BIG4 firms' audit fees, not from all audit providers. The last main finding relates to BIG4 auditors as well, when it was found that BIG4-premium existed, but only for small firms. Bigger firms had lower relative fees even when audited by BIG4 auditor. That is interesting, when usually all factors affecting audit fee are positively correlated with client size. Despite that, Decile 1 had 76 times higher relative audit fee than Decile 10 when regarding BIG4 clients.

When reviewing prior literature, there wasn't that much research about the appropriate level of audit fees or what is the role of audit quality. Also, studies regarding audit quality have had incoherent results, and there's no consensus about factors that improve the quality and factors that weaken it.

For example, several authors such as Johnson (2002), Myers (2003) and Francis (2004) reported that SOX includes unnecessary regulation, which doesn't serve its initial purpose. For instance, auditor tenure wasn't reducing audit quality according to them as it was generally believed. When audit quality is extremely difficult to measure objectively, and when we do not know from prior research the optimal level of audit quality, it is questioned whether audit fees compensate the quality level, especially if audit fees are considerably high. Is there too much audit quality resulting too high audit fees? Based on results from empirical tests, audit fees increased mainly during SOX implement, so it is reasonable to assume that at least partly the increase was due of improved audit quality. Especially when the impact of SOX seemed to be more powerful for non-BIG4 auditors, it may implicate that their audit quality increased, when it could expect to be at lower level pre-SOX when compared to BIG4 auditors. However, when BIG4 auditor fees remained rather same despite the SOX, it may also indicate that implement costs were simply much higher for smaller auditors and it required more effort from them, and for that reason fees went up only for non-BIG4 auditors. When analysis of relative audit fees suits poorly for evaluating audit quality, SOX's benefits remain unclear.

This study contributes to prior literature and research at least in four ways. First, outcomes from empirical tests supported for example Audit Analytics' (2014) and Asthana et al. (2009) results, that audit fees have increased remarkably during the investigation period. Every test made in chapter six supported the assumption that relative fees have went up. Related to this, results are also in line with Audit Analytics' (2014), Raghunandan & Rama's (2006) as well as with Francis' (2004) studies, where SOX was seen as main reason behind increased audit fees. From time series diagrams it was visible that with every sample despite the client size, the biggest increase was between years 2001-2005 – the time that SOX would have had the most impact. In addition, results considering different deciles suggested that smaller firms pay relatively more audit fees than bigger firms do. Francis (2004), Audit Analytics (2014) and Iliev (2010) all got similar results, that is, smaller firms face relatively higher audit fee levels. Lastly, results from this study supported the assumption of BIG4-premium existing only for small clients, as Choi et al. (2008) and Francis & Simon (1987) suggested. From sensitivity analysis it was clearly visible that premium fees were directed only for smaller clients, and that larger clients had relative fees close to zero. Thus, all results were in line with previous studies and offered additional evidence and proof for those results being valid.

What comes to limitations of this study, the first one is that regression models lean on assumption of ceteris paribus. For that reason, models cannot consider every possible aspect, and results are based on presumption that all other relevant factors outside the model are held fixed. This should be noted especially with simple regression models. The second limitation is the possibility for multicollinearity, but is should be emphasized that this considers only Model (3), where multiple regression was used, and furthermore, it is highly unlikely that those explanatory variables would be perfectly correlated to each other. For that reason, the basic assumption is that there's no multicollinearity regarding Model (3). The third and fourth limitations relate to data used in the study. Even though data was adjusted before empirical tests, it may still contain errors, incorrect information or outliers. With data modifications all the blanks and possible outliers for example were removed, but there's still possibility that remaining data is imperfect. However, the source of the data is reliable, and after several data adjustments, it should suit adequately for the purposes of this study. The third and last limitation is that the data includes only companies that are based in U.S., SEC registrants, are publicly listed and traded, and have done electronic filing during 2000-2017. Thus, results are poorly generalizable for private companies and outside of United States, even though Canadian and foreign companies were included in sensitivity analysis.

