Restatement announcements: the effect of audit quality on the market reaction

Master Thesis Department Accountancy,
Faculty of Economics and Business Studies,
Tilburg University

Marjolein L. van der Weele
S696637
December 2, 2011

Supervisor: Prof. Dr. J.P.J. Verkruijsse RE RA
Second reader: Prof. Dr. E.H.J. Vaassen RA
Management summary

This study researches the relationship between audit quality measured by audit firm size, and the effect of a restatement announcement on the market reaction. A company makes a restatement when its earlier issued financial statements are not complete, transparent or truthful. Investors react to the announcement of a restatement: the market value of the restating company will decrease because investors lose confidence in the restating company. This might be effected by audit quality: high audit quality should prevent mistakes and fraud in the financial statements. Therefore it should prevent restatements. This research will try to find out whether investors react on a restatement announcement in a different way when the restating company is audited by a Big 4 audit firm instead of a non-Big 4 audit firm. Data is retrieved from various databases, based on a list of the General Accounting Office which contains 396 restatements announcements made between 1 October, 2005 and 30 June, 2006. After analyzing this data, it becomes clear that audit quality, measured by the size of the audit firm, has no role in the market reaction following a restatement announcement.
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Chapter 1: Introduction

Companies are expected to have a high quality of financial reporting. Management has the responsibility to prepare financial statements that correctly reflect reporting requirements like the General Accepted Accounting Principles (GAAP) or the International Financial Reporting Standards (IFRS) (Arens, Beasley & Elder, 2010). Creditors, investors and other users should be able to rely on the financial statements so they can make informed investment decisions.

High quality financial reporting is not only important for the investors, it is also important for the company itself. Managers, employees, government and researchers all make decisions and analyze companies while relying on financial information. Financial information can come from various sources: the financial press, advice from analysts, changes in economic conditions, et cetera. A major source is companies’ quarterly and annual reports (Scott, 2009). When financial information is based upon the audited reports, investors can get a perception of the reliability of that information. When an unqualified opinion was issued erroneously, investors might base their decisions upon unreliable information, which can lead to inappropriate decision-making (Flanagan, Muse & O'Shaughnessy, 2008). Financial statements should be complete, transparent and truthful. When discovered that already published annual or quarterly financial statements come short of these requirements, a company’s management has to correct its financial statements (Skinner 1997; Flanagan et al., 2008). This correction is called the restatement. The audit firm failed to detect or report a material mistake.

After a restatement announcement investors lose their confidence in the company, the market value will decline and the company experiences a significant negative influence on the share price in the first days after the announcement (Dechow, Sloan & Sweeney 1996; Palmrose, Richardson and Scholz 2004; Flanagan, Muse & O'Shaughnessy, 2008). A report of the General Accounting Office (2002) shows that restating companies suffer a loss in market value for a longer period of time, with on average an 18% decrease in the share price within 120 trading days (GAO-03-138 [GAO, 2002]).

Audit quality can influence the probability of a restatement. It can be described as ‘the market-assessed joint probability that a given auditor will both (a) discover a breach in the client’s accounting system and (b) report the breach’ (DeAngelo, 1981, p. 186). One way to measure audit quality is by the size of the audit firm. DeAngelo (1981) states that large audit firms with many clients have less incentive than small audit firms to behave opportunistically.
Researches of Dye (1993), Francis and Krishnan (1999) and Nelson, Elliott and Tarpley (2002) confirm this. This theory will be used in this research, audit firm size will be measured by using the Big 4/ non-Big 4 dichotomy. Turner and Sennetti (2001) show that firms that were audited by a large audit firm are less likely to restate their financial statements. Consequently, when audit quality is high, investors do not expect mistakes or fraud in the financial statements and therefore do not expect an accounting restatement to be made. So when a company that is audited by a high quality audit firm announces an accounting restatement, investors might lose their confidence in the company and the market value will drop. However, investors might regain trust in the company faster after a restatement announcement when the company was audited by a large audit firm. Therefore, this research will investigate the following research question:

*Does audit quality have an effect on the market reaction after an accounting restatement announcement in the United States of America?*

In order to answer the research question, data is needed on restatements, market reactions and audit firms of the restating companies. In 2006, the United States General Accounting Office issued a report with restatements that were announced between October 1, 2005 and June 30, 2006. The report contains the dates and names of 396 restatement announcements. This list is used to collect the other data. The data on market reactions and audit firms is retrieved from Datastream, Audit Analytics and the Center for Research in Security Prices (CRSP) database. Not all data was found on each restating company, a final sample of 275 companies was left.

After analyzing the data, there is not enough evidence to say that audit quality, measured by the size of an audit firm, has an effect on the market reaction after a restatement, neither on the short run, nor on the long run.

Previous to this study, no research was performed to see whether the Big 4/ non-Big 4 dichotomy has an effect on the market reaction after a restatement announcement. Earlier research focused on the effect of audit quality on the probability of a restatement, or on the market reaction after a restatement announcement. These two theories were not earlier linked to each other. This study does that, so it offers new contributions to existing literature.
The remainder of this paper is as follows: chapter two contains the theoretical framework upon which the hypothesis and the research method in chapter three are built. Chapter four contains the results of the data analysis, which are used for the conclusions in chapter five.
Chapter 2: Theoretical background

This study researches whether audit quality has an effect on the market reaction to accounting restatements announcements in the United States. In order to get a profound background on this research question, the concepts restatement and audit quality will be explained in the following chapter.

2.1.1. Restatements

Studies of Kinney and McDaniel (1989) and Palmrose et al. (2004) show that restating companies have certain corresponding characteristics. They are less profitable, smaller and slower growing than companies that do not restate. Restating companies often have no audit committee, have higher debt, diffuse ownership and a higher frequency of qualified audit reports.

In the years prior to 2002, questionable accounting practices which resulted in financial scandals with bankruptcies as a result came to light. Consequently, investor confidence decreased and the number of accounting restatements increased. The government of the United States reacted by implementing the Sarbanes-Oxley Act (Coates, 2007). This act tries to prevent management misbehavior and deceptive accounting by imposing additional disclosure requirements, requiring more oversight and setting higher penalties for managerial misbehavior (Zhang, 2007). Information asymmetry between the audit firms and the users of the financial information was reduced and financial information became more transparent, by which the risk of financial statements to be incomplete, misleading and inaccurate, decreased. However, the number of accounting restatements did not decrease in the years after introducing SOx. According to the General Accounting Office (GAO-06-678 [GAO, 2006]), this is caused by the greater focus on financial reporting quality by audit committees, management, regulators and audit firms.

