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The Financial Crisis and the Consequences for Auditor Switching

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The Financial Crisis and the Consequences for Auditor Switching

An empirical study

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ABSTRACT

This master thesis aims to investigate auditor switches in a period of financial crisis. To achieve this goal, a large sample of American auditor switching data is used to allocate the observations to four different types of auditor switches. After matching these data with a carefully determined period of financial crisis, this study provides strong evidence that auditor switches occur less frequently in a period of financial crisis compared to a period of normal economic growth. Further, this study finds that Big-4 to Big-4 auditor switches occur less frequently in a crisis period, while non-Big-4 to non-Big-4 auditor switches occur more frequently in a period of financial crisis. In addition, this study provides evidence that firms, in a period of financial crisis, are less inclined to replace their current Big-4 auditor with a non-Big-4 auditor. No evidence is found for non-Big-4 to Big-4 auditor switching in a period of crisis. As a result, this study provides little evidence that in a period of financial crisis, non-Big-4 audit firms lose, relative to Big-4 audit firms, more market share due to auditor switching.

PREFACE

This thesis is made as a completion of the master program in Accountancy at Tilburg University, School of Economics and Management. This thesis is the product of a half year of research, which is the last part of the master in Accountancy. Previous year, I had achieved the bachelor degree in Business Administration at the same university. My bachelor thesis was written about the effects of earnings management in a financial crisis. Because I would further expand this research to the effects for firms when they become in a financial crisis, I had chosen to investigate auditor switches in a period of financial crisis.

I really enjoyed working on this thesis. It was a time-consuming job, but it is always satisfactory to find surprising results and therefore add knowledge to the field of accounting. Working on this report was not always easy for me because my brother René deceased during the period I was writing this thesis.

The last couple of months, I found a lot of support from several people. First, I would like to thank my supervisor prof. dr. E.H.J. Vaassen RA who provided me with very helpful comments, feedback and other suggestions. Second, I would like to thank Bart van Kraaij for his valuable comments on my thesis. Third, I would like to thank my girlfriend Wendy, my brother Mark and the rest of my family for their helpful support and interest in my thesis.

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CHAPTER 1
INTRODUCTION

Last years, financial and economic news has dominated the newspapers. According to some economists, most of the problems we are currently facing, are related to the housing market. When banks began to give out more loans to potential home owners, housing prices began to rise. While the housing and credit bubbles were rising, several factors caused the financial system to both expand and become increasingly fragile. Many economists agreed that the bursting of the U.S. housing bubble caused a great part of these problems. The house prices declined rapidly in value and even customer confidence decreased quickly. As a result, many financial institutions lost a large part of their value and became insolvent. Even more trouble arose when many banks went bankrupt. Examples are the run on Northern Rock in 2007 and Lehman Brothers in 2008. Declines in credit availability and damaged investor confidence had an impact on the global stock markets. As a result, many securities suffer large losses (International Monetary Fund, 2009). It was clear, this banking crisis has a huge impact: The housing market collapsed, unemployment rates went up and also consumer confidence decreased to historical low levels. People were more willing to save money instead of investing money which resulted in lower capital requirements. At the end of 2008, the politics talked about a global recession (Government). Because the banking crisis in the U.S. had a worldwide impact, the EU-member states decided on a common European approach to the crisis. While in 2009, most of the EU-member states just began with dissolving their financial problems, Greece came out with a huge government budget deficit. After further research, banks and other financial institutions have less and less faith that Greece was able to repay their loans. When one year later the cabinet was fallen, the situation was even getting worse. The confidence in the Greek financial markets was too low, that other EU-member states decided to refuse further loans to Greece. As a result, Greece was not further able to finance their government budget deficit. Only the International Monetary Fund (IMF) was willing to give Greece a loan so that they were again able to finance their government budget deficit and pay back their loans. This loan was provided on the condition that Greece completely reformed their own economy and that they strongly cut in their government expenditures. The financial markets were initially primary focused on Greece, but the uncertainty spread rapidly. It turned out that not only Greece, but also Spain, Portugal and Ireland did have a much bigger government budget deficit than already was expected. Now, the news spread under the heading “global financial crisis”.

It is clear that the economic situation described in the previous paragraph is not the ideal for a firm. For a firm it is important that their own shareholders and stakeholders can trust their investments in firms and even that banks know how much they can lend to them. Therefore, shareholders and stakeholders need objective, relevant and reliable information from the firms’ performance and economic conditions (Knechel, Salterio, Ballou, Gelinas, & Dull, 2011).

Any of these information risks may lead to poor decisions by share and stakeholders or other users of this financial information. The role of the auditor is to reduce these risks. An auditor reduces the risk of unreliable information, reduces the risk of adverse surprises and improves investment decisions. Users of financial information want a kind of insurance against material errors or fraud in their financial information. A way to build that trust or to create some confidence by the shareholders is to hire an auditor, which can control the firms’ financial statements and internal controls and let him give an opinion on it. If an auditor gives an unqualified opinion about the firms’ financial statements, then this will significantly reduce the risk that the financial statements are materially misstated.

The risks of unreliable, subjective and/or irrelevant information and the benefits of an audit create a natural demand for auditing and related services. This demand is naturally higher in times of a financial crisis because the financial markets are then more uncertain than in a period of normal economic growth and as a result, agency problems become much higher. For a firms' management it is more difficult to make good estimates when the economy is instable. Therefore, not only the risk to make wrong decisions is likely to be higher in a period of financial crisis, even wrong decisions may have a bigger impact in an instable economy because the risk to go bankrupt is in a period of financial crisis likely to be higher than in a period of normal economic growth. As a consequence, an auditor is likely to be of more importance for a company if they operate in times of a financial crisis.

This study mainly focuses on the consequences of auditor choice by American companies when they become in a financial crisis. A lot of research was been done about this topic, but not many studies make a relation between auditor switching and changing economic conditions due to a financial crisis. The research question used in this study is:

"What are the effects of the financial crisis on auditor switching?"

There are several reasons thinkable for why firms will change from auditor when they become in a financial crisis. This study focuses mainly on the switch to, or from a Big-4 auditor. The Big-4 audit firms belong to the four largest international professional services networks in accountancy and professional services and audit about 40% of all U.S. public companies (Grothe & Weirich, 2007). The Big-4 consists of PwC, Deloitte, Ernst & Young and KPMG. A very obvious reason for why firms would change to a non-Big-4 auditor is that firms, especially in times where margins are smaller, are more inclined to save costs on the audit so that they can maintain a profit. Simunic (1980) and Chaney, Jeter, & Shivakumar (2004) investigate audit fees and find that the audit fees that Big-4 auditors charge to their clients are significantly higher than the fees charged by non-Big-4 auditors. For that reason, firms can be more inclined to go to a lower ranked auditor to save costs on the audit. Another reason for why firms may change to a non-Big-4 auditor could be that they are more inclined to manipulate their earnings in case of financial distress. Prior research of Fudenberg & Tirole (1995) suggests that when future earnings are expected to be good, managers are inclined to make accounting choices that increase current period discretionary accruals. In effect, managers are effectively 'borrowing' earnings from the future. Conversely, when current earnings are relatively high, but expected future earnings are relatively low, managers will make accounting choices that decrease current year discretionary accruals. Therefore, managers are effectively 'saving' current earnings for possible use in the future. Prior research (Merino, 1981; Smith, Lipin, & Kumar Naj, 1994) confirms this point of view, and finds that managers indeed make discretionary accounting choices that 'smooth' reported earnings around some predetermined target. Other research from (Becker, DeFond, Jiambalvo, & Subramanyam, 1998) was more focused on the earnings quality in relation with audit ranking. They find that clients audited by non-Big-4 auditors have indeed higher discretionary accruals than clients of Big-4 auditors. Another study from Ghosh & Olsen (2009) finds comparable results in a slightly different context. They find that firms are more inclined to manipulate their earnings if they operate in uncertain markets, so during a financial crisis. Finally, research from DeAngelo (1981) suggests that a reason to change from Big-4 to non-Big-4 auditor could be that reputation plays a bigger role for Big-4 auditors, than that it does for non-Big-4 auditors. They argue that a big-4 auditor has 'more to lose' by failing to report a discovered breach by a particular client. In other words, they argue that the engagement risk of a Big-4 auditor is likely to be higher than the engagement risk of a non-Big-4 auditor. Besides these reasons, there are also reasons thinkable for why a firm would switch to a Big-4 auditor instead of a to a non-Big-4 auditor when they become in a financial crisis. An important reason may be that companies wish to switch

to a Big-4 auditor if they believe that such an alteration would add credibility to the firms' financial statements. In fact, they may not save costs on the audit but they are willing to pay a higher fee. Another important reason can be that the government uses a policy so that firms are required to rotate auditors (Gregory & Collier, 1996). Other, less common reasons are further discussed in chapter 2.

This study requires data about financial statements, auditing history and information that gives me the opportunity to mark certain periods as 'crisis-period' or mark them as 'non-crisis-period'. This study calls on research from Mishkin (1991) to determine these crisis-periods. He determines five factors that possibly cause a financial crisis[1]. The study analyses data from the years 1990 – 2011. Both the frequency of changing from auditor is analyzed as the direction (from non-Big-4 to Big-4 or vice-versa) of the change.

The most important findings in this study are that this study provides strong evidence that auditor switches occur less frequently in a period of financial crisis compared with a period of normal economic growth. This study finds also evidence that Big-4 to Big-4 auditor switches occur less frequently in a period of financial crisis, and that non-Big-4 to non-Big-4 auditor switches occur more frequently in a period of financial crisis. Additionally, this study find strong evidence that firms which have currently a Big-4 auditor are less inclined to switch to a non-Big-4 auditor when they become in a period of financial crisis. No evidence is found about non-Big-4 to Big-4 auditor switching.

The results of this study can be of importance for a firms' management, audit firms, standard setters and several other parties. It is important to know how a firms' management reacts to auditor switching as a result of changing market conditions. Especially bigger audit firms can use this information by planning their 'capacity' for upcoming years. The results of this study can also be of importance for users of a firms' financial information. A firm gives a signal if they switch to a lower ranked auditor. That could also mean that their financial statements are of lower quality and/or less trustworthy (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; DeAngelo L. E., 1981). Further, the results of this paper could be added to the auditing expertise.

Important to note is that this paper refers specifically to the financial part of accounting. The term 'accounting' refers in this paper to the process by which information about an activity or enterprise is identified, recorded, classified, aggregated and reported. The term 'financial accounting' refers to the specific process that is required for external purposes by GAAP (Smith, Hamelink, & Hasselback, 2009). Therefore, financial accounting is a subset of the total information that is generated by a business enterprise (Knechel, Salterio, Ballou, Gelinas, & Dull, 2011). A financial statement is an annual report that is the result of capturing, classifying, aggregating and reporting of the financial activities of a business. Further is in this paper the term 'auditor' very often used. Important to know is that I in this paper only talk about an external auditor because an internal auditor is not relevant for this study.

The structure of this paper is as follows: The research question is developed and further outlined in the next chapter. This chapter contains also a discussion of related prior research. Chapter 3 contains the definition and further information about a financial crisis. This chapter calls on a study of Mishkin (1991) to determine the borders for the crisis versus non-crisis periods in more detail. Chapter 4 discusses the research method used in this study and chapter 5 contains the results. Finally, the discussion of the results, limitations of this study and the opportunities for future research are discussed in chapter 6.

[1] These factors are: (1) rising interest rates, (2) declining share prices, (3) increasing rate of unemployment, (4) significant more bank runs, and (5) a decline in the aggregated price level.

CHAPTER 2
LITERATURE REVIEW

An audit of the financial statements of a public company is usually required for investment, financing, and tax purposes. For the primary users of the financial statements it is important that the information presented in the financial report is reliable, comparable, verifiable, timely and written in an understandable manner. These primary users are for example present and potential investors, lenders and other creditors. They base their decisions about buying, selling or holding equity or debt in a firm mainly on the information as presented in the firms' financial statements (International Accounting Standards Board, 2007). Therefore, it is for these primary users important that the information presented is free of material errors. An auditor checks the financial statements whether these give a true and fair view of the firms' financial performance and whether the financial statements comply with the used accounting standard. Information in financial statements can be biased, irrelevant, incomplete and/or inaccurate. An auditor's task is to reduce these risks so that people who use this information can fully rely on it (Knechel et al., 2011). Wrong, hidden or inaccurate information can lead to poor decision making by a firms management and hence by shareholders. Earnings management is allowed for so far the adjustments do not affect the compliance with U.S. GAAP and whether the statement of true and fair view of the firms' performance remains to be valid. If an auditor performs an audit for a firm, it is highly important that the auditor has the required knowledge and skills to do the audit and that he works fully independent of the firms' management. An auditor is not allowed to do the audit if he lacks on one of these items. The results of the audit are summarized in an audit report that either provides an unqualified opinion on the financial statements or qualifications as to its fairness and accuracy. This audit opinion is important to know for the users of the financial information and therefore always included in the financial statements. The name of the auditor is mentioned in the financial statements as well.

Because the auditor is of huge importance by completing the firms' financial statements, many users want to know which auditor has performed the audit. Users of this information are interested in the quality of the audit, and hence in the level of independence of the auditor. It is self-evident that only an independent auditor can do a sufficient audit.

Firms can switch from auditor for several reasons. This study focuses mainly on the behavior of managers by switching from auditor when economic conditions change significantly. Therefore, I do not describe all the possible reasons to switch from auditor, but only the reasons which are possibly related to changing economic conditions. Only these reasons are relevant for this study.

2.1 PRIOR RESEARCH ABOUT AUDITOR SWITCHING

If a firm changes his auditor, this gives a signal to potential financial statement users. Recently there was a lot of debate about auditor switching. Some researchers (Turner, Williams, & Weirich, 2005; Carey & Simnett, 2006) suggests that the independence impairs when audit tenure becomes too long. Another study of (Ghosh & Moon, 2005) finds opposite results and argues that independence and audit quality increase with a longer tenure because of improved auditor expertise from superior client-specific knowledge. They argue that an auditor with a longer tenure has more client-specific knowledge of items such as the firms' operations, their accounting system, and the internal control structure, which was crucial to detect material errors and misstatements.

A question can arise which auditor is better able to do a particular audit? Much research is done about this topic, but with partly contradictory results. A study from (Becker, DeFond, Jiambalvo, & Subramanyam, 1998) shows the relation between audit quality and the extend to which earnings management is applied in the financial statements. They find evidence that clients of non-Big-6 auditors report significantly more income increasing discretionary accruals than clients of Big-6 auditors. For that reason they conclude that Big-6 auditors are of higher quality that non-Big-6 auditors are. Other research (DeAngelo L. E., 1981) suggests that bigger auditors have more to lose by failing to report a discoverred breach in a particular clients record than that smaller auditors have. In other words, the engagement risk of a Big-4 auditor is likely to be higher than the engagement risk of a non-Big-4 auditor. Their paper argues that size only alters auditors' incentives such that, ceteris paribus, larger audit firms supply a higher level of audit quality. On the other side, research from Arnett and Danos (1979) argues that "as long as professional standards and qualifications were maintained, it is unfair to arbitrarily distinguish between large and small CPA firms". In 1980, the American Institute of Certified Public Accountants (AICPA) considered the size issue sufficiently important to appoint a special committee (the Derieux Committee) to study the issue in more depth. The Derieux Committee later suggested that "the selection of a CPA firm should be based not on size, but on the ability to provide service". In other words, the Derieux Committee's position is that auditor size should be irrelevant in the selection of an auditor because auditor size alone does not affect the quality of audit services supplied (DeAngelo L. E., 1981).

