The relationship between audit fees and audit opinions in the United States of America

Rawi Chandrikasingh, 558797

Supervisor: Agapi Thaleia
Second assessor: Nico Lehman

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Abstract

This study tries to determine whether the amount charged for auditing services by auditors can have an impact on the result of the audit opinion issued at the end. By investigating data obtained on publicly traded companies from the last decade in the USA, the study looks if there is a correlation between audit fees and audit opinions. The research applies logistic regression analysis and uses variables such as audit fees, non-audit fees, company size, revenue streams, and financial health indicators such as cash flow and loss. The findings show a significant negative association between higher audit fees and receiving unqualified opinions, suggesting that higher audit fees, can result in less favorable audit outcomes. For non-audit fees, the conclusion of a relationship— positive or negative— was not found. The study also shows that companies that incurred losses are less likely to receive an unqualified audit opinion. This thesis contributes to the literature on audit quality and audit fees, supplying insights for auditors, regulators, and stakeholders about the financial involvement of audit services and their impact on the integrity of financial reporting.

Keywords*: Audit fees, audit opinions, audit quality, financial reporting, regression analysis, United States.*

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1. Introduction

Stakeholders are usually interested in how well a company does financially, by looking at audit reports as well as financial reports of the past years the stakeholder can gain confidence in the company. When financial statements are verified independently this can add value to the auditor's work (Habib, 2013). The audit report which is made by the auditor contains an audit opinion which is formed at the end. The opinions are used as important factors of trust and transparency. The audit opinion at the end can contain one of the four results, these are as follows disclaimed, qualified, adverse, or unqualified also known as clean (Audit Reporting: The 4 Types of Audit Opinions & Reports, z.d.). The way stakeholders or customers make investment choices can be influenced by looking at the financial reports of companies and comparing these with each other or with previous years. This thesis plans to investigate factors and reasons that have a relationship with audit opinion with the focus being mainly on audit fees. During the audit process, auditors play an important role as they must evaluate and examine the accuracy and integrity of the financial statements of their clients on their own (Antle, 1984). One of the key parts of the auditing process is the composition of the audit fees, which are made by the client companies to auditors for their delivered audit services. These audit fees auditors charge can change due to the complexity, scope, and risk associated with the audit engagement. If the fees paid to auditors are large, the auditor may increase the effort, resulting in higher audit quality (DeAngelo, 1981).

Alternatively, if the fees paid to auditors are enormous, especially those that are related to non-audit services the so-called non-audit fees, this could bring up a problem in this case, auditors can become more dependent on their clients in an economic sense (Simunic, 1984). Another perspective was also explained by Xie, Cai, & Ye, (2010) who looked into abnormal audit fees and how these fees lead to a different audit opinion at the end of the audit process. Other studies have highlighted problems in relation to higher audit fees, these include the auditor independence being compromised and more favorable audit opinions being given to uphold certain relationships with audit clients (Choi, Kim, Liu, & Simunic, 2008). Awareness of these fees is important to stakeholders and other users of financial information to ensure the objectivity and integrity of these reports. To see if these audit fees have any relationship with companies getting an unqualified opinion, the main research question of this study is formed:

"In which way can audit fees have an influence on receiving a unqualified audit opinion?"

To answer the central research question, the size of audit fees of companies in the United States of America in will be looked into, and their relationship with the audit opinion. These results will be explained by the following sub-questions:

1. *What are audit fees and what is an unqualified audit opinion?*
2. *What are non-audit fees and why are they important for companies?*
3. *Do financial health indicators serve a specific role between audit fees and audit opinions?*

The structure of the thesis is as follows; first, the introduction section will be provided, afterward a literature review will be done to analyze previous research investigating if there is a relationship between audit fees and audit quality as well as the formed hypotheses that result from this. Next, the data sources will be discussed, which include the data selection process as well as the data source used, screening measurements done to the data, and transformations of certain data parts. After this, the methodology section will explain in detail which variables are used in the mathematical regression function and how this is formed to examine the relationship between auditor fees and audit opinion with the variables. Finally, the findings section will show the results from the regression analysis, using descriptive analyses and tables to clarify the data and show the results regarding the hypotheses that were tested. The discussion and conclusion section will discuss the results and conclusions found by our study, as well as limitations as well as future research suggestions.

