THE IMPACT OF THE GLOBAL FINANCIAL CRISIS ON AUDIT QUALITY

A Study of Publicly Listed Swedish Firms

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Abstract
Audit quality is a widely researched topic but remains a complex concept that is difficult to quantify, which is why several different proxy measurements have been developed. The earnings quality measurement discretionary accruals has been chosen as the proxy measurement for this study as it captures small variations in audit quality which is important since it allows for analysis of a relatively small sample size.

Previous literature has found that for example client size, audit firm size, firm performance and company growth have a significant impact on audit quality. There has also been limited research on what the impact of financial crises has been on audit quality. The evidence in prior studies has suggested that financial crises could have both a positive and a negative impact on earnings quality and audit quality.

This study therefore tests two alternative hypotheses regarding the effects of the Global Financial Crisis (GFC) on publicly traded Swedish companies’ audit quality. The first hypothesis stipulates that audit quality improved from the pre-crisis period to the crisis period and continued to improve in the post-crisis period. The alternative hypothesis stipulates that audit quality, in terms of discretionary accruals, worsened during the GFC in an effort by companies to hide their real economic performance during a period of financial turmoil.

The study concludes that audit quality, in terms of discretionary accruals, was significantly higher for the time periods during the financial crisis (2008-2009) and during the post-crisis period (2010-2012) compared to the pre-crisis period (2005-2007). This finding confirms the first part of hypothesis 1 that stipulated that audit quality would increase from the pre-crisis period to the crisis period while it rejects hypothesis 2. No conclusive evidence was found in the data that audit quality continued to improve after the end of the GFC. The reasons for the improved audit quality could be that companies are incentivized to improve their financial reporting quality when they have liquidity issues in order to attract financing and that auditors tend to be more conservative during periods of increased business risk such as during a financial crisis. The finding is of particular interest since poorly performing companies in the sample have a lower level of audit quality and companies in general performed worse during the GFC compared to the other two time periods analyzed.
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1. INTRODUCTION
This introduction introduces the background of the problem area that this study is focused on. The problem background leads to the purpose of the study and the main research question that it addresses and the practical implications and scientific contribution of it. Finally, some initial limitations of the study are defined.

1.1 Problem background
Auditing, or the “systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to interested users” (Eilifsen, 2010, p. 10) is a widely researched topic in scientific literature. Auditing is of importance as it is a cost-effective way to solve the agency problem between the ownership and the management of a specific company that arises out of the information asymmetry and conflict of interest between them (Eilifsen, 2010, pp. 5-6).

According to the Financial Reporting Council (2006, cited in Francis 2011, p. 127) and Bonner (2008, cited in Francis 2011, p. 127), audit quality is a complex concept and therefore difficult to define. We share the view of Francis (2011, p. 127) who states that audit quality is a continuum ranging from very low quality to very high quality which is in contrast to the binary view of audit quality where it is high if the appropriate audit report is issued and low if the issued audit report is inappropriate. Studying audit quality is of importance not only to evaluate whether the correct audit opinion has been issued but also to ascertain whether the audit is correctly serving its purpose of solving the agency problem between ownership and management.

Another complex issue when studying audit quality is how audit quality can be observed and measured. DeFond & Zhang (2013, pp. 15-30) reviewed previously used proxy measurements such as audit quality (including auditor characteristics), audit fee, material misstatements, audit opinion, perception-based variables and earnings quality. They find that each of these measurements has their advantages and disadvantages. This study will use discretionary accruals as the proxy for audit quality since it captures small variations in audit quality, reflects our view of audit quality as a continuum and can be used on a limited sample size which is the case for this study. Discretionary accruals are the most commonly used proxy measurement of earnings quality (DeFond & Zhang, 2013, p. 21). This measurement has previously been used in many different studies, for example Svanström (2013) and Ashbaugh et al. (2003). Earnings quality are of particular importance since they determine how well reported financial figures reflect the actual underlying economic activities (DeFond & Zhang, 2013, p. 21) which is important in order for investors to correctly allocate society’s economic resources across firms and one of the main purposes of having Financial Reports audited. Studying accrual quality during a macro-economic shock is of particular importance since firms with poorer accrual quality are more exposed during these periods than firms with higher accrual quality (Kim & Qi, 2010, p. 970).

The current Global Financial Crisis (GFC) is the most devastating economic crisis in the history since the Great Depression (Friedman & Friedman, 2009, p. 1). It started in the US
in 2007 (Bergman, 2011, pp. 431) and was a correction in US housing prices after a period of expansion (Österholm, 2010, p. 265). According to Österholm (2010, p. 265), the loans in the US housing market during this period were securitized and sold all over the globe and since the loans were held in various financial instruments across the globe the price correction in the housing market did not only affect the US but spread globally and banks suffered great economic difficulties. This led to a period of global economic difficulties.

The GFC, and all the corporate failures that it led to, has increased the level of criticism of the audit profession and increased the pressure on auditors to improve audit quality (Holm & Zaman, 2012, p. 51). Auditing practices have been severely questioned, Sikka (2009, pp. 869-872), for example, discovered that auditors failed to issue going-concern opinions or modified audit opinions for banks that shortly thereafter were revealed to have financial issues. An example mentioned in the study is Lehman Brothers, who received an unmodified audit opinion for a quarterly report just over two months before they declared bankruptcy. High levels of audit fees raises questions of auditor independence and their ability to stand up to management’s interests and it is also questionable whether auditors have the competence to properly audit and understand the modern, complex financial instruments (Sikka, 2009, pp. 869-872).

Sweden provides a particularly interesting area of study in auditing after the GFC. It was hit very hard by it and GDP fell by 0.6% in 2008 and by an additional 5 percent during 2009 (Konjunkturinstitutet, 2014). This was only the fourth period of GDP decrease in Sweden since the end of World War II and none was as steep as this one and it was also steeper than the EU average for this period (Bergman, 2011, pp. 432-434; 449). Sweden also suffered a large drop in the stock market; over 40% between the beginnings of 2008 until early December of the same year (Österholm, 2010, p. 265). This caused issues for Swedish firms which have been documented in studies of the textile and clothing industry (Pal et al., 2014, p. 410-411) and in the heavy vehicle industry (Radway et al., 2011, p. 269). This illustrates the large impact that the GFC had on Swedish firms which in turn would lead to an increase in the pressure on their auditors. Another important factor that makes Sweden an interesting country of study is that it has managed to recuperate relatively well from the financial crisis and rebounded with 6.6% growth in GDP in 2010, followed by 2.9 % in 2011 and has maintained positive GDP growth since then (Konjunkturinstitutet, 2014). This allows us to already observe data from a post-crisis period.

Studies have been made regarding auditors in Australia increasing audit fees and their propensity to issue going-concern reports during the financial crisis (Xu et al., 2013, p. 301-302) and also that financial reporting quality actually improved during the GFC among companies in some of the European countries affected most severely by it (Kousenidis et al., 2013, p. 351). Otherwise, very little has been studied regarding the effect of the GFC on auditing and audit quality in particular to see how auditors responded to the macro-economic shock and to the increased criticism and no study was found regarding the effects in Sweden and the level of audit quality after the end of the GFC. This is the gap in previous research that this study aims to fill.
1.2 Research Purpose
The previously described problem background leads to our research purpose which is to study what effect the Global Financial Crisis had on audit quality in Sweden.

The implication for ownership and management is whether auditors are fulfilling their role in solving the agency issue in a better way after the crisis. The implication for society is whether auditors are upholding their role in ensuring effective resource allocation during and after a financial crisis and the contribution to previous research is to study the effect of this financial crisis on audit quality and earnings management.

The main scientific contribution of this study is that it is the first study to investigate the effect of the global financial crisis on audit quality in terms of discretionary accruals among publicly listed companies in Sweden and there are very few other studies internationally covering this. Furthermore, data has also been analyzed regarding audit quality in the post-crisis period as well in order to measure the lasting impact of the crisis on audit quality after the initial two tumultuous years. No previous study has been found that analyzes the lasting impact of the GFC on audit quality.

1.3 Research Question
The stated research purpose leads to our research question which is:

How has audit quality for publicly listed firms in Sweden been affected by the global financial crisis?

1.4 Limitations
The research question introduces three important limitations for the scope of this study. The first one is that the focus is on auditing quality during the period leading up to the crisis, during it and after it. The second limitation is that we will only study publicly listed firms. The reason for this is that auditing is of particular importance for these firms due to the separation of management and ownership which leads to the agency problem (Francis, 2004, p. 346). The third limitation is that we will limit our study to Swedish firms. The reasons for choosing Sweden were stated above and include that it was a country severely affected by the GFC that has now stabilized and improved which allows us to identify periods before, during and after the crisis.
2. THEORETICAL FRAMEWORK

This chapter on theoretical framework starts with a more general discussion on auditing and audit quality and discusses some factors that have an impact on audit quality. After that, ways of measuring and quantifying audit quality are introduced. The chapter, thereafter, presents the Global Financial Crisis and how it relates to audit quality and some studies regarding its impact on audit quality and financial reporting quality.

2.1 Auditing

A widely used definition of auditing sees it as a “systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to interested users” (Eilifsen et al., 2010, p. 10). Eilifsen et al. (2010, pp. 4-31) simply define auditing as checking or evaluating financial statements in order to ensure that those financial statements are free from material misstatement and the people who perform these audits are called auditors. They continue to explain that there are many types of auditors but the two most common types of auditors are external auditors and internal auditors. External auditors act on behalf of shareholders of particular companies in order to monitor the business run by management that they have hired to run the company (Eilifsen et al., 2010, pp. 5-6). The external auditors do not rely solely on one client for employment and do not involve themselves in the client’s daily business operation (Stefaniak et al., 2012, pp. 40-41). On the other hand, internal auditors are company employees and can also have an informal partnership with management where they provide additional value for them by performing proactive activities (Bou-Raad, 2000, p. 182; Balkaran, 2008, p. 21).

2.1.1 Agency theory and auditing

Auditing is very important for businesses and financial markets. Jensen and Mecking (1976, p. 308) defines an agency relationship as the relationship between one or more people (the principal) who involve another person (the agent) to perform a service on their behalf. They explain that if both of these parties aim to maximize their utility there will be situations where the actions of the agent are not in the best interest of the principal and this will lead to incurred costs to the principal which together with monitoring costs and bonding expenditures by the agent make up agency costs. Auditing is a form of monitoring cost with the aim of minimizing the costs of actions taken by company management (the agent) that are not in the interest of the owner (the principal) (Eilifsen et al., 2010, pp. 5-6). Healy and Palepu (2001, p. 405) argue for the need of disclosure and audited financial reports in order to reduce information asymmetry between principals and agents. Watts and Zimmerman (1986, cited in Michas, 2011, p. 1733) explain that auditing is important for debt markets and well-functioning equity markets because it is used as the contract to reduce agency cost of companies.