Material misstatements in financial reporting that lead to accounting restatements can be caused by personal incentives of management to profit from share price gains, or just by mistakes made by the management (Flanagan et al., 2008). According to the General Accounting Office (GAO-03-138 [GAO, 2002]), the most frequent reasons for a restatement are (1) revenue recognition (2) operating expenses or costs of sales that are improper capitalized or classified and (3) restructuring charges or restatements for assets or inventory.
When revenue recognition is the reason for a restatement, revenue is recognized in the wrong time period, the reported revenue is doubtful or other mistakes have led to improper reported revenue. In addition, restatements can be caused for example by mergers and acquisitions that were not properly accounted for or by issues where research and development is valued improperly. Plumlee and Yohn (2010) document that 57 percent of the restatements made from 2003 till 2006 are caused by internal company errors. 37 percent is related to unclear accounting standards and what is left, only 6 percent, is attributed to transaction complexity and intentional manipulation. The amount of restatements that were made because of internal company errors might decline in the future because improved internal controls are established after implementing the Sarbanes-Oxley Act.

2.1.2. Identifying a restatement

The need for a restatement can be identified by the company itself, an independent audit firm, by the Securities and Exchange Commission (SEC) or by a combination thereof (Palmrose, Richardson & Scholz, 2004). These options will be explained below.

The company itself can discover misstatements in the financial statements by making use of internal control procedures and internal audits. Examples of internal control procedures are policy reviews, period-end closing processes, and pattern recognition and data analysis. Having a qualified, independent and active audit committee makes it less probable to restate the financial statements (Dechow, Sloan & Sweeney, 1996; Abbott, Parker & Peters, 2004). An audit committee should exist of independent directors who critically observe reports from the Chief Financial Officer (CFO) and who ask questions about the company’s financial conditions. However, in practice some audit committee members lack independence, for example when a member is a former employee or officer of the company (Carcello & Neal, 2000). In that case, the audit committee does not influence the probability of mistakes in the financial statements. However, when the audit committee has independent members who know what is going on in the company, the audit committee has the ability to discover errors or fraud and to protect the credibility of the company’s financial reporting (Carcello & Neal, 2000).
Whether or not the company’s published financial statements are in need of a restatement can also be significantly influenced by the actions of a CFO. Aier, Compríx, Gunlock and Lee (2005) found that when CFOs have a higher level of training, for example a CPA certification, or have more experience in the position of CFO, the company is less likely in need of a restatement.

Before publicly held companies submit their financial statements to the SEC and to the Electronic Data Gathering, Analysis, and Retrieval system (EDGAR), the financial statements have to be certified by an independent, external audit firm. The audit firm provides assurance that the financial statements are fairly and truly presented and are represented in accordance with the applied General Accepted Accounting Principles (GAAP). When the financial statements are fairly and truly presented, the audit firm provides the company with an unqualified audit report, which should assure the reliability of the financial statements quality (Flanagan et al., 2008). However, when an audit firm discovers a misstatement in previously issued financial statements, he has to advise the client to make the misstatement public (Palmrose et al., 2004).

The SEC protects investors, facilitates capital information and maintains orderly, efficient and fair markets (SEC, 2006). One division of the SEC is concerned with violations of security laws such as accounting irregularities. It uses investor complaints, press reports and surveillance activities to discover possible accounting violations (Flanagan et al., 2008). When something seems suspicious, the SEC will start a full investigation and reviews company filings, to discover accounting violations and the need to restate financial statements.

The SEC also has oversight authority over the Public Company Accounting Oversight Board (PCAOB). The PCAOB is a nonprofit organization in the U.S. that oversees audits of public companies to protect investors by promoting accurate, independent and informative audit reports (PCAOB, 2011). It tries to improve audit quality, to diminish the risk of audit failure and to promote public trust in the auditing profession and the financial reporting process. This can lead to a decreased amount of restatements.

When the need for a restatement is not identified by the company but by an external audit firm or the SEC, this can indicate that the monitoring functions and internal controls of the company do not work properly (Palmrose et al., 2004). They did not prevent, discover or correct the material misstatements in the financial statements. However, when the company did identify the material misstatements by itself, this can indicate strong internal controls and
better oversight by the audit committee and the management. It also might reduce the probability that the top management is involved in creating the misstatement.

Once the material misstatements are identified and it is clear that the company has to make a restatement, the restatement can be disclosed. The restating company can indicate that a restatement is possible, probable with uncertain impact, or necessary. In the United States, this can be done by reporting it in a press release, in a Form 8-K report or in a Form 10-K report (Palmrose et al., 2004). Form 8-K is a report that companies use to inform investors about important and relevant things such as bankruptcy, departure of a CFO and accounting restatements (Carter & Soo, 1999). A Form 10-K report contains detailed and comprehensive financial information about a company, such as financial position and performance (Griffin, 2003).

### 2.1.3. Consequences of a restatement

When a company needs to make an accounting restatement, the company can be affected in various ways. After the restatement investors cannot rely on the involved financial statements anymore, they lose their confidence in the company and the market value of the company will decline (Flanagan et al., 2008). According to Callen et al. (2006), the market evaluates three things: (1) the credibility of the restating company’s accounting system and financial disclosures; (2) whether the restatement has effect on future earnings estimates and (3) the likelihood that managers behave opportunistically. Except for influencing investor’s confidence, accounting restatements can also influence the cost of capital of a restating company (Hribar & Jankins, 2004). Projections that were based on these misstated earnings figures are not correct anymore when restatements affect past earnings. This leads to a downward adjustment of future expected earnings; expected future cash flows are lower so firm value decreases. A part of this downward adjustment is attributable to a higher discount rate that investors attach to the expected future cash flows: the cost of capital. Hribar and Jankins (2004) estimated a 7.65 percentage increase in the cost of capital in the first month after a restatement announcement.

Also, after a restatement, the company and its managers can suffer reputational damage. Desai et al. (2006) show that after a restatement is made, the company has difficulty to maintain customers and investor relationships and to hire new employees. The managers of restating firms have difficulty in finding new employment. Srinivasan (2005) finds that 48
percent of the directors of restating companies leave within three years after the restatement. Members of the audit committee lose their position in other boards in 25 percent of the cases.