2. Literature review & hypothesis

2.1 Audit opinions

External audits are used to inspect and oversee the financial reports of companies and are a key part of the corporate world (Habib, 2013). They are used to provide fairness of the financial statements, and at the end of the audit an opinion is given by the auditor. An unqualified opinion can most of the time imply that a financial report is honest and free of material falsification or misstatements. For the management of the company that is being audited, this opinion is seen as important as it can boost confidence in the financial statements to the stakeholders and users of these statements. Audit opinions are not only limited to the precision and accuracy of financial statements and are free from material errors, but they also include judgment into the growth of the company also known as the so-called going concern. A negative going concern can be a problem as stated by auditors, this is one of the most difficult and complicated decisions given by an auditor (Nugroho, & Fitriany, 2019).

2.1.1 Audit fees and qualified audit opinions

A qualified opinion is given when the information within the financial statements is not consistent or contains errors that are significant but not common. In previous research, it is shown that a relationship between audit fees and the possibility of receiving a qualified audit opinion exists. Choi et al. (2008) state that if audit fees of companies are higher than normal, they can most of the time result in lower chances of getting qualified opinions.

2.1.2 Size of audit fees and probability of unqualified audit opinions

Fees that are paid for audit services provided by auditors so called audit fees, can be influenced by different factors, these include how big the client is in size. The size of the company can be used as a measurement for the total amount of audit services needed to complete the audit process in this case meaning that larger clients may require more work necessary for the audit process (Pong & Whittington, (1994). If there were no misstatements found in the financial statements, the company would get an unqualified opinion. The chances of a company receiving an unqualified opinion by the influence of audit fees is studied by several studies. Simunic (1980) shows that a positive relationship between audit fees and audit quality exists, which means that higher audit fees could lead to more extensive audit work, resulting companies a higher likelihood of getting

unqualified opinions contrary to Choi et al. (2018). This leads us to the first hypothesis of this study is:

Hypothesis 1: A positive correlation exists between audit fees and companies receiving an unqualified audit opinion.

2.2 Non-audit fees

Audit companies also provide non-audit services some examples of these services can include tax consulting advice given to companies, management consultation advice, and giving recommendations on various international aspects of the business (Firth, 1997). Non-audit services has seen a growing trend worldwide and more and more audit firms are delivering these services in the most recent years. This can be seen by the fact that over 80% of the companies in the sample of Palmrose (1986) had also acquired non-audit services provided by their auditor. These fees charged by the auditors for the non-audit services are so-called non-audit fees.

2.2.1 Non-audit fees and audit opinions

The non-audit services bring up worries of a possible conflict of interest being present (Kinney Jr, Palmrose, & Scholz, 2004). The argument by Frankel, Johnson, & Nelson (2002) explains that if non-audit fees are on the higher side the auditor his reputation could take big hits of damage in terms of independence, which can in turn lead to audit opinions given in a more positive direction. If there is no auditor independence, then the opinion can be biased in favor of the client. Ashbaugh, LaFond & Mayhew (2003) show the opposite to this, they state that non-audit fees do not directly impact audit quality if precautions and measures are taken beforehand. With some studies pointing out that non-audit fees are negatively correlated with audit opinions, while other studies found no relationship the evidence is still mixed (Parkash, & Venable, 1993); (Raghunandan, Read, & Whisenant, 2003). To check if a relationship between non-audit fees and unqualified audit opinions exists, the second hypothesis of this study is formed:

Hypothesis 2: Non-audit fees are related with a higher chance of receiving an unqualified audit opinion for companies at the end of the audit process.

2.3 The size of a company & the role of financial health

To see how big a company is can be measured by looking at one of the crucial elements of the balance sheet namely total assets and number of sales the company makes in terms of revenue

(Jennings & Seaman, 1990). If these numbers are high this can mean that the company identifies as a large company, in this case the possibility of getting a going concern could then increase (Iatridis, 2018). This means that the company does not have any problem to keep on going as a business in terms of survival. Companies that have large number of sales are viewed as clients with lower level of risks, attracting lower audit fees. Firth (1985) states that if companies have financial problems this can be looked at auditors as having more risk, which could mean that efforts during the audit process should be increased by auditors, which in turn can lead to audit fees rising.

2.3.1 Financial health indicators and their impact

To check if companies are financially healthy many barometers can be looked at by the public, these include liquidity ratios to see if the company is liquid enough to pay off its short-term liabilities with available cash on balance, profitability ratios to see if the company is profitable, and other indicators. If the company is stable and profitable, people can look at these ratios to get a general understanding. Geiger & Raghunandan (2002) show that companies with high leverage and low liquidity have a higher risk of negative going concern issues such as liquidity problems. Auditors are demanded to increase their input to provide more accurate financial reporting diving deep into financial statements and trying to find misstatements.