There are several possibilities for further research around this topic. For example, it could be interesting to study more thoroughly, how large proportion of firms would eventually turn from unprofitable to profitable, if audit fees would be lowered, or removed entirely. Another research topic could be price discussions between audit firms and their clients, and especially power issues during negotiations. How unilaterally audit firms can assess the fee level, and when the client is big and important enough, that it affects the final price of the audit? The pricing of audit alone would offer numerous research problems as well, when it could be examined how e.g. tenure or changes in the client's operational environment affect the asked audit fee. Additionally, more accurate research about the effects of SOX and Great Recession could be made, for example, what was the main reason behind fees' increase starting from year 2002 due SOX. Was it because of additional audit work and effort, increased risks or because audit quality improved? Or was it possibly a combination of these? Also, why the level of non-audit fees decreased mainly before SOX? Lastly, one interesting research topic could also be the BIG4-premium when regarding smaller clients. It would be generally useful information to know more accurately, what client size triggers the BIG4-premium, and what are the true reasons behind that.

References

Acharya, V., Philippon, T., Richardson, M. & Roubini, N., 2009. The Financial Crisis of 2007-2009: Causes and Remedies. *New York University Salomon Center.* Vol. 18 No. 2, pp. 89.

Ashbaugh, H., LaFond, R. & Mayhew, B.W. 2003. Do Non-audit Services Compromise Auditor Independence? Further Evidence. *The Accounting Review*. Vol. 78 No. 3, pp. 611-639.

Ashbaugh-Kaife, H., Collins, D.W. & Kinney, W.R. 2007. The discovery and reporting of internal control deficiencies prior to SOX-mandated audits. *Journal of Accounting and Economics*. Vol. 44 No1-2, pp. 166–192.

Asthana, S., Balsam, S., Kim, S., 2009. The effect of Enron, Andersen, and Sarbanes-Oxley on the US market for audit services. *Accounting Research Journal*. Vol. 22 No. 1, pp. 6-7.

Beatty, R.P. 1989. Auditor Reputation and the Pricing of Initial Public Offerings. *The Accounting Review.* Vol. 64 No. 4, pp. 707.

Chambers, D. & Payne, J.L. 2011. Audit Quality and Accrual Persistence: Evidence from the Pre- and Post-Sarbanes-Oxley Periods. *Managerial Auditing Journal*. Vol. 26 No. 5, pp. 437-456.

Chang, S., Tsai, C., Shih, D. & Hwang, C. 2008. The development of audit detection risk assessment system: Using the fuzzy theory and audit risk model. *Expert Systems with Applications*. Vol. 35 No. 3, pp. 1053-1067.

Choi, J., Kim, J., Liu, X. & Simunic, D.A. 2008. Audit pricing, legal liability regimes, and Big 4 premiums: Theory and cross-country evidence. *Contemporary Accounting Research*. Vol. 25 No. 1, pp. 55, 84.

Choi, J., Kim, J. & Zang, Y. 2010. Do Abnormally High Audit Fees Impair Audit Quality? *Auditing: A Journal of Practice and Theory*. Vol. 29 No. 2, pp. 115-140.

Collins, D., 2016. Arthur Andersen – American company. *Encyclopædia Britannica.* Available at: https://www.britannica.com/topic/Arthur-Andersen. Referenced 15.11.2018.

Craswell, A., Stokes, D.J. & Laughton, J. 2002. Auditor independence and fee dependence. Journal of Accounting and Economic. Vol. 33 No. 2, pp. 253-275.

DeAngelo, L.E. 1981. Auditor Size and Audit Quality. *Journal of Accounting and Economics*. Vol. 3 No. 3, pp. 197.