Auditing plays a vital role in monitoring contracts between principals and agents and controlling information risk (Watts & Zimmerman, 1979 p. 276). The financial and accounting information that are used for decision making by internal and external users will lack credibility without an external audit and external audit is one of the effective tools to measure honesty (Eilifsen et al., 2010, p. 6). There is extensive literature regarding the conflict of interest between principals and agents and audit demand. One of them is a study
by Francis and Wilson (1988, p. 663) who study the relationship between information asymmetry and audit demand and find out that high demand from high quality auditors, Big 8 during that time, of audit service is clearly affected by agency costs. Auditing is therefore essential. A study by Collis et al. (2004, p. 87) illustrates this in their study of small firms exempt from government-mandated audits where they found that most small companies in the United Kingdom still prefer to have their financial statements audited (Collis et al., 2004, pp. 96-97). Deakins and Hussain (1994, pp. 332-333) claim that small companies, though being permitted not to have statutory audit, prefer to have audit because of financing benefits from creditors. To understand deeply whether exempted small companies would voluntarily choose to be audited, Collis et al. (2004, p. 87) studied a sample of 385 companies in the United Kingdom and found that 63 percent of them prefer to have their accounts audited because the perceived benefits outweigh the costs. Those benefits are financing benefits, improving internal controls, reducing agency cost and information asymmetries.

2.2 Audit Quality

2.2.1 What is audit quality?
Audit quality and its determinants has been widely debated (Svanström, 2013, p. 360). The Financial Reporting Council and Bonner (2006 and 2008, cited in Francis, 2011, p. 127) state that it is not easy to define audit quality because it is a complex concept and, because of that, a simple definition will not suffice. There is no single way to measure audit quality (Svanström, 2013, p. 345). Francis (2011, p. 127) views audit quality as a continuum which is a view that we share and means that audit quality can range from very low quality to very high quality. On the contrary, the legal view of audit quality refers to the appropriate issuance of audit report on financial statements of the client according to General Accepted Accounting Principles (GAAP) which is a binary view of audit quality as either good or bad (Francis, 2011, p. 127). DeAngelo (1981, p. 186) defines audit quality as “the market assessed joint probability that a given auditor will both discover a breach in a client’s accounting system, and report the breach”. Sungren and Svanström explain that in the low range of audit quality there are outright audit failures. They divide audit failures into two categories. The first one happens when the auditors do not manage to enforce GAAP and the second one occurs when auditors issue a clean audit report while the financial statements of the clients are materially misstated (Sundgren & Svanström, 2012, p. 35). Francis (2004, p. 346) argues that audit failure certainly happens at the lower end of the quality of continuum. He adds that to understand audit quality, it is necessary to think of what the rate of outright audit failure is.

2.2.2 Factors that drive audit quality
What are the factors that drive audit quality? Different authors come up with somewhat different audit quality drivers. Francis (2011, p. 126) introduces six levels of analysis that affect audit quality. They are audit input, audit process, accounting firms, audit industry and audit market, institutions and economic consequences of audit outcomes. On the contrary, Financial Reporting Council (FRC, 2008, cited in Knechel et al., 2013, p. 388) proposes five drivers for audit quality; the culture within the audit firm, the skills and personal qualities of audit partners and staff, the effectiveness of the audit process, the reliability and usefulness of audit reporting and factors outside the control of auditors.
affecting audit quality. Knechel et al. (2013, p. 390) mention four indicators of audit quality which are inputs, processes, outcomes and context.

2.2.3 Input and audit quality
Planning for a good quality audit depends on assessing the uniqueness and riskiness of each client. That is why auditors have to consider appropriate inputs for their audit process so that good audit quality can be assured. One of the inputs that may have negative impact on audit quality is incentives. Gramling (1999, pp. 117-135) conducts an experiment on audit managers in one of the Big 5 accounting firms regarding the effect of audit fees on auditor independence, a measure of audit quality. The study suggests some concerns over the influence of a high fee on auditor independence. Auditors who receive a high fee from their client are prone to rely more on the internal audit function, which can influence audit quality (Gramling, 1999, p. 117). A study by Houston (1999, p. 70) supports Gramling’s finding. He studied senior auditors’ budgeted audit hours and their assessments of inherent risk and find that they are less responsive to increased risk due to presence of audit fee pressure and this occurs because of economic bonding between auditors and clients. Another finding is that audit quality can be reduced due to a decrease in the budgeted audit hours in order to maintain short-term profitability. Besides incentives, professional skepticism is another important input to audit quality. Shaub and Lawrence (1996, pp. 124-157) studied the relationship between audit quality and auditors’ professional skepticism on 156 auditors from 56 different offices of an audit firm among the Big 6 and found that an increase in professional skepticism can be due to clients’ prior business problems or inaccuracy in financial information. This increased professional skepticism can in return, increases audit quality. Two additional inputs that are important to consider are knowledge and expertise and inside firm pressure (Knechel et al., 2013, pp. 392-393).

2.2.4 Process and audit quality
The audit process consists of risk assessment, internal control evaluation, testing and review (Knechel et al., 2013, p. 393). In order to maintain a high quality audit process, auditors need to have a high quality professional judgment as well. According to Smith and Kida (1991, p. 479), auditors who have a high level of expertise and familiarity tend to be less susceptible to bias. Risk assessment plays a very important role in determining audit quality. However, different approaches of risk assessments may result in different assessments and decomposing the audit task into smaller components could be the key approach in correctly assessing audit risk (Jiambalvo & Waller, 1984, pp. 80, 87).

2.2.6 Contexts and audit quality
Francis (2011, pp. 140-141) mentions that the institutional setting, which refers to the legal framework of which an audit is conducted, can impact audit quality. An important international institution mentioned by the author is the International Accounting Standards Board (IASB). The author further explains that the legal framework affects audit quality by defining what an audit failure is and what the consequences are for this failure and who can take action and in what way when this occurs. He also mentions that contextual factors such as governance mechanisms, for example the audit committee and boards of directors can influence audit quality. A study by DeFond et al. (2005, p. 153) found evidence that financial experts appointed to boards is complementary to higher quality auditors being hired. Other contextual factors of importance to audit quality as mentioned by Francis
(2011, p. 126) are auditing markets and the auditing industry that accounting and auditing firms constitute.

2.2.8 Audit office and audit quality

Literature regarding audit office and audit quality extends the research area of audit quality. It has been noted that differences in which country, region and city an audit firm office is based may result in different audit quality regardless of audit firms (Sundgren & Svanström, 2012, p. 36). Investing heavily in building brand name and reputation, large audit firms try to maintain their homogenous level of audit performance and quality throughout every office around the world (Choi et al. 2010, p. 73). A large sample of U.S audit clients from 2000 to 2005 was investigated to see whether there was an association between audit office and audit quality in a study made by Choi et al. (2010, p. 94). They conclude that there is a positive relationship between audit office size and audit quality. This means that the larger the local audit office is, the higher the audit quality they provide. Francis and Yu (2009, p. 1521), however, find that smaller audit offices do not provide unacceptably low audit quality. Results from their study of 805 office years of the Big 4 offices in the United States from 2003 to 2005 shows that clients whose financial statements were audited by larger offices have lower abnormal accruals. This result supports the hypothesis that larger audit offices provide higher audit quality. These studies focus on both public companies and private companies. Most of the studies were conducted in the U.S and similar countries while the study by Sundgren and Svanström (2012) was conducted with Swedish SMEs.

2.3 Financial reporting quality

There is a difference in the demand of information in the form of financial reports between public firms and private firm. Hope et al. (2013, p. 1717) mention that private firms complain about accounting practices which are not applicable for them but for public firms. They criticize that they are overly burdensome and not relevant for their financial situation. However, their study does not discuss whether the accounting standards are more applicable for public firms than private firm but only discusses the evidence that financial information provided by public firms are greater than private firms because of a high demand and expectation of information from external users and markets. Among public firms, the demand for high-quality information is undeniable (Hope et al., 2013, p. 1718). On the other hand, the demand for financial reporting from private firms is aimed for the purposes of tax reporting, dividend policy and other objectives rather than financial information that has to be available for the public in order to seek external capital (Ball & Shivakumar, 2005; Burgstahler et al., 2006).

Financial reporting quality is threatened by manipulation from management. Opportunistic management manipulates financial information in order to achieve particular objectives either for themselves or for the firm (Graham et al, 2005, p. 4). Due to pressures from the financial markets to meet financial targets, managements have the incentives to manipulate financial information in order to meet these objectives (Graham et al., 2005, pp. 65-66). Since the economic benefits of company management may be tied to the stock price for the company that they work for they have the incentive to maintain a preferable stock price (Hope et al., 2013, p. 1719). Degeorge et al. (1999, p. 1) mention that companies’ managements use earnings management to impact the perceptions of investors. Dye (1988,
p. 195) introduces two reasons behind earnings management. The first one is to increase executive remuneration while the second one is to go along with shareholders’ wishes, for example increasing share value.

2.4 Threats to audit quality

2.3.1 Auditor tenure and audit quality
Does audit quality increase or decrease when incumbent auditors maintain long-term relationship with clients? As incumbent auditors have long-term relationship with clients, they become less challenging in applying innovative audit tools and procedures to perform audit and they even become less skeptical (Shockley, 1982, pp. 126-143). On the contrary, investors and financial information intermediaries perceive increased audit tenure as leading to improved audit quality (Ghosh & Moon, 2005, p. 585). There are in other words mixed results of the study of the relationship between auditor tenure and audit quality. Nevertheless, there is not enough evidence to support that having the same auditor over a long period of time improves audit quality (Meyer et al., 2003, p. 796). Oppositely, a study in Indonesian context shows a result of significantly negative effect on propensity to issue going-concern audit report as auditor tenure increases (Junaidi et al., 2012, p. 313). However, Carey and Simnett (2006, p. 656) argue that there is little evidence of a strong relationship between audit partner tenure and audit quality.

2.3.2 Audit partner tenure and audit quality
Carey and Simnett (2006, p. 653) use data from Australia to study the relationship between audit partner tenure and audit quality and conclude that in Australia, where audit partner rotation is not mandatory, as the tenure increases, the propensity to issue going-concern opinion decrease, which is a sign of deterioration of audit quality. Similarly, empirical evidence from a study in Taiwan made by Chi and Huang (2005, p. 65) shows that even though familiarity helps improve earning quality, excessive familiarity deteriorates audit quality due to long-term relationships between auditor partners and clients. In addition, since audit-firm rotation is mandatory, the study finds that audit quality decreases with non-Big 5 auditors because of a lack of ability to maintain knowledge familiarity with clients. The evidence from a study in the US points to audit quality increasing when audit partner tenure increases based on data from three large international audit firms (Manry et al., 2008, p. 553). There is therefore mixed evidence as to whether audit partner tenure affects audit quality positively or negatively.