2.3.2 Audit opinions and negative going concern

If auditors notice concerns regarding a company's capability to pay off their debt to creditors, they most likely can issue an adjusted audit opinion, these can include qualified, adverse, or disclaimer of opinion. The negative going concern audit opinion can be seen as a negative sign for a company in terms of survival. This information is necessary for investors and stakeholders, while going concern opinion shows that the company is in good condition and will most likely be able to survive, giving more confidence to stakeholders (Putra & Kawisana 2020). If a company has a unstable financial health it can lead to nt receiving a unqualified opinion at the end of the audit process, as financially unstable companies are more likely to receive a negative going concern (Kida, 1980). This could lead to receiving either a qualified, adverse, or disclaimer of opinion which forms the third and final hypothesis of this study:

Hypothesis 3: Companies with losses are less likely to receive an unqualified audit opinion due to the increased risk associated with their operations.

3. Data and sample selection

3.1. Description of data source

The data used in this study looks at the geographical location of the United States with the timeframe being January 1st 2014 to December 31st 2023. The most important variables of this study include audit opinions, audit fees , non-audit fees and other necessary financial data such as assets and revenue reports, which were retrieved from the data source Wharton Research Data Services (WRDS). Wharton Research Data Services is a data management and research platform that gives access to a wide variety of financial, economic, and business data. Within WRDS the vendor Audit Analytics was used and then the Audit Opinions section. The initial dataset downloaded from WRDS had a total count of 236,832 observations.

3.2 Sample selection & sample size

The data was screened, and removals were made, all the missing observations (blanks) were removed for all variables. For variables that were transformed the negative values and zero were also removed. The following data was removed; around 38.96% (66,347) of observations missed data in the audit fees variable and non-audit fees variable or resulted in zero. Meanwhile, 20.50% (48,557) had the same characteristics as the previously discussed variable. About 1.41% (3,344) of observations omitted data in the cash variable. Around 4.59% (326) of observations missed, were negative or had zero values in the total assets variable and prior total assets variable. As assets cannot be negative these were removed from the sample.

To create the return on assets (ROA) variable the data from net income and prior year assets was used. Additionally, 0.14% (334) of observations were excluded from the roa variable. Lastly, around 0.01% (25) of observations had missing values in the net income variable. The final sample after removing the previously discussed values consisted of 70,576 observations.

4. Methodology

4.1 Mathematical model specification

The three mathematical models used in this study are presented below.

First Model (1) is presented:

$$AuditOpinion = a_0 + a_1 LNAuditfees + a_2 LNAssets + a_3 LNRevenue + a_4 Cashflow + a_5 Big4 + \epsilon_i$$

The definition of the variables can be found in the appendix.

4.2 Dependent variable

This study uses the dependent variable Audit opinion, which is a binary variable equal to 1 for companies receiving an unqualified audit opinion and value equal to 0 otherwise.

4.3 Independent variable & other control variables

Apart from the dependent variable, there are other variables used in this study. The first one is independent variable used, Audit fees, which contains the total audit fees paid during the year. The variable is transformed by taking the natural logarithm to normalize the data. The expectation is that if clients are bigger in size they pay a higher fee per dollar in comparison to smaller clients in the industry (Palmrose, 1986). As size of mostly measured by total assets and revenue, the variable Assets and Revenue will be included in the model as control variables for the company's size. These variables are also transformed by taking the natural logarithm of the raw data to improve the linear relationship (Hay, Knechel, & Wong 2006). Many studies which were done in the United States of America market, stated that big auditing companies (Big Four) made audits that were proven to be of higher quality rather than other firms (DeAngelo, 1981). These four auditing companies will be added to the model as a binary variable Big4 (binary value equal to 1). The rest of the audit firms are classified as non-Big 4 (binary value equal to 0). As financial health is important for companies as seen by Firth (1985) the variable Cashflow will be added to the model which is a dummy variable with the following criteria, if the cash flow from operating activities is greater than zero, it equals the binary value equal to 1 and otherwise equals the binary value equal to 0 explaining negative cash flows result in a 0 as value.

For the second hypothesis, non-audit fees will be added to the model to see the effect of non-audit fees on audit opinion. The variable Non-audit fees is added which consist of total non-audit fees paid during the year by the client. The variable is transformed by taking the natural logarithm to normalize the data just as done to the previous variables Audit fees, Assets and Revenue. Meanwhile, Geiger and Raghunandan (2002) found small companies are more likely to receive a a negative going concern since they might experience liquidity issues. The loss variable is commonly used to measure the performance of a company (Hay, Knechel, & Wong 2006). This dummy variable Loss will be included in the second and third model to test for the financial health of the company. This variable holds a value of 1 if the net income is below zero and 0 if the net income is positive. The second model is presented below.