Back to losing confidence, Dechow, Sloan and Sweeney (1996) find that firms that restate their income statement experience a significant negative share price reaction. Palmrose, Richardson and Scholz (2004) on average find a negative mean market reaction of 9.2 percent over a 2-day event window, the day of the restatement announcement and the next day. They also find that the market reaction is more negative after a restatement announcement when the restatement is caused by fraud or attributed to audit firms or management. Furthermore, when the restatement affects multiple accounts, the market reaction is more negative. All together, characteristics of the restatement are important in forecasting market reactions to the restatement announcement. Burks (2011) finds that after the introduction of the Sarbanes-Oxley Act in 2002, the price reaction to a restatement announcement is less negative than before the introduction of the Act. He concludes that investors are confused how to interpret the new Act and therefore restatements after implementing the Sarbanes-Oxley Act might have little impact on the value of the firm.

Callen et al. (2006) find that the stock market reaction following a restatement is different when the restatement is made to revise earnings and revenues downwards than when earnings and revenues are revised upwards. The stock market reacts negative when a downwards revision is made, while an upwards revision is followed by a neutral response. Elliott and Hanna (1996) find something similar: when the restatement is made in the operating income, the market reacts more strongly than when it is related to special items or one-time events.

A report of the General Accounting Office (GAO-03-138, [GAO, 2002]) shows that restating companies suffer a loss in the market value over a longer period of time. On average, the market-adjusted share price of a restating company falls with 18 % from 60 days before till 60 days after the date of announcing the restatement. However, because the event window is long, it is possible that the impact at the share price of a restating company might not be entirely caused by the restatement announcement; other factors may have impacted the share price.
2.2.1. Audit quality

DeAngelo (1981) defines audit quality as: ‘the market-assessed joint probability that a given auditor will both (a) discover a breach in the client’s accounting system, and (b) report the breach’ (p. 186). The probability of discovering a breach depends on the audit capabilities of the audit firm and the audit procedure. The probability of reporting the breach depends on the independence of the audit firm.

Francis (2004) describes audit quality as ‘meeting or not meeting minimum legal and professional requirements’ (p. 346). Audit quality ranges from low audit quality at the one side to very high audit quality at the other side. Low audit quality means that there is audit failure: the audited financial statements might mislead its users. This can happen in two circumstances: when the audit firm did not enforce the Generally Accepted Accounting Principles and when the audit firm did not issue a qualified audit report when needed. High audit quality can be achieved by meeting all the audit objectives and following rules and standards. Audit objectives can be transaction-related, balance-related or presentation and disclosure-related (Arens et al., 2010). Examples are completeness, accuracy, occurrence and classification. Rules and standards can be set by a country’s government and are often based on the International Standards on Auditing (ISAs) of the International Federation of Accountants (IFAC).

The Financial Reporting Council (FRC, 2008) states that audit quality is dynamic, the indicators and drivers of audit quality change over time. Therefore, the definition of DeAngelo (1981) and Francis (2004) might not be all-embracing anymore. The Financial Reporting Council does not give a precise definition, but it gives five main drivers of audit quality: (1) the audit firm’s culture; (2) the personal qualities and skills of staff and audit partners; (3) the audit process’ effectiveness; (4) the usefulness and reliability of audit reporting and (5) factors that affect audit quality outside the audit firms control.

2.2.2. Factors influencing audit quality

Audit quality can be influenced by many factors, for example: audit fees and non-audit fees, audit tenure, audit firm alumni, and audit committees. According to Francis (2004), a higher audit fee means higher audit quality because billing rates are higher which implies greater expertise, or more hours are used which implies more audit effort. Frankel, Johnson and Nelson (2002) find that there is more earnings management in companies who pay relatively more non-audit fees to their audit firms. This is because the audit firm can get an economic
bond with the client when it provides non-audit services. That might increase the risk that the audit firm becomes less independent, which will compromise audit quality and by which the audit firm will easier allow earnings management (Simunic, 1984). On the other hand, the audit firm can get to know the client’s company better by performing non-audit services, which may have a positive effect on audit quality.

Audit tenure also can decrease audit quality: when there is no mandatory audit firm’s rotation, a client has the same audit firm for a long period of time. This can impair the independency of the audit firm, who can become captive to the client (Francis, 2004). However, knowledge of the client is good and this knowledge might be gone when the client switches to another audit firm too frequently. Another factor that has an effect on audit quality, audit firm alumni, holds that there are alumni of the audit firm who fulfill a management position at the audit client. This may impair audit firm’s objectivity and skepticism. Furthermore, the alumni can more easily deceive the audit company because they know the audit firm’s methodology (Francis, 2004). The fourth factor is that having an audit committee and board of directors that are independent of management, has a positive effect on audit quality because it has a critical attitude which helps to protect the credibility of the company’s financial statements.

Currently, there is a discussion in the European Commission about audit quality. This discussion might reach the U.S. in the future. The credit crisis launched questions about the quality and independence of audits and the Autoriteit Financiële Markten (AFM) started an investigation in the Netherlands which confirmed that audit quality should be improved. Barnier wrote a Green Paper (2010) to give attention to the role of audit firms and how to increase the audit firm’s independence. He points out that an audit firm should provide the stakeholders a high level of assurance on the financial statements. Also, audit firms should be more critical, have more professional skepticism, communicate public information better to external sources and communicate better with internal organs. To improve the auditor independence, Barnier sums eight measures: (1) The appointment, payment and duration of the engagement should not be the responsibility of the client, but of a third party; (2) mandatory audit firm rotation should be sharpened: not only partners, but also audit firms should be rotated; (3) audit firms should not provide non-audit services when it impairs audit independence; (4) the total fees that an audit firm receives from one client should be limited compared to total audit revenues; (5) the financial statements of audit firms should be transparent by letting public bodies audit these statements; (6) the organizational requirements in an audit firm should be strengthened
to mitigate conflicts of interest with clients; (7) the partnership model should be changed in a way that capital is not only raised from partners, but also from external sources; and (8) the role of the group auditor should be reinforced.

2.2.3. Audit quality and audit firm size

According to DeAngelo (1981), there is another factor that affects audit quality: whether the client is audited by a large company or by a small company. She states that when the audit firm is large and has many clients, it has less incentive to behave opportunistically. Therefore, the quality of the audit will be higher than when the audit is performed by a small audit firm to which the audit fees of a client can be a large fraction of the audit firm’s total income from audit fees. Small audit firms will try to satisfy their client and thereby the independency and audit quality of that audit firm can be compromised. Furthermore, large audit firms often have a greater reputation to lose when they misreport; by providing audits with high-quality, they will try to protect this reputation. Many researchers agree with DeAngelo, but the paper is dated and some researchers do not agree with her anymore. Gaeremynck and Willekens (2003) for example show that when financial difficulties in companies are obvious, there is no difference in audit quality between Big Six and non-Big Six audit firms. They are evenly independent and competent to report and assess problems. Also Francis (2004) argues that the differences in audit quality are overstated. He states that companies with high earnings quality and little incentive to manage earnings simply select a Big 4 audit firm as their audit firm. This might cause the audit quality of the Big 4 to seem higher than the quality of a non-Big 4, because their clients have less trouble in their financial statements. The choice of an audit firm is endogenous and non-Big 4 firms get the clients with lower earnings quality and higher earnings management.