DeFond, M.L., Raghunandan, K. & Subramanyam, K.R. 2002. Do Non-Audit Service Fees Impair Auditor Independence? Evidence from Going Concern Audit Opinions. *Journal of Accounting Research*. Vol. 40 No. 4. pp. 1248.

Eilifsen, A., Messier, W.F., Glover, S.M., Prawitt, D.F., 2014. Auditing & Assurance services. 3rd international edition. *McGraw-Hill Education UK*. pp. 6-7; 186-187.

Eisenhardt, K.M. 1989. Agency Theory: An Assessment and Review. *The Academy of Management Review*. Vol. 14 No. 1, pp. 57-74.

Ettredge, M., Fuerherm, E.E. & Li, C., 2014. Fee pressure and audit quality. *Accounting, Organizations and Society.* Vol. 39 No. 4, pp. 249, 260.

Felix, W.L. JR., Gramling, A.A. & Maletta, M.J. 2001. The Contribution of Internal Audit as a Determinant of External Audit Fees and Factors Influencing This Contribution. *Journal of Accounting Research.* Vol. 39 No. 3, pp. 513-514, f528-530.

Ferguson, A., Francis, J.R. & Stokes, D.J. 2003. The Effects of Firm-Wide and Office-Level Industry Expertise on Audit Pricing. *The Accounting Review*. Vol. 78 No. 2, pp. 430.

Financial Executives International (FEI). 2007. FEI Survey: Average 2007 SOX Compliance Cost $1.7 Million. *Financial Executives International*. Available at: https://web.archive.org/web/20110714064622/http://fei.mediaroom.com/index.php?s=43&item=204. Referenced 15.11.2018.

Firth, M. 1997. The Provision of Non-Audit Services and The Pricing of Audit Fees. *Journal of Business Finance & Accounting*. Vol. 24 No. 3 & 4, pp. 512.

Francis, J.R. 1984. THE EFFECT OF AUDIT FIRM SIZE ON AUDIT PRICES. A Study of the Australian Market. *Journal of Accounting and Economics.* Vol. 6 No. 2, pp. 133-151.

Francis, J.R. 2004. What do we know about audit quality. *The British Accounting Review*. Vol. 36, pp. 345–368.

Francis, J.R. & Simon, D.T. 1987. A Test of Audit Pricing in the Small-Client Segment of the U. S. Audit Market. *The Accounting Review.* Vol. 62 No. 1, pp. 148-156.

Francis, J.R. & Stokes, D.J. 1986. Audit Prices, Product Differentiation, and Scale Economies: Further Evidence from the Australian Market. *Journal of Accounting Research.* Vol. 24 No. 2, pp. 383-393.

Francis, J.R. & Yu, M.D. 2009. Big 4 Office Size and Audit Quality. *The Accounting Review*. Vol. 84, No. 5, pp. 1549.

Frankel, R.M., Johnson, M.F. & Nelson, K.K. 2002. The Relation between Auditors' Fees for Nonaudit Services and Earnings Management. *The Accounting Review.* Vol. 77, Supplement: Quality of Earnings Conference (2002), pp. 71-105.

Gates, S.K., Lowe, J.D. & Reckers, P.M.J., 2007. Restoring public confidence in capital markets through auditor rotation. *Managerial Auditing Journal.* Vol. 22 No. 1, pp. 5-6.

Ghosh, A. & Moon, D. 2005. Tenure and Perceptions of Audit Quality. *The Accounting Review*. Vol. 80 No. 2, pp. 585-612.

Gul, F.A. 1991. Size of Audit Fees and Perceptions of Auditors' Ability to Resist Management Pressure in Audit Conflict Situations. *Abacus*. Vol. 27 No. 2, pp. 163.

Gul, F.A., Fung, S. & Jaggi, B. 2009. Earnings quality: Some evidence on the role of auditor tenure and auditors' industry expertise. *Journal of Accounting and Economics.* Vol. 47 No. 3, pp. 265–268.