2.2.1 REASONS FOR AUDITOR SWITCHING WHEN ECONOMIC CONDITIONS CHANGE SIGNIFICANTLY

There are several reasons thinkable for why firms will change their auditor when they become in a financial crisis. The reason might be that a financial crisis has in most cases an unfavorable effect on the firm performance. By far the most companies report less favorable firm performance in a crisis period compared to a period of normal economic growth. Very common effects are higher interest rates due to higher risk premiums by banks, declining sales levels due to less consumer confidence and raising unemployment rates and as a result lower or sometimes negative net profits. In such situations, managers will let the financial statements look good even in a situation where it is less likely to maintain a good firm performance. A very common term for this type of earnings management is "income smoothing". Managers have an incentive to reduce variability in earnings so that it seems that they have, even in less favorable economic conditions, much control over the firm performance. This creates some confidence by shareholders. Research from DeFond and Park (1997) confirms this view. They suggest that when future earnings are good, managers have an incentive to borrow earnings from a future period and use these in the current period (and vice versa). More explicitly, when current performance is poor, managers have an incentive to shift future earnings into the current period in order to reduce the chance of dismissal. Conversely, when future performance is expected to be poor, managers wish to shift current period earnings into the future in order to reduce the likelihood of future dismissal. A possible reason therefore is that poor performance increases the likelihood of managements' dismissal and good performance will not compensate for poor performance in the future (Fudenberg & Tirole, 1995). Prior research from (Turner, Williams, & Weirich, 2005) finds that more auditor resignations occur when litigation risk increases and a company's financial health deteriorates. They find also evidence that auditor resignations often occur in the context of grave financial circumstances, and that such a change results mostly in a drop in the firms' stock price. Therefore, it is not self-evident that a firm will change their auditor when they become in a financial crisis.

In the next three paragraphs, I describe the reasons for switching from auditor for even the firms' management, the auditor himself, and some governmental reasons.

2.2.2 REASONS FROM THE FIRMS' MANAGEMENT

The firms management can also play a role by an auditor dismissal. A very common reason for a firms management to switch from auditor is that companies may wish to change from a non-Big-4 to a Big-4 auditor because they believe that such an alteration in the auditor would add credibility to the companies financial statements (Gregory & Collier, 1996). In that case the company does not seek to fee reductions, but they are prepared to pay a higher fee to get more assurance about their financial statements. An increased level of disclosure reduces the possibility of information asymmetries arising either between the firm and its shareholders, or among potential buyers and sellers of firm shares (Christensen, Hail, & Leuz, 2011). In fact, they reduce their cost of capital by obtaining more assurance about their financial statements.

Another reason to switch from auditor can be that a firms' management thinks that Big-4 auditors are of higher quality than non-Big-4 auditors are. Becker et al. (1998) find that non-Big-4 clients report higher accruals than clients of Big-4 auditors do. Another study find similar results in a slightly different context. Research from Teoh & Wong (1993) measure audit quality with a measure of information assymmetry: the Earnings Response Coefficient (ERC). More clearly: The ERC is a measure of the extent to which new earnings information is capitalized in the stock price. It is a multiple that correlates unexpected earnings with abnormal changes in stock prices in response and is commonly estimated as the slope coefficient in a regression of the abnormal stock returns on a measure of earnings surprise. Because they find significantly higher ERC's by clients of Big-4 auditors, they conclude that Big-4 auditors are of higher quality than non-Big-4 auditors are and are therefore better able to reduce this information asymmetry component. But, the fact that Big-4 auditors are more likely to be of higher quality than non-Big-4 auditors are does not neccecarily mean that managers will switch to a Big-4 auditor. It can be that, managers prefer an auditor of lower quality because they will apply more earnings management to reduce variability in the firms earnings. Therefore, a firm can also lower its cost of capital to go to a non-Big-4 auditor. It can be that, in periods of financial crisis, management decides to save money on the audit and therefore choose for a cheaper auditor. Some other research suggest that Big-4 auditors charge higher fees to their clients than non-Big-4 auditors do (Simunic, 1980; Chaney, Jeter, & Shivakumar, 2004). For that reason, a firm can go to a lower ranked auditor to save costs (which can possibly be at the expense of audit quality).

Research from Turner, Williams, & Weirich (2005) gives also some other reasons to change from auditor. A possible reason can be that management has disagreements about accounting principles or the scope of the audit. Or that management has concerns about the quality of the audit or that they are unsatisfied about the opinion gived by the auditor (Roberts, Glezen, & Jones, 1990). They argue also that there was an increase in the number of changes due to the inability (or unwillingness) of accounting firms to meet SEC requirements. Also other accounting disagreements can play a role such as improper, aggressive or non-GAAP accounting that the current auditor is unwilling to accept can lead to an auditor switch. In that case, firms can decide to dismiss their current auditor which disagrees with management's accounting matters and subsequently hire a more conciliatory one.

In such situations it is more likely that the change is due to a dismissal by the company rather than an auditor's resignation.

2.2.3 REASONS FROM THE AUDITOR HIMSELF

Not only the auditor can get dismissed by the firms management, the auditor can also resign himself. This can be the case if for example an auditor cannot longer rely on management representations for conducting the audit. If this is the case, doubt is cast on the integrity of the management and the financial statements as well. For many auditors, this is reason enought to abandon the relationship with his client. Trust can be a big issue so that further collaboration is not sensible. A lack of trust can therefore be a huge problem bij conducting an audit. But the trust issue can also work in the other way around: the relationship between the auditor and the client can be so close that the audit firms' objectivity and independence is at risk. It is important that auditors maintain a high level of independence to keep the confidence of users relying on their reports (Arens, Elder, & Beasley, 2011). As mentioned before, their is a lack of clarity about the relation between audit independence and audit tenure. Some research suggests that independence impairs by a longer tenure with their client because of familiarity reasons. Other research suggest that independence and audit quality increase by a longer tenure because of superior client-specific knowledge. Another reason for an auditor to abandon the relation with his client is because his client is concerned in illegal acts. The chance that management commits an illegal act is in a situation of financial crisis intuitively higher than in a situation of normal economic growth because the demand for aggressive earnings management is much higher when the firm performance is under pressure. An auditor can decide to abandon the relationship because of possible reputation damage or because they will not be concerned in these acts for principle reasons. Finally, a relationship between an auditor and a client can also be terminated because of personal reasons. If an auditor has very often discussion with management, or they cannot trust eachother anymore, it is in some situations better for both parties to terminate the relationship. Of course, this can be a reason to change for both the firms' management as the auditor himself.

2.2.4 GOVERNMENTAL REASONS

The auditor - client relationsship does not neccesarily have to be terminated due to one of both parties. Also the government can have influence on the auditor – client relationship. Due to major financial reporting failures at for example Enron and WorldCom led to financial reporting reforms contained in the Sarbanes-Oxley Act of 2002 (SOX). SOX's reforms directly related to auditors include the establishment of the Public Company Accounting Oversight Board (PCAOB), increased audit committtee responsibilities, and mandatory rotation of audit partners after five consecutive years on an engagement (Brody, Arel, & Pany, 2005). Some regulators have shown that long-term relationships between companies and their auditors create a level of closeness that could reduce the level of independence and therefore the audit quality. Prior reasearch (Nashwa, 2004) argues that long-term relationships between auditors and their clients increase the risk of audit failures because auditors get closer to their clients; become stale in their audit approaches; and lose their independence. To mitigate these problems, especially in a period of financial crisis, the government can carry a policy to rotate auditors after a pre-determined length of period. Therefore, the government can also play a role by auditor switches. Note that a lot of researchers are not sure of the impact that mandatory audit rotation has. Research from Brody, Arel, & Pany (2005) argues that it is very difficult for an auditor to completely understand a company's business in a short period of time. They find that mandatory auditor-rotation could have a negative impact on audit quality because audit failure rates are likely to be higher when the auditors are new and have not yet developed the institutional knowledge necessary for a comprehensive audit. Mandatory auditor rotation is also more costly for a company because a new auditor also incur setup costs by a new

client. Research of Jackson, Moldrich, & Roebuck (2008) confirm with this view. They find a positive relation between audit tenure and audit quality. In other words, they suggest that audit quality increases with audit firm tenure and conclude that there are minimal, if any, benefits of mandatory audit firm rotation. In contrast to the research of PriceWaterhouseCoopers (2007) were they argue that mandatory rotation of auditors makes it much more difficult to achieve current audit quality. Furthermore, they argue that mandatory rotation of audit firms will increase audit costs because of the tender and start-up time incurred by both management and the new audit firm.

2.3 CONSEQUENCES OF AUDITOR SWITCHES

Before a firms' management decides to switch their auditor, they must be aware for the consequences of such switch. A switch from auditor always gives a signal to (potential) investors and therefore it is important to know if the shareholders interpret such change as good or bad news. Under SEC rules, companies are required to disclose certain information when they change their auditor. They do not necessarily have to disclose a specific reason for the auditor change (Turner, Williams, & Weirich, 2005). Therefore, investors can be left to wonder about the real reason for the change. Investors should always be careful when a company announces an auditor change. It may be related to underlying, but undisclosed problems in the company's financial statements. A study of Hagigi, Kluger, & Shields (1993) investigates the effect of the auditor change announcement on the consensus of investor expectations. They find that an auditor change announcement lead to increased investor consensus (trading volume declines) but that the bid-ask spread (their measure of information asymmetry) will decline either to information or to institutional (volume)factors. Which of the two findings has a stronger effect depends on the type of the announcement. The results suggest that an auditor change announcement lead to increased investor consensus, and therefore lower beliefs about the value of a firms asset. Finally, they argue that, regardless of whether investors interpret an auditor change announcement as good or bad news, the announcement itself seems to have informational value and is therefore informative to investors. Other research from Persons (1995) does not only look at auditor changes in relation to investor reactions, but looks also at the firms' financial conditions. They find that financially troubled firms which change their auditor from a Big-8 to a non-Big-8 experience a more unfavorable stock price reaction than financially healthy firms that change their auditor in the same direction. These results suggest that investors consider a firms' financial condition in reacting to an auditor change.

CHAPTER 3
DETERMINING THE FINANCIAL CRISIS

In the previous chapter different determinants of auditor switches are discussed. Each determinant is of different interest by the parties involved. There are probably more causes of auditor changes, but for this study I assume that these are the most relevant ones. The first part of this chapter is committed to determine the crisis versus non-crisis periods. The latter part is dedicated to analyse investor reactions as a result of auditor switches.

First of all it is important to know which period we determine as a crisis period, and which period we determine as non-crisis period. This is not an easy task because there are different definitions of what a crisis exactly is. This is possibly due to the fact that crises of such magnitude arise very sporadic and that a crisis can arise in many different ways. Therefore, there are many different views about wat a crisis really is. As mentioned in the introduction, there are serveral types of crises which al have their own characteristics. Because many previous research called about a financial crisis, this type of crisis is already used for this study.

Some monetarists (Friendman and Schwartz, 1963) have linked a financial crisis with banking panics. They view banking panics as a major source of contractions in the money supply which, in turn, have led to severe contractions in aggregate economic activity in the United States. An opposite view of a financial crisis is outlined by Kindleberger (1978) and Minsky (1972) who have developed a much broader definition of what constitutes a real financial crisis. In their view, sharp declines in asset prices, failures of firms, deflations or disinflations, disruptions in foreign exchange markets, or a combination of these could indicate a financial crisis. A disadvantage of Kindleberger-Minsky view is that they do not have developed a clear theory of what characterizes a financial crisis. On the other hand, the monetarists point of view is extremely narrow because they only focus on banking panics and their effect on the money supply (Mishkin, 1991). Therefore, a more rigorous and clear theory is needed to mark a certain period as crisis versus non-crisis period.

Mishkin (1991) had developed a more precise definition of a financial crisis in his research named: “The Anatomy of a Financial Crisis”. He defines a financial crisis as: “A disruption to financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities”. Therefore, he focusses more on the information-asymmetry component of a financial crisis. More clearly, asymmetric information occurs if one party does not have al the necessary information which was needed to correctly perform an transaction. Asymmetric information creates problems in two possible ways: before (adverse selection) and after the transaction (moral hazard). Adverse selection occurs for example when bad potential borrowers, who are the most likely to be unsuccesful in their project, are the ones who are even the most likely to be selected to get a loan. Moral hazard occurs because the borrower has incentives to invest in projects with high risks in which the borrower bears most of the profit if the project succeeds, while the lender bears most of the loss if the project fails (Douma, et al., 2008). As a result, several problems can arise. On one hand, investors make wrong decisions because they have wrong and/or incomplete information. On the other hand, these mistakes can have a huge impact, especially because the investors run too high risks while they are not compensated for the risks they bear.

This study calls on the research of Mishkin (1991) which has several reasons. First, he sets out a very precise definition of what a financial crisis exactly is. This makes it possible to correctly define the crisis versus non-crisis periods. Second, he links the characteristics of a financial crisis with problems related to information asymmetry. In my opinion, this information asymmetry

component is more related to auditors quality than methods used in other research. This is because auditors quality has much to do with reducing this information asymmetry component between shareholders and a firms' management. Third, he also developed five factors in the economic environment that can lead to substantial worsening of adverse selection and moral hazard in financial markets, which in turn cause a financial crisis. These factors that possibly cause a financial crisis are: (1) increases in interest rates, (2) stock market declines, (3) increases in uncertainty, (4) bank panics, and (5) unanticipated declines in the aggregate price level. These five factors make it possible to determine the crisis versus non-crisis periods carefully which is very important for the reliability of the results, if there are. These five factors will be discussed in the next sections, but first the thoughts behind Mishkin's theory about the 'life cycle' of a financial crisis will be explained in more detail.

3.1 MISHKINS THEORY BEHIND A LIFE-CYCLE OF A CRISIS

Such as the study of Mishkin (1991) suggests, almost all financial crises in the U.S. history began with a strong rise in interest rates, a stock market crash and a significant decrease in consumer confidence as a result from bankruptcies or other failures of important financial institutions. As a result of the deteriorating economic conditions, depositors will be worried that the bank where they have their deposits might go bankrupt and begin to withdraw their funds. The resulting banking panic ensures that the amount of money in the economy declined which further boosted the interest rates up. Not seldom after many bankruptcies have occured, there would be a sorting out of solvent and insolvent firms which lead to a decrease of adverse selection and moral hazard problems. The uncertainty in the financial markets will decline and the economic activity rises to a normal level again.

3.1.1 INCREASES IN INTEREST RATES

When interest rates raise up, borrowing costs become higher and people will start to spend less. As a consequence, the demand for goods and services will drop which causes inflation to fall. Conversely, falling interest rates can cause recessions to end. When de Fed lowers the federal funds rate, borrowing money becomes cheaper. In effect, this stimulates the spending level again.

As we have seen before, firms with the most risky investments are willing to pay the highest interest rates. For example, when the market interest rate is driven up, the borrowers with the least risky investments are the ones who are less likely to want to borrow on a higher rate, while the borrowers with the most risky projects, are still willing to borrow on the higher rate. Hence, the adverse selection problem becomes higher when interest rates raise and, as a result, lenders will no longer want to make loans because of these risks. This will lead to a decline in lending which in turn lead to a decline in investment and the aggregate economic activity.

When many firms become in a financial crisis, the FED is likely to stimulate the investments and the economic activity by lowering their interest rate. Therefore, the point in time where the interest rates began to decline significantly is seen as the starting point of the financial crisis. Conversely, the point in time where the interest rates began to rise significantly is seen as the ending point of the financial crisis. To measure the effects of the crisis on the interest rates, data from the Federal Reserve System (also known as The Fed) is used because this is the central banking system of the United States. These Federal Funds rates are shown in figure 1 of appendix 1 for the last ten years. As seen in this graph, from the second quarter in 2004 to the second quarter in 2006, there was a significant increase in the interest rate (from 1.00% to 5.25%). But when in September 2007 the first problems became public, and people became uncertain about the real safety of their deposits, the FED wanted to stimulate the economic activity and lowers their base rate by 0.5

percent. Short thereafter, the value of houses (and therefore collateral) declined further and the FED was forced to further decline their interest rate. In December 2008, the interest rate reached a historical minimum of 0.25 percent. Based on this graph, it is reasonable to assume that the financial crisis began at the beginning of the fourth quarter in 2007 and ended at the beginning of the first quarter in 2009 when a historical low interest rate was reached.

3.1.2 STOCK MARKET DECLINES

A decline in the stock market can even increase adverse selection and moral hazard problems in financial markets because it leads to a decline in the market value of firms net worth. This decline in net worth (and therefore in collateral) makes lenders less willing to lend because if the value of collateral declines, it provides less protection against adverse selection problems so that losses from loans are likely to be more severe. A possible reaction of the lenders is that they, because they are less protected against the consequences of adverse selection, decrease their lending which in turn leads to a decline in investment and the aggregate economic activity.