Lawrence, Minutti-Meza and Zhang (2011) list some reasons why the audit quality of non-Big 4 firms is comparable to that of Big-4 firms. First, both non-Big 4 and Big-4 firms should comply with the same professional audit standards and regulations, therefore both categories of audit firms have a reasonable quality level. Second, Louis (2005) states that non-Big 4 audit firms might have comparative advantages in particular areas. For example, they are likely to know the local markets very well and they have good connections with local business communities. Also, non-Big 4 firms are less likely to have conflicts of interest with clients; (7) the partnership model should be changed in a way that capital is not only raised from partners, but also from external sources; and (8) the role of the group auditor should be reinforced.

1 Please note that in 2001 there were six big audit firms, but the demise of Arthur Anderson and the merger of Price Waterhouse and Coopers & Lybrand reduced the Big 6 to the Big 4. In this research, the terms Big 6 and Big 4 are both used to indicate the group of largest audit firms.
small audit firms try to give their clients a personal service while large audit firms are likely to neglect their small clients so they can concentrate on larger clients, a more profitable business for them (Boone et al., 2000). Third, non-Big 4 audit firms often are unable to get reasonable insurance coverage. This might increase the effort of non-Big 4 audit firms to deliver a high audit quality, because insurance companies give a different level of backing to non-Big 4 and Big 4 firms. Small firms are likely to be too small to spread litigation risk and realize economies of scale. A final reason is that certified public accountants (CPAs) often switch from a Big 4 firm to a non-Big 4 firm and vice versa, so knowledge transfers. This decreases the possibility that one type of audit firms becomes superior.

Despite these researches in which the theory of DeAngelo is questioned, there are some researches that confirm the theory. Dye (1993) for example states that large audit firms have more incentive to be accurate because they have deeper pockets: they have more to lose in a court case. Studies of Teoh and Wong (1993), Francis et al. (1999), and Nelson et al. (2002) show that companies that are audited by a Big 4 audit firm often have lower abnormal accruals and higher earnings quality than when audited by a non-Big 4 audit firm. Low abnormal accruals imply less earnings management and so lead to higher earnings quality. Francis and Krishnan (1999) investigated whether large audit firms (the Big 6) are more conservative in their audit reporting than non-Big 6 audit firms. Conservative means in this context that the threshold for issuing a modified audit report is relatively low. This leads to a decreased probability of not issuing a modified audit report when needed. They find that Big 6 audit firms are indeed more conservative in issuing audit reports when financial reporting uncertainties come to light. This indicates that, according to Francis and Krishnan, Big 6 audit firms have a higher audit quality than non Big 6 audit firms. Also Lennox (1999) shows findings that confirm DeAngelo’s theory of 1981 that audit firm size is related to audit quality. He found that large audit firms give more accurate audit reports than small audit firms, even when controlling for the fact that large audit firm’s clients differ from small audit firm’s clients. He states that this might be a result of large audit firms having more client-specific knowledge or being more specialized in a particular industry. Industry-specialization leads to higher audit quality.

In line with Lennox (1999), Weber and Willenborg (2003) state that large audit firms issue more accurate pre-IPO audit reports than small audit firms. Large audit firms often predict future stock returns and stock delistings more accurate than small audit firms. These findings are also consistent with the theoretical findings of DeAngelo. Furthermore, as mentioned
earlier, Francis (2004) states that audit quality is high when audit fees are high. Audit fees in Big 4 audit firms are higher than audit fees in non-Big 4 firms; this implies a higher audit quality in the Big 4.

2.3. Audit quality and restatements

Audit quality has a positive effect on the quality of financial statements and a negative effect on mistakes and fraud, and therefore should lead to less material misstatements in the financial reporting and to less accounting restatements. There has been research on the relationship between audit quality and restatements, where audit quality is measured by audit fees and non-audit fees, audit tenure or audit committees. However, the effect on the market after a restatement announcement is not described in these researches.

The Sarbanes-Oxley Act states that some non-audit services that are offered by audit firms reduce the independency of the audit firm, which leads to a lower quality of financial reporting. Kinney, Palmrose and Scholz (2004) investigated whether specific fees for non-audit services were related to the number of accounting restatements made. They found that unspecified fees for non-audit services are positively related to restatements, which probably indicates that the audit firm is not completely independent anymore and audit quality is compromised. However, fees for tax services are negatively related to restatements. This indicates that an audit firm acquires benefits in the financial reporting quality by providing tax advice.

Aier et al. (2005) find that the financial expertise of a CFO is negatively associated with the likelihood of a restatement. When the CFO has an accounting background, he is better able to keep the quality of financial reporting high. Also having an independent audit committee with a critical attitude probably leads to less accounting restatements because it has the ability to discover errors and fraud and to protect the credibility of the company’s financial reporting (Carcello & Neal, 2000; Palmrose et al., 2004). Turner and Senetti (2001) take audit firm size as a measure for audit quality and find that companies that are audited by a Big 6 firm are less likely to restate their financial statements than companies that are audited by a non-Big 6 firm.

Francis (2004) stated that audit quality became higher when the audit firm was specialized in a specific industry. Romanus, Maher, and Fleming (2008) investigated whether this audit firm industry specialization has an effect on accounting restatements. They found that audit firm industry specialization is negatively related to accounting restatements, particularly
restatements that affect core operating accounts. They also found that when a company switches from an audit firm that is not specialized to an audit firm that is, the likelihood of a restatement increases while it decreases when a company switches from a specialist to a nonspecialist. Stanley and DeZoort (2007) found that the length of the relationship between the client and the audit firm is negatively related to the likelihood of a restatement when the relationship is longer than five years. In line with Romanus et al. (2008), they also found that industry specialization is important and negatively related to restatements when the relationship between the client and the audit firm is relatively short, shorter than three years. All these researches mentioned above show that audit quality, measured in various ways, has an effect on the likelihood of making an accounting restatement.
Chapter 3: Research method

In this chapter, first the hypotheses are discussed and second, the framework for the data analysis will be developed. Finally, found data and regressions will be analyzed and discussed.