Model 2 :

$$AuditOpinion \ = \ a_0 + \ a_1 LNAuditfees + a_2 LNNonauditfeesa_2 + a_3 LNAssets + a_4 LNRevenue + a_5 Cashflow + a_6 Big4 + a_7 Loss + \epsilon_i$$

The definition of the variables can be found in the appendix.

To test the third hypothesis, Putra & Kawisana (2020) stated that auditors are more likely to issue a negative going concern for companies that have a low number on their balance sheet regarding profits. Hence, the control variable of Roa (Return On Assets) is added for the third model, which is defined as net income divided by total average assets and is entered as a profitability variable. This ratio can identify if a company is in better financial health regarding its returns on assets.

Model 3 :

$$AuditOpinion \ = \ a_0 + \ a_1 LNAuditfees + a_2 LNNonauditfeesa_2 + a_3 LNAssets + a_4 LNRevenue + a_5 Cashflow + a_6 Big4 \ + a_7 Loss + \ a_8 Roa + \epsilon_i$$

The definition of the variables can be found in the appendix.

4.4 Big 4 firm allocation

As seen in Table 2 in the Appendix, around 52,897 (74.96%) of the total 70,567 audit reports were done by Big 4 firms. The remaining little over 25 percent of firms were in this case non Big 4. The table demonstrates that the larger part, 31.64% was audited by the company PwC, while 27.61%

by EY. These two audit firms took over half of the total Big 4 audits share. The next Big 4 firm was Deloitte with a share of 24.03% of the total Big 4 audits and lastly KPMG with 17.28%.

4.5 Descriptive statistics

Table 3 below displays the descriptive statistics of the variables.

Table 3: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
AuditOpinion	70,567	0.91	0.28	0.00	1.00
LNAuditfees	70,567	13.54	1.50	5.91	18.37
LNNonauditfees	70,567	11.54	1.86	1.79	18.27
LNAssets	70,567	20.97	2.95	2.94	28.84
Cashflow	70,567	0.48	0.50	0.00	1.00
LNRevenue	70,567	19.26	2.93	0.00	27.49
Loss	70,567	0.35	0.48	735.00	1.00
Roa	70,567	57.96	24,278.69	-178413.90	6,446,074.00
Big 4	70,567	0.75	0.43	0.00	1.00

1) The definition of the variables can be found in the appendix.

The variable AuditOpinion had the following characteristics, 91.13% of companies received an unqualified audit opinion which indicates that the auditors have found no errors or concerns in the financial statements provided by the companies. 8.87% of companies received either a qualified audit opinion, adverse opinion or lastly a disclaimer of opinion. The variable "LNAuditfees", displayed a mean value of 13.54, with a standard deviation of 1.50. The "LNNonauditfees" variable showed a mean value of 11.54, with a standard deviation of 1.86. The mean of the "LNAssets" value is 20.97, with a slightly higher standard deviation of 2.95. It demonstrates big variability in the asset sizes across the sample. The "Cashflow" dummy variable has a mean of 0.48 and shows a standard deviation of 0.50. The mean of the "LNRevenue" variable is 19.26 and the standard deviation is 2.93, implying a wide area of values. The "Loss" dummy variable had a mean of 0.35 and a standard deviation of 0.48. indicating that less than half of the companies had a negative net income. The "Roa" (return on assets) variable showed a mean value of 57.96 with

a standard deviation of 24,278.69. The variable "Big4" displays a value of 1 if the audit was done by one of the Big4 firms. The binary variable indicates large part of the companies in the dataset, around 75%, had their audit done by one of these big4 firms with a standard deviation of 0.43.

4.6 Correlation table

The correlation coefficients among the variables are presented in Table 4 below. The dependent variable "AuditOpinion" shows a positive correlation with all other independent and control variables except for the variables Loss and Roa which have a negative correlation. This could imply that auditors might be more accurate when issuing opinions to companies that have a negative level of net income The Loss variable is negatively correlated with with all other variables. The Big 4 dummy variable is positively correlated with all variables except for the variables Loss and Roa which resulted in a negative correlation in this instance. This means that Big4 firms could issue negative going concerns to companies who had a loss on their balance sheet.