In addition, the decline in net worth (and therefore in collateral) as a result of a stock market decline increases also moral hazard incentives. Borrowing firms are more inclined to make risky investments because these firms now have less to lose if their investment is unsuccesfull. As a result, the increase in moral hazard incentives makes lending less attractive and is therefore a reason for lenders to decrease their lending which in turn leads to a decline in investment and the aggregate economic activity.

To measure the effects of the crisis on the financial markets, data from the Dow Jones index is used. These Dow Jones index rates are shown in figure 2 of appendix 1 for the last ten years. The point in time where the stock prices began to decline significantly is seen as the starting point of the financial crisis. Conversely, the point in time were the stock prices began to rise significantly is seen as the ending point of the financial crisis. As seen in this graph, from the beginning of 2001 to the first quarter of 2003 were the index reaches a minimum, the index had grown at a negative rate of -11.25 percent per year. Thereafter, the index rates raised with a rate of 14.85 percent a year to a maximum of 13901 points in the fourth quarter of 2007. At the end of 2007, the index rates began to drop significantly ($\alpha = 0.001$) compared with the same length of period before. The share prices declined at an average rate of almost -32 percent a year to a minimum of 7235 points at the end of the first quarter of 2009. The sharpest drop is measured on 15 September 2008 when Lehman Brothers declared bankruptcy. After the first quarter of 2009, the stock prices began to raise significantly ($\alpha = 0.001$) compared with the period before. Based on these index data, it is reasonable to assume that the financial crisis began at the beginning of the fourth quarter in 2007 and ended at the end of the first quarter in 2009.

3.1.3 INCREASES IN UNCERTAINTY

If the uncertainty in the economy increases unexpectedly, it is harder for lenders to distinct good from bad credit risks. Therefore, lenders are less able to solve the adverse selection problem which in turn makes them less willing to lend. This results in a decline in lending and therefore also in the investment and aggregate economic activity.

To measure the effects of the crisis on consumer confidence, data from the U.S. Consumer Confidence Index (CCI) is used. These index rates are shown in figure 3 of appendix 1 for the last ten years. The point in time where the index began to decline significantly is seen as the starting point of the financial crisis. Conversely, the point in time where the index began to rise significantly is seen as the ending point of the financial crisis. As seen in this graph, from the beginning of 2001

to the first quarter of 2003 where the index reached a minimum, the index had grown at a negative rate of 20.85 percent per year. Thereafter, the Consumer Confidence Index rates raised with a rate of 18.62 percent per year to a maximum level of 111.9 at the end of the third quarter in 2007. After this quarter, the trust in the financial markets declined significantly ($\alpha = 0.012$) compared with the same lenght of period before. The index rates drop with a average rate of 50.69 percent per year to a minimum of 25.3 at the end of the first quarter of 2009. Thereafter, the index began to raise significantly ($\alpha = 0.007$) compared with the period before. Based on these index data, it is reasonable to assume that the financial crisis began at the beginning of the fourth quarter in 2007 and ended at the end of the first quarter in 2009.

3.1.4 BANK PANICS

Bankruns can also give a signal for when a crisis is coming up. An obvious reason is that a simultaneous failure of many banks, reduces the lending capacity by banks which in turn leads to a decline in investment and aggregate economic activity. But also asymmetric information can play a role by banking panics. It is harder for depositors to distinguish between solvent and insolvent banks. Banks will protect themselves from possible deposit outflows, and increase their reserves relative to their deposits. The net result is also a reduced lending capacity by banks which in turn leads to a decline in investment and aggregate economic activity.

To measure the effects of the crisis on banking panics, the history of bankruns in the United States is consulted. The number of bankruns is shown graphically in figure 4 of appendix 1 for the last seven years. The years 2005 and 2006 did not show any bank failures. The first bank went bankrupt at the 25th of January, 2007 while also two other bankruns followed in that same year. Further, the years 2008, 2009 and 2010 reported 25, 140 and 157 bankruns respectively. Based on this data, it is difficult to determine a starting point for the financial crisis. It is clear that the trouble began in 2007, but the most bankruns were only reported in 2010. Also an ending point if the financial crisis is difficult to determine because many bank failures keep happening in later years.

3.1.5 UNANTICIPATED DECLINES IN THE AGGREGATED PRICE LEVEL

Also unanticipated declines in the aggregate price level can have effect on the net worth of firms. Because if the aggregate price level declines, this does not have an effect on the nominal value of the firms' liabilities because these are contractually fixed. But this decline in aggregate price level raises the value of the firms liabilities in real terms because of increased burdens to the debt. In other words, the relative value of the firms liabilities raises more strongly than the firms assets do. The result is that the net worth in real terms declines as a result of a decline in this aggregated price level. Therefore, a drop in the aggregated price level causes an increase in adverse selection and moral hazard problems by lenders which in turn lead to a decline in investment and aggregate economic activity.

To measure the effects of the crisis on the aggregate price level, data from the Consumer Price Index (CPI) for the United States is used. These index rates are shown in figure 5 of appendix 1 for the last nine years. The point in time where the index began to decline significantly is seen as the starting point of the financial crisis. Conversely, the point in time where the index began to rise significantly is seen as the ending point of the financial crisis. As seen in this graph, the index was grown substantially from the beginning of 2003 to the end of the second quarter in 2008 where the index reached a maximum of 219.96 points. Thereafter, the aggregate price level declines significantly ($\alpha = 0.020$) compared with the period before. The aggregated price level dropped at an average rate of 8.85 percent per year to a minimum of 210.23 at the end of the fourth quarter of

2008. After the fourth quarter of 2008, the price level began to raise significantly ($\alpha = 0.027$) compared with the period before. Based on the Consumer Price Index, it is reasonable to assume that the financial crisis began at the beginning of the third quarter of 2008 and ended at the end of the fourth quarter of 2008.

3.2 DETERMINING THE CRISIS PERIOD

After these five factors that possibly cause a financial crisis have been analyzed, I should be able to mark certain periods as crisis versus non-crisis period. Therefore, a confidence level of $\alpha = 0.05$ is used to define these periods reliable. For reasons with regarding to the data collection, it is required that a period of crisis must at least have a lenght of two quarters.

Important to note is that for only one period significant effects are found for at most four of the five factors. At the moment, we are even in an economic recession, but based on the requirements, these effects are not significant enought to mark these other periods as crisis period. Based on the first three factors, the crisis began in the fourth quarter of 2007 and ended after the first quarter of 2009. As previously mentioned, the graph of the banking panics does not tell us much about a financial crisis. Therefore, I cannot mark a crisis period based on this data. The decline in aggregate price level is shorter of lenght, but occurs right in the period which I found by the first three factors. In despite of the unusable graph of the banking panics and the shorter period in which the price level declined, it is reasonable to assume that their was only one crisis period which began at the beginning of the fourth quarter of 2007 and ended at the end of the first quarter of 2009.

CHAPTER 4
HYPOTHESES DEVELOPMENT

The main subject of this study is to relate auditor switches to a period of financial crisis. As described before, there are many reasons for auditor switching. Changing economic conditions could cause a change; the firms' management could cause a change; the auditor could resign himself and also the government could play a role in auditor change. This study focuses mainly on the auditor changes in relation to a financial crisis, so when economic conditions change significantly. As described in the previous chapter, this crisis period is defined based on five factors that possibly cause a financial crisis.

This study focuses on both the frequency and the direction of the auditor switch. Therefore, the research question in this study is: *"What are the effects of the financial crisis on auditor switching?"* To distinct small from big audit firms, this study distinct Big-4 with non-Big-4 firms. The reason to make a distinction between Big-4 and non-Big-4 audit firms is that the four largest auditing firms audit about 40% of all U.S. public companies. In comparison with the four second-tier audit firms, they audit less than 10% of all public companies in the U.S. (Grothe & Weirich, 2007). Therefore, this study makes only a distinction between Big-4 and non-Big-4 audit firms. By keeping this in mind, a firm can change from auditor in four possible ways: from non-Big-4 to Big-4; from Big-4 to non-Big-4; from non-Big-4 to non-Big-4 and from Big-4 to Big-4. In this study, we further call about an "upward switch", a "downward switch" and the last two types are "switches within the same class". Each type of change will be brought in relation with the predefined crisis period. It is noteworthy that there is a clear distinction between the so called frequency of auditor switches, and the auditor switches within the same class. The difference is that the frequency is related to all types of auditor switching, while auditor switches within the same class only relates to two types of auditor switching. Therefore, an increase (decrease) in auditor switches within the same class does not necessarily lead to a higher (lower) frequency of total switches in that particular year. The results of the frequency of auditor switching are mostly described in the descriptive statistics and the results of auditor switching within the same class where described in the results of the regression analysis.

Another important point to mention is that this study uses auditor change observations instead of firm year observations. Therefore, this study does not 'follow' a particular number of firms and look if they switch upward or downward, but it investigates if a particular observation is an upward or a downward switch. In despite of having only one Big-4 across the last ten years, even an increase in upward auditor switching does therefore not automatically lead to a decrease in downward switching. However, it could be that a specific factor has for example an increasing effect on upward switching and also a decreasing effect on downward switching (or vice versa). Another effect is that the bankruptcy of a firm does not lead to an auditor switch, but in that case, the auditor has lost a client as well. Therefore, this study does not investigate the effects of the market share for auditors, but focuses specifically on the consequences for auditor switching.

For a logical structure, I will first describe the frequency of the changes and thereafter the direction of the change. Most of the reasons are already described in chapter two. For simplicity, the reasons for switching that could have an effect on the frequency of the change are summarized in paragraph 4.1, the reasons for switching that could have an effect on the direction of the change are summarized in paragraph 4.2, and the reasons that could have an effect on in class auditor switching are summarized in paragraph 4.3. Each paragraph ends with an expectation, if possible.

4.1 FREQUENCY OF AUDITOR SWITCHES

There are several reasons for why firms will change *more* frequently their auditor when they enter into a financial crisis. As already is mentioned in chapter two, Turner, Williams, & Weirich (2005) found that auditor switches can occur more frequently because the litigation risk in a period of financial crisis is likely to be higher than in a period of normal economic growth. Another reason could be that, because the risk of going bankrupt in a period of financial crisis is likely to be higher than in a period of normal economic growth, the firms' management is less likely to be satisfied with the opinion given by the auditor over their financial statements (Roberts, Glezen, & Jones, 1990). Therefore, a firms' management should be more inclined to dismiss their auditor in a period of financial distress. In addition, the risk of fraud, or to engage into an illegal act is likely to be higher in a period of financial crisis than in a period of normal economic growth because the demand for aggressive earnings management is higher when the firm's performance is under pressure.

Conversely, there are also some reasons thinkable for why firms will change *less* frequently their auditor when they enter into a financial crisis. As seen in section 2.6, an auditor change announcement gives a signal to investors. Hagigi, Kluger, & Shields (1993) suggest that an auditor change announcement could have negative implications for the firms' stock price as a result of increased investor consensus. They find that the trading volume declines significantly as a result of an auditor changes announcement. In addition, Jackson, Moldrich, & Roebuck (2008) find that changing from auditor is more costly for a company because a new auditor also incurs setup costs by a new client. Therefore, a firms' management can even decide to stay with their current auditor. Also earnings quality could be an issue. Brody, Arel, & Pany (2005) show that the audit failure rates are higher when the auditors are new and have not yet developed the necessary institutional knowledge. This could also be a reason for a firms' management to stay with their current auditor.

Because results of prior research are contradictory, the first set of hypothesis is twofold. Based on this prior research, auditor switches can even occur more or less frequently when economic conditions becomes more worse, that is when firms' become in a financial crisis. Therefore, it is not possible to give an expectation of the total frequency auditor switches. More formally, the first set of hypotheses used in this study is:

H1a: "Firms switch their auditor *more* frequently during a financial crisis compared to a period with normal economic growth."

H1b: "Firms switch their auditor *less* frequently during a financial crisis compared to a period with normal economic growth."

4.2 DIRECTION OF AUDITOR SWITCHES

In addition to the total frequency of auditor switches and the frequency of auditor switches within the same class, this study also investigates whether a firms' management is more inclined to go to a Big-4 auditor, or whether they are less inclined to go to a Big-4 auditor. Further, this study also investigates whether a firms' management is more inclined to go to a non-Big-4 auditor, or whether they are less inclined to go to a non-Big-4 auditor. It is noteworthy that an increase in upward switching not automatically results in a decrease in downward switching (and vice versa). As previously mentioned, there are four possible switches for when a firm changes his auditor. Each switch can occur more or less frequent in a period of financial crisis. There are several reasons thinkable for why firms will change a non-Big-4 to a Big-4 auditor (or vice versa) when they become in a financial crisis. As already was mentioned in chapter two, some managers believe that an upward switch adds credibility to the firms reported profits in the financial markets. They argue that a Big-4 auditor is of higher quality

than a non-Big-4 auditor is. This may lead to an increased level of disclosure, which reduces the possibility of information asymmetries arising either between the firm and its investors (Christensen, Hail, & Leuz, 2011). Research from Becker et al. (1998) confirms with this view, while research from Chaney, Jeter, & Shivakumar (2004) suggests that Big-4 auditors are not superior in terms of perceived quality. This could induce an increase in upward auditor switching and/or a decrease in downward auditor switching when firms become in a financial crisis. Another reason to switch to a Big-4 auditor is that this could give a positive signal to investors because the earnings quality of Big-4 auditors is likely to be higher than of non-Big-4 auditors. This could both induce an increase in upward switching and/or a decrease in downward switching. Note that prior research does not give us consistent results about this topic. Another study of (Persons, 1995)Persons (1995) finds significantly lower bid-ask spreads when firms switch from a non-Big-4 to a Big-4 auditor. This could also be a reason to perform an upward switch or to avoid a downward switch.

Conversely, there are also reasons thinkable for whether a firms' management will avoid an upward switch and is more inclined to switch from a Big-4 to a non-Big-4 auditor when they become in a financial crisis. It could be that a firms' management chooses to go to a non-Big-4 auditor to save costs (which can possibly be at the expense of audit quality). Studies from Chaney, Jeter, & Shivakumar (2004) and Simunic (1980) suggest that Big-4 auditors charge significantly higher fees to their clients than that non-Big-4 auditors do. Note that such change could give a bad signal to investors because a cut in audit fees may be interpreted as a result of reduced effort spent on checking procedures (Gregory & Collier, 1996). Another reason to change from a Big-4 to a non-Big-4 auditor could be that a firms' management will apply earnings management to a greater extent than was possible by their predecessor auditor because they will led the financial statements look good even in a period of financial crisis. Managers can have incentives to reduce variability in earnings so that it seems that they have, even in a period where it is less likely to maintain a good firm performance, much control over firm performance (DeFond & Park, 1997). This could have a decreasing effect on upward switching and/or an increasing effect on downward switching. In addition, commitment in illegal acts can have an effect on both the frequency as the direction of the switch. Therefore, a client who committed an illegal act and is willing to switch to another auditor is more likely to be refused by a new Big-4 auditor than by a non-Big-4 auditor. Note that the risk that a client commits in an illegal act is in a period of financial crisis intuitively higher than in a period of normal economic growth. Therefore, the opinion given by the auditor could even have an effect on both the frequency as the direction of the switch. Note that this could have a decreasing effect on upwards switching or an increasing effect on downward switching or switches within the same class. This could also induce a positive effect on auditor switches within the same class because it is in such situations possible that, due to the damaged auditor – client relation, further collaboration is not possible and that, regardless of the direction, the client is forced to find another auditor. Also litigation risk could have a double effect. As described in paragraph 4.1 it could induce more auditor switching within the same class, but it could also induce an increase in downward auditor switching and/or a decrease in upward switching. But on the other side, some firms could also think that Big-4 auditors have more specialized knowledge and are therefore better able to assist them by lawsuits. This could induce a negative effect on switches within the same class, or a positive effect on upward switching and/or a negative effect on downward switching. Research from DeAngelo (1981) suggests that the litigation risk of Big-4 auditors is significantly higher than that of non-Big-4 auditors because they have more to lose by failing to report a breach by a particular client. Based on that research, a Big-4 auditor is more suspicious by accepting a new client which has many legal affairs than a non-Big-4 auditor has. It could also be possible that a Big-4 auditor has more opportunities to investigate these things because they are more specialized than non-Big-4 auditors are. As mentioned in paragraph 4.1, it is in a period of financial crisis more likely that a bad opinion is given by an auditor because the risk to go bankrupt is in such a period significantly higher. As research from Becker et al.