3.1. Hypothesis development

As described in chapter one, accounting restatements are made when already issued financial statements do not give a true and fair view; when they are not complete, transparent and truthful (Flanagan et al., 2008). A restatement can indicate that the restating company’s audit firm either did not detect the misstatement or did not report it, so either the quality of the audit firm or the independence of the audit firm was compromised (DeAngelo, 1981).

As stated above, it seems that audit quality has much influence on the probability of a restatement. A high audit quality should lead to a higher quality of financial reporting and to less accounting restatements. Many researchers investigated this relationship (e.g. Turner and Sennetti, 2001; Kinney et al., 2004; Stanley & DeZoort, 2007; Romanus et al., 2008) and the general conclusion is that audit quality, either from internal or external audits, indeed is negatively associated with the likelihood of a restatement.

Furthermore, Dechow et al. (1996), Palmrose et al. (2004) and Burks (2011) provide evidence that firms in the U.S. experience a negative share price reaction in the first days after announcing an accounting restatement. A report of the General Accounting Office (GAO-03-138, [GAO, 2002]) shows that restating companies also experience a loss in market value over a longer period of time.

This research will investigate whether the two concepts audit quality and market reaction after a restatement announcement are related to each other. The effect can occur on the short run or on the long run, as such, two hypotheses will be used.

DeAngelo’s theory of 1981 will be used to measure audit quality.

3.2. Hypothesis 1

The first hypothesis focuses on the market reaction after a restatement announcement on the short run. It is already known that the market value of a restating company decreases in the first days after the restatement announcement (e.g. Palmrose et al., 2004). It is also known that audit quality has an effect on the likelihood of a restatement (e.g. Romanus et al., 2008).
However, whether audit quality has a direct effect on the change in market value of a restating company has not been investigated earlier.

When a company announces an accounting restatement, investors might lose their confidence in the company and the market value will drop in the first days following the restatement (Palmrose et al., 2004). Audit quality has a negative effect on the probability of a restatement and investors believe that Big 4 audit firms have a higher audit quality than non-Big 4 audit firms. Turner and Sennetti (2001) stated that clients at a Big 6 firm are less likely to make a restatement than clients at a non-Big 6 audit firm. Also the Big 4 audit firms are believed to have a more client-specific knowledge and to be more specialized in a particular industry. This leads to higher audit quality (Lennox, 1999). Because of these researches, investors and other users of the financial statements might believe that when their company is audited by a Big 4 audit firm, the likelihood of a restatement is small. So when a restatement is announced, investors did not expect this to happen and they might lose more confidence in the company than when this happens to a company with a non-Big 4 audit firm. By losing more confidence, the market value of the restating company might decrease more when it is audited by a Big 4 instead of by a non-Big 4 audit firm. Based on this theory, the following hypothesis is developed:

**H1.** On the short run, the market value of a restating company decreases more when the company is audited by a Big 4 audit firm than when the company is audited by a non-Big 4 audit firm.

3.3. Hypothesis 2

The second hypothesis is developed to measure whether after a restatement announcement, the long-term market reaction of a company audited by a Big-4 firm differs from the market reaction of a company audited by a non-Big 4 audit firm.

According to a report of the General Accounting Office (GAO-03-138 [GAO, 2002]), restating companies suffer a loss in market value over a longer period of time. From 60 days before until 60 days after the announcement date of the restatement, the market-adjusted share price of a restating company on average falls with 18 percent. The question is whether the choice of an audit firm has an effect on this loss in market value. On the one hand, investors believe that Big 4 audit firms have a high quality, and they might still believe that after a restatement announcement: they regain trust in the restating company and its audit firm faster.
when the company was audited by a Big 4 audit firm than when it was audited by a non-Big 4 audit firm. So they believe that the financial statements that were not restated, are still reliable. In this case, the restating company that is audited by a Big 4 audit firm suffers a relatively smaller loss in the market value over a long period of time than when it is audited by a non-Big 4 audit firm. On the other hand, investors might lose their confidence in the reliability of the company's financial statements that were not restated completely. They might have difficulties in regaining trust in the company's credibility because the company was audited by a Big 4 audit firm and they believed that audit quality was high. When this happens, the restating company that is audited by a Big 4 audit firm suffers a relatively larger loss in market value over a long period of time than when it is audited by a non-Big 4 audit firm. Hypothesis two is based on this theory:

**H2.** On the long run, restating companies that are audited by a Big 4 audit firm experience a different change in market value than companies that are audited by a non-Big 4 audit firm.

### 3.4. Regression model, hypothesis 1

To assess whether the Big 4/ non-Big 4 dichotomy has effect on the market reaction on the short run after a restatement announcement, the following linear regression model will be used:

\[
CAR_i = \beta_0 + \beta_1 (AUDITFIRM) + \beta_2 (TOT\_ASS) + \beta_3 (LEV)
\]

- \(CAR_i\) = cumulative market-adjusted abnormal return for restating company \(i\), from one day before until one day after the restatement announcement date.
- \(AUDITFIRM\) = 1 when restating company is audited by a Big 4 audit firm; 0 when audited by a non-Big 4 audit firm.
- \(TOT\_ASS\) = size of the restating company, measured in total assets.
- \(LEV\) = leverage of the restating company, measured as total liabilities divided by total assets.
The following paragraphs will discuss and motivate the dependent, independent and control variables used in this model.

**Dependent variable**

The first model tests whether the short-term market return after a restatement announcement is influenced by the size of the audit firm. The dependent variable is the market return of company $i$. The event window for this hypothesis is three days: one day before the restatement announcement date until one day after the announcement date. Day -1 is included because it can capture early news leakages. The General Accounting Office (GAO-03-138 [GAO, 2002]) uses the same event window, even as Palmrose et al. (2004).

Market reactions will be measured by using a market-adjusted model, which is used in many other researches. This model calculates the market-adjusted abnormal return for each company on each day by subtracting the market index return of the Center for Research in Security Prices (CRSP) from the daily return of the company. The market index return is equally weighted and includes dividends. When these daily abnormal returns are summed, the cumulative abnormal return (CAR) can be calculated.

**Independent variable**

Audit quality can be measured in various ways: by using audit fees and non-audit fees, audit tenure, audit firm alumni, or audit committees. However, audit quality is typically measured by using the Big 4 / non-Big 4 dichotomy. As stated in chapter two, Big 4 audit firms are believed to have a higher audit quality than non-Big 4 audit firms. As such, this difference will be used in this model to measure audit quality. The dichotomous variable AUDITFIRM will be 1 if the restated company is audited by a Big 4 audit firm, and will be 0 when the company is audited by a non-Big 4 audit firm.