2.3.3 Auditor Independence
Every auditor has to perform audits in accordance to audit standards so that they can ensure minimum requirement for audit quality. DeAngelo (1981, pp.183-199) uses auditor independence as a measure of audit quality. She explains in her paper that large audit firms, the Big N, tend to be more financially independent than small audit firms because they do not depend on a single source of finance and they have their reputation to lose so that they have to maintain their independence in order to avoid losing this reputation and be involved in litigations. Becker et al. (1998, pp. 1-24) found that audit quality, in terms of discretionary accruals, is higher for the clients of the Big 6 accounting firms. Francis and Wilson (1988, p. 663) support these findings by arguing that large audit firms have built their brand name over long periods of time. Thus, they tend to provide higher audit quality than smaller firms. In addition, large audit firms are capable to withstand pressure from
company management and issue going-concern audit reports to financially distressed companies and clean reports to financially healthy companies according to Lennox (1999, p. 226). His study focuses on publicly listed companies in the UK between 1987 and 1994.

In 2011, Michael Barnier, Internal Markets Commissioner of the European Commission, recommended that “mandatory audit firm rotation would boost the quality of audit, shattering the perverse pressure on partners not to lose long-standing clients” (Orlik, 2011, p. 1). However, audit firm rotation is not required in the U.S which is why there is limited research about auditor rotation and some studies are limited to voluntary audit rotation (Jenkins & Vermeer, 2013, p. 77). Although there is limited research regarding mandatory auditor rotation in the U.S, there are plenty of studies in other countries such as Australia, China, Korea, Spain and Taiwan (Jenkins & Vermeer, 2013, p. 78). A study in Korea found that discretionary accruals are significantly lower for companies with mandatory auditor rotation compared to companies with voluntary auditor rotation (Kim & Yi, 2009, p. 207). On the other hand, evidence from a study measuring auditors’ propensity to issue qualified audit opinions in China shows that, mandatory auditor change has limited impact on audit quality in less developed regions (Firth et al., 2012, p. 109).

2.3.4 Audit quality and non-audit services
The topic of non-audit service and audit quality has been critically discussed since the collapse of Enron. The impaired audit quality of the Enron audit by Arthur Anderson, which lead to the collapse of both firms, was partly due to compromised independence of the auditors since they also provided non-audit consultancy services to Enron which meant that the auditors had a large financial incentive to get along with management’s wishes and hide material financial information regarding additional liabilities not mentioned in the annual report (Solomon, 2010, p. 38). A negative relationship between non-audit service fees and audit quality, in terms of discretionary accruals, has been found also in a larger study by Frankel et al. (2002, pp. 98-100). This finding has however been negated as being due to incorrectly specified models and most studies of public firms have found that audit quality increases when larger amounts of non-audit service are provided to the same client (Svanström, 2013, p. 341). An explanation for this is that there is a great potential of knowledge spillover when both audit services and non-audit services are provided by the same auditor according to Simunic (1984, pp. 699-700). His study is supported by for example Antle et al. (2006, p. 235) who used data of audit fees in relation to non-audit fees in the UK from 1994 to 2000 and found evidence of potential knowledge spillovers from the provision of non-audit services to the same audit clients. Similarly, firms that purchase auditor-provided tax service are fully reserved for IRS disputes while firms that do not are required to have tax reserves for IRS disputes (Gleason & Mills, 2011, p. 1486).

2.3.5 Audit quality and audit fee
Are higher audit fees a threat to audit quality? Results from a study in both the US and the UK show that high audit fees lead to an increased acceptance of abnormal accruals (Antle et al., 2006, p. 238). Eshleman and Guo (2014, p. 120) claim that “higher audit fee than what are justified by workload of audit may cause the auditor to lose her independence and allow the client to engage in more questionable accounting practices”. Trompeter (1994, cited in Eshleman & Guo 2014, p. 120) mentions that since audit engagements are performed by audit partners rather than the audit firm, audit partners enjoy the vast majority
of additional revenues from the clients and take risks by going along with them regardless of the reputation risk for the whole audit firm. On the other hand, the higher the audit fee, the more effort will be put into audit engagements by the auditors. Investors interpret abnormally high audit fees as an indicator that firms have high earning quality and that is why they invest more in costly audit services (Higgs & Skantz, 2006, p. 21). Controlling for internal control quality, Blankley et al. (2012, p. 93) find a negative relationship between audit fees and future restatements of audited financial statements. Based on previous studies, it is therefore difficult to judge if abnormally high audit fees threaten audit quality.

2.3.6 Audit quality and client size

Reynolds and Francis (2001, p. 375-376) suggest that auditors may compromise their independence in relation to large clients that they are economically dependent on. However, they cannot find any evidence to support whether auditors compromise their independence to retain large valuable clients. Nevertheless, they still argue that if the auditors have more than one client, they will be less financially dependent as compared to having just a single client. That is why DeAngelo (1981, p. 189) uses auditor size to measure audit quality because she believes that larger accounting firms have more clients than smaller accounting firm and are therefore less economically dependent to large client firms. Besides economic dependence, large clients can pose potential audit risk to auditors (Reynolds & Francis, 2001, p. 379). Auditing firms may have a greater risk of losing their reputation and face a larger litigation threat and individual auditors face a larger risk of being sanctioned when they fail to properly perform audit services to those larger clients compared to smaller less visible clients (Shafer et al., 1999, pp. 97-98). There is therefore evidence and theories in both directions regarding how client size affects audit quality.

A study by Madhogarhia (2009, p. 1767; 1770-1771) investigated whether there is a relationship in earnings quality, as measured by discretionary accruals, and whether a company was a growth or a value firm. They conclude that growth companies are more aggressive in their earnings management both upward and downward compared to value firms since growth firms are penalized higher in terms of stock price when reporting earnings that are lower than expectations. This result leads us to believe that firms with higher growth rates will have higher levels of discretionary accruals also in our sample. In addition, Manry et al. (2008, p. 553) study the association between audit quality and audit partner tenure. In their model, they include growth in size of client, growth in assets, as their control variable but find no association between audit quality and growth in assets.

2.4 Proxy Measurements of Audit Quality

Previous studies of audit quality have used a proxy measurement for audit quality as the dependent variable in order to be able to measure it. Audit quality is a concept that is difficult to observe and quantify as the user of financial statements cannot perfectly see the level of assurance provided by the auditor (DeFond & Zhang, 2013, p. 15). Some of the audit quality measures listed below are not necessarily related to each other; a study in Greece has for example showed that audit opinion is not correlated with discretionary accruals (Tsipouridou & Spathis, 2013, p. 38). Below is a presentation of the more common proxy measurements of audit quality categorized into input-based measurements and output-based measurements as well as a summary of the strengths and weaknesses of each.
measure and a short explanation of whether or not the specific measurement is applicable to this specific study and why.

2.4.1 Input-based Measurements
Input-based measurements have previously mainly been used for studies that look at demand-side factors and how they affect audit quality but since they are inputs into the auditing process it is not guaranteed that they lead to observable outputs and are therefore quite noisy proxies for audit quality (DeFond & Zhang, 2013, pp. 15; 26).

Auditor Characteristics
Auditor characteristics such as size (which is usually measured by Big N-membership) or industry specialization (measured by customer-concentration within a specific industry) are used in research as input-based measurements of audit quality (DeFond & Zhang, 2013, pp. 26-27). As mentioned previously DeAngelo (1981, p. 197) has found that the bigger the audit firm in terms of size, the higher the quality and this result has been corroborated by Palmrose (1988, pp. 71-72). They provide higher quality audits since they have higher incentives to provide it, in terms of reputation loss, and a higher level of competence (DeFond & Zhang, 2013, pp. 26-27). Reputation loss is specifically costly for the Big N-firms due to the vast resources spent on building up their brand image (Francis & Wilson, 1988, p. 680). Despite these factors, several European studies have found no relationship between audit quality and Big N firms (Svanström, 2013, pp. 357-358). Auditors with a higher degree of industry specialization have been found to provide a higher level of audit quality due to their industry-specific expertise (Francis, 2004, p. 355).

These auditor characteristics are often used as the dependent variable denoting audit quality but are also used as independent variables to see if they indeed have an effect on observable outputs and the advantages of using this proxy is that it has a high construct validity since it is associated with most of the output-based measurements described later on, but a major drawback is that the variable is often coded dichotomously which implies that audit quality is the same within the two groups and this means that it does not capture small variations in audit quality (DeFond & Zhang, 2013, pp. 26-27). Since these are binary measurements and quite noisy proxies of audit quality they will not be used in this study as the proxy measurement but whether the audit firm is Big N or not will be included as a control variable.

Audit Fee
Audit fees are used to measure audit quality since they are expected to capture audit effort. DeFond and Zhang (2013, pp. 28-29) state that audit fees are affected by both supply and demand side factors as customers have to be willing to pay a higher fee for increased effort and it is therefore a measurement used in studies of both sides of the audit market. They further state that an advantage of this proxy is that it is a continuous measurement and can therefore capture small variations in audit quality. A major drawback, that they report, is that the fees can also be affected by other factors than audit effort. DeFond and Zhang (2013, pp. 29) mention as an example that an increased efficiency and risk premium can also affect audit effort without being included in the fees. This means that changes in fees can not necessarily be attributed to audit quality. Since audit price can be affected by other factors than audit quality it will not be used as an audit quality measurement in this study.
2.4.2 Output-based Measurements

Studies that focus on the supply-side effects on audit quality mainly use output-based measurements as their proxy for audit quality (DeFond & Zhang, 2013, pp. 15-16). The summary of the strengths and weaknesses in this section will focus on the dimensions directness, egregiousness and actual-versus-perceived. DeFond & Zhang (2013, pp. 15-16) define directness as to what extent the auditor has direct control of the measurement, egregiousness as the severity if an audit is performed poorly according to the measurement and actual-versus-perceived as to whether the measurement is an actual measure of audit quality or of how it is perceived by the users of the financial information.

Material Misstatements

Keune and Johnstone (2012, pp. 1641-1642) state that when an auditor finds a misstatement they inform management and the audit committee of the audited firm who can choose to not rectify it if the misstatement is immaterial. The authors mention that since the criteria for whether a certain amount is to be considered material or immaterial are subject to professional judgment, there is a possibility that this judgment is affected by strategic considerations of the firm.

Material misstatements are usually measured by restatements of previously issued financial statements and Accounting and Auditing Enforcement Releases (AAERs) which are enforcement actions such as lawsuits by the SEC, both of which occur infrequently, are under the direct control of the auditor and seen as egregious audit errors (DeFond & Zhang, 2013, pp. 17-18). A previous study by Keune & Johnstone (2012, p. 1672-1673) found that among American companies an increase in audit fees meant that auditors were less likely to allow management to not correct misstatements which they attribute to an increased audit effort made possible by the higher audit fee.

This measurement only captures very low-quality audits and is a binary measurement that doesn’t capture small variations in audit quality and also has the disadvantage that there might also be cases of material misstatements that occur but are not corrected or spotted by an enforcement agency (DeFond & Zhang, 2013, pp. 17-18). Due to their infrequent nature and our relatively small sample size and short time period as well as this measurement not being in agreement with our view of audit quality as a continuum, this measurement will not be used for this study.