(1998) suggests, the earnings quality of Big-4 auditors is possibly higher than that of non-Big-4 auditors, and therefore it could be that a non-Big-4 auditor is less able to find a breath in a firms' financial statements, and/or they are more willing to give an unqualified opinion about a firms financial statements. That is also a reason for why firms are possibly more inclined to switch to a non-Big-4 auditor instead of a Big-4 auditor when they receive a qualified or adverse opinion about their financial statements. As a consequence, this could also have a negative effect on upward switching.

Because results of prior research are contradictory, the second sets of hypotheses are twofold. There are two sets of hypotheses provided because an increase in upward auditor switches does not automatically result in a decrease in downward switches (and vice versa). For example, suppose that in a population 10 percent of the firms decide to go to a Big-4 auditor and another 10 percent decide to go to a non-Big-4 auditor. This results in positive coefficients for both upward as downward switching, while the Big-4 did not grow in market share. Therefore, the fact that a firm is more likely to go to a Big-4 auditor is not exactly the opposite of that a firm is less likely to go to a non-Big-4 auditor. Using only two opposite hypotheses may give therefore problems by interpreting the results. For that reason, the directions of the switches are split out in two sets of hypotheses instead of one. Based on this prior research, the direction of auditor switches can for each switching type be upwards or downwards when economic conditions become worse that is when firms become in a financial crisis. Therefore, it is not possible to give an expectation about the direction of the switches. More formally, the second and third sets of hypotheses used in this study are:

H2a: "Firms that currently have a non-Big-4 auditor are *more* inclined to switch to a Big-4 auditor when they are in a financial crisis."

H2b: "Firms that currently have a non-Big-4 auditor are *less* inclined to switch to a Big-4 auditor when they are in a financial crisis."

H3a: "Firms that currently have a Big-4 auditor are *more* inclined to switch to a non-Big-4 auditor when they are in a financial crisis."

H3b: "Firms that currently have a Big-4 auditor are *less* inclined to switch to a non-Big-4 auditor when they are in a financial crisis."

4.3 AUDITOR SWITCHES WITHIN THE SAME CLASS

The causes which have an effect on the frequency of auditor switching could also have implications for auditor switches within the same class. Some factors can cause an auditor switch, but do not directly ensure an upward or a downward switch. For example, it could be that a higher litigation risk in a period of financial crisis induces an increase in the frequency of auditor switching within the same class, but that there are no quite good reasons thinkable for why firms will switch upward or downward. That is the reason why this study examines the total frequency of auditor switches and auditor switches within the same class separately. Many factors which had an effect on the total frequency of auditor switches have also an effect on the auditor switches within the same class. Referring back to the litigation risk example, when litigation risk becomes higher, both the frequency of auditor changes could increase or decrease, and as a result, the frequency of auditor switches within the same class could increase or decrease as well. The same reasoning holds for the opinion given by the auditor. Because the risk on a qualified opinion is in a period of financial crisis likely to be higher than in a period of normal economic growth, both the frequency of auditor switches could increase as the frequency of auditor switches within the same class. For example, if an auditor concludes that a firms' management was committed into illegal acts (which is in a period of financial crisis likely to be higher), the management is likely to be primary inclined to switch to another auditor regardless of this is a Big-4

or a non-Big-4 auditor. The same holds for the costs of the audit. Because not all Big-4 auditors charge exactly the same fees to their clients, a firms' management could even decide to switch to another Big-4 auditor to save money. The desire to save money is in a period of financial crisis likely to be higher than in a period of normal economic growth. The same holds for non-Big-4 to non-Big-4 auditor changes. They charge even not the same fees to their clients. Therefore, saving costs could also boost this type of auditor switching.

Conversely, switches from auditor lead to unavoidable setup costs which could have a negative effect on the frequency of auditor switching within the same class. Therefore, a switch from auditor may lead to higher fees instead of lower fees in the first year of engagement. In addition, research from Persons (1995) (Persons, 1995)suggests that changing from a Big-X auditor to a non-Big-X auditor could have negative effects on the firms' stock price, especially by financially troubled firms. That could also be a reason to switch less frequently from auditor. Also the earnings quality could be of importance by switching to an auditor within the same class. A study from Brody, Arel, & Pany (2005) shows that the audit failure rates are higher when the auditors are new and have not yet developed the necessary institutional knowledge. This could also be a reason for why a firms' management prefers to stay with their current auditor, especially in a period of financial crisis where uncertanty increases.

Because results of prior research are partly contradictory, also the fourth and fifth sets of hypotheses are twofold. Based on this prior research, auditor switches within the same class can even occur more than less frequently when economic conditions becomes more worse, that is when firms become in a financial crisis. Note that this research talks about "auditor switches within the same class" and does not make a distinction between Big-4 to Big-4 switches and non-Big-4 to non-Big-4 switches. A reason therefore is that such distinction is very difficult to make. Prior research does not give more information about differences between these types of auditor switching. Therefore, this study assumes in theory no difference between these groups, but will even measure these types of auditor switching separately. Therefore, these different types of auditor switches are split out in two separate sets of hypotheses instead of one. Note that, because of the contradictory results in previous research, it is not possible to give an expectation about the frequency of these types of auditor switches. More formally, the fourth and fifth sets of hypotheses used in this study are:

H4a: "Firms that currently have a Big-4 auditor are *more* inclined to switch to another Big-4 auditor when they are in a financial crisis."

H4b: "Firms that currently have a Big-4 auditor are *less* inclined to switch to another Big-4 auditor when they are in a financial crisis."

H5a: "Firms that currently have a non-Big-4 auditor are *more* inclined to switch to another non-Big-4 auditor when they are in a financial crisis."

H5b: "Firms that currently have a non-Big-4 auditor are *less* inclined to switch to another non-Big-4 auditor when they are in a financial crisis."

Note that besides these hypotheses, this study will also look at other frequency distributions of auditor changes, which could be of interest for one of the parties involved. For example, this study will not only look at the frequency distribution of auditor changes *across* several years, but also at auditor changes *within* a particular year. This could be of interest for capacity planning and/or marketing purposes by audit firms. Further, this study will not only look at auditor changes *across* the Big-4 audit firms, but also at auditor changes *within* the Big-4 audit firms. This could also be of importance for marketing and strategic planning purposes by Big-4 audit firms.

CHAPTER 5
RESEARCH METHODOLOGY

This study examines the consequences for auditor switching when firms become in a financial crisis in an empirical way. This study attempts to find a causal relation between the dependent variables (the auditor change variables) and the independent variable (the variable that indicate a financial crisis period). Because the dependent variable consist of four so called "changing types" of auditors, it is necessary to make up four different statistical models. Further, it is important that the influence of other factors, which could possibly have also an effect on auditor changes, is excluded. In order to exclude these effects, several control variables will be included in the statistical models.

5.1 DATA COLLECTION

This study only focuses on American companies. A reason therefore is that, according to many economists, most of the problems we are currently facing find their origin in the U.S. housing market. The required data for this study is derived from Audit Analytics. This database contains information about financial restatements, internal control (ICOFR) disclosures, auditor changes, and audit fees by American public companies. That is exactly where the main focus of this study can be found. This database is a well known American database which is used in many academic research. Further, it is a very large database, which contains many company year observations. This is important for the reliability of the results. For the regression analysis, only data from the years 2003 to 2011 will be used because this is also the period for which the financial crisis period was determined. There are also several other reasons for why only these nine years are used in this study. First, earlier data for determining the crisis versus non-crisis periods was not available for all the five factors that possibly cause a financial crisis. This is highly necessary for matching the financial crisis data with the data of auditor switching. Second, this research talks about Big-4 versus non-Big-4 audit firms. Before Arthur Anderson went bankrupt in 2002, there was a Big-5 instead of a Big-4 in audit firms. That is why I can only use data from 2002 onwards. Note that only filtering out Arthur Anderson should possibly bias the results. Third, the economic environment is changing over time, and therefore it is for quality purposes important that the data is not too old.

To test my hypotheses, historical data is required from auditor names, the names of firms where the auditors were engaged or dismissed, auditor change data, and finally, data that makes it possible to group firms into Big-4 or non-Big-4 categories. This data is all available in the Audit Analytics data bank. When this data is properly matched with the predefined crisis period, it should be possible to test my two sets of hypotheses and reject them if necessary.

5.2 SAMPLE SELECTION

As shown in table 1, the sample consists of 14,738 auditor switch observations in the period from 2003 to 2011. Only 2,721 (18.46%) of these are auditor switches for which the current auditor engaged was a Big-4 auditor. The remaining part, (81.54%) are auditor switches for which the current auditor engaged was a non-Big-4 auditor. Further, there are no additional eliminations made of firms which belong to special industry types because this study prefers to a view, that correspondents as well as possible with the normal auditing practice.

Table 1

SAMPLE DETAILS

	Number of auditor switches	Percentage
- Engaged with Big-4 auditor[1]:	2,721	18.46%
- Engaged with non-Big-4 auditor[2]:	12,017	81.54%
Total auditor change observations:	14,738	100.00%
Separate audit firm switches within Big-4:		
- Price Waterhouse Coopers	672	24.70%
- Deloitte	647	23.78%
- KPMG	689	25.32%
- Ernst & Young	713	26.20%

[1] This is the number of firm year observations where the company is engaged with a Big-4 auditor.

[2] This is the number of firm year observations where the company is engaged with a non-Big-4 auditor.

In the second part of table 1, the Big-4 audit firms are shown separately. It is evident that in our sample each Big-4 auditor had experienced approximately the same number of auditor changes over these nine years. Note that these numbers do not give a specific direction of the change. Therefore, this does not automatically mean that the market share of these Big-4 auditors individually remained approximately the same. For example, by holding the number of auditor switches constant for a particular audit firm, there could also be an increase in market share in earlier years and a decrease in later years (or vice versa).

5.3 RESEARCH METHOD

Because the data in Audit Analytics contains auditor switch observations instead of firm year observations, it is not possible to test hypothesis 1a and hypothesis 1b in the regression analysis. Each observation corresponds to one switch, and therefore is the number of observations equal to the number of total switches. For that reason it is more practical to test these hypotheses based on the descriptive statistics instead of a more complex regression analysis. As described in the previous chapter, this study will also look at other frequency distributions which could be of interest for one of the parties involved. These frequency distributions are shown in more detail, supplemented with several tables and graphs in chapter 6.

The second and third sets of hypotheses are tested with four separate regression models. The only difference between these four models is the dependent variable. The dependent variable is a dummy for each type of auditor switching in a particular observation. This variable is a 1 if the observation correspondents with the particular switching type tested in the regression model, and a 0 otherwise. The independent variable is a crisis dummy which is a 1 if the auditor switch occurs in the predetermined crisis period, and a 0 otherwise. As mentioned before, the crisis period begins at the beginning of the fourth quarter of 2007 and ends at the end of the first quarter in 2009. It is therefore necessary to code the data in the year and the quarter in which the auditor switch occurs. As described by the hypothesis development in chapter 4, there are possible other factors that could induce auditor switching. To measure these effects, several control variables are included in the statistical model. The control variables which are included in the model are described below. Note that, not all effects could be included in the model. The effects that were excluded in the statistical model are described in sub-paragraph 5.4.5. Note that this is a possible limitation in this study.

5.4 CONTROL VARIABLES

In the following subparagraphs are some control variables described. All control variables are dummies. After the description of the variables itself, there is a short description made of the expected slope coefficients of the betas. Variables which are not included in the model are further outlined in the last subparagraph.

5.4.1 LITIGATION RISK

Litigation risk could be an important variable by measuring auditor switches in a period of financial crisis. As the research of Turner, Williams, & Weirich (2005) suggests, auditor switches can occur more frequently because the litigation risk in a period of financial crisis is likely to be higher than in a period of normal economic growth. Measuring litigation risk is often more difficult. There are a lot of factors which could have influence on the litigation risk of a specific company. Litigation risk is therefore often measured based on industry-based measures. Research from (Irene & Skinner, 2011) have studied this topic and suggests that litigation rates vary considerable across industries and over time, and are therefore poor measures of litigation risk. They argue that litigation risk depends more on individual firm characteristics than on industry characteristics. Audit Analytics contains a separate variable that measures if companies had submitted a fee dispute by their auditor. To measure if litigation risk has indeed a positive effect on auditor switching, the variable D_FEE_DISPUTE is included in the statistical model. This variable gives a 1 if the client has submitted a fee dispute (law suit), and a 0 otherwise. Because it is reasonable expected that legal disputes occur more in periods of financial crisis, the interaction variable D_FEE_DISPUTE * D_CRISIS is also included in the statistical model. It is difficult to make an expectation about the relation between the number of legal disputes and the frequency of auditor switches in a period of normal economic growth. Therefore, this study provides no expectation about that. However, in a period of financial crisis, this study expects that even more legal disputes take place and therefore it expects a significant positive relation between the interaction variable and the number of auditor switches within the same class. Up or downward auditor switches can occur either more or less in a period of financial crisis.

5.4.2 OPINION GIVEN BY THE AUDITOR

The opinion given by the auditor could also have influence on the frequency of auditor switches. Management could have concerns about the quality of the audit or that they are unsatisfied with the opinion given by the auditor. Because the risk to go bankrupt is in a period of financial crisis likely to be higher, it is reasonable to expect that in this period the risk on a qualified opinion is even higher than in a period of normal economic growth. To measure if the audit opinion has an effect on auditor switching, the dummy variable D_AUDIT_OPINION is included in the statistical model. This variable gives a 0 if the audit opinion is unqualified, and a 1 otherwise. Because this study mainly focuses on the effect of auditor switching when firms become in a period of financial crisis, the interaction variable D_AUDIT_OPINION * D_CRISIS is also included in the statistical model. The expectation is that an unqualified or adverse opinion given by the auditor increases auditor switching for all types, especially in a period of financial crisis. Therefore, the expectation is that both variables have a significantly positive effect on auditor switching for all types of switches except for upwards switches.

5.4.3 FRAUD OR ILLEGAL ACTS

The risk of fraud or to commit an illegal act is in a period of financial crisis likely to be higher than in a period of normal economic growth. This is because the demand for aggressive earnings management is in a financial crisis probably higher. An auditor can abandon the relationship because his client is concerned in illegal acts which possibly lead to reputation damage by the audit firm. Research from DeAngelo (1981) suggests that a Big-4 firm has more to lose than a non-Big-4 firm had. Therefore Big-4 firms are possibly more suspicious by accepting a new client. To measure if the risk of fraud and/or committing illegal acts has an effect on auditor switching, the dummy variable D_ILLEGAL_ACTS is included in the statistical model. This variable gives a 1 if the client committed illegal acts, and a 0 otherwise. Because it is expected that the risk to commit illegal acts is higher in a period of financial crisis, the interaction variable D_ILLEGAL_ACTS * D_CRISIS is also included in the statistical model. The expectation is that committing illegal acts has a positive effect on downward auditor switching, especially in a period of financial crisis wherein firms are less able to permit such acts. As a consequence, I expect a negative relation between the reduction in audit fees and upward auditor switching. Because an auditor can also abandon the relationship with his client when they commit illegal acts, I expect also a positive relation between committing illegal acts and auditor switches within the same class.

5.4.4 COSTS SAVINGS ON AUDIT

Firms can decide to go to a non-Big-4 auditor because they want to save costs on the audit. As described in paragraph 4.2, prior research from Chaney et al. (2004) and Siminic (1990) suggests that non-Big-4 auditor charge significantly lower fees to their clients than Big-4 auditors do. Therefore, firms can, especially in a period were margins are smaller, decide to save costs on the audit so that they can maintain a profit. To measure if clients have indicated that they want a cut in audit expenditures, the dummy variable D_REDUCE_FEES is included in the statistical model. This variable gives a 1 if the client has indicated a reduction in audit fees, and a 0 otherwise. Because it is expected that the desire to cut in audit fees is higher in a period of financial crisis, the interaction variable D_REDUCE_FEES * D_CRISIS is also included in the statistical model. The expectation is that the desire to cut in audit fees has a positive effect on downward auditor switching, especially in a period of financial crisis where margins are smaller and where it is more difficult to maintain a profit. As a consequence, I expect a negative relation between the reduction in audit fees and upward auditor switching. An expectation for switches within the same class is difficult to make and is therefore omitted.