Gunny, K., Krishnan, G. & Zhang, T. 2007. Is Audit Quality Associated with Auditor Tenure, Industry expertise, and fees? Evidence from PCAOB Opinions. *SSRN.* Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1015089. pp. 30.

Hay, D.C. 2017. Audit fee Research on Issues Related to Ethics. *Current Issues in Auditing. American Accounting Association.* Vol. 11 No. 2, pp. A4.

Hogan, C.E & Wilkins, M.S. 2008. Evidence on the Audit Risk Model: Do Auditors Increase Audit Fees in the Presence of Internal Control Deficiencies? *Contemporary Accounting Research*. Vol. 25 No. 1, pp. 219-221, 236

Hoitash, R., Markelevich, A. & Barragato, C.A. 2007. Auditor fees and audit quality. *Managerial Auditing Journal.* Vol. 22 No. 8, pp. 761-786.

Holm, C. & Zaman, M., 2012. Regulating audit quality: Restoring trust and legitimacy. *Accounting Forum*. Vol. 36 No. 1, pp. 51, 61.

Houston, R.W., Peters, M.F. & Pratt, J.H. 1999. The Audit Risk Model, Business Risk and Audit-Planning Decisions. *The Accounting Review*. Vol. 74 No. 3, pp. 284.

Iliev, P. 2010. The Effect of SOX Section 404: Costs, Earnings Quality, and Stock Prices. *The Journal of Finance*. Vol. 65 No. 3, pp. 1166, 1193.

Johnson, V.E., Khurana, I.K. & Reynolds, J.K., 2002. Audit-Firm Tenure and the Quality of Financial Reports. *Contemporary Accounting Research*. Vol. 19 No. 4, pp. 641, 655.

Kenton, Will. 2019. Dodd-Frank Wall Street Reform and Consumer Protection Act. *Investopedia.* Available at: https://www.investopedia.com/terms/d/dodd-frank-financial-regulatory-reform-bill.asp Referenced 16.5.2019.

Kinney W.R. Jr., Palmrose, Z. and Scholz, S. 2004. Auditor Independence, Non-Audit Services, and Restatements: Was the U.S. Government Right? *Journal of Accounting Research*. Vol. 42 No. 3. pp. 563-565.

Kohlbeck, M., Mayhew, B.W., Murphy, P., Wilkins, M.S. 2010. Competition for Andersen's Clients. *Contemporary Accounting Research*. Vol. 25 No. 4, pp. 1100.

Lim, C. & Tan, H. 2008. Non-audit Service Fees and Audit Quality: The Impact of Auditor Specialization. *Journal of Accounting Research*. Vol. 46 No. 1, pp. 199-246.

Myers, J.N., Myers, L.A. & Omer, T.C. 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, pp. 796.

O'Keefe, T.B., Simunic, D.A. & Stein, M.T., 1994. The Production of Audit Services: Evidence from a Major Public Accounting Firm. *Journal of Accounting Research*. Vol. 32 No. 2, pp. 252.

Oppel, R. & Eichenwald, K., 2002. Enron's Collapse: The Overview; Arthur Andersen Fires an Exectuive for Enron Orders. *The New York Times*. Available at: https://www.nytimes.com/2002/01/16/business/enron-s-collapse-overview-arthur-andersen-fires-executive-for-enron-orders.html. Referenced at 15.11.2018.

Palmrose, Z. 1986. Audit Fees and Auditor Size: Further Evidence. *Journal of Accounting Research*. Vol. 24 No. 1, pp. 108-109.

Palmrose, Z. 1988. 1987 Competitive Manuscript Co-Winner: An Analysis of Auditor Litigation and Audit Service Quality. *The Accounting Review*. Vol. 63 No. 1, pp. 55-73.

Pong, C.M. and Whittington, G. 1994. The Determinants of Audit Fees: Some Empirical models. *Journal of Business Finance & Accounting.* Vol. 21 No. 8, pp. 1072.