Audit Opinion

A modified going-concern opinion by an auditor means that the auditor has substantial doubts as to whether the audited firm can continue as a going concern (DeFond & Zhang, 2013, p. 18). Carson et al. (2013, pp. 354-355) explains that this evaluation is based on the evidence procured during the audit process and if there is evidence that supports that the audited company is not expected to continue as a going-concern the auditors will request information about management’s plans to address these issues. They further note that if the auditor still has substantial doubt regarding the continuance of the company and this is not adequately addressed in the annual report, the auditor has to modify their opinion and explain the reasons for their concern.
A decrease in the auditors’ propensity to issue this audit opinion is seen as a result of the auditor failing to stand up to the pressure put on by management and is therefore of low audit quality (DeFond & Zhang, 2013, pp. 19-20). DeFond & Zhang (2013, pp. 18-20) view this as a very direct measurement of audit quality as the auditor has full control over the audit opinion and it is considered egregious if the auditor does not issue the appropriate audit opinion. They therefore view this as a clear sign of low audit quality which gives insights into auditor independence. They mention several disadvantages with this measurement such as that it only captures low audit quality and not small variances in audit quality and this opinion should only be issued to poor-performing companies and says nothing of the audit quality of financially healthy companies. Another disadvantage mentioned by the authors is that it also only captures a limited part of the auditor’s task and an increased issuance of going-concern opinions could be a sign of auditors becoming too conservative and it is therefore not clear whether it is actually a higher quality audit.

A study by Carson et al. (2013, pp. 355-356) found that auditor’s propensity to issue going-concern opinions increased in the US in 2002 after the Enron crisis and the implementation of the Sarbanes-Oxley act (SOX). The fall of Arthur Andersen and a large increase in insurance-related costs appear to have been the reasons for the increase in the issuance of going-concern opinions according to the authors. They found that from 2002 to 2010, there was a very small increase in issuance of going-concern opinions (from 16,57% to 17,01%) and that large companies were in the decade 2000-2010 much less likely to receive a going-concern opinion in the US (only 0,33% for firms with market cap over 500 million USD compared to 36,7% for firms with a market cap of less than 0,75%) which implies that audit quality is poorer for large firms.

Going-concern opinions are, like material misstatements, infrequent occurrences and this is therefore not a suitable measurement for our sample size and timeframe and the binary view of audit quality is contrary to our perception of the concept. Since it could also reflect an increased conservativeness among auditors during the financial crisis, it could be a misleading measurement of audit quality.

Perception-based Measures
Perception-based measures study how a variety of users perceive and react to audit information and include stock market reactions to audit-related events and the cost of capital and measurements of how audit committees perceive audit quality, such as changes in audit firms’ market share and changes in audit fees aiming to capture whether an audit failure leads to an audit firm losing market share or forces them to charge less for their services (DeFond & Zhang, 2013, pp. 23-26). Another perception-based measurement previously used was management perceived-quality of auditing which gave similar results of audit quality as discretionary accruals (Svanström, 2013, p. 345).

DeFond and Zhang (2013, pp. 23-26) view this as a very indirect measurement of actual audit quality, especially when investor reactions are measured since the audit has a small impact on company valuations compared to company performance and economy-wide factors. They further explain that egregiousness for this measurement can be gauged by for example the strength of the stock market reaction, but since it is an indirect measurement it is difficult to assess whether the entire reaction was due to an audit-related event or to other
factors mentioned above. An important advantage, mentioned by the authors, with this measurement is that it captures a complete view of the auditor’s role compared to for example audit opinion-related measurements and is continuous which means that small variations in quality can be identified.

This measurement will not be used in this study since the studied time period is the global financial crisis which was a period of abnormally large swings in market evaluations and it would therefore be very difficult to determine whether reactions in the stock markets were a result of audit-related information or other economic events. Price valuations of firms could also be a result of company’s liquidity issues and not reflect perceived audit quality.

**Earnings Quality Including Discretionary Accruals**

The aim of earnings quality measures is to study how well reported earnings capture the actual economic events that they aim to portray and one of the key purposes of auditing is to prevent management from managing earnings in order to provide financial reports of high quality (DeFond & Zhang, 2013, pp. 21-22). Kousenidis et al. (2013, p. 352) divide earnings quality measures into two categories; market-based measures and accounting-based measures. They explain that market-based measures focus on timeliness, conditional conservatism and value relevance and the basic assumption is that earnings are a reflection of economic income where-as accounting-based measures focus on earnings smoothing, earnings management and persistence and predictability and these measures are based on the assumption that earnings are allocated cash flows by using accruals. Earnings management is an indicator of low quality financial reporting (Kinney et al., 2004, p. 567). The focus in this study will be entirely on accounting-based measures.

Audit quality in terms of earnings quality is most frequently measured by identifying discretionary accruals (DeFond & Zhang, 2013, pp. 21). Earnings reported in companies’ financial statements consist of cash flow and accounting accruals which in turn consist of two parts; normal, non-discretionary accruals that are a part of a company’s operational and investment activities and the abnormal discretionary accruals which are a result of management’s discretionary accounting activities (Choi et al., 2011, p. 167). An example of a study using discretionary accruals as the proxy measurement of audit quality was made by Svanström (2013, p. 337) to measure the effect of non-audit services on audit quality among private firms in Sweden but this measurement has been used in many studies of both audit quality and financial reporting quality (Chen et al., 2008; Francis et al. 1999; Lim & Tan, 2007).

DeFond and Zhang (2013, pp. 21-23) characterize discretionary accruals as not a particularly direct measurement of audit quality as the auditor does not have direct control of discretionary accruals as they do over for example their audit opinion. If earnings management is within accounting standard limits it is not considered to be a particularly egregious offence by the authors. They further state that the measurement has the disadvantage that there is a lack of consensus on exactly how earnings management is measured which leads to conflicting results in studies. However, this measurement does have many advantages that make it very attractive. An important advantage is that it is a continuous measurement so it captures small variations in audit quality that occur within the limits of applicable accounting standards and another advantage is that it captures
quality in financial reporting which is the ultimate goal of auditing (DeFond & Zhang, 2013, pp. 21-23).

Since this measure is suitable to a smaller sample size and shorter time frame as it captures small variations in audit quality as well as that it is in agreement with our view of audit quality as a continuum of different levels of quality, this is the proxy measurement that will be used in this study. A previous study by Cohen et al. (2005, pp. 0-1; 10) mapped discretionary accruals from 1987 until the implementation of the SOX Act in 2002 and found that discretionary accruals steadily increased during this period with a peak in the years leading up to the SOX-act being enacted and a steep decline in the years after. The increase in earnings management was mainly attributable to companies in poor-performing industries according to the authors. This finding suggests that when companies perform poorly they are prone to increase earnings management which would lead us to believe that companies during the financial crisis would have higher levels of discretionary accruals due to the negative macro-economic situation.

Choi et al. (2011, p.170) also makes this argument regarding the Asian financial crisis and that managers used discretionary accruals to hide the company’s real profits or losses especially in situations when the company’s poor performance put the company in technical default situations or would have made them violate debt covenants due to their poor performance. It is also important to note here that companies with low accrual quality are more exposed in poor macroeconomic environments (Kim & Qi, 2010, p. 970). This means that identifying the companies with a high level of discretionary accruals are important to allocate capital effectively. Svanström (2013, p. 355) could, however, not find any statistically significant relationship between company performance in terms of ROA and discretionary accruals. The relationship that was found indicated higher levels of discretionary accruals for companies with a higher ROA among Swedish privately held firms.

Among companies that rely on external financing and suffer from liquidity issues, there is a strong incentive to improve the quality of the financial reporting in order to attract investors and evidence has been found that this quality has improved in some of the European countries affected most severely by the global financial crisis (Kousenidis et al., 2013, p. 351). This finding will be explained in more details further down.

2.5 Financial Crisis
The Global Financial Crisis (GFC) started in the US in 2007 (Bergman, 2011, pp. 431). The origin of the crisis was a correction in US housing prices after a period of expansive monetary policy and generous credit conditions in the US housing markets where these credits were in turn securitized and sold in very complex financial instruments all over the globe (Österholm, 2010, p. 265). What made this securitization and selling possible across the world and what spread the GFC was increased financial globalization which was enabled by financial deregulation (Bezemer, 2010, p. 677). When the US housing market bubble busted banks suffered great economic difficulties and the trust in them decreased which created large spreads in interest levels (Österholm, 2010, p. 265).
USA is the epicenter of the global financial system which meant that the global system had less possibility to resolve the issue by itself which differentiated this crisis from previous financial crises according to Singala and Kumar (2012, p. 22). Another differentiating factor mentioned by them was the size and magnitude of this crisis with a total estimated fiscal implication of US$ 11.9 trillion. They further explain that similar to previous crises, there was acceleration in system-wide leverage before it occurred, which has historically been the strongest predictor of financial crises, and the impact of it was exacerbated by panics in the banking industry with runs on several types of short-term loans. Many observers therefore consider this financial crisis to be the worst since the 1930s (Österholm, 2010, p. 272).

According to Bergman (2011, pp. 431-432), the GFC sparked the start of a recession that has caused a lot of issues in Europe as well, including in the public finances and it even reached the point where it threatened the European Union as a project and the Euro currency. He found that in 2010, 24 out of 27 EU countries had debt levels and budget deficits surpassing the limits agreed in in the Stability and Growth Pact. Singala and Kumar (2012, p. 25) explain that the reasons for the GFC having such a strong negative impact in Europe were the large banking sectors that were widely exposed to the housing bust and the overall uncompetitive economies with large private sector unemployment. They see Europe as having been struck by two different but strongly related crises; the first one being the banking crisis caused by losses in asset pricing (for example housing) and capital market securities and the second one is the sovereign debt crisis which has been made worse by recessions, banking rescue packages and in some cases poor fiscal management.

The GFC also presented auditors with a difficult and declining economic situation marked by illiquid markets according to Xu et al. (2013, p. 301-302). They write that many companies faced issues securing sufficient loans to continue operations which placed an increased pressure on audit firms to issue going-concern opinions. In a period of large economic uncertainty it is increasingly difficult for auditors to assess when it is appropriate to issue this comment and since the GFC increased company’s business risk it therefore also increased the risk of auditors issuing an incorrect audit opinion (Xu et al., 2013, p. 301-302).

2.5.1 Financial Crisis in Sweden

Sweden was hit severely by the global financial crisis and the recession that followed (Bergman, 2011, p. 432). Real GDP fell by 0.6% in 2008 and by an additional 5% during 2009 (Konjunkturinstitutet, 2014). This was a larger drop in GDP than the EU average (Bergman, 2011, p. 449). It was only the fourth period of GDP decrease in Sweden since World War II and none of the previous ones were as steep as this one and this has also led to a steep decline in exports and a rise in the unemployment rate, but despite these economic issues, public debt levels in Sweden were held almost constant over this time period (Bergman, 2011, pp. 432-434).

Österholm (2010, p. 265) writes that Sweden also suffered a large drop in the stock market; over 40% between the beginnings of 2008 until early December of the same year. According to the author, there was a great deterioration in the financial conditions during 2008 and the growth outlooks were substantially lowered due to the GFC. Swedish banks,
however, did not hold many of the more problematic asset types so they fared quite well in the crisis, partly due to assistance from Swedish legislators and intervention from the Central Bank (Österholm, 2010, p. 265).