5.4.5 VARIABLES THAT ARE NOT INCLUDED IN THE MODEL

In paragraph 4.1 and 4.2 I mentioned even more reasons for why firms would switch from auditor. Some of these variables are not included in the statistical model. There are several reasons for not including some variables. First, it could be that Audit Analytics does not contain the required data. For some variables is no explicit data available because they are difficult or not reliably measurable. An example is the credibility of firms' financial statements. This is not reliable measurable because the credibility depends on lots of factors. Another example are the setup costs of new auditors. Anyone knows that there are, but no-one knows exactly how much because this is very difficult measurable. Second, some data is only available in an annual format. Because a switch from auditor is an event in one point of time, these data is not useful. An example is the stock price reaction. The database of Audit Analytics contains only annual stock price data which is useless for this study because this study looks at direct stock price reactions due to a switch of auditor. Another example is the bid-ask spreads of firms stock which was outlined in paragraph 2.6. These data is also not available in the right format for

this study. Third, some relations are already studied in previous research. For example, a lot of prior research has been done to investigate the earnings quality when a new auditor was engaged and this leads to (partly) contradictory results. Another example is that firms apply more earnings management when they become in a financial crisis. It goes beyond the primary focus of this study to investigate all these factors again. Because using poor measures does not add any good distribution to this study, this study focuses mainly on the control variables as described in the paragraphs 5.4.1 to 5.4.4. Table 2 gives a quick summary of the expectations for the variables used in the regression model.

Table 2

SUMMARY OF THE RESEARCH MODEL AND EXPECTED RELATIONS

Switching type:	(1) Big-4 to Big-4	(2) Big-4 to Non-Big-4	(3) Non-Big-4 to Big-4	(4) Non-Big-4 to Non-Big-4
D_CRISIS*	±[2]	±[1]	±[1]	±[2]
D_FEE_DISPUTE	±	±	±	±
D_FEE_DISPUTE * D_CRISIS	+	±	±	+
D_AUDIT_OPINION	+	+	–	+
D_AUDIT_OPINION * D_CRISIS	+	+	–	+
D_ILLEGAL_ACTS	+	+	–	+
D_ILLEGAL_ACTS * D_CRISIS	+	+	–	+
D_REDUCE_FEES	±	+	–	±
D_REDUCE_FEES * D_CRISIS	±	+	–	±

* Primary independent variable.

[1] These expectations are based on hypotheses 3 and 2 respectively

[2] These expectations are based on hypotheses 4 and 5 respectively.

After the discussion of the literature in chapter 2, the determining of the crisis versus non- crisis periods in chapter 3, the development of the hypotheses in chapter 4, and the determining of the control variables which are described in chapter 5, it is possible to set up a valid research model. It is attempted to hold the research model as simple as possible. Therefore, the research model used in this study is:

$$Auditor\ switch\ type = \beta_0 + \beta_1 \times D_{CRISIS} + \beta_2 \times D_{FEE\ DISPUTE} + \beta_3 \times D_{FEE\ DISPUTE} \times D_{CRISIS} + \beta_4 \times D_{AUDIT\ OPINION} + \beta_5 \times D_{AUDIT\ OPINION} \times D_{CRISIS} + \beta_6 \times D_{ILLEGAL\ ACTS} + \beta_7 \times D_{ILLEGAL\ ACTS} \times D_{CRISIS} + \beta_8 \times D_{REDUCE\ FEES} + \beta_9 \times D_{REDUCE\ FEES} \times D_{CRISIS} + \varepsilon$$

Note that all variables included in the model are dummy variables. These dummy variables must be interpreted as the effect on the particular auditor switch type which is tested in the model over the whole period. Note that the interaction variables with D_CRISIS must be interpreted as the additionally effect on the auditor switch type which is tested in the model, particularly in the crisis period.

CHAPTER 6
RESULTS

6.1 DESCRIPTIVE STATISTICS

First, I will provide some descriptive results. Later on, the more complex regression model is used to find statistical relations in the auditor switch data. Important to note is that the observations described, are auditor switches and therefore not firm-year observations. The difference is that, theoretically, a firm can switch their auditor more than once a year, which results in more than one observation. In contrast, a firm can even change less than once a year from auditor, which results in less than one observation. In the case of firm-year observations, there should always be one observation per firm-year.

As already is mentioned in chapter 4, this study distinct four different types of auditor switching. The total number of auditor switches is for each type separately described in table 3.

Table 3

SUMMARY OF TOTAL AUDITOR SWITCHES

Switching type:	(1) Big-4 to Big-4	(2) Big-4 to Non-Big-4	(3) Non-Big-4 to Big-4	(4) Non-Big-4 to Non-Big-4
Number of switches:	2,108	2,281	612	9,736
Percentage:	14.30%	15.48%	4.15%	66.07%

As seen in this table, by far the most auditor switches occur within the non-Big-4 category (66.07%), and almost 80.37 percent (14.30% + 66.07%) are auditor switches within the same class. Only 19.63 percent (15.48% + 4.15%) of the firms decided to switch from, or to a Big-4 auditor. Firms which had currently a Big-4 auditor and had decided to change their auditor are almost equally likely to switch to another Big-4 auditor, than that they will switch to a non-Big-4 auditor (14.30% versus 15.48%). This is approximately not the case for firms which currently had a non-Big-4 auditor, and decided to change their auditor. From this group, only 5.91 percent decided to switch to a Big-4 auditor. By far the most firms of this group (94.09%) decided to switch to another non-Big-4 auditor.

As mentioned before, this study examines the frequencies of both auditor switches across several years, and within a particular year. This could be of interest because such overview makes it possible to figure out if external factors induce auditor switching. Which external factors could have influence on auditor switching is described in more detail by the regression analysis. First the auditor switches across the last nine years are described in table 4.

Table 4

FREQUENCY OF AUDITOR SWITCHES FROM 2003 TO 2011[1]

Switching type:	(1) Big-4 to Big-4	(2) Big-4 to Non-Big-4	(3) Non-Big-4 to Big-4	(4) Non-Big-4 to Non-Big-4	Total:
2003	304 (18%)	365 (21%)	55 (3%)	975 (57%)	1699
2004	278 (13%)	513 (25%)	55 (3%)	1218 (59%)	2064
2005	296 (15%)	506 (25%)	90 (4%)	1135 (56%)	2027
2006	286 (15%)	340 (18%)	60 (3%)	1168 (63%)	1854
2007	223 (14%)	206 (13%)	77 (5%)	1137 (69%)	1643
2008	172 (13%)	113 (9%)	67 (5%)	953 (73%)	1305
2009	191 (12%)	114 (7%)	74 (4%)	1278 (77%)	1657
2010	228 (16%)	58 (4%)	71 (5%)	1061 (75%)	1418
2011	130 (12%)	66 (6%)	63 (6%)	811 (76%)	1070

[1] The percentages in column 1 to column 4 are relative to the total changes in that particular year.

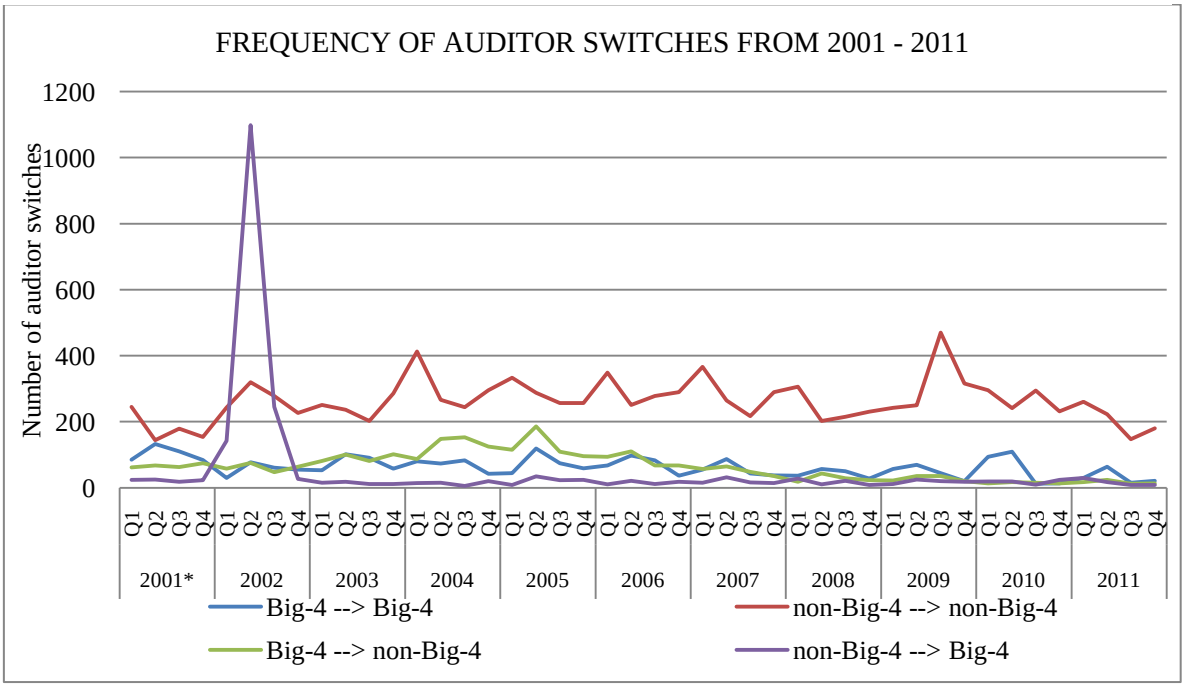
As shown in table 4, the total auditor switches declined over time. In 2004, 2064 auditor switches are reported while in 2011 only 1070 auditor switches are reported. This is partially due to a lower number of auditor switches over all the groups, and partially to the strong decline in Big-4 to non-Big-4 auditor switches. Compared with the other categories, there are significantly less Big-4 to non-Big-4 changes in 2011 compared with the years 2003 and 2004 in both absolute as relative terms. The Big-4 to non-Big-4 switches declined with approximately 15 percent point (21% – 6%) from 2003 to 2011, which means that significantly lesser firms are inclined to switch from a Big-4 to a non-Big-4 auditor. This holds by making this comparison in absolute terms. While in 2003, a total of 365 firms decided to replace their Big-4 auditor for a non-Big-4 auditor, in 2011, only 66 firms decided to switch their current Big-4 auditor for a non-Big-4 auditor for the upcoming year. This is a decrease of 299 auditor switches in nine years. This is good news for the Big-4 auditors because nowadays, many current Big-4 clients prefer a Big-4 auditor instead of a non-Big-4 auditor. Thereby, also the auditor switches within the Big-4 category declined either in absolute terms as in relative terms the last nine years. In 2003 for example, 18 percent of the auditor switches took place within the Big-4 category, while in 2011 only 12% of the total auditor switches took place within the Big-4 category. The auditor switches within this category declined also in absolute terms. While in 2003, a total of 304 firms decided to replace their Big-4 auditor for one of the other three Big-4 auditors, in 2011 only 130 firms decided to switch their current Big-4 auditor for another Big-4 auditor. This is a decrease of 174 auditor switches within this category. A possible explanation therefore is that there is an relative increase in internal auditor roulation and a relative decrease in external auditor roulation. Furthermore, table 4 shows that the non-Big-4 to Big-4 auditor switches remain approximately constant in absolute terms, but increase in relative terms from 3 percent in 2003 to 6 percent in 2011. This difference is obviously due to a strong decline in total auditor switches across all categories. Nevertheless, this implies that, firms which had currently a non-Big-4 auditor are nowadays relatively more inclined to go to a Big-4 auditor instead of a non-Big-4 auditor. The last column of table 4 shows the auditor switches within the non-Big-4 category. As seen in this column, the auditor switches reaches a maximum of 1218 (59%) in 2004 and a minimum of 811 (76%) in 2011. Therefore, the auditor switches within this category are declined with 407 switches in absolute terms, but increased with 17 percent (76% – 59%) in relative terms. The relative increase indicates that firms which had currently a non-Big-4 auditor, are relatively more inclined to switch to another non-big-4 auditor instead of a Big-4 auditor.

Looking at the crisis period is difficult with annual data. The only year which lies completely in the in the crisis period, is 2008. In that year, significantly less auditor switches took place in total compared with the period before. While in 2007 a total of 1643 auditor switches occur, in 2008 only 1305 auditor switches took place. These are also significantly fewer auditor switches (1657) than in

2009 occurred. It seems that firms were inclined to stay with their current auditor when they become in a financial crisis.

Combining some columns can possibly give new insights. By combining column one and two, it can be seen that there are nowadays relatively less auditor switches (18% in 2011 versus 39% in 2003) by firms which had currently a Big-4 auditor. Conversely, by combining column three and four, it can be seen that there are nowadays relatively more auditor switches (82% in 2011 versus 60% in 2003) by firms which had currently a non-Big-4 auditor. Therefore, firms which had currently a Big-4 auditor are likely to be more satisfied about their big-4 auditor comparing with earlier years, and are therefore more inclined to stay with their current auditor. However, firms which had currently a non-Big-4 auditor are more inclined to switch from auditor to keep them satisfied. By combining columns one and four, it can be seen that 75% (18% + 57%) of the total auditor switches in 2003 are switches within the same class while in 2011 88% (12% + 76%) of the total auditor switches are switches within the same class. This is a relative increase of 13% but in absolute terms, there occurred less auditor switches within the same class in 2011 (941) compared with 2003 (1279). Therefore, it can be concluded that Big-4 and non-Big-4 auditors try to keep their own clients within the same group.

Figure 1



* Note that there was in 2001 a Big-5 in auditors instead of a Big-4.

Figure 1 presents the same data as in table 4, but now in a graphical way. This gives a quicker overview in the frequencies of auditor switches from the last years and the data is easier to compare. Note that this graph also includes the years 2001 and 2002 which were excluded in the other descriptive statistics and the regression analysis. The reason for including these years in this graph was that in these years, many things happened which resulted in a lot of switches from non-Big-4 auditors to Big-4 auditors in these years. First of all, this could be related to uncertainty. The destruction of the Twin Towers in New York on September 11, 2001 induced serious damage to the economy and had a significant impact on global markets (Nanto, 2004). Secondly, the Euro was introduced in the beginning of 2002 which could also cause some uncertainty in the world wide economy. Finally, when in 2002 Arthur Andersen went bankrupt because they were concerned in illegal acts, many clients of this Big-5 auditor switched to one of the remaining Big-4 auditors. These three reasons possibly have an adverse effect on the global uncertainty in the financial markets and therefore, they could possibly explain the

significant increase in upward auditor switches in 2002. Note that, as mentioned before, these two years are further not relevant for this study. Further, it can be seen that in the crisis period there occur slightly more downward auditor switches than that there occur upward auditor switches. This implies that in a period of financial crisis, the market share of non-Big-4 audit firms decline relative to Big-4 audit firms due to auditor switching.

Building further on the previous analysis, this study also examines the frequencies of auditor switches within a particular year. This can be of importance for auditors because such overview makes it possible to figure out if seasonality factors play a role in auditor switches. Note that this overview is part of the descriptive statistics, and therefore only looks at seasonality effects across all firms. The following table provides the quarterly frequency distributions of auditor switches over the last nine years. Therefore, the percentages give an overview over the relative quarterly auditor switches for an average year.

Table 5

SUMMARY OF QUARTERLY AUDITOR SWITCHES FROM 2003 TO 2011[1]

Switching type:	(1) Big-4 to Big-4	(2) Big-4 to Non-Big-4	(3) Non-Big-4 to Big-4	(4) Non-Big-4 to Non-Big-4	Total:[2]
Quarters 1	518 (25%)	504 (22%)	150 (25%)	2816 (29%)	3988 (27%)
Quarters 2	779 (37%)	730 (32%)	192 (31%)	2221 (23%)	3922 (27%)
Quarters 3	495 (23%)	551 (24%)	125 (20%)	2324 (24%)	3495 (24%)
Quarters 4	316 (15%)	496 (22%)	145 (24%)	2375 (24%)	3332 (23%)
Total:	2108 (100%)	2281 (100%)	612 (100%)	9736 (100%)	14737 (100%)

[1] The percentages in column 1 to column 4 are relative to the total changes in a particular year.