**Control variables**

Among others, Bhushan (1989) and El-Gazzar (1998) found that the market reaction after earnings news for a small company is larger than for a large company. This can be explained by the differences in the information environments of the firms. Investors in larger companies might have greater incentives to search for pre-disclosure information and larger company’s security prices are more informative. This reduces the impact of earnings
announcements. Furthermore, Atiase, Bamber and Tse (2010) state that the voluntary
disclosure level prior to earnings announcements in large companies is higher than in small
find investors might estimate the magnitude of the restatement differently when the company
is large or small. Thereby, their expectations of future performance change.

The size of the restating company ($TOT\_ASS$) is used as a control variable in this model,
and will be measured as the most recent book value of total assets before the restatement
announcement.

The second control variable is the level of debt ($LEV$). Market reactions to restatement
announcements differ across the level of debt. Dhaliwal and Reynolds (1994) show that the
earnings response coefficient (ERC) is negatively related to the risk of debt. This means that
when there is a high default risk of debt, investors react more negative on earnings news. This is
expected to be the same for restatement news. Total liabilities to total assets is used instead of
liabilities to equity so the problem of companies having negative or very small equity is avoided.

3.5. Regression model, hypothesis 2

To assess whether the Big 4/ non-Big 4 dichotomy has effect on the market reaction on
the long run after a restatement announcement, the same linear regression model as in chapter
3.4. will be used:

$$CAR_i = \beta_0 + \beta_1 (AUDITFIRM) + \beta_2 (TOT\_ASS) + \beta_3 (LEV)$$

$CAR_i$ = cumulative market-adjusted abnormal return for restating company $i$,
from sixty trading days before until sixty trading days after the restatement
announcement date.

$AUDITFIRM$ = 1 when restating company is audited by a Big 4 audit firm; 0 when
audited by a non-Big 4 audit firm.

$TOT\_ASS$ = size of the restating company, measured in total assets.

$LEV$ = leverage of the restating company, measured as total liabilities divided
by total assets.

The following paragraphs will discuss and motivate the variables used in this model.
Dependent variable

The second model tests whether the size of the audit firm has long term impact at the market return after a restatement announcement. The dependent variable is the market return of company \( i \). The event window for this hypothesis is 120 days: 60 trading days before the restatement announcement date until 60 trading days after the announcement. By using this time frame, the intermediate impact can be measured. The General Accounting Office (GAO-03-138 [GAO, 2002]) uses the same event window.

Market reactions will be measured by using a market-adjusted model, which is based on an equally weighted index and includes dividends.

Independent variable and control variables

The independent variable is the size of the audit firm: Big 4 or non-Big 4. When the audit firm of the restating company is a Big 4 audit firm, \( \text{AUDITFIRM} \) is 1 and when the audit firm is a non-Big 4 audit firm, \( \text{AUDITFIRM} \) is 0. The control variables are the same as the control variables used in the model of hypothesis 1: the size of the restating company (TOT_ASS) and the level of debt (LEV).

3.6. Data

This study focuses on the United States of America. In order to answer the research question and to test the hypotheses, data is needed on restatements, market reactions and audit firms. In 2006, the United States General Accounting Office issued a report with restatements that were announced by publicly traded companies in the United States between October 1, 2005 and June 30, 2006 (GAO-06-678, [GAO 2006]). The restatement announcements were all made because of accounting errors or financial reporting fraud. The report contains 396 restatement announcements and gives the names and ticker symbols of the restating companies, the date of the announcement and the market the restating company was trading in at that date. Many other studies based their research upon this list of the GAO.

In the U.S. approximately 10,000 companies are publicly traded (Francis, 2004). Of these, 360 companies\(^2\) made an accounting restatement between October 2005 and June 2006, this is only 0.036%.

\(^2\) 36 companies of the list from the GAO made more than one restatement.
The data on the audit firms of the restating companies can be collected by using the database Audit Analytics. In this database, data is stored about the audit firm that audited the restating company when the restatement was announced, and whether the audit firm belongs to the Big 4 or to the non-Big 4 audit firms.

Market reactions are measured by inspecting the change in the market-adjusted share price for each company on the list of the GAO. The CRSP database or DataStream is used for collecting the share prices of restating companies. The CRSP database is also used to get the CRSP market index return that can be used to calculate the market-adjusted abnormal return for each company and each day.

The original sample for this research consisted of 396 restating companies. However, some data was unavailable. Audit Analytics did not give output on 54 of the restating companies, so these were eliminated from the sample. CRSP did not give information about market reactions of 44 companies on the short term and on 52 companies on the long term and neither Compustat nor Datastream gave information about total assets and total liabilities of 23 companies. This results in a final sample of 275 companies for the short-term hypothesis and 267 for the long-term hypothesis.
Chapter 4: Results

In this chapter, the data and the data analysis will be described, and some robustness checks are discussed.

4.1. Descriptive statistics

Before any analysis was performed, the data was tested for univariate and multivariate outliers. For hypothesis 1, nine outliers were identified of which five were univariate and four were multivariate. For hypothesis 2, eight outliers where identified of which six were univariate and two were multivariate. The univariate outliers were found using the definition of Tabachnick and Fidell (2001): an outlier has a standardized residual value above 3.33 or below -3.33. The multivariate outliers are found using a Mahalanobis distance of 16.27. The outliers were excluded for further analysis, so a dataset of 266 cases for hypothesis 1 and 259 for hypothesis 2 is left to analyze.

Table 1 presents descriptive statistics for the sample used in this research. The second row shows the mean of the abnormal return after a restatement announcement. This is -2.1%, which indicates that on average the market reaction after a restatement announcement is negative. The largest negative market reaction on the short run is -31.05% and the largest positive market reaction is 19.39%. The mean abnormal return on the long-term is -10%, which is less negative than the -18% of the research of the General Accounting Office (GAO-03-138, [GAO 2002]).