**Table 4: Correlation table for companies
in the United States of America**

Variable		1	2	3	4	5	6	7	8	9
1	AuditOpinion	1								
2	LNAuditfees	0.33*	1							
3	LNNonauditfees	0.26*	0.67*	1						
4	LNAssets	0.52*	0.62*	0.52*	1					
5	Cashflow	0.25*	0.47*	0.32*	0.15*	1				
6	LNRevenue	0.48*	0.79*	0.60*	0.81*	0.46*	1			
7	Loss	-0.38*	-0.20*	-0.31*	-0.53*	-0.22*	-0.44*	1		
8	Roa	-0.01*	-0.01	-0.00	-0.02*	-0.00	-0.01	-0.01	1	
9	Big4	0.39*	0.50*	0.37*	0.63*	0.07*	0.52*	-0.30*	-0.00	1

1) The definition of the variables can be found in the appendix.

*2) Note. * p < 0.05.*

4.7 Assumptions

First, one of the main assumptions of logistic regression is the appropriate structure of the outcome variable. Binary logistic regression requires the dependent variable to be binary. In this case, the dependent variable is binary, so this assumption holds.

Logistic regression also requires observation independence meaning that the observations should be independent of each other, as this study uses data from a 10-year period this assumption does not hold. This is due to the fact that the same companies are included in the dataset every year.

The third assumption of logistic regression is the linearity of independent variables and log odds. This analysis does not require the dependent and independent variables to be related linearly, it only requires that the independent variables are linearly related to the log odds. A scatter plot was made for the continuous variables LNAuditfees, LNNonauditfees, LNAssets and LNRevenue. The second scatter plot was made for the binary variables Cashflow, Big4 and Loss LNAuditfees, LNNonauditfees, LNAssets and LNRevenue. This is shown in Appendix Figure 1 and Figure 2. The figures display a linear relationship between the variables, meaning that this assumption holds.

The fourth assumption of a logistic regression is multicollinearity between the variables. Variance Inflation Factors (VIF) values which are beneath 10 are considered acceptable, meaning that multicollinearity in this logistic regression analysis is not a big concern in this case. The VIF values are presented in Table 5. The VIF values are below 10 suggesting that multicollinearity is not a big problem.

Table 5. VIF Values

Variable	VIF Value
LNRevenue	5.67
LNAssets	4.67
LNAuditfees	3.92
LNNonauditfees	1.95
Cashflow	1.74
Big4	1.73
Loss	1.61
Roa	1.00

1) The definition of the variables can be found in the appendix.

Finally, the last assumption of logistic regression is that it requires a large sample size. As this study uses a sample size of 70,576 this assumption is met.

5. Findings

5.1 Multiple regression analysis

This chapter displays the results of the logistic regression analysis from Model (1), Model (2) and Model (3) as described in section 4. Using a logistic regression is the most applicable choice as the dependent variable as well as most of the other variables used in the models are binary variables. The results are presented in Table 6, displaying all three models alongside each other. This provides a clear overview of how the outcome of the coefficients changed or stayed the same.

Table 6. Regression analysis relation between Audit fees and audit opinion

Dependent Variable = AuditOpinion

Variables	Model 1	Model 2	Model 3
LNAuditfees	-0.625***	-0.454***	-0.416***
	(0.024)	(0.026)	(0.026)
LNNonauditfees		-0.017	-0.016
		(0.014)	(0.014)
LNAssets	0.798***	0.713***	0.691***
	(0.015)	(0.016)	(0.016)
LNRevenue	0.140***	0.114***	0.118***
	(0.010)	(0.010)	(0.010)

Cashflow	1.502***	1.010***	1.104***
	(0.053)	(0.055)	(0.056)
Big4	0.626***	0.565***	0.619***
	(0.049)	(0.049)	(0.049)
Loss		-1.654***	-1.553***
		(0.065)	(0.064)
Roa			0.000***
			(0.000)
Intercept	-7.680***	-6.250***	-6.592***
	(0.221)	(0.233)	(0.236)
Observations	70,576	70,576	70,576
Psuedo R-Squared	0.513	0.532	0.531

1) The definition of the variables can be found in the appendix.

2) Standard errors are in parentheses

*3) * p<0.1; **p<0.05; ***p<0.01*

First, we would like to assess Hypothesis 1, which states that the size of audit fees potentially increases the probability of a company receiving an unqualified audit opinion. The results of Model (1) demonstrate that a lot of the independent variables have a significant positive correlation with the dependent variable, in this case AuditOpinion. The LNauditfees variable, has a significant negative effect with a coefficient of -0.625 as seen in Column 1 of Table 6. With a significance level of 1% there is a strong negative relationship between audit fees and Audit Opinion. This

implies that higher audit fees are affiliated with less favorable audit opinions and are -0.625 times less likely to receive a unqualified audit opinion.