[2] The percentages in this column are relative to the total changes in a particular quarter.

This table shows that the auditor switches are not equally distributed within an average year. As shown in the last column, almost 54% (27% + 27%) of the total auditor switches took place in the first half of the year. Less than 23% of the total auditor switches did occur in the last quarter of the year. A possible explanation for this could be that many public firms in the United States are free to choose their financial period, and many of them had chosen for a period which ends at June 30, so the end of the second quarter. It could be that many firms spend the first en the second quarter to look at a good auditor to audit their financial statements. Therefore, it could be that in the first half of the year, more auditor switches occur than in the second half of the year. It is remarkable that this effect is significantly stronger in the category of Big-4 to Big-4 switches. For this category it holds that 62% (25% + 37%) of the switches took place in the first half of the year and only 15% in the last quarter of the year.

To test hypothesis 1a and 1b, it is necessary to take a closer look at the results in table 4 and table 5. Based on the graph in figure 1, it is difficult to determine if auditor switches in a period of financial crisis occur more frequently than in a period of normal economic growth. In order to test the differences in the total frequency of auditor switches between these periods, a two tailed *t*-test with pooled variances is used because this leads to the most reliable results (Nieuwenhuis, 2009). Table 5 gives an overview of the total auditor switches in a period of normal economic growth, compared with the predetermined crisis period.

Table 6

TOTAL FREQUENCY OF QUARTERLY AUDITOR CHANGES

	μ	n	σ	t-statistic	α
Quarterly switches in non-crisis period:	409.36	36	98.98	3.186^{***}	< 0.01
Quarterly observations in crisis period:	335.83	6	39.53		
Difference:	73.52				

Note that *, ** and *** denote the levels of significance for a two-tailed test with $\alpha = 0.1$, $\alpha = 0.05$ and $\alpha = 0.01$ respectively. Further, the average number of switches in a particular quarter is denoted with μ, the number of quarters in a period is denoted with n and the corresponding standard deviation is denoted with σ.

As shown in table 6, the difference of total auditor switches is statistically significant at the $\alpha = 0.01$ level. It can therefore be concluded that auditor switches occur *less* frequently in a period of financial crisis, compared with a period of normal economic growth. Therefore, hypothesis 1a can be rejected and hypothesis 1b can be confirmed. A very obvious explanation therefore is that firms are not willing to spend a lot of money in a new auditor when they become in a period of financial crisis. Or they need the firm specific knowledge of their current auditor and are therefore not inclined to switch their auditor when they become in a financial crisis.

We can further expand our analysis by splitting up the Big-4 in four separate audit firms. It could be possible that in one particular year, for example, only one audit firm is responsible for relatively many auditor switches. This is of importance for the Big-4 audit firms because it could be that, relative to other Big-4 audit firms, one of these audit firms has lost market share the last nine years. In table 7 are the audit firms which belong to the Big-4 analyzed separately. By looking more profound on the Big-4 audit firms, there are four switches possible. For example: a Big-4 auditor can lose a client to another Big-4 client; a Big-4 auditor can lose a client to a non-Big-4 client, a Big-4 auditor can win a client from one of the other auditors which belong to the Big-4 and, a Big-4 auditor can win a client from a non-Big-4 auditor. Table 7 presents in detail all the auditor switches for the Big-4 audit firms separately. In figure 2, the cumulative balance is plotted for each firm individually. This gives a quick summary of the results in table 7.

Table 7

AUDITOR SWITCHES FOR BIG-4 AUDIT FIRMS INDIVIDUALLY

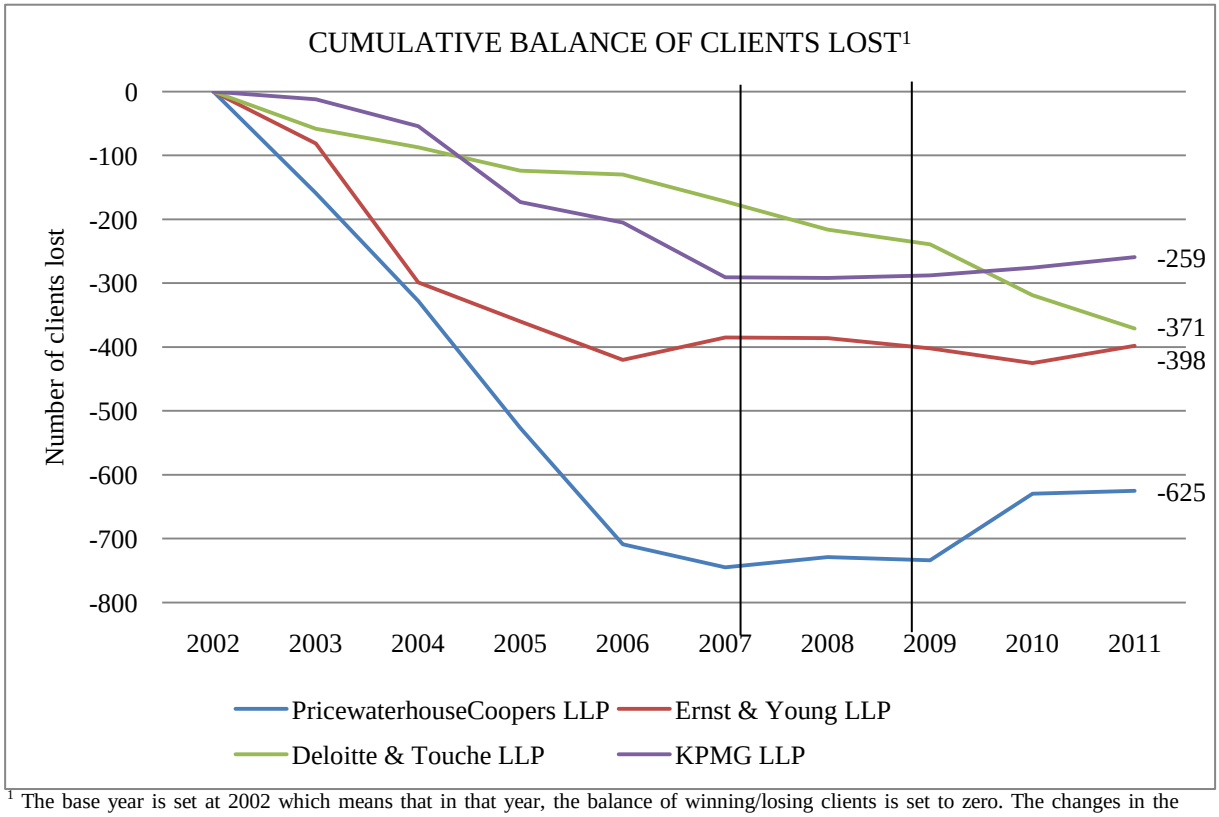
	Switching type:	(1) Lose to Big-4	(2) Lose to Non-Big-4	(3) Win from Big-4	(4) Win from Non-Big-4	Balance:[1]
2003	Price Waterhouse Coopers	136	94	61	10	-159
	Ernst & Young	68	102	68	21	-81
	Deloitte	52	82	62	14	-58
	KPMG	48	87	113	10	-12
2004	Price Waterhouse Coopers	103	134	56	12	-169
	Ernst & Young	90	172	31	13	-218
	Deloitte	45	92	94	14	-29
	KPMG	40	115	97	16	-42
2005	Price Waterhouse Coopers	109	158	60	8	-199
	Ernst & Young	67	107	75	38	-61
	Deloitte	55	101	83	36	-37
	KPMG	65	140	78	8	-119
2006	Price Waterhouse Coopers	121	114	42	11	-182
	Ernst & Young	64	94	75	23	-60
	Deloitte	53	57	88	16	-6
	KPMG	48	75	81	10	-32
2007	Price Waterhouse Coopers	68	51	64	19	-36
	Ernst & Young	39	37	76	35	35
	Deloitte	37	71	56	10	-42
	KPMG	79	47	27	13	-86
2008	Price Waterhouse Coopers	21	29	50	16	16
	Ernst & Young	44	28	56	15	-1
	Deloitte	61	27	27	17	-44
	KPMG	46	29	55	19	-1
2009	Price Waterhouse Coopers	50	23	51	17	-5
	Ernst & Young	41	41	46	20	-16
	Deloitte	75	28	61	19	-23
	KPMG	25	22	33	18	4
2010	Price Waterhouse Coopers	36	11	133	18	104
	Ernst & Young	70	20	46	21	-23
	Deloitte	88	19	17	10	-80
	KPMG	34	8	32	22	12
2011	Price Waterhouse Coopers	28	11	28	16	5
	Ernst & Young	30	13	55	15	27
	Deloitte	54	21	13	10	-52
	KPMG	18	21	34	22	17

[1] The balance is calculated as the difference between the total clients won, and the total clients lost in one particular year. More clearly, the balance is calculated as: (3) + (4) – (1) – (2). Comparing this balance with table 4, it holds that the sum of the balance in one particular year must be equal to the winning part in column (3) of table 4, minus the losing part in column (2) of table 4.

As shown in table 7, Price Waterhouse Coopers (PwC) has lost many clients compared to the other three Big-4 audit firms. Especially in the period from 2003 to 2006, were they lost 136, 103, 109 en 121 clients respectively. This is significantly more than the other Big-4 audit firms have lost in that period. It is noteworthy that the other Big-4 audit firms also lost most clients in this period. Looking at all Big-4 firms together, the Big-4 in total have lost the most clients (-458) in 2004 and won the most clients (+13) in 2010.

By looking at the whole period, PwC lost the most clients in total (625) compared with the other Big-4 audit firms. KPMG, Deloitte, and Ernst & Young lost 259, 371 and 398 clients respectively. Note that these are only the clients lost due to auditor switching, not due to bankruptcies of clients. In the period defined as the crisis period, nothing strange happened. Moreover, looking at figure 3, this period appears to be the most stable. Therefore, the Big-4 audit firms did not specifically won or lost clients in this period. This is in accordance with the results of table 4, where the table shows a significant decline in auditor switches for the year 2008 which was the only year which lies completely in the crisis period. Note that this provides additional support for hypothesis 1b.

Figure 2



[1] The base year is set at 2002 which means that in that year, the balance of winning/losing clients is set to zero. The changes in the number of clients lost must therefore be interpreted as absolute changes relative to the number of clients in 2002 for each firm individually. Note that the entire Big-4 audit firms have lost clients compared with the number of clients in 2002.

6.2 RESULTS OF REGRESSION ANALYSIS

Table 8 shows the results of the linear regressions which relate to hypotheses two, three, four, and five. Note that hypothesis one is already tested in paragraph 6.1. Each column corresponds with the separate regression models necessary to test each type of auditor switching. The independent variables are shown at the left hand side, including the control variables (with or without interaction effect). The results of the regression analysis are structured by model. Therefore each model is described separately.

Table 8

RESULTS OF THE LINEAR REGRESSION ANALYSIS

		Model:			
Dependent variables:		(1) Big-4 to Big-4	(2) Big-4 to Non-Big-4	(3) Non-Big-4 to Big-4	(4) Non-Big-4 to Non-Big-4
Independent & control variables:					
Constant		0.148***	0.159***	0.043***	0.650***
D_CRISIS	β_1	-0.016*	-0.079***	0.000	0.096***
		(-1.896)	*(-8.580)*	*(-0.064)*	*(8.175)*
D_FEE_DISPUTE	β_2	-0.138***	-0.173***	-0.016	0.328***
		(-2.789)	*(-3.405)*	*(-0.559)*	*(4.897)*
D_FEE_DISPUTE * D_CRISIS	β_3	0.002	0.154	-0.027	-0.128
		(0.017)	*(1.451)*	*(-0.461)*	*(-0.922)*
D_AUDIT_OPINION	β_4	-0.029**	0.044***	-0.024***	0.009
		(-2.294)	*(3.403)*	*(-3.334)*	*(0.521)*
D_AUDIT_OPINION * D_CRISIS	β_5	0.107***	0.056	0.023	-0.186***
		(2.685)	*(1.362)*	*(1.021)*	*(-3.460)*
D_ILLEGAL_ACTS	β_6	0.028	0.184***	-0.026	-0.185***
		(0.531)	*(3.391)*	*(-0.879)*	*(-2.603)*
D_ILLEGAL_ACTS * D_CRISIS	β_7	0.209	-0.303*	-0.016	0.110
		(1.261)	*(-1.781)*	*(-0.172)*	*(0.492)*
D_REDUCE_FEES	β_8	-0.055***	0.286***	-0.041***	-0.190***
		(-2.241)	*(11.315)*	*(-2.946)*	*(-5.703)*
D_REDUCE_FEES * D_CRISIS	β_9	-0.055	-0.217***	0.204***	0.068
		(-0.885)	*(-3.426)*	*(5.793)*	*(0.816)*
Model details:					
n =		14741	14741	14741	14741
F =		3.788	28.965	5.507	15.638
α =		< 0.01	< 0.01	< 0.01	< 0.01
R^2_{adj} =		0.002	0.017	0.003	0.009
D =		1.811	1.749	1.924	1.664

Note that *, ** and *** denote the levels of significance for a two-tailed test with α = 0.1, α = 0.05 and α = 0.01 respectively. The numbers after the variables denote the unstandardized beta coefficients and the numbers in italic are the corresponding *t*-statistics. Each model has ($n - k - 1$) degrees of freedom where $k = 9$ in all models. The models are all statistically significant based on the F-statistic. Last, the Durbin Watson test-statistics are denoted with "*D*" and indicate if the error terms in the models (ε) are independent. Therefore, autocorrelation is not a real issue.

The regression results as shown above are based on a two-tailed linear regression model. Linearity can be assumed because in all models are both the dependent and control variables dummies (Nieuwenhuis, 2009). It is therefore impossible to have a non-linear relation between these variables. The beta coefficients as shown in table 8 are unstandardized coefficients which are measured with ($n - k - 1$) degrees of freedom. Thereby, "*k*" denotes the number of predictors (interaction variables included) in the model which is in all models nine. By comparing the F-statistics, all four models are statistically significant on the ($\alpha \leq 0.01$) and therefore useful for drawing conclusions. The percentage of explained variance is measured with the adjusted R^2, but because the sample is very large compared to the number

of predictors, there is no difference with the ordinary R^2. The percentage of explained variance is in all the models quite low ($0.002 < R^2 < 0.017$). Therefore, it is possible that there are also other factors that have an effect on auditor switching which are not included in the model. The reason for the low R^2 could be that in the research model only dummy variables are used. Further, the dependent variable is statistically significant in model one, two, and four. In model three, no significant effect can be observed. The coefficient of interest is β_1 in each model.

To test hypothesis 2a and 2b, it is necessary to take a closer look at the regression results of model three in table 8. In model three, the beta of the dependent variable D_CRISIS is approximately zero ($\beta_1 \approx 0.000$), and insignificant ($\alpha = 0.949$). Therefore, this study provides no support for one of these hypotheses because it is not possible to accept any of these hypotheses. Therefore, both hypotheses 2a and 2b must be rejected.

To test hypothesis 3a and 3b, it is necessary to look at the regression results of the dependent variable in model two. In model two, the beta of the dependent variable D_CRISIS is negative ($\beta_1 = -0.079$) and significant ($\alpha < 0.01$). This result provides strong evidence that firms which had currently a Big-4 auditor are *less* inclined to dismiss their current auditor and engage with a non-Big-4 auditor when they become in a financial crisis. Therefore, hypothesis 3a can be rejected and hypothesis 3b can be confirmed.

To test hypothesis 4a and 4b, it is necessary to take a closer look at the regression results of model one. In model one, the beta of the dependent variable D_CRISIS is negative ($\beta_1 = -0.016$) and significant at $\alpha = 0.058$. This result implies that firms which had currently a Big-4 auditor are *less* inclined to dismiss their current auditor and engage with another Big-4 auditor when they become in a financial crisis. Therefore, hypothesis 4a can be rejected and hypothesis 4b can be confirmed.