Prowse Chowne LLP Team, 2015. When do Canadian Companies Need To Be American SOX Compliant. *Business Lawyer Edmonton, Canadian Tax Attorney.* Available at: https://prowsechowne.com/when-do-canadian-companies-need-to-be-american-sox-compliant/. Referenced 13.12.2018.

Raiborn, C., Schorg, C.A. & Massoud, M. 2006. Should auditor rotation be mandatory? *The Journal of Corporate Accounting & Finance.* Vol. 17 No. 4, pp. 41.

Scott, W.R. 2014. Financial Accounting Theory. 7th edition. *Pearson*. pp. 8-9.

Segal, T., 2018. Enron Scandal: The Fall of a Wall Street Darling. *Investopedia, LLC.* Available at: https://www.investopedia.com/updates/enron-scandal-summary/. Referenced 15.11.2018.

Simunic, D.A., 1980. The Pricing of Audit Services: Theory and Evidence. *Journal of Accounting Research*. Vol. 18 No. 1, pp. 189.

SOX-online, 2018. Section 201 – Prohibited Auditor Activities. Available at: http://www.sox-online.com/key-sections/section-201-prohibited-auditor-activities/. Referenced 21.11.2018.

Tanyi, P., Raghunandan, K. & Barua, A. 2010. Audit Report Lags after Voluntary and Involuntary Auditor Changes. *Accounting Horizons.* Vol. 24 No. 4, pp. 674.

The CPA Journal, 2016. Have Audits Become Too Inefficient And Expensive? *The CPA Journal – The Voice of the Profession.* Available at: https://www.cpajournal.com/2016/02/01/audits-become-inefficient-expensive/. Referenced 17.12.2018.

Uang, J., Citron, D.B., Sudarsanam, S. & Taffler, R.J. 2006. Management Going-concern Disclosures: Impact of Corporate Governance and Auditor Reputation. *European Financial Management*. Vol. 12 No. 5, pp. 790-795.

Wooldridge, J.M., 2012. Introductory Econometrics A Modern Approach. 5th edition. *Michigan State University*. pp. 12, 22.

Appendices

Appendix A. Data distribution to deciles

Decile	*N*
Decile 1	12,380
Decile 2	12,389
Decile 3	12,391
Decile 4	12,389
Decile 5	12,386
Decile 6	12,393
Decile 7	12,391
Decile 8	12,388
Decile 9	12,391
Decile 10	12,382
Total	123,880

Appendix B. Frequency of observations by fiscal years.

Fiscal Year	N
2000	3 969
2001	6 161
2002	8 201
2003	8 934
2004	9 003
2005	8 944
2006	8 374
2007	7 394
2008	7 410
2009	6 895
2010	6 557
2011	6 202
2012	5 931
2013	5 927
2014	5 951
2015	6 416
2016	6 138
2017	5 473
Total	**123 880**

Appendix C. Data distribution to quintiles.

Quintile	N
1	24,769
2	24,780
3	24,779
4	24,779
5	24,773
Total	**123,880**

Appendix D. Mean values of AF2SALES during 2000-2017. Quintiles 1-5.

Year	Q1	Q2	Q3	Q4	Q5
2000	0.018	0.004	0.002	0.001	0.000
2001	0.017	0.004	0.002	0.001	0.000
2002	0.024	0.005	0.002	0.001	0.001
2003	0.030	0.005	0.003	0.001	0.001
2004	0.031	0.007	0.004	0.002	0.001
2005	0.033	0.007	0.004	0.003	0.001
2006	0.031	0.007	0.004	0.002	0.001
2007	0.033	0.007	0.004	0.002	0.001
2008	0.034	0.006	0.004	0.002	0.001
2009	0.034	0.007	0.004	0.002	0.001
2010	0.037	0.007	0.004	0.002	0.001
2011	0.037	0.007	0.003	0.002	0.001
2012	0.036	0.007	0.003	0.002	0.001
2013	0.038	0.007	0.004	0.002	0.001
2014	0.039	0.007	0.004	0.002	0.001
2015	0.036	0.008	0.004	0.002	0.001
2016	0.035	0.008	0.004	0.002	0.001
2017	0.033	0.006	0.003	0.002	0.001

Appendix E. Yearly median values of audit fees by complete sample.