For the remaining variables, variables associated with financial health or performance such as asset, revenue and cashflow constantly display positive coefficients with a significance level of 1%. The results propose a strong relationship between positive or favorable audit opinions and companies with high financial performances. The Big4 variable also resulted in a positive coefficient of 0.626, p<0.01 seen in Column 1 of Table 5 implying that companies audited by a big4 firm are 0.626 more likely to get a favorable audit opinion at the end. As the LNAuditfees variable displays a negative coefficient, the findings do not uphold the claim that higher audit fees can result in a higher likelihood of receiving an unqualified audit opinion in fact, it proposes the opposite in this case. The results given by the regression analysis display a significant negative relationship, therefore we reject Hypothesis 1.

The focus of the second hypothesis was non-audit fees. The hypothesis stated that higher non-audit fees potentially increase the likelihood of receiving an unqualified audit opinion. The results demonstrate that all the independent variables have a statistically significant correlation with AuditOpinion, except for Non-auditfees. The Non-auditfees variable displayed a negative insignificant coefficient of -0.017 as seen in Column 2 of Table 6. This because the p-value is higher than 0.05. This means that there is no significant relationship between Non-audit fees and Audit Opinion. Variables related to financial health or performance such as revenue and cashflow constantly display positive coefficients with a significance level of 1%. The variable asset shows the following, with a significance level of 1% the coefficient 0.713 as shown in Column 2 of Table 6. implies that companies with higher assets are 0.713 more likely to receive a unqualified audit opinion. The Auditfees variable also changed but still was negative and significant at a 1% significance level. Variables which have are related to the financial risk or liabilities burden of a company such as Loss displayed a negative coefficient of -1.654, p<0.01. This implies that companies who had losses are less likely to receive a favorable audit opinion. Auditors may see higher financial risk as a worry, which can result to more conservative audit opinions. It cannot be proven that higher non-audit fees are associated with a higher likelihood of receiving an unqualified audit opinion. The coefficients for LNNonauditfees are not statistically significant at

a 10%, 5% and 1% level, therefore we do not have enough supporting evidence for Hypothesis 2. Thus, we reject Hypothesis 2, as there is no significant relationship demonstrated.

Lastly, the third and final hypothesis, where the main objective was financial health in terms of losses. The hypothesis stated that higher companies with losses are less likely to receive an unqualified audit opinion due to the increased risk associated with their operations. The results demonstrate that all the independent variables have a statistically significant correlation with AuditOpinion, except for Non-auditfees just like seen before in Model 2. Variables related to the financial risk such as Loss displayed a negative coefficient of -1.553, $p<0.01$ as seen in Column 3 of Table 6. showing a slight change as well. This implies that companies who had negative net income (losses) are less likely to receive a favorable audit opinion. Variables related to financial health or performance such as revenue and cashflow constantly display positive coefficients with a significance level of 1%. These variables did have a slightly lower coefficient than before in the previous two models. The variable asset stayed positive, the coefficient displayed a value of 0.691, $p<0.01$. The Auditfees variable was also lower but still negative and significant at a 1% significance level. The return on assets (Roa) variable had a coefficient of 0.000 with a significance level of 1%. The effect was exceedingly small but positive in 4 decimal points 0.0004 in this case. Meaning that higher return on assets resulted in a 0.0004 more likelihood of getting an unqualified audit opinion. The findings strongly show a negative relationship between losses and receiving an unqualified audit opinion and supports Hypothesis 3. The evidence shows that indeed companies with losses are less likely to receive an unqualified audit opinion due to the larger risks associated with their operations, so we cannot reject Hypothesis 3.

6. Conclusion & discussion

6.1 Main Findings

The relation between audit fees, non-audit fees, financial health of companies and audit opinion outcomes was studied in this paper. The literature review previously discussed that a suggestion that audit fees positively correlate with an unqualified audit opinion is available. With regards to non-audit fees there was argued that they could lead to more positive audit opinions, or damage auditor independence with some studies suggesting the opposite. The financial health of companies was one of the key elements of the audit opinion as financially distressed companies could result into more work being done by the auditor and thus also lead to qualified opinions if these companies' incurred losses.