To test hypothesis 5a and 5b, it is necessary to take a closer look at the regression results of model four. Looking at model four, the beta of the dependent variable D_CRISIS is positive ($\beta_1 = 0.096$) and significant ($\alpha < 0.01$). This result provides strong evidence that firms which had currently a non-Big-4 auditor are *more* inclined to dismiss their current auditor and engage with another non-Big-4 auditor when they become in a financial crisis. Therefore, hypothesis 5a can be confirmed and hypothesis 5b can be rejected.

Based on these results, it is important to refer back to the graph in figure 1 and to make a comparison with the regression results as described in table 8. This graph suggests that in the crisis period, downward auditor switches occur slightly more frequently than upward auditor switches. This implies that, ceteris paribus, when firms become in a period of financial crisis, non-Big-4 audit firms lose, relative to Big-4 audit firms, (more) market share due to auditor switching. The regression results in table 8 confirm with this result. In model two, β_1 is significantly negative ($\alpha < 0.01$). Therefore it can be concluded that in a period of financial crisis, based on the descriptive results and the regression results, non-Big-4 audit firms lose market share due to auditor switching. Further, the graph in figure 1 suggests that in the crisis period no visual differences can be seen for the different types of auditor switching. In contrast to the regression results which suggest that there are significant differences for auditor switches within the same class and for downwards auditor switching as well. The reason for why these results are not visually observable in the graph but that they are in the table is that the beta coefficients of the variables are very small. The graph gives a quick overview of the auditor switches, but does not give reliable information to draw conclusions.

6.2 RESULTS OF CONTROL VARIABLES

As discussed in chapter 4, there could be many other factors which induce auditor switching. In each model are several control variables included to test these effects.

Litigation risk was measured with the dummy variable D_FEE_DISPUTE. The coefficients of interest are β_2 and β_3 for the single variable, and the interaction term respectively. As seen in table 8, this variable has a significantly negative effect (β_2 = -0.138; $\alpha < 0.01$) on Big-4 to Big-4 auditor switching, while in a crisis period where the litigation risk is likely to be higher, no significant result ($\alpha = 0.987$) is found. This result implies that when litigation risk increases, firms are less able to switch their current Big-4 auditor for another Big-4 auditor. A possible explanation therefore is that the current auditor has more firm specific knowledge and is therefore better able to assist them by lawsuits. On the other hand, it could also be that an auditor will resign himself because of the higher litigation risk. Therefore, no explicit expectation was made about this variable. Looking at model two, litigation risk has also a negative effect (β_2 = -0.173; $\alpha < 0.01$) on downward auditor switching. Consistent with the expectation, the interaction variable is positive (β_3 = 0.154), but insignificant ($\alpha = 0.147$) which means that no incremental effect is found in a crisis period. No expectation was provided about both the single variable as the interaction term. Further, litigation risk has a significant positive effect (β_2 = 0.328; $\alpha < 0.01$) in the model which measures non-Big-4 to non-Big-4 auditor switching. This effect implies that when litigation risk becomes higher, firms which had currently a non-Big-4 auditor are more inclined to switch to another non-Big-4 auditor. The interaction term with the crisis dummy does not give a significant result ($\alpha = 0.357$) which is inconsistent with the expectation made.

The audit opinion given was measured with the dummy variable D_AUDIT_OPINION. The coefficients of interest are β_4 and β_5 for the single variable, and the corresponding interaction term respectively. Looking at model one, the single variable had a significant negative effect (β_4 = -0.029; $\alpha = 0.022$) on Big-4 to Big-4 auditor switching. Because this variable shows a 1 if a qualified or adverse opinion is given and a 0 when an unqualified opinion is given, it can be concluded that firms which had currently a Big-4 auditor are less inclined to switch their auditor for another Big-4 auditor when an adverse opinion is given. Looking at the corresponding interaction variable it is remarkable that the beta is significantly positive (β_5 = 0.107; $\alpha < 0.01$). This implies that the opinion given by the auditor has opposite and significantly higher effect in a period of financial crisis, compared with a period of normal economic growth. Therefore, in a period of financial crisis firms are more inclined to switch to another Big-4 auditor due to a qualified or adverse opinion. This is consistent with the expectation made. Conversely, by looking at the same interaction variable in model four, it can be seen that an adverse opinion given has a significant negative effect (β_5 = -0.186; $\alpha < 0.01$) on non-Big-4 auditor switching within the same class. This is inconsistent with the expectation made. Therefore, an adverse audit opinion given in a period of financial crisis has an opposite effect on Big-4 to Big-4 auditor switching, compared to non-Big-4 to non-Big-4 auditor switching. By looking at model two and three, the qualified opinion has a significantly positive effect (β_4 = 0.044; $\alpha < 0.01$) on downwards switching and a significantly negative effect (β_4 = -0.024; $\alpha < 0.01$) on upwards switching. Both coefficients are as expected. Firms are more inclined to switch downward when a qualified or adverse opinion is given, and are less inclined to switch upward when a qualified or adverse opinion is given. Both models show an insignificant interaction term.

Committing illegal acts was measured with the dummy variable D_ILLEGAL_ACTS. The coefficients of interest are β_6 and β_7 for the single variable, and the corresponding interaction term respectively. The regression analysis does not show significant results in model one for these variables. In this model, the coefficients on β_6 and β_7 are both positive (β_6 = 0.028; β_7 = 0.209) which is consistent with the expectations, but also insignificant ($\alpha = 0.596$ for β_6; $\alpha = 0.207$ for β_7). By looking at model two, it can be seen that committing illegal acts has a significant positive effect (β_6 = 0.184; $\alpha < 0.01$) on downward auditor switching. A possible explanation therefore is that non-Big-4 auditors are less specialized and therefore less able to observe such acts. The corresponding interaction term is also significant, but negative (β_7 = -0.303; $\alpha = 0.075$). This implies that firms who are willing to commit in illegal acts are in a period of normal economic growth more inclined to switch downward, but in a

period of financial crisis, they are less inclined to switch downwards. It is remarkable that in model three, which measures the effects on upward switching, no significant results are found. In model four, it is seen that the single variable is significantly negative (β_6 = -0.185; $\alpha < 0.01$), which means that firms who are committing illegal acts are less inclined to dismiss their current auditor for another non-Big-4 auditor within the same class. This result is inconsistent with the expectation made. The interaction variable with the crisis dummy shows in this model a positive, but insignificant result (β_7 = 0.110; α = 0.623). Therefore, this study provides no evidence for these effects by non-Big-4 auditor switching within the same class in a crisis period.

To measure if clients have indicated that they want a reduction in audit fees, I use a dummy variable D_REDUCE_FEES. The coefficients of interest are β_8 and β_9 for the single variable, and the corresponding interaction term respectively. By looking at the regression results, it can be seen that the single variable is statistically significant in all four models. In model one, both the single variable as the interaction term have the same coefficient, but only the single variable is significant. This result implies that the fact that clients indicate a fee reduction by their auditor has a significantly negative effect (β_8 = -0.055; $\alpha < 0.01$) on Big-4 to Big-4 auditor switching in a period of normal economic growth, but that no incremental effect could be found in a period of crisis. A possible explanation could be that firms which submit a fee reduction will save costs on their audit, while an auditor switch may in the first year of engagement possibly lead to higher fees due to additional set-up costs. The same explanation holds for the negative result (β_8 = -0.190; $\alpha < 0.01$) on auditor switching within the same class in model four. In model two, where the effects on downwards auditor switching where measured, both the single as the interaction variable are significant. The single variable shows a positive effect (β_8 = 0.286; $\alpha < 0.01$) on downwards auditor switching, while the interaction variable shows a significantly negative effect (β_9 = -0.217; $\alpha < 0.01$) on downwards auditor switching. These results imply that submitting a fee reduction has a positive effect on downwards auditor switching, which is consistent with the expectation. Prior research has indeed provided evidence that non-Big-4 auditors charge lower fees to their clients than Big-4 auditors do. In a period of financial crisis, there was found a negative effect which implies that in a period of financial crisis, firms were less inclined to perform a downward switch due to lower audit fees. A reason therefore could be that firms worry about negative stock price effects and therefore decide to stay with their current Big-4 auditor. Comparing these results with model three, it can be concluded that submitting a fee reduction has a significant negative effect (β_8 = -0.041; $\alpha < 0.01$) on upwards switching. This is also consistent with the expectation. This implies that firms which had submitted a fee reduction are less inclined to switch from their current non-Big-4 auditor to a possibly more expensive Big-4 auditor. Even in this model, the interaction variable had an opposite effect (β_9 = 0.204; $\alpha < 0.01$) compared with the single variable ($\beta_8 < 0$). Therefore, in a crisis period firms are even more inclined to switch upwards compared with a period of normal economic growth.

6.3 ADDITIONAL TESTS

Besides the traditional linear regression analysis, this study performs either some tests to increase the reliability of the results. First, it could be that there is autocorrelation on the error terms (ε). A Durbin Watson test (D) is performed for each model to test whether first order autocorrelation has a significant influence on the results. Note that this test is in a sense two-sided. The Durbin Watson test statistic can take values in the range [0, 4], where realizations close to 0 indicate positive first order autocorrelation, realizations close to 4 indicate negative first order autocorrelation and realizations close to 2 indicate no autocorrelation at all (Nieuwenhuis, 2009). The test statistics are separately executed under SPSS, but they are easily calculated because $D \approx 2 - 2 \times (R^2_{adj})^{1/2}$. As seen in the test results, the test statistic is approximately 2 in all models, and therefore it can be concluded that there is no first order autocorrelation in each of the models. Further, it is assumed that the control variables have an

independent effect on auditor switching, if there is. It could also be that, on the other hand, that the control variables are not fully independent of each other. In other words, that they have also an effect on each other. To measure this effect, it is necessary to perform an additional test for so called "multicollinearity" to test if there is a linear relationship between some of the control variables. To test for significant relations between the control variables, a correlation matrix is made for each model. The results suggest that only a few control variables correlate with each other. In all models, the correlation matrix shows a significant positive relation ($\alpha < 0.01$) between D_AUDIT_OPINION and D_ILLEGAL_ACTS. This indicates that committing illegal acts is positively correlated with an unqualified or adverse opinion given by the auditor. This is not surprising because committing illegal acts could be a good reason to give an unqualified or adverse audit opinion. Additionally, the correlation matrix shows also a positive relation between D_FEE_DISPUTE and D_CRISIS ($\alpha < 0.05$). This result is also easily interpretable because, as expected, the litigation risk is higher in a period of financial crisis than in a period of normal economic growth. This is consistent with the findings of Turner, Williams, & Weirich (2005). The correlation matrix shows also a significant correlation between D_FEE_DISPUTE and D_AUDIT_OPINION ($\alpha < 0.05$). This signifies that litigation risk has a positive effect on the chance that an unqualified or adverse audit opinion is given by the auditor. The last significant correlation between the control variables is the D_FEE_DISPUTE and D_REDUCE_FEES ($\alpha < 0.01$). They have a significant positive correlation between each other which means that litigation risk has a positive effect on the desire to issue a fee reduction. Important to note is that the statistic models are not adjusted because of these collinearities. Prior research is ambiguous about the way of acting in case of collinearities. Some research suggests that collinearity is not a problem at all and should not bias the results (Nieuwenhuis, 2009). For that reason, the statistic model is not adjusted because of these collinearities. Another test to increase the reliability of the regression results is to test whether the disturbance term is truly heteroskedastic or not. This test investigates if the variances of the error term (ε) linearly depend on the observed values of the independent variables. If heteroskedasticity is a real issue, than there is no common σ_ε and, as a consequence, the ordinary least squares estimators (B_x) are less precise in their duty to estimating the β_x. After plotting the models in a graph to test for this heteroskedasticity bias, it can be concluded that the observations of the error terms appear to be homoskedastic in all the models. Therefore, it can be concluded that heteroskedasticity does not significantly influence the regression results.

CHAPTER 7
DISCUSSION

This study provides insight in the consequences for auditor switching when firms become in a financial crisis. The main focus is on both the frequency of auditor switching, and the direction of the switches. Because prior research came up with contrasting results, no predictions are made at all. This study finds strong evidence that in a period of financial crisis, auditor switching occurs less frequently compared with a period of normal economic growth. Regardless of the direction of the switches, companies are more likely to keep their current auditor instead of switching to another auditor in a period of financial crisis. That does not necessarily mean that the market share of the auditors remains constant, because a firm which went bankrupt, does not lead to a switch but the auditor has lost a client as well. The consequences of auditor switching when firms become in a financial crisis are investigated in more detail in the regression analysis.

The main results of the regression analysis show that, in a period of financial crisis, firms are less inclined to switch their current Big-4 auditor to another Big-4 auditor, while they are more inclined to switch their current non-Big-4 auditor to another non-Big-4 auditor. Therefore, it can be concluded that when firms become in a financial crisis, the possibility that a Big-4 auditor will be replaced by another auditor within the same class is significantly lower. On the other hand, the possibility that a non-Big-4 auditor will be replaced by another auditor within the same class is in a period of financial crisis significantly higher. By looking at downward versus upward auditor switching, this study finds strong evidence that managers in a period of financial crisis are less inclined to switch from their current Big-4 auditor to a non-Big-4 auditor. Conversely, this study does not provide evidence that managers in a period of financial crisis are more or less inclined to switch upwards. Therefore, it can be concluded that when firms become in a financial crisis, the possibility that a Big-4 auditor will be replaced by a non-Big-4 auditor is significantly lower in a period of financial crisis compared with a period of normal economic growth. As a result, it can be concluded that, ceteris paribus, the market share of non-Big-4 audit firms declined when firms become in a period of financial crisis. This result is in accordance with the graph in figure 1.

This study does not only look at auditor switches across several years, but also at auditor switches within a particular year. It finds that the most (54%) auditor switches occur in the first half of the year and the least auditor switches occur in the last quarter of the year (23%). In addition, this study investigates also the auditor switches within the Big-4 in more detail. This study finds that PwC has lost the most clients (625) due to auditor switching. Conversely, KPMG has lost the least clients (259) due to auditor switching in the last nine years. Therefore, the Big-4 in total has a net decrease in clients in the last nine years due to auditor switching, but they had possibly lost more clients due to bankruptcies of clients.

This study is an important extension on the existing literature about auditor switching. Not many researches are focused on the consequences of auditor switching when firms become in a period of financial crisis. That is not very surprising because crises of such magnitude occur very sporadic and therefore this data is relative difficult to gather. The research method was very consistent and the data used was reasonably recent. Additionally, this study finds strong evidence about several types of auditor switching. Therefore, the results of this study could be of importance for audit firms. For them, it is important to know how a firms' management responds to auditor switching as a result of changing market conditions. They can use this knowledge in order to prepare for a possible future crisis or by planning their capacity for upcoming years when they become in a period of crisis. The results of this study can also be of importance for a firms' management, financial statement users, standard setters and

several other parties. Further, the results of this study can be added to the auditing expertise and therefore be of importance for several educational institutions.

7.1 LIMITATIONS AND OPPORTUNITIES FOR FUTURE RESEARCH

As in any research, also this study has some limitations. A possible limitation in this study is that the boundary of Big-4 versus non-Big-4 is partly subjective. Some research suggests that Big-4 audit firms are more specialized than non-Big-4 firms, but this border is not quite clear. Some, smaller audit firms are more specialized in a particular industry and could therefore be more specialized for some firms than Big-4 auditors are. Future research could extend this limit by including a second category of for example Big-10 audit firms, because these audit firms could have also more specialized knowledge than non-Big-4 auditors have.

In addition, many assumptions are made in determining the crisis period in chapter 3. This determination was based on a theory about information asymmetries. This method is used in many prior researches, but it could even be possible that also other factors cause a financial crisis. The reason for why is chosen for a method based on information asymmetries is that this method is more related to auditors' quality than methods used in other research. Note that the other reasons for choosing this method are described in more detail in chapter 3.

Another possible limitation is that in the crisis period only four of the five factors which possibly cause a financial crisis are significant. It was therefore necessary to make some concessions and mark this period as "crisis period" even when only four of the five factors are significant. Future research could extend this knowledge by using other theories for determining the crisis versus non-crisis periods. Also the time span for measuring these factors could be a limitation in this study. Only the last nine years are measured because before the year 2002, there was a Big-5 instead of a Big-4 in audit firms which results in many switches in 2002. One of the reasons to exclude the years before 2003 is that I believe that holding the research method consistent will lead to more reliable results. Additionally, using older data could also have a negative effect on the reliability of the results.