Financial crises do not only have a large impact on the financial sector, they create issues in the real economy as well (Kousenidis et al., 2013, p. 352). In studies of Swedish firms, it has been found for example that Swedish textile and clothing companies suffered twice the bankruptcy rate during 2007-2009 compared to the average for the entire decade due to a decrease in revenue (Pal et al., 2014, p. 410-411). Some companies in the heavy vehicle industry had financial issues a year after the crisis began (Radway et al., 2011, p. 269). This illustrates the large impact that the GFC had on Swedish firms which in turn would lead to an increase in the pressure on auditors.

2.6 Criticism of Auditing After the Financial Crisis
The GFC, and all the corporate failures that it led to, have increased the level of criticism of the audit profession and the pressure on auditors to improve audit quality (Holm & Zaman, 2012, p. 51). Sikka (2009, p. 869-872) has raised questions regarding auditing practices since auditors failed to issue going-concern opinions or modified audit opinions for banks that shortly thereafter were revealed to have financial issues. An example mentioned by the author was Lehman Brothers, who received an unmodified audit opinion for a quarterly report just over two months before they declared bankruptcy. According to the author it is unclear if Lehman Brothers and the many other financial firms that were distressed during the financial crisis in any way dissuaded auditors from issuing a modified audit report, exposing their high leverage levels and risky business practices but the high level of audit fees raises questions regarding auditor independence and their ability to stand up to management’s interests and there is also an issue of auditor competence regarding their ability to properly audit and understand the modern, complex financial instruments.

2.6.1 Responses to the Criticism from Auditors and Studies of Audit Quality during and After the Financial Crisis
One initiative to improve audit quality after the financial crisis has been put forth by the Financial Reporting Council (FRC) in the UK in 2008 who issued an ‘Audit Quality Framework’ with the aim to restore trust in the auditing profession and to move away from self-regulation to regulation by independent bodies and this initiative has been studied by Holm and Zaman (2012). They found that this framework was insufficient in a study of the responses from various stakeholders of the initiative and fell especially short in addressing audit firm culture and auditor reporting issues according to investors and that it failed to especially address issues that might threaten the commercial interests of audit firms.

A study in Australia performed by Xu et al. (2013, p. 301-302) found that auditors did have a higher propensity to issue going-concern opinions during 2008-2009 compared to 2005-2007. They argue that during a financial crisis or periods of financial turmoil where there is increased regulatory pressure, a higher risk of issuing an incorrect audit opinion, a higher litigation risk and risk of reputation loss, it will be tougher to find sufficient audit evidence to keep the audit risk at a manageable level. According to them, three strategies can be adopted by audit firms to manage this risk which is to drop risky clients, increase the propensity to issue going-concern opinions and to increase the audit effort. This particular
study discovered that audit firms adopt two of these three strategies; increase the propensity to issue going-concern opinions (controlling for client characteristics) and to increase audit effort (as measured by an increase in audit fees during the financial crisis compared to before).

Other responses from the accounting and auditing community have been to re-evaluate accounting norms such as fair-value accounting, mark-to-market accounting and the lax auditing practices that existed (Bezemer, 2010, p. 677). In a study by Kousenidis et al. (2013, p. 351) of companies in Spain, Ireland, Italy, Portugal and Greece it was found that earnings quality in terms of value relevance, timeliness, conditional conservatism, smoothing, management, persistence and predictability, generally increased during the financial crisis. However, they also found that the earnings quality of the companies that had the largest amounts of discretionary accruals worsened during the period which signals that on average the earnings quality increased but if there are incentives to manage earnings the earnings quality deteriorated.

To summarize, the financial crisis has led to a lot of criticism of the auditing profession and the quality of the audits that the auditors provided. Have the auditors responded by increasing the audit quality after the crisis to address the criticism that they have endured?

2.7 Hypotheses Development

Two alternative hypotheses have been developed due to the multiple explanations and findings in previous research regarding how audit quality in general and discretionary accruals in particular are affected by financial crises.

2.7.1 Hypothesis 1

The study in Australia mentioned previously showed that audit quality in terms of audit fee and propensity to issue a going-concern opinion increased during the financial crisis as a response from auditors to increase the quality because of the higher risk environment (Xu et al., 2013, pp. 332-333). The study by Kousenidis et al. (2013, p. 351-353), of companies in European countries that were the most severely impacted by the financial crisis, showed an increase in earnings quality during the financial crisis. The explanation for this was that companies that rely on external financing and suffer from liquidity issues have a strong incentive to improve the quality of the financial reporting in order to attract investors.

As mentioned above, the GFC and all the corporate failures that it led to have raised a lot of criticism of the audit profession and the pressure has been put on them to improve audit quality (Holm & Zaman, 2012, p. 51). Audit processes and auditor competence among other things have been questioned (Sikka, 2009, pp. 869-872). The accounting and auditing community have responded to this criticism by re-evaluating accounting norms such as fair-value accounting, mark-to-market accounting and the lax auditing practices that existed prior to the GFC (Bezemer, 2010, p. 677). Initiatives, such as the one by the FRC in the UK described above (Holm & Zaman, 2012, pp. 51-55) have been put in place in order to increase the audit quality.

This reasoning leads to hypothesis 1 that audit quality will improve during the years of the financial crisis and also afterwards due to the response to the criticism it has faced.
**Hypothesis 1:** Audit quality, in terms of discretionary accruals, will improve from the pre-crisis period to the crisis period and continue to improve in the period after the GFC.

### 2.7.2 Hypothesis 2
Our alternative hypothesis is based on the expectation that in bad times, companies might choose to increase their discretionary accruals and engage in “big bath” accounting, taking an even bigger loss during bad economic conditions such as a financial crisis (Kousenidis et al., 2013, p. 351). Another incentive to engage in earnings management during a financial crisis is to hide the company’s real profits or losses, especially in situations when the company’s poor performance puts it in technical default situations or make them violate debt covenants (Choi et al., 2011, p. 170).

The finding by Cohen et al. (2005, p. 0) that increases in earnings management from 1987-2002 was mainly attributable to companies in poor-performing industries also leads us to the expectation that there would be an increase in discretionary accruals during a financial crisis when the economy as a whole is performing poorly. After the crisis when the economic situation stabilizes, discretionary accruals would then return back to their normal levels. This leads to the alternative hypothesis:

**Hypothesis 2:** Audit quality, in terms of discretionary accruals, will decrease during the period of the financial crisis and would after the end of the crisis return to pre-crisis levels.

### 2.8 Model Specifications
The model for calculating the discretionary accruals that is used in this study has previously been used by Svanström (2012, p. 345-349), Discretionary accruals are viewed as the difference between total accruals and an estimate of expected accruals. Total accruals in this study have been calculated using an indirect balance sheet approach which is the most common method in prior research (Chen et al., 2009, p. 220):

\[
TA_t = \Delta CA_{t-(t-1)} + \Delta CL_{t-(t-1)} + \Delta CASH_{t-(t-1)} - \Delta STDEBT_{t-(t-1)} - DEP_t
\]

CA is current assets, CL current liabilities, CASH is cash equivalents, STDEBT is short term debt and DEP is depreciation. The normal accruals are thereafter calculated according to the accrual estimation model from Jones (1991) and the discretionary accruals are the residuals from this regression model (Svanström, 2012, p. 349) calculated for each industry for each year:

\[
TA/A_{t-1} = \alpha(1/A_{t-1}) + \beta_1 (\Delta REV_{(t-1)-t} / A_{t-1}) + \beta_2 (PPE_t / A_{t-1}) + \varepsilon_t
\]

In this equation, TA equals total accruals and A is the total assets, \(\Delta REV\) is the change in revenue over the last year. PPE is the total property, plant and equipment for the year and \(\varepsilon_t\) is the error term for the sample firm for the current year.

After discretionary accruals were calculated they were converted to absolute figures as earnings management can be made both downward and upward which has already been described earlier in the this chapter. The absolute values of discretionary accruals were
thereafter entered in as the dependent variables in the regression models aimed at determining the relationship between the discretionary accruals and the independent and control variables listed below. Table 1 contains a description of each variable. To test the two Hypotheses slightly different models were applied in order to capture different relationships. The purpose of all models, however, was to measure whether there was a relationship between the time periods pre-crisis, crisis, post-crisis and discretionary accruals. The different time periods can be seen as a qualitative dummy variable with three different levels. In this case each model can contain two of the three levels coded as individual dummy variables with 0 indicating that the observation occurs during the time period and 1 if the observation occurs outside of the time period (Anderson et al., 2007, p. 586). Adding a third variable to one model would not work as that variable does not explain anything that the other two variables have already captured in terms of their relationship to the dependent variable. We have therefore constructed three models, each highlighting how the variables in the model relate to discretionary accruals compared to the excluded variable. This means that each model highlights a different aspect of how discretionary accrual levels during the time periods inter-relate. In the first model the variables PRECRISIS and CRISIS are included and the variable POSTCRISIS has been excluded:

**Model 1**

\[
DA = \beta_0 + \beta_1\text{PRECRISIS} + \beta_2\text{CRISIS} + \beta_3\text{SOLIDITY} + \beta_4\text{ROA} + \beta_5\text{BIGN} + \beta_6\text{LOSS} + \beta_7\text{GROWTHASSETS} + \beta_8\text{LNASSSETS} + \epsilon_t
\]

In Model 2, the variable PRECRISIS has been excluded and the variables POSTCRISIS and CRISIS are included.

**Model 2**

\[
DA = \beta_0 + \beta_1\text{POSTCRISIS} + \beta_2\text{CRISIS} + \beta_3\text{SOLIDITY} + \beta_4\text{ROA} + \beta_5\text{BIGN} + \beta_6\text{LOSS} + \beta_7\text{GROWTHASSETS} + \beta_8\text{LNASSSETS} + \epsilon_t
\]

In Model 3, finally, the variable CRISIS was excluded in order to see how discretionary accrual levels during this period relate to the variables PRECRISIS and POSTCRISIS.