The mean of a restating company’s total assets is 3203 million US dollars, and the average leverage is 56%. The smallest company has 3.09 million US dollars in total assets; the largest company has total assets of 60150 million US dollars. The mean of the variable audit firm is 0.81, which suggests a skewed distribution.
Table 1. Means and standard deviations for all variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal return</td>
<td>-0.021</td>
<td>-0.311</td>
<td>0.194</td>
<td>0.066</td>
</tr>
<tr>
<td>Abnormal return, long-term</td>
<td>-0.100</td>
<td>-1.678</td>
<td>0.861</td>
<td>0.264</td>
</tr>
<tr>
<td><strong>Independent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audit firm</td>
<td>0.81</td>
<td>0</td>
<td>1</td>
<td>0.394</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total assets</td>
<td>3203.066</td>
<td>3.09</td>
<td>60150.2</td>
<td>7217.485</td>
</tr>
<tr>
<td>Total assets, transformed</td>
<td>2.799</td>
<td>0.49</td>
<td>4.78</td>
<td>0.843</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.564</td>
<td>0.059</td>
<td>1.378</td>
<td>0.270</td>
</tr>
</tbody>
</table>

4.2. Frequencies

Table 2 presents the frequencies of the variable audit firm, used in the regressions for both hypotheses. For the short-term dataset, 51 restating companies or 19.2% were audited by a non-Big 4 audit firm. 80.8% is audited by a Big 4 audit firm. For the long-term dataset, 47 companies (18.1%) were audited by a non-Big 4 audit firm and 212 companies (81.9%) by a Big 4 audit firm. Appendix I contains a frequency table for all audit firms. 162 companies (60.9%) suffered from a negative abnormal market return on the short run, 104 companies (39.1%) experienced a positive abnormal market return. On the long run this is about the same: 155 companies (59.8%) experienced a negative market return and 104 companies (40.2%) had a positive abnormal market return after a restatement announcement.

There is no need to show the frequencies of the other variables used in this research, because these are all individual numbers: all restating companies have their own leverage and amount of total assets.

Table 2. Frequencies of the independent variable audit firm.

<table>
<thead>
<tr>
<th>Audit firm</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Big 4</td>
<td>51; 47</td>
<td>19.2; 18.1</td>
</tr>
<tr>
<td>Big-4</td>
<td>215; 212</td>
<td>80.8; 81.9</td>
</tr>
</tbody>
</table>
4.3. Assumptions

When multiple regressions are conducted, some assumptions are made (Pallant, 2005). The data used in this research is tested for four assumptions: normality, linearity, multicollinearity and heteroscedasticity.

**Normality**

To test for normality, the Kolmogorov-Smirnov test is used. This test shows that none of the variables are normally distributed. The skewness and kurtosis value can give a better picture of the normality; when these values are 0, the data is distributed perfectly normal (Pallant, 2005). The variable abnormal return (ABN_RET) has a skewness value of -0.874, which indicates a small clustering of scores at the right-hand side of a graph. A positive kurtosis value indicates that the data is clustered in the centre (i.e. the distribution is peaked). This is the fact for the variables AUDIT FIRM, ABN_RET and TOT_ASS. Leverage is distributed relatively normal: it is slightly positively skewed with a skewness value of 0.252 and a kurtosis value of -0.311. However, the variable total assets is non-normal distributed. This variable has large values on skewness and kurtosis and the histogram shows a peak on the left side of the graph. To improve the normality of this variable, the variable is transformed. The new variable (TOT_ASS_TRANS) is the logarithm of TOT_ASS and has a mean of 2.8 million USD. According to the Kolmogorov-Smirnov test, this transformed variable is normal.

The other variables were not normal as well, but transforming these variables only leads to a switch of the direction of the skewness. Therefore, the original data of all data is used in the analysis, except for TOT_ASS.

**Linearity**

Linearity can be tested by using a normal probability plot of the standardized residuals (P-P plot) or a normal Q-Q plot. The variable is normally distributed and is linear when all points are on or close to the line (Pallant, 2005). The P-P plots show that all points are reasonably close to the line, which indicates that there is no problem with normality or linearity. The Q-Q plots indicate the same.
**Multicollinearity or singularity**

Multicollinearity is the assumption that independent variables are not highly correlated with other independent variables (Pallant, 2005). Singularity exists when an independent variable is a combination of two or more independent variables. To examine whether multicollinearity or singularity exists, the Pearson correlation matrix is used (table 3). When $r$ exceeds 0.9, multicollinearity exists. In the data set used for this research, all independent variables are significantly correlated to each other, but $r$ does not exceed 0.9 so there is no sign of multicollinearity.

<table>
<thead>
<tr>
<th>Table 3. Pearson correlation matrix of independent variables.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit firm</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Audit firm</td>
</tr>
<tr>
<td>Leverage</td>
</tr>
<tr>
<td>Total assets, transformed</td>
</tr>
</tbody>
</table>

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

**Homoscedasticity**

Another assumption is that the data are homoscedastic. This can be checked from the residuals scatterplots. These scatterplots should not have a visible clear pattern, which is the fact for the datasets used in these analyses. This means that there is no problem with heteroscedasticity. The scatterplots are included in appendix II.

**4.4. Simple regressions**

At first, simple regressions are conducted to test whether the choice of an audit firm (Big 4 or non-Big 4) is related to the abnormal market return, without controlling for other determinants of market return. The results for hypothesis 1, market reaction after a restatement announcement on the short run, are shown in table 4. The results show that the model is not significant (0.235 with $\alpha = 0.05$) and that the model explains only 0.5% of the variance in the abnormal return ($R^2 = 0.005$). Also the variable *audit firm* is not significant. This suggests that the Big 4 / non-Big 4 dichotomy has no effect on the market reaction on the short run after a restatement announcement.
### Table 4. Effects of the simple regression model for hypothesis 1.
Dependent variable: abnormal return.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard error</th>
<th>Beta</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.009</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Audit firm</td>
<td>0.010</td>
<td>0.073</td>
<td>0.235</td>
</tr>
</tbody>
</table>

The results of the same model, but for a long-term market reaction, are shown in table 5. $R^2$ is 0.007, which indicates that only 0.7% of the variance in the abnormal return on the long run is explained by the model. Besides that, the model is not significant (0.183), which indicates that restating companies that are audited by a Big 4 audit firm do not experience a different change in market value than do companies that are audited by a non-Big 4 audit firm.

### Table 5. Effects of the simple regression model for hypothesis 2.
Dependent variable: abnormal return, long-term

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard error</th>
<th>Beta</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.161</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Audit firm</td>
<td>0.074</td>
<td>0.083</td>
<td>0.183</td>
</tr>
</tbody>
</table>

### 4.5. Multiple regressions

The multiple regressions include the control variables total assets (transformed) and leverage. It was expected that both the independent variable AUDIT FIRM as the control variables total assets and leverage in model 1 had a significant effect on the market reaction after a restatement announcement. However, the results are the same as in the simple regressions. The short-term model with control variables has an explanatory power of 1.7% ($R^2 = 0.017$). The model also is not significant (0.217) and neither are the variables in the model, so it is clear that the model does not explain the relationship between the market reaction and the Big 4 / non-Big 4 dichotomy.