Another limitation could be that the crisis period is measured in quarters instead of days. It is therefore harder to define this period precisely. The crisis period is measured in quarters because this was the most detailed data format.

The use of only American data of public firms could also be a limitation in this study because it is assumed that there is no difference in the effects on auditor switching in the United States compared with European companies. It is noteworthy thatprevious research did not indicate that there are differences in auditor switching by American companies compared with European companies. This could be an opportunity for further research because we do not know this currently.

The regression analysis has also some limitations. A possible limitation in the regression model could be that the adjusted R^2 is very low in all models. Therefore, it is possible that there are also other factors which have an effect on a particular type of auditor switching and that, as a consequence, not all control variables are included in the model. To expand the knowledge about auditor switching, it is an opportunity to test whether other control variables have an additionally effect on some types of auditor switching.

In general, it can be concluded that there are a lot of opportunities to expand the knowledge about auditor switching and/or to extend the usefulness of the results.

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APPENDIX 1

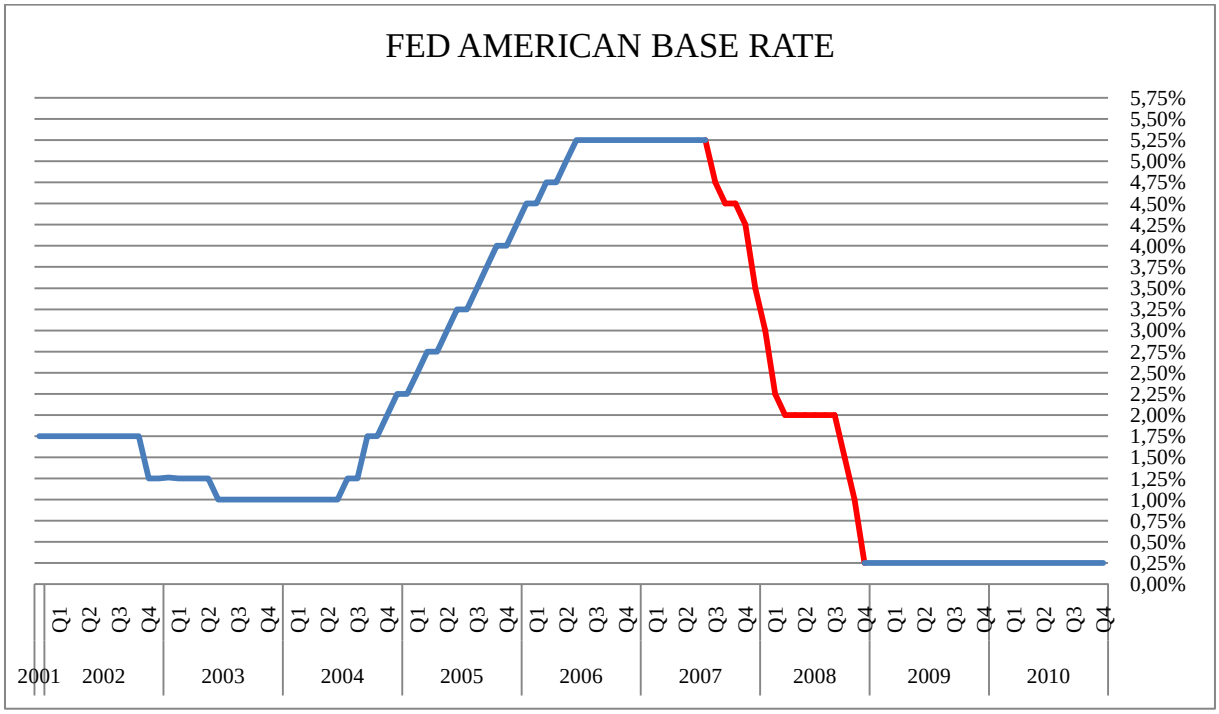

Figure 1

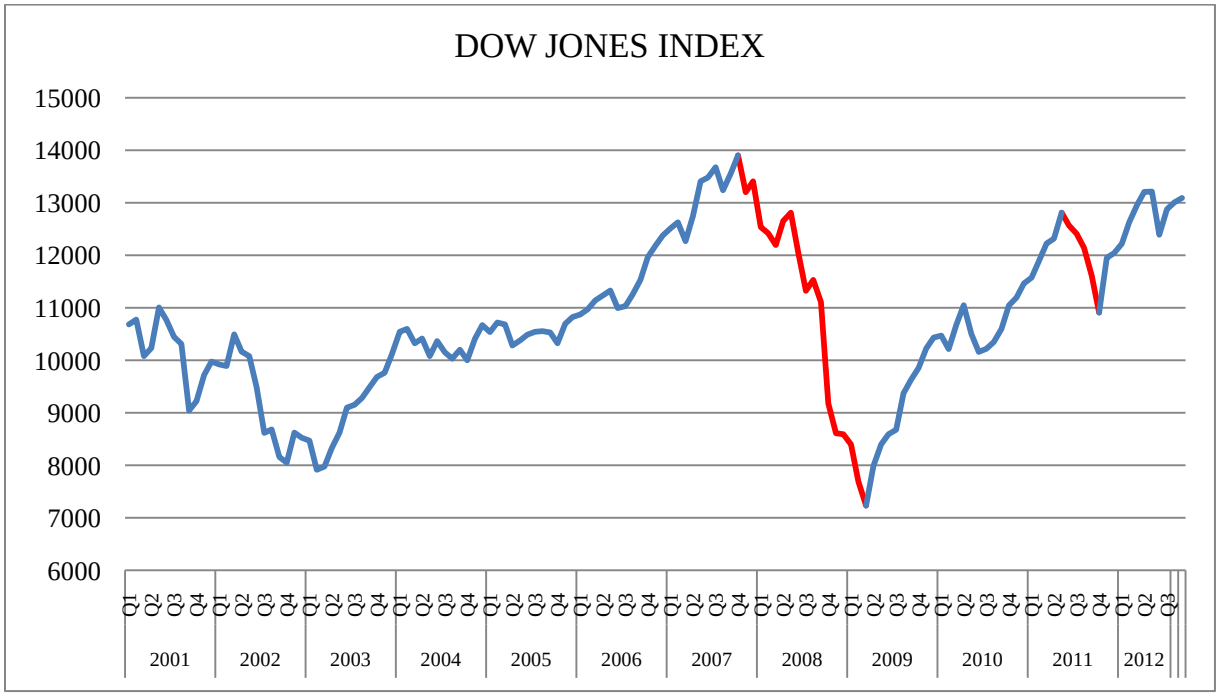

Figure 2

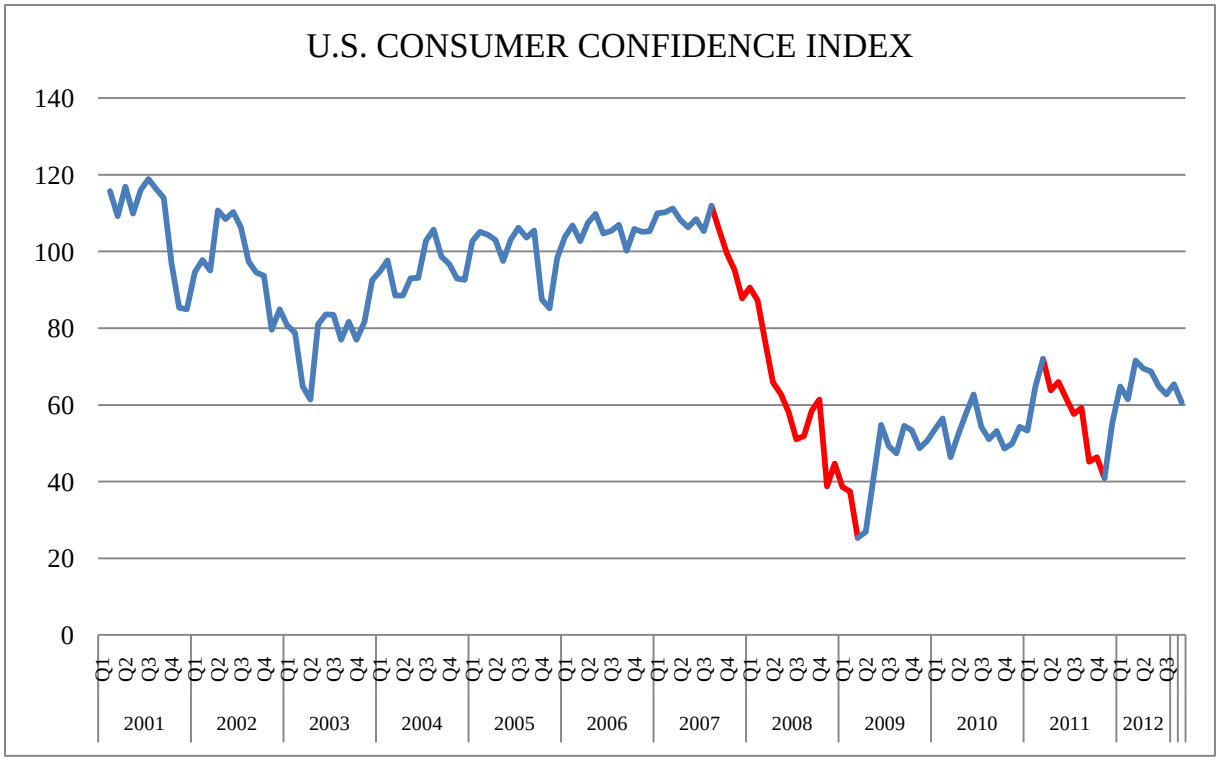

Figure 3

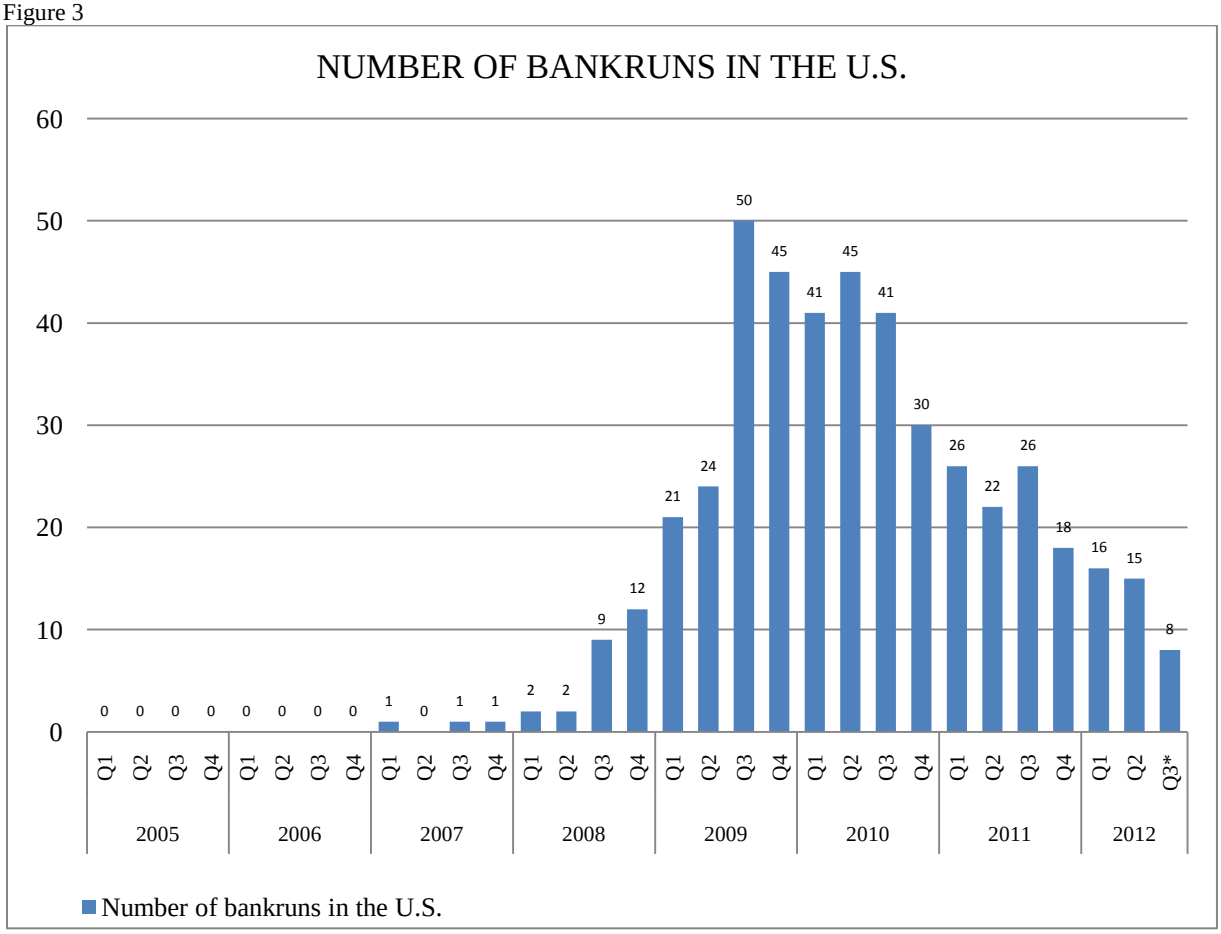

Figure 4

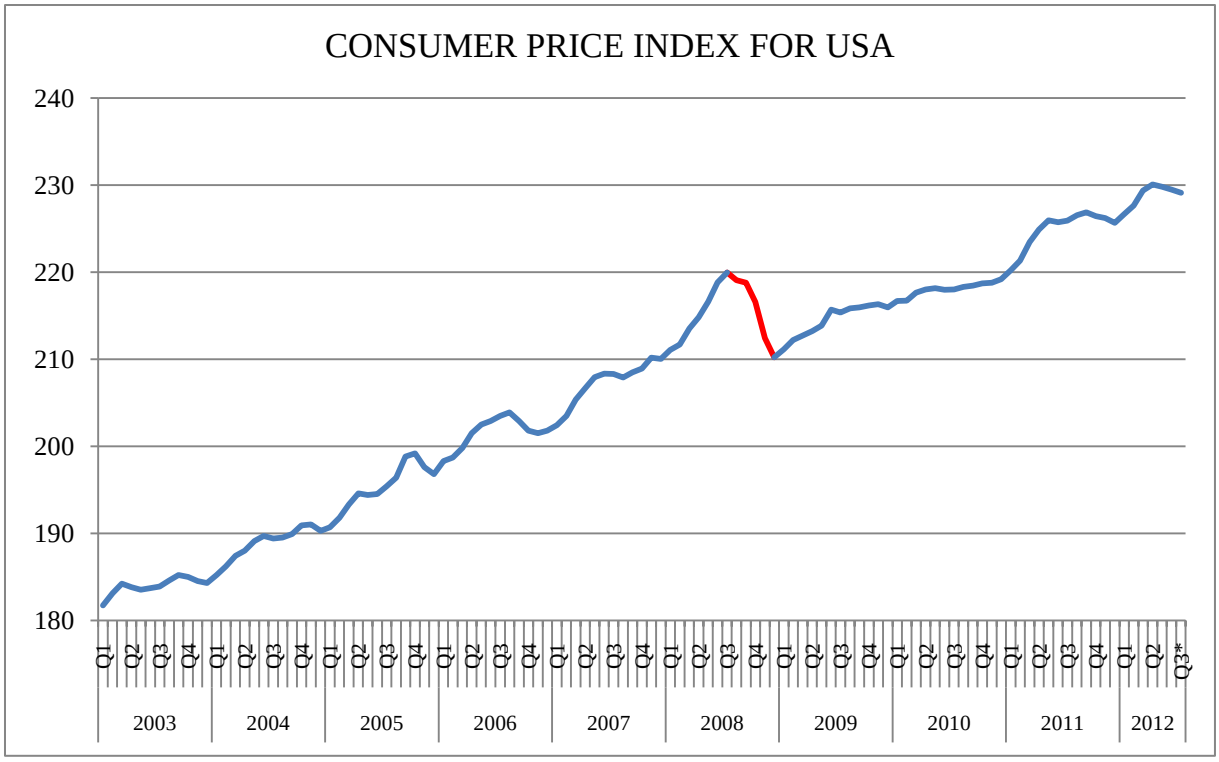
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Figure 5