**Model 3**

\[
DA = \beta_0 + \beta_1\text{PRECRISIS} + \beta_2\text{POSTCRISIS} + \beta_3\text{SOLIDITY} + \beta_4\text{ROA} + \beta_5\text{BIGN} + \beta_6\text{LOSS} + \beta_7\text{GROWTHASSETS} + \beta_8\text{LNASSSETS} + \epsilon_t
\]

Table 1 defines each of the variables included in the models mentioned above and how it has been coded. For further explanations regarding each variable and why it is included, please refer to section 3.2.3.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Measurement/coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-CRISIS</td>
<td>Whether the observation was made in the pre-crisis period or not (2005-2007)</td>
<td>0 = Not during pre-crisis 1 = During pre-crisis</td>
</tr>
<tr>
<td>CRISIS</td>
<td>Whether the observation was made in the crisis period or not (2008-2009)</td>
<td>0 = Not during crisis 1 = During crisis</td>
</tr>
<tr>
<td>POST-CRISIS</td>
<td>Whether the observation was made in the post-crisis period or not (2010-2012)</td>
<td>0 = Not during post-crisis 1 = During post-crisis</td>
</tr>
<tr>
<td>SOLIDITY</td>
<td>Equity as a proportion of total assets</td>
<td>(0.7 * untaxed reserves+equity)/total assets (Svanström, 2013, p. 347)</td>
</tr>
<tr>
<td>ROA</td>
<td>Performance measure of client firm</td>
<td>Net income / Total assets</td>
</tr>
<tr>
<td>BIGN</td>
<td>Whether the audit firm is one of the big 4 audit firms; KPMG, E&amp;Y, D&amp;T or PwC.</td>
<td>0 = Non Big 4-firm 1 = Big 4-firm</td>
</tr>
<tr>
<td>LOSS</td>
<td>Performance measure of client firm</td>
<td>0 = Net income &gt; 0 1 = Net income &lt; 0</td>
</tr>
<tr>
<td>GROWTHASSETS</td>
<td>Growth measure of the client firm</td>
<td>Total assets / Total assets_{t-1}</td>
</tr>
<tr>
<td>LNASSETS</td>
<td>Size of the client company in terms of assets.</td>
<td>Natural logarithm of the amount of total assets of the company</td>
</tr>
</tbody>
</table>

*Table 1. Variables and their measurements.*
3. RESEARCH METHODOLOGY
This chapter will firstly describe the ontological and epistemological considerations of this article as well as our research strategy and research method. It will thereafter discuss in detail the practical method including how the population and sample was chosen as well as the criteria for selecting the variables in our models and how the data was collected and analyzed.

3.1 Scientific Method

3.1.1 Pre-understanding
By being accounting students, we have gained a basic knowledge regarding accounting and auditing and how essential accounting and auditing is in business. Accounting is a business language while auditing is a check-and-balance tool to ensure whether accounting practices are aligned with accounting standards. We believe that this background knowledge can have influence on how we conduct this research topic and guides the way we think and how we analyze the data. Even though audit quality has been researched before, most of the studies have been conducted in the U.S and U.K.

Audit quality is an under-researched topic in the Swedish context although there are plenty of academic resources that we can use in order to gain insight and knowledge about audit quality and what affects it. There are, however, very few studies regarding how financial crises affect audit quality. This creates a gap in prior research regarding the effect of the GFC and audit quality. Filling this gap is this study’s contribution to prior research.

Graziano and Raulin (2013, p. 91) say that science strives for objectivity and go on to explain that objectivity is important since subjective measures are research specific, other researchers can have different judgments in the same situation (Graziano & Raulin, 2013, p. 91). It is therefore difficult to replicate subjective-based studies. We strive for objectivity in this study in order to facilitate future replication of it. Because of this it is not appropriate for us to have a subjective approach. We try to be as objective as possible and limit any subjectivity in our study. This means that we strive to make our research independent from ourselves.

3.1.2 Scientific Approach
Bryman and Bell (2011, pp. 15; 20) mention two philosophical considerations in research, epistemological considerations and ontological considerations. Epistemological considerations concern whether or not the social world can be studied by the same procedures, principles and ethos as natural sciences use (Bryman & Bell, 2011, p. 15). On the other hand, Bryman and Bell (2011, p. 19) state that “ontological considerations are concerned with the nature of social entities”. They continue to explain that it concerns whether social entities can be studied as if they were objective entities; or, that they are constructed by social actors.

3.1.3 Epistemological considerations
There are three types of epistemological considerations, positivism, realism and interpretivism (Bryman & Bell, 2011, pp. 15-17). According to Saunders et al. (2009, p. 113), when research reflects the philosophical standpoint of positivism, the researchers tend
to adopt the philosophical stance of the natural scientist. According to Bryman and Bell (2011, p. 15) there are five principles of positivism:

1. Only knowledge that the senses can identify can be called knowledge. This principle is called phenomenalism.

2. Theory is created in order to make hypotheses that are possible to test and when confirmed create laws. This is the principle of deductivism.

3. The principle of inductivism relates to that facts, that are the basis of laws, are collected, and this generates knowledge.

4. Research has to be created in a value-free way, which means that it has to be objective.

5. Scientific statements are clearly distinct from normative statements.

According to realism there is also an external reality from humans that we can study objectively (Bryman & Bell, 2011, p. 17). However, there is a difference between positivism and realism. Realists believe that reality is independent of the mind (Saunders et al., 2009, p. 114). There are two types of realism, direct realism and critical realism. “Direct realism says that what you see is what you get: what we experience through our senses portrays the world accurately” (Saunders et al., 2009, p. 114). The critical realists, the people who adopt the second type of realism, on the other hand “argue that what we experience are sensations, the images of the thing in the real world, not the things directly” (Saunders et al., 2009, p. 115).

Interpretivism is the contrasting philosophical stance from positivism and realism. It argues that we should respect the differences between people and objects and scientists should strive to understand the subjective meaning of the social actors and should not apply models from the natural sciences to the study of social the world (Bryman & Bell, 2011, pp. 16-17).

In our study, we adopt the epistemological viewpoint of positivism. Ashbaugh et al. (2003, p. 612) study the association between audit quality and discretionary accruals. As well as, Svanström (2013, p. 345) uses discretionary accruals as a measure for audit quality and study its relationship with NAS. Furthermore, Becker et al. (1998, p. 1) study the relationship between audit quality and earnings management by using discretionary accruals which are used to measure audit quality in the current study. Thus, there is prior knowledge of relationships that we can test. In addition, our study will be value-free, which means that there is no subjective influence from us as researchers (Saunders et al., 2009, p. 114). To contribute to the existing research, we have deduced hypotheses to test whether the GFC had an effect on audit quality. Our study therefore has the positivistic principle of deductivism.
3.1.4 Ontological considerations
Ontological considerations have two philosophical stances, objectivism and constructionism (Bryman & Bell, 2011, p. 20). Constructionism can also be called subjectivism (Saunders et al., 2009, p. 110). Objectivism is concerned with whether objects are independent from social actors so that their phenomena and meanings are independent from social action (Bryman & Bell, 2011, p. 21). Constructionism or subjectivism is concerned with the subjective meaning of social actors (Saunders et al., 2009, pp. 110-111). Constructionists argue that it is impossible to study the social world without understanding what social actors think about his or her world because phenomena and their meanings are being continuously established by social actors and are at the constant state of revision (Bryman & Bell, 2011, p. 22).

In this study, we adopt the ontological position of objectivism. We take objectivism because we believe that discretionary accruals, which are used as a measure of audit quality, can be viewed as an objective reality that is independent from social actors. We do not take the ontological position of subjectivism because we argue that to study the relationship between audit quality and other independent variables; we have to see it as a separate object that can be tested objectively. If we held the position of subjectivism, we would study the subjective meaning of audit quality as constructed by social actors, which is not the intention of our study.

3.1.5 Research approach

![Diagram of research process]

*Figure 1. Process of deduction. Source: Bryman & Bell, 2011, p. 11.*

Based on our chosen epistemological standpoint, positivism, and ontological standpoint, objectivism, we choose deductive reasoning as our research approach. According to Bryman and Bell (2011, pp. 4; 11), the deductive approach means that previous theory
guides the research because they are the basis for the hypotheses tested in the study. In contrast, theory is the outcome of research based on inductive reasoning (Bryman & Bell, 2011, p. 4). Researchers examine problems and then try to find solutions. People whose studies are inductive conduct research in order to develop new theory by gathering data, mostly in words, stories or text, and try to interpret the meaning of the social actors (Saunders et al. 2009, p. 126). We choose the deductive approach because there are already prior studies from which we can deduce hypotheses to test. The scientific literature regarding which variables influence audit quality makes us interested to study and test whether results that have previously been found are applicable to the Swedish context during the GFC, which has not been studied before. That is why an inductive approach is not suitable for our study. Figure 1 describes the process of the deductive approach that has been used in our study (Bryman & Bell, 2011, p. 11).

3.1.6 Research Strategy
There are two types of research strategies; quantitative and qualitative (Bryman & Bell, 2011, p. 26). Bryman and Bell (2011, p. 150) define quantitative research as a tool to collect numerical data and it describes the relationship between theory and research as deduction which is a predilection of positivism and sees social entities as objects that are independent from social actors. On the contrary, qualitative research tends to be collections of word-data rather than numbers and it has a tendency to use an inductive reasoning and adopts the standpoints of interpretivism and constructionism which are contrasting to quantitative research because it studies the subjective meaning of social actors (Bryman & Bell, 2011, p. 386-387). Our study is a purely quantitative research because we collect numerical data from a database which is available at Umea University’s library. We do not include any word-based data in our study.

3.1.7 Research design
According to Bryman and Bell (2011, p. 45), there are five main research designs; experimental design, cross-sectional design, longitudinal design, case study design and comparative design. The research design that we use in our study is a mixture of cross-sectional and longitudinal research design. Saunders et al. (2009, p. 144) explain cross-sectional research as a way of collecting quantitative data which can be eventually tested and analyzed by using descriptive and inferential statistics. Similarly, Bryman and Bell (2011, p. 53) also define this design as a collection of quantitative data in connections to more than one variables on more than one case and at a single point in time which is analyzed to detect patterns between those variables. We will collect quantitative data of variables that we would like to study in our research from the database Business Retriever. We do not conduct any survey since we use only secondary data, which will be discussed more in the chapter of practical research method. Furthermore, the characteristic of longitudinal research design is to study changes and developments of phenomena (Saunders et al., 2009, p. 155). Since our study focus on what happened to audit quality before, during and after the GFC, it includes elements of a longitudinal study.

3.1.8 Choice of theories
To provide a basic understanding regarding auditing, our theoretical framework begins with a definition of auditing and how important it is in business. We then go on to explain what audit quality is, what its determinants are and how it is measured by reviewing prior
scientific literature. We chose to study the context of the GFC because there is very little prior research regarding the effect of financial crises on audit quality.

3.1.9 Choice of theoretical sources
We use both primary and secondary sources for our literature review. We use different kind of sources such as academic articles, text books, online newspapers and online articles. The scientific articles that are used have been found in the database EBSCO (Business Source Premier), available online at Umeå University library’s webpage, or Umeå University Library’s own database. The articles have been found by searching key words such as audit quality and financial crisis.

3.2 Practical Method
Our choice of population as well as how we collected the data and the variables included in the model are specified below in our description of the practical method as well as a description of how the results have been analyzed.

3.2.1 Population Choice
This study will only focus on publicly traded firms in Sweden. We have chosen to study only firms traded on the stock market since there is a separation of ownership and management control which means that the independent external audit is of additional importance for these companies for governance reasons and to increase the confidence of owners in the management (Francis, 2004, p. 346). Sweden has been chosen as the setting for the study not only because it is the current place of residence of the authors but that it is a country that was severely impacted by the GFC (Bergman, 2011, pp. 432-434) as mentioned previously. Another important factor is that Sweden has managed to recuperate relatively well from the financial crisis and rebounded with 6.6% growth in GDP in 2010, followed by 2.9% in 2011 and has maintained positive GDP growth since then (Konjunkturinstitutet, 2014). This allows us to already observe data from a post-crisis period.