Year	N	Median for AF2SALES
2000	3,969	0.00138
2001	6,161	0.00140
2002	8,201	0.00175
2003	8,934	0.00202
2004	9,003	0.00265
2005	8,944	0.00276
2006	8,374	0.00266
2007	7,394	0.00266
2008	7,410	0.00263
2009	6,895	0.00287
2010	6,557	0.00281
2011	6,202	0.00266
2012	5,931	0.00259
2013	5,927	0.00263
2014	5,951	0.00271
2015	6,416	0.00272
2016	6,138	0.00267
2017	5,473	0.00250
Total	123,880	

Appendix F. Yearly mean and median values for total fees by complete sample.

Year	N	Mean for TF2SALES	Median for TF2SALES
2000	3,969	0.0090	0.0028
2001	6,161	0.0078	0.0027
2002	8,201	0.0088	0.0028
2003	8,934	0.0100	0.0029
2004	9,003	0.0111	0.0035
2005	8,944	0.0113	0.0035
2006	8,374	0.0105	0.0032
2007	7,394	0.0108	0.0032
2008	7,410	0.0109	0.0031
2009	6,895	0.0111	0.0034
2010	6,557	0.0117	0.0034
2011	6,202	0.0114	0.0032
2012	5,931	0.0112	0.0032
2013	5,927	0.0115	0.0032
2014	5,951	0.0119	0.0033
2015	6,416	0.0116	0.0033
2016	6,138	0.0112	0.0032
2017	5,473	0.0105	0.0030
Total	**123,880**		

Appendix G. Mean values of AF, NAF and TF. BIG4 auditors.

Year	N	mean_AF2SALES	mean_NAF2SALES	mean_TF2SALES
2000	2,626	0.0040	0.0046	0.0086
2001	4,065	0.0041	0.0030	0.0071
2002	5,920	0.0048	0.0020	0.0068
2003	6,552	0.0052	0.0018	0.0070
2004	6,334	0.0060	0.0016	0.0076
2005	5,926	0.0055	0.0011	0.0066
2006	5,477	0.0053	0.0010	0.0063
2007	4,710	0.0057	0.0010	0.0067
2008	4,642	0.0052	0.0009	0.0061
2009	4,319	0.0058	0.0010	0.0069
2010	4,073	0.0060	0.0011	0.0071
2011	3,909	0.0056	0.0011	0.0066
2012	3,884	0.0057	0.0011	0.0068
2013	3,883	0.0063	0.0010	0.0073
2014	3,865	0.0059	0.0011	0.0070
2015	4,268	0.0059	0.0010	0.0070
2016	4,075	0.0062	0.0010	0.0072
2017	3,651	0.0061	0.0012	0.0073
Total	**82,179**			

Appendix H. Mean values of AF, NAF and TF. Non-BIG4 auditors.

Year	N	mean_AF2SALES	mean_NAF2SALES	mean_TF2SALES
2000	1,343	0.0066	0.0033	0.0099
2001	2,096	0.0061	0.0029	0.0090
2002	2,281	0.0113	0.0026	0.0140
2003	2,382	0.0157	0.0027	0.0184
2004	2,669	0.0167	0.0026	0.0193
2005	3,018	0.0176	0.0028	0.0205
2006	2,897	0.0162	0.0021	0.0183
2007	2,684	0.0158	0.0023	0.0182
2008	2,768	0.0167	0.0021	0.0188
2009	2,576	0.0162	0.0021	0.0182
2010	2,484	0.0169	0.0022	0.0191
2011	2,293	0.0175	0.0020	0.0195
2012	2,047	0.0176	0.0019	0.0195
2013	2,044	0.0176	0.0019	0.0195
2014	2,086	0.0189	0.0021	0.0210
2015	2,148	0.0184	0.0023	0.0207
2016	2,063	0.0173	0.0019	0.0192
2017	1,822	0.0151	0.0018	0.0170
Total	**41,701**			

Appendix I. Descriptive statistics for data including only Canadian companies.