The results showed that companies who had higher audit fees are less likely to receive an unqualified opinion. This could be the result of higher risks associated with the companies leading to a qualified opinion. Another reason can be that the companies had financial trouble and because of that resulted in qualified opinion. Auditor independence was one of the important elements as higher fees can result to more independence, indicating that auditors can be influenced by their client and then result in qualified opinions. The analysis shows that companies with large non-audit fees do not have a significant relationship with receiving an unqualified audit opinion. This could be the result of other services such as tax advisory or compliance reviews that have no direct impact on the audit opinion. All three models display that if a company is audited by one of the Big 4 firms, they are more likely to receive unqualified opinions. This could be the case due to the fact that Big 4 firms can perform interim audits and conduct audits with a higher level of intensity. The more revenue and cashflow the company have the more favorable the resulting audit opinion. Companies that had losses on their balance sheet also had a significant negative relation with the audit opinion, meaning that companies who had financial troubles were less likely to receive an unqualified audit opinion. Losses are mostly correlated with other financial measures such as poor cash flow and high debt this can create trust problems for stakeholders and concerns.

6.2 Limitation & future research

A key limitation would be the geographical setting of this study. This study looks into companies from the USA therefore, the findings might not be the same for other countries. Another limitation is that the assumption of independence between variables did not hold. If the dataset was limited

to a smaller timeframe (1-year) this assumption would hold. The study also contains data that was during the covid pandemic around 2019-2021. Some companies had terrible sales figures in those years which resulted in heavy losses. The three models also have omitted variables, these can be corporate governance quality, auditor tenure, or industry-specific risks which could each also result in a different result. By only looking at audit fees, non-audit fees and financial health, this study overlooks potential important variables in the audit process. In future research, it can add additional variables to the models that define differences in audit practices beyond the audit fees and financial health indicators.

The level of psuedo R-squared values of this regression analysis is higher than expected (0.51) for Model 1, (0.53) for Model 2 and Model 3. The psuedo R-squared in Model 1 implies that 51.3% of the variability in audit opinions is explained by the independent variables in the model. This indicates a good fit, as more than half of the variance is considered for by the model. Model 2 has the highest Psuedo R-Squared value (0.53), suggesting it has a slightly better fit in comparison to Models 1 and 3.

Future research could investigate how audit fees relate to audit opinion in different time periods thoughout history or economic conditions of countries. This could examine insights if there are differences between audit fees in each country. By actively doing case studies or interviews with auditors and company management from audit firms, regarding factors influencing audit opinions could also give more insight. Comparing audit fees before and after consulting a Big 4 company could also be relevant to see. In addition, it would be fascinating to find a moderating variable that positively affects the relationship between audit fees and audit opinion.

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Appendix

Table 1. Variable Definition

Variable	Definition
AuditOpinion	Binary variable set to 1 for a company if they received an unqualified audit opinion and 0 in other cases (qualified audit opinion).
LNAuditfees	Natural logarithm of total audit fees paid by the client during the year.
LNNonauditfees	Natural logarithm of total non-audit fees paid by the client during the year.
LNAssets	Natural logarithm of the year-end total assets of the client company found on the balance sheet.
LNRevenue	Natural logarithm of past year's total revenue found on the income statement of the client.
Cashflow	Binary dummy variable resulting in 1 if the Cash from operating activities was higher than zero and resulting in 0 otherwise.
Big4	Binary variable categorizing audit companies as one of the Big 4 if they meet the following criteria: (PricewaterhouseCoopers LLP (PwC), KPMG LLP (KPMG), Deloitte & Touche LLP (Deloitte), Ernst & Young LLP (EY)) set to a value of 1, and non-big 4 set to a value of 0.
Loss	Binary dummy variable resulting in 1 if the value of Net income was lower than zero and resulting in 0 otherwise.
Roa	Return on assets, which is calculated as net income divided by total average assets. Average assets is calculated by adding the assets of the current year and the prior year and dividing them by 2.