There are in total 296 total companies trading on the Stockholm OMX Stock Exchange (NASDAQ OMX NORDIC, 2014). From this list of firms we have removed banks and utilities since they have a different asset structure (Alexeyeva, 2012, p. 42), otherwise we have used all the firms listed on the stock exchange in the large cap, mid cap and small cap segment. Due to the moderate amount of firms in these segments no further sampling has been necessary.

3.2.2 Data Collection Method
The data that has been the subject for analysis for this thesis have all been secondary data in the form of publicly available reported financial figures from companies traded on the OMX stock exchange in Stockholm. The list of companies’ organizational numbers that trade in the Large Cap, Mid Cap or Small Cap groups on this stock exchange have been taken from the website allabolag.se (allabolag.se, Unknown Year/b) which gathers information provided by the Swedish Bolagsverket, Skatteverket and the Swedish Central Statistical Bureau (SCB) (allabolag.se, Unknown Year/a).

After having collected the list of firms to be included in the data collection, the detailed accounting data from annual reports were gathered using the database Retriever. Retriever
is a database accessible to us via Umeå University and contains information from the officially reported annual reports from all of Sweden’s 1.4 million companies and this website uses the same sources for their information as allabolag.se (Retriever, Unknown Year, p. 1-3).

Using secondary data means that this study is a part of the tradition of archival research within auditing which uses available data to answer, or attempt to answer, auditing-related research questions (DeFond & Zhang, 2013, p. 4). Besides the obvious advantage of savings in terms of money and time, other advantages with using secondary data is that we do not need to disturb and intrude in the companies we study, the data we have is of high quality and it provides us with the opportunity to do a longitudinal study (Bryman & Bell, 2011, pp. 313-320). The longitudinal aspect is crucial for this specific study as it allows us to observe auditing quality in different time periods in relation to the financial crisis.

There are also disadvantages with secondary data such as that we are not as familiar with the data as we would have been if we had collected it ourselves, the data set is complex and vast, we have no direct control of the quality of the data set and some key variables might be missing (Bryman & Bell, 2011, p. 320-322). In our case we are using official and publicly reported data which means that the original source of the data is of very high quality. However, while reviewing the data set and looking at certain ratios used in our analysis it became apparent that there were gaps and inconsistencies in the data since Retriever had not been able to extract the data correctly from the companies’ annual reports. We have therefore manually, gone through the anomalies that we were able to observe in the data and correct the data in accordance with the annual reports of the companies. It is possible, however, that there is incorrect data included in the analysis that we have not been able to identify and correct due to time constraints and the vast number of observations and data points used in the study.

The data is typical accounting data which we are sufficiently familiar with and the richness of the data set that we have access to covers most of the key variables that we wanted to include even though there are limitations to the data set. The data set does not include variables such as audit fee, non-audit services and audit tenure which also have been found to affect audit quality. These limitations will be discussed further under chapter 7. There are also limitations in the data regarding audit firm which will be described further in section 3.2.3.

3.2.3 Variables

The variables studied in this paper include the dependent variable of audit quality, represented here by discretionary accruals. The model for how discretionary accruals are calculated was based on the model by Jones (1991). The basic philosophy of it is that total accruals are calculated and the normal accruals, calculated for each industry for each year, are removed from the total accruals and what remains are the discretionary accruals.

Since the objective of the study is to see whether audit quality in terms of discretionary accruals was affected by the crisis and by how much, the main independent variables for our study are the time periods pre-crisis, crisis and post-crisis. The period of the global financial crisis, as defined in this paper, started in 2008 and ended in 2009. These are the
same years as used by Xu et al. (2013, p. 301-302) in their Australian study and are deemed to be applicable in Sweden as well due to the decrease in GDP in Sweden in 2008 and 2009 followed by the positive GDP growth in the years after (Konjunkturinstitutet, 2014). The different time periods were each represented by a dummy variable in our regressions. The variables in the analysis were pre-crisis, crisis and post-crisis. If the observation falls during the specific variable it will be coded with 1 and if it falls outside of the period it will be coded with 0. Pre-crisis contains the years from 2005 to 2007, the crisis is as mentioned during 2008 and 2009 and post-crisis is from 2010 until 2012 (last year for which financial data was available).

To control for other variables that are expected to have an effect on audit quality other control variables were also included such as whether the audit firm is a Big N firm or not. Big N firms include Deloitte & Touch, Price Waterhouse Cooper, KPMG and Ernst & Young. As mentioned in the literature review, these firms may have an impact on audit quality despite this relationship not having been found in European studies (Svanström, 2013, pp. 357-358) which allows us to compare the size of this effect to the size of the effect of the financial crisis. A limitation in the data set available to us is that the audit firm is only given for the last year of the data which in this case is 2012. The companies that had a Big N firm in 2012 are therefore assumed to have had a Big N auditor in the preceding years and vice versa which is a limitation in this study as it might not accurately reflect actual circumstances.

Cameran (2005, p. 134) suggests that financial distress could be a factor for increased audit risk which could also impact the level of audit quality as it may require further audit procedures. Financial distress here is approximated by using the companies’ level of solidity (proportion of own equity to total assets) which is the same as previously done by Svanström (2013, p. 351). Another sign of financial distress is poor company performance which in our model was measured by the company’s return on assets, ROA as well as whether the company had a negative net income. We are also controlling for client size measured by the natural logarithm of the company’s total assets to check whether the size of the firm has an effect on audit quality which is a control variable suggested by Svanström (2013, p. 351). Growth has also previously been found to have a significant relationship with discretionary accruals where growth firms tend to have higher levels of discretionary accruals (Madhogarhia et al., 2009, p. 1767). Growth in assets is therefore also added as a control variable in the models used in this study.

3.2.4 Method of Data Analysis

After having collected and sorted the data, it was subject to analysis. The first step as described in the description of our model was to calculate total accruals for each firm for each year. Thereafter, regressions were performed for each year containing companies from the same industry where the residuals of these regressions were identified as the discretionary accruals to be used in the final regressions using models 1-3.

After this was completed, the descriptive statistics, which included how many companies were considered in the different industries and what the maximum, minimum, mean and standard deviation values were for each variable, were analyzed. We also performed a bi-variate cross-correlation to check for inter-correlations between the different variables. This
was done to see if the correlation was very high which could lead to incorrect results in the regression model. The reason for the incorrect results in the relationships between the variables described in the linear regressions could be due to multicollinearity, which occurs when there are near linear relationships between several of the explaining variables (Wetherill, 1986, p. 15). Multicollinearity was also tested for by checking the VIF-score for the different variables.

The main form of analysis to identify whether there is a relationship between the dependent variable and the independent variable was a multiple variable regression model (Wetherill, 1986, p. 7). We used this type of multivariate analysis to see whether the control variables also had an effect on discretionary accruals and whether the effects of the control variables were stronger than the effect of the dependent variable (Bryman & Bell, 2011, p. 351-353). The statistical software used to perform this calculation as well as the bi-variate cross-correlation was SPSS.

The squared correlation was also calculated ($R^2$) for our models to find out the fraction of the data’s variation that the variables in our model accounts for. The squared correlation tells you if the factors that we have identified and included account for variance in the audit quality or if it is mainly impacted by factors outside of our model (De Veaux et al., 2012, pp. 190-191). We also identified the beta-coefficient for each variable and its p-value as well as the p-value and the F-value for the entire models.

### 3.2.5 Ethical Considerations

There are several ethical considerations to keep in mind when conducting research in any field which include making sure no harm comes to participants, that there is informed consent so the research subjects know what they are taking part in, to not invade the privacy of the research participants and to not deceive them (Bryman & Bell, 2011, pp. 122-136). Since we are using archival data and not gathering any additional data than is already publicly available these considerations are difficult to violate. The companies have previously volunteered the data or been obliged to provide it by regulatory standards so the data used are not confidential or sensitive company information.

There are other potential issues to consider that are more applicable to archival research such as for example issues regarding data management (Bryman & Bell, 2011, p. 139). The data used in this study have been taken from a restricted database where they have been sortable for easier analysis. Despite the access to the database being restricted the actual data is publicly available which means that there was no obligation from our end to protect the data from being spread. Furthermore, there is no conflict of interest for the authors involved as this paper is not written on commission or in collaboration with any external entity to Umeå University.
4. EMPIRICAL RESULTS

This chapter will first go through the descriptive statistics of the variables studied, followed by a correlation analysis. After that, the results of the regressions of models 1-3 will be presented.

4.1 Descriptive Statistics

In order to test hypothesis 1, which states that audit quality improved during the GFC and continued to improve after the end of it, and hypothesis 2, which states that audit quality decreased during the GFC and will after the end of crisis return to pre-crisis levels, we collected data from publicly traded companies in Sweden from 2005 until 2012. During these years, there are 1760 firm-year observations. Table 2 presents the descriptive statistics of all variables in the model.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA</td>
<td>1760</td>
<td>0,0005</td>
<td>4,58</td>
<td>0,10</td>
<td>0,18</td>
</tr>
<tr>
<td>SOLIDITY</td>
<td>1760</td>
<td>-0,68</td>
<td>5,67</td>
<td>0,49</td>
<td>0,28</td>
</tr>
<tr>
<td>ROA</td>
<td>1760</td>
<td>-2,50</td>
<td>0,72</td>
<td>0,01</td>
<td>0,20</td>
</tr>
<tr>
<td>BIG 4</td>
<td>1760</td>
<td>0</td>
<td>1</td>
<td>0,97</td>
<td>0,16</td>
</tr>
<tr>
<td>PRE CRISIS</td>
<td>1760</td>
<td>0</td>
<td>1</td>
<td>0,36</td>
<td>0,48</td>
</tr>
<tr>
<td>CRISIS</td>
<td>1760</td>
<td>0</td>
<td>1</td>
<td>0,25</td>
<td>0,44</td>
</tr>
<tr>
<td>POST CRISIS</td>
<td>1760</td>
<td>0</td>
<td>1</td>
<td>0,38</td>
<td>0,49</td>
</tr>
<tr>
<td>LOSS</td>
<td>1760</td>
<td>0</td>
<td>1</td>
<td>0,25</td>
<td>0,44</td>
</tr>
<tr>
<td>GROWTHASSETS</td>
<td>1760</td>
<td>-0,88</td>
<td>45,87</td>
<td>0,26</td>
<td>1,43</td>
</tr>
<tr>
<td>LNASSETS</td>
<td>1760</td>
<td>7,08</td>
<td>19,74</td>
<td>14,32</td>
<td>2,14</td>
</tr>
</tbody>
</table>

Based on the descriptive analysis, the highest value of the discretionary accruals (DA) from 2005 until 2012 was 4,58 while the lowest value was 0,0005. Mean and standard deviation are 0,10 and 0,18, respectively. As mentioned previously, the Discretionary Accruals (DA), were converted into absolute values. The higher the discretionary accruals are, the lower the audit quality is. The values for total assets were transformed to their natural logarithm values (LNASSETS) since we expected the relationship with discretionary accruals to non-linear. The highest value of LNASSETS is 19,74 while the lowest was 7,08. Furthermore, the mean and standard deviation for LNASSETS are 14,32 and 2,14, respectively. Other control variables such as BIG 4, PRE CRISIS, POST CRISIS, CRISIS and LOSS have their dummy value coded as either 0 or 1 in the model. Their means and standard deviation can be found in the table 2. The maximum value of Return On Assets (ROA) for all of the firm-year observation is 0,72; and its minimum is -2,50, with a mean of 0,01 and standard deviation of 0,20 which indicates influence from extreme outliers. Lastly, SOLIDITY, which is calculated by using the same formula as by Svanström (2013, p. 347) the highest value of was 5,67, which is an incorrect value but this was not noticed until after the analysis was made. This illustrates certain issues with our data source that have to a large extent been mitigated but unfortunately some errors still remained. The lowest value for this variable is -0,68, which is also extreme but this value has been confirmed by inspection.
of the company’s annual report. The mean of this variable was 0.49 and the standard deviation was 0.28.