### Table 6. Effects of the multiple regression model for hypothesis 1.
Dependent variable: abnormal return.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard error</th>
<th>Beta</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.015</td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>Audit firm</td>
<td>0.012</td>
<td>0.012</td>
<td>0.871</td>
</tr>
<tr>
<td>Total assets, transformed</td>
<td>0.006</td>
<td>0.127</td>
<td>0.092</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.016</td>
<td>-0.010</td>
<td>0.878</td>
</tr>
</tbody>
</table>
The multiple regression for model 2 also did not have the expected outcome. $R^2$ is 0.038, slightly higher than in the simple regression. With a significance of 0.019, the model is significant. However, as shown in table 7, only the control variables total assets and leverage are significant (0.027 and 0.010 with $\alpha = 0.05$), but the variable audit firm is not.

**Table 7.** Effects of the multiple regression model for hypothesis 2.

Dependent variable: abnormal return, long-term.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard error</th>
<th>Beta</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.073</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td>Audit firm</td>
<td>0.063</td>
<td>0.025</td>
<td>0.727</td>
</tr>
<tr>
<td>Total assets, transformed</td>
<td>0.091</td>
<td>-0.156</td>
<td>0.027</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.029</td>
<td>0.200</td>
<td>0.010</td>
</tr>
</tbody>
</table>
Chapter 5: Conclusion

This chapter describes the main conclusions of this research. A summary of this research will be given and an answer to the research question is drawn. Also the limitations of this research are discussed, and suggestions for further research are given.

5.1. Summary

This study investigates the relationship between audit quality and the market reaction after an accounting restatement announcement in the United States. According to Callen et al. (2006), the market evaluates certain things after a restatement announcement: the restating company’s credibility of the accounting system and financial disclosures, the effect on future earnings estimates and the likelihood that managers behave opportunistically. Taking this into account, investors might lose confidence in the restating company and the market value will decline (Flanagan et al., 2008).

Audit quality is measured according to the theory of DeAngelo (1981): large audit firms with many clients have less incentive to behave opportunistically than small audit firms. Audit quality should lead to less material misstatements in financial reporting and therefore to less restatements. This is supported by the research of Turner and Senetti (2001).

In this research, these theories are linked together and it is expected that the market value of a restating company will decrease more on the short run when the company is audited by a Big 4 audit firm than when it is audited by a non-Big 4 audit firm. It is also expected that on the long term, these two groups experience a different change in market value.

5.2. Conclusions

The first hypothesis was not supported. Both the simple and the multiple regressions for this model did not give the expected outcome. It was hypothesized that the market value of a restating company would decrease more on the short run when the company is audited by a Big 4 audit firm than when the company is audited by a non-Big 4 audit firm. The variable audit firm did not have a significant value. This suggests that the choice of an audit firm has no effect on the market reaction after a restatement announcement.

Also, the second hypothesis was not supported. The simple regression model was not significant, but the multiple regression model was. However, the independent variable audit firm was not significant. It was hypothesized that restating companies with a Big 4 firm as their
audit firm would experience a different change in market value over 120 days than companies that were audited by a non-Big 4 audit firm. The variable audit firm had no significant effect on the market reaction, so there is no relationship between the change in market value and the choice of an audit firm. The control variables total assets and leverage were significant in this model. Total assets has an expected negative effect on the market reaction, leverage has an expected positive effect on the market reaction. However, the explanatory power of this model is just 3.8%, so this relationship is not very strong.

The two hypotheses that are just discussed were developed to answer the following research question: Does audit quality have an effect on the market reaction after an accounting restatement announcement in the United States of America? The results of this study show that there is too little evidence to say that this effect exists, neither on the short run, nor on the long run. On average, the market return after a restatement announcement is negative, but whether the restating company is audited by a Big 4 or a non-Big 4 audit firm makes no difference in the market return. This means that either investors do not care or do not know about the size of the company’s audit firm, or audit firm size does not play a role in this research.

5.3. Academic contribution

Previous to this study, no research was performed to see whether the Big 4/ non-Big 4 dichotomy has an effect on the market reaction after a restatement announcement. Earlier research focused on the effect of audit quality on the probability of a restatement, or on the market reaction after a restatement announcement. These two theories were not earlier linked to each other. This study links the two theories together, thereby offering new contributions to existing literature.

5.4. Limitations and suggestions for future research.

This research is subjected to some limitations. First, the report with restatement announcements from the General Accounting Office that is used in this research is from 2006, with restatement announcements from October 2005 till June 2006. This report is not very recent, so the data is not up-to-date and the results could be different when more recent data is used. Therefore, it might be helpful to use more recent data. Second, a limitation could be that the groups Big 4/ non-Big 4 are not very evenly divided. For both hypotheses, only 18 or 19 percent of the group restating companies was audited by a non-Big 4 audit firm. This might be
caused by the fact that listed companies are often audited by a Big 4 audit firm (Barnier, 2010). Therefore, too little information might be available and the results might not give a truthful picture. In the future, when a similar kind of research is done, the groups should be more evenly spread or audit quality should be measured in another way. Furthermore, the line between Big 4 audit firms and non-Big 4 audit firms might be drawn too sharp. Nowadays, there are a lot of non-Big 4 audit firms that are large, have high returns and many clients and are member of international networks. It is difficult to make a distinction between small and large audit firms, but in the future this could be done more precisely. A fourth limitation is that only two control variables were used in this research. Other control variables such as how many errors the restatement contains or who prompted the restatement, could give more insight in the probability of restatements.

The Green Paper of Barnier (2010) is also a limitation in this research: this paper can lead to changes in the audit profession in Europe, and perhaps later in the United States of America. Future research about restatements and audit quality can hereby be limited.
6. References


trends, market impact, and regulatory enforcement activities. General Accounting Office, GAO-06-1053R


7. Appendices

**Appendix I.** Frequency table with audit firms

<table>
<thead>
<tr>
<th>Audit Firm</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aidman Piser &amp; Company</td>
<td>1</td>
<td>0.3</td>
</tr>
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Some restating companies are audited by more than one audit firm, therefore the total is higher than the number of restating companies.
Appendix II. Scatterplots

Scatterplot
Hypothesis 1

Dependent Variable: ABN_RET

Scatterplot
Hypothesis 2

Dependent Variable: ABN_RET_LT