Table 2 : Allocation of Big 4 firms

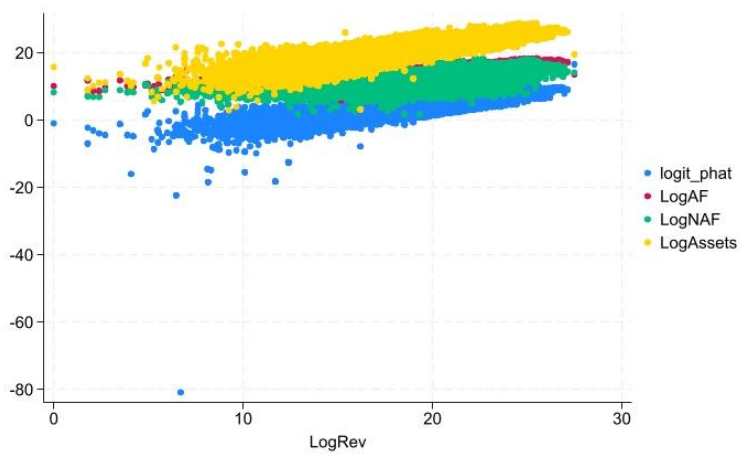| Big 4 Firm name	Obs.	%
KPMG	9,143	17.28%
Deloitte	12,711	24.03%
PWC	16,439	31.64%
EY	14,604	27.61%
Total	52,897	100%

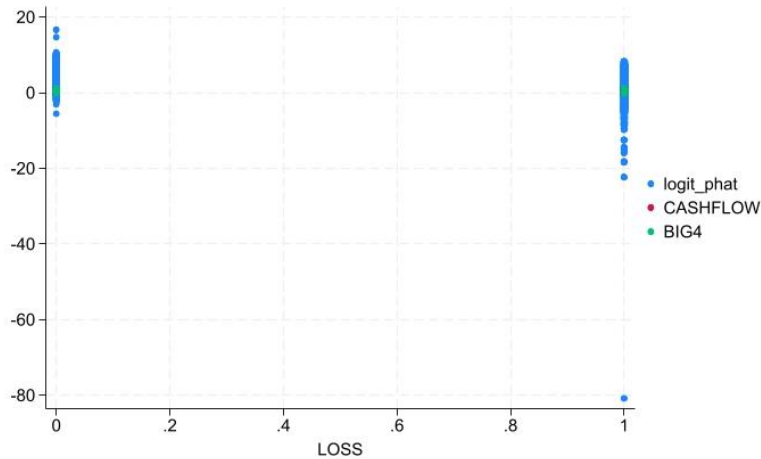*Figure 1 Scatter plot linear relationship, 2014-2023*

Figure 2 Scatter plot linear relationship binary variables, 2014-2023

Statistical Output tables of all three models used in the study.

Number of obs = 70,576

Table 7. Regression analysis relation between audit fees and audit opinion Model 1

Dependent Variable = AuditOpinion

Variable	Coefficient	Std. error	P value	95% conf. interval	
LNAuditfees	-0.625	0.024	0.000	-0.6729	-0.577
LNAssets	0.798	0.015	0.000	0.768	0.828
LNRevenue	0.140	0.010	0.000	0.119	0.160
Cashflow	1.502	0.053	0.000	1.398	1.606
Big4	0.626	0.049	0.000	0.530	0.721
Intercept	-7.680	0.221	0.000	-8.113	-7.248

1) The definition of the variables can be found in the appendix.

Table 8. Regression analysis relation between audit fees and audit opinion Model 2

Dependent Variable = AuditOpinion

Variable	Coefficient	Std. error	P value	95% conf. interval	
LNAuditfees	-0.454	0.026	0.000	-0.506	-0.402
LNNonauditfees	-0.017	0.014	0.207	-0.044	0.009
LNAssets	0.691	0.016	0.000	0.681	0.745
LNRevenue	0.118	0.010	0.000	0.093	0.134
Cashflow	1.010	0.055	0.000	0.901	1.119
Big4	0.565	0.049	0.000	0.468	0.661
Loss	-1.654	0.065	0.000	-1.781	-1.528
Intercept	-6.250	0.233	0.000	-6.706	-5.795

1) The definition of the variables can be found in the appendix.

Table 9. Regression analysis relation between audit fees and audit opinion Model 3

Dependent Variable = AuditOpinion

Variable	Coefficient	Std. error	P value	95% conf. interval	
LNAuditfees	-0.416	0.026	0.000	-0.467	-0.365
LNNonauditfees	-0.016	0.014	0.245	-0.042	0.011
LNAssets	0.798	0.015	0.000	0.660	0.724
LNRevenue	0.140	0.010	0.000	0.098	0.138
Cashflow	1.104	0.056	0.000	0.995	1.214
Big4	0.619	0.049	0.000	0.524	0.715
Loss	-1.553	0.064	0.000	-1.678	-1.428
Roa	0.000	0.000	0.000	0.000	0.000
Intercept	-6.592	0.236	0.000	-7.055	-6.129

1) The definition of the variables can be found in the appendix.