Table 3 presents the firm-year observations per industry that is used in this study and figure 2 depicts sample distributions for all industries from 2005 to 2012. The table illustrates that the companies were quite evenly divided amongst the industries except that there were only 27 companies that belonged to the industry Other. The table also shows that some companies started their business activity after 2005 which means that there were fewer companies in the earlier time periods compared to in 2012.

<table>
<thead>
<tr>
<th>Industry</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manufacturing:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>62</td>
<td>13</td>
</tr>
<tr>
<td>2011</td>
<td>62</td>
<td>13</td>
</tr>
<tr>
<td>2010</td>
<td>62</td>
<td>13</td>
</tr>
<tr>
<td>2009</td>
<td>62</td>
<td>13</td>
</tr>
<tr>
<td>2008</td>
<td>62</td>
<td>13</td>
</tr>
<tr>
<td>2007</td>
<td>61</td>
<td>12</td>
</tr>
<tr>
<td>2006</td>
<td>60</td>
<td>12</td>
</tr>
<tr>
<td>2005</td>
<td>58</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>489</td>
<td>100</td>
</tr>
<tr>
<td><strong>Retail:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>41</td>
<td>13</td>
</tr>
<tr>
<td>2011</td>
<td>41</td>
<td>13</td>
</tr>
<tr>
<td>2010</td>
<td>41</td>
<td>13</td>
</tr>
<tr>
<td>2009</td>
<td>42</td>
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Consultancy:

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Others:

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<td>12</td>
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<tr>
<td>2005</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>203</strong></td>
<td><strong>100</strong></td>
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</tbody>
</table>

Grand Total: 1760

Table 3. Firm-year observation per industry.

We selected our sample group out of the population from the OMX stock exchange in Stockholm. This stock exchange has, as mentioned, 296 listed companies (NASDAQ OMX NORDIC, 2014). The utilities and financial services were then removed from these 296 companies which meant that 226 publicly listed companies remained. However, since our
study focuses on not only a single year but from 2005 until 2012, there are 1760 firm-year observations in total.
4.2 Correlation Analysis

4.2.1 Bivariate correlation

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<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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<th>(8)</th>
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<td></td>
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<td></td>
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<tr>
<td>SOLIDITY</td>
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<td></td>
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</tr>
<tr>
<td>ROA</td>
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<tr>
<td>BIG 4</td>
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<td>PRE CRISIS</td>
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<tr>
<td>CRISIS</td>
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<td>-0.031</td>
<td>-0.041</td>
<td>0.002</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>POST CRISIS</td>
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<td>0.038</td>
<td>-0.022</td>
<td>0.003</td>
<td>-0.594</td>
<td>-0.461</td>
<td>1.000</td>
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<td></td>
</tr>
<tr>
<td>LOSS</td>
<td>0.137</td>
<td>0.076</td>
<td>-0.601</td>
<td>-0.023</td>
<td>-0.045</td>
<td>0.067</td>
<td>-0.015</td>
<td>1.000</td>
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<tr>
<td>GROWTHASSETS</td>
<td>0.238</td>
<td>0.014</td>
<td>0.051</td>
<td>-0.001</td>
<td>0.101</td>
<td>-0.041</td>
<td>-0.063</td>
<td>-0.021</td>
<td>1.000</td>
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</tr>
<tr>
<td>LNASSETS</td>
<td>-0.142</td>
<td>-0.254</td>
<td>0.227</td>
<td>0.183</td>
<td>-0.066</td>
<td>0.008</td>
<td>0.058</td>
<td>-0.281</td>
<td>-0.033</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*Table 4. Linear correlation between the variables in Models 1-3.*
The correlation was tested in order to understand the relationship between the variables. To measure the association among the variables we use Pearson’s Product Moment Correlation Coefficient which gives a value ranging from -1 for perfect negative correlation to 1 for perfect positive correlation (Berenson et al., 2012, p. 127).

The highest correlation between variables is a negative correlation between LOSS and ROA, -0.601 which is logical as the lower the ROA is the higher is the probability that the company has performed at a loss. Another fairly strong negative correlation was between SOLIDITY and BIG4 (-0.101) which indicates that clients of the Big 4 audit firms have lower levels of solidity. The lowest correlation is also a negative correlation between the variables GROWTHASSETS and BIG 4 (correlation: -0.001). The highest positive correlation is between Growth in Assets and DA, 0.238 which indicate that companies that grow quicker tend to have higher levels of discretionary accruals. The lowest positive correlation is between CRISIS and BIG 4, 0.002 which indicates that the Big 4 audit firms did not change their market share during the GFC.

The variable LNASSETS had fairly strong relationships with several other variables. For example there was a positive correlation between LNASSETS and ROA (0.183) and a negative correlation between LNASSETS and LOSS (-0.281) indicating that larger firms have better economic performance. There was also a quite strong negative correlation between LNASSETS and SOLIDITY (-0.254) and between LNASSETS and DA (-0.142) indicating that larger firms had lower levels of discretionary accruals and lower solidity.

Interestingly, the correlations between our independent variables and dependent variable provide interesting results that can be used to indicate whether our hypotheses are likely to hold. We can for example see that there is a positive relationship between PRE CRISIS and DA (0.110). This shows that discretionary accrual levels are higher during the pre-crisis period compared to the other periods. On the other hand, correlations between the CRISIS and DA and POST CRISIS and DA are negative with levels of -0.045 and -0.068, respectively. The negative correlation between the crisis period and the discretionary accruals as well as the post-crisis period and discretionary accruals, indicate that there was a decrease in discretionary accrual levels during these periods. This indicates that audit quality increased after the crisis and that the audit quality during the crisis was better than the pre-crisis period.

Another interesting observation that can be made in the bivariate correlation table are the correlations between the performance related variables and the variable CRISIS. They show that ROA was lower during this time period (-0.041), that companies had a lower level of solidity (-0.031) and had a larger tendency to operate with a financial loss (0.067). Companies also had a lower level of growth in assets during this period compared to the others (-0.041). Companies had the highest levels of asset growth during the pre-crisis period (0.101). The variable LOSS also had a positive relationship with DA (0.137) and a negative relationship with ROA (-0.094) indicating that firms that performed worse economically tended to have higher levels of discretionary accruals.

Multicollinearity was also tested in order to make sure that the levels were not too high so they would impact the results of the models. The result of the multicollinearity can be
found in Appendix A. Since the VIF-values are relatively low multicollinearity has not affected the below stated results.

4.3 Hypothesis 1 Regression Results

Hypothesis 1 states that audit quality in terms of discretionary accruals are expected to improve from one time period to the next. This Hypothesis is tested by using models 1 to 3 to see whether we can identify a relationship between the different time periods and discretionary accruals. Below follows the results of Models 1 to 3 specifying their implications for hypothesis 1. The implications of the results from these models for hypothesis 2 will be discussed in the following section and will include the results of additional analysis.

4.3.1 Results of Model 1

The result of Model 1 can be found in Table 6. The model has an adjusted $R^2$ of 0.091 which means that 9.1 percent of the variance of discretionary accruals can be explained by the variables in the model and 90.9 percent of this variance is explained by variables external to our model. This may appear to be a low number but is similar to discretionary accrual-models developed by Svanström (2013, p. 356) which had $R^2$ ranging from 0.07 to 0.144. The strength of the model is further confirmed by the statistical significance of the F-value (<0.001) and its relatively high coefficient (23.142) which indicate that the variables in our model has statistically significant predictive capabilities of discretionary accruals.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized Coefficient</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLIDITY</td>
<td>0.004</td>
<td>0.168</td>
<td>0.866</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.027</td>
<td>-0.942</td>
<td>0.346</td>
</tr>
<tr>
<td>BIG 4</td>
<td>0.041</td>
<td>1.763</td>
<td>0.078</td>
</tr>
<tr>
<td>PRECRISIS</td>
<td>0.083</td>
<td>3.264</td>
<td>0.001</td>
</tr>
<tr>
<td>CRISIS</td>
<td>-0.006</td>
<td>-2.49</td>
<td>0.803</td>
</tr>
<tr>
<td>LOSS</td>
<td>0.102</td>
<td>3.495</td>
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<td>GROWTHASSETS</td>
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<td>Adjusted $R^2$</td>
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<tr>
<td>F-value</td>
<td>23.142</td>
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<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Table 5. Results of regression of model 1.*

Regarding the results of the individual variables, the regression found significant relationships between discretionary accruals (DA) and three of the six control variables. Companies performing with a LOSS had higher levels of discretionary accruals than companies who had made a profit (t-value: 3.495). A higher level of GROWTHASSETS also indicated a higher level of DA (t-value: 10.025) and finally companies with more assets tended to have lower levels of DA (t-value: -4.006). All of these results were statistically significant with p-values of less than 0.001. Companies with higher solidity had a slight tendency to have a higher level of discretionary accruals whereas companies with a higher return on assets (ROA) actually had a tendency to have lower levels of discretionary accruals (DA). These relationships were however insignificant as the p-value is well above 0.05. Companies with auditors from any of the BIG 4 companies tended to have higher
levels of discretionary accruals (DA) which indicate a lower level of audit quality from these firms. This is a very interesting finding despite it not being quite statistically significant at the 5%-level as the p-value is 0.078.

The two independent variables also showed interesting results. As the period POST CRISIS was excluded from this model, the results of the independent variables can be interpreted as being in contrast to this time period. DA during the PRE-CRISIS period were significantly higher compared to both the CRISIS period and the POST-CRISIS period with a high t-value of 3.264 and the result was statistically significant at the 1%-level (p-value: 0.001). The time period of CRISIS indicated a slight tendency of lower levels of DA, but this result is statistically insignificant (p-value is over 0.8) which indicates that DA during the crisis were similar to the post-crisis period.

### 4.3.2 Results of Model 2

<table>
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<td>CRISIS</td>
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<td>-3.176</td>
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</tr>
<tr>
<td>POST CRISIS</td>
<td>-0.084</td>
<td>-3.264</td>
<td>0.001</td>
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*Table 6. Results of regression of model 2.*

In model 2, the variable PRE-CRISIS was excluded in order to compare the variables CRISIS and POST CRISIS