Variable	*N*	*Mean*	*Std Dev*	*Minimum*	*Median*	*Maximum*
Revenue	3,846	2,359,665,926	5,650,256,193	100,000	174,346,000	50,069,000,000
Audit Fees	3,846	1,694,385	4,100,305	835	418,751	59,500,000
Non-Audit Fees	3,846	534,928	1,624,585	0	105,050	30,100,000
Total Fees	3,846	2,229,313	5,261,529	835	580,230	72,700,000
Audit fees/Sales	3,846	0.01289	0.02606	0.00000	0.00268	0.19021
Non-audit fees/Sales	3,846	0.00314	0.00964	0.00000	0.00037	0.16644
Total fees/Sales	3,846	0.01603	0.03088	0.00002	0.00362	0.19796
BIG4	3,846	0.74077	0.43827	0.00000	1.00000	1.00000

Appendix J. Descriptive statistics for data where including only foreign companies

Variable	*N*	*Mean*	*Std Dev*	*Minimum*	*Median*	*Maximum*
Revenue	12,467	9,156,886,633	29,358,265,730	100,000	469,390,000	475,778,000,000
Audit Fees	12,467	3,778,896	8,535,182	500	769,964	90,200,000
Non-Audit Fees	12,467	1,344,903	4,517,137	0	99,000	114,600,000
Total Fees	12,467	5,123,799	11,679,744	500	985,310	131,315,000
Audit fees/Sales	12,467	0.0068	0.0178	0.0000	0.0015	0.1990
Non-audit fees/Sales	12,467	0.0012	0.0051	0.0000	0.0001	0.1599
Total fees/Sales	12,467	0.0080	0.0200	0.0000	0.0020	0.1990
BIG4	12,467	0.7524	0.4316	0.0000	1.0000	1.0000

Appendix K. Yearly mean and median values for Canadian companies.

Year	N	mean_AF2SALES	median_AF2SALES
2000	24	0.0190	0.0065
2001	48	0.0186	0.0053
2002	244	0.0118	0.0022
2003	308	0.0105	0.0023
2004	346	0.0127	0.0030
2005	338	0.0156	0.0040
2006	275	0.0180	0.0041
2007	215	0.0191	0.0036
2008	238	0.0175	0.0035
2009	237	0.0126	0.0033
2010	232	0.0116	0.0028
2011	221	0.0117	0.0022
2012	199	0.0092	0.0021
2013	198	0.0089	0.0019
2014	194	0.0100	0.0019
2015	200	0.0103	0.0019
2016	197	0.0105	0.0019
2017	132	0.0099	0.0022
Total	3,846		

Appendix L. Yearly mean and median values for foreign companies.

Year	N	mean_AF2SALES	median_AF2SALES
2000	58	0.0076	0.0016
2001	121	0.0064	0.0011
2002	644	0.0045	0.0008
2003	833	0.0054	0.0008
2004	857	0.0058	0.0010
2005	866	0.0064	0.0012
2006	745	0.0069	0.0015
2007	681	0.0076	0.0017
2008	816	0.0063	0.0019
2009	836	0.0061	0.0019
2010	847	0.0055	0.0018
2011	808	0.0065	0.0017
2012	753	0.0067	0.0017
2013	765	0.0074	0.0018
2014	764	0.0085	0.0018
2015	764	0.0082	0.0018
2016	767	0.0084	0.0018
2017	542	0.0101	0.0020
Total	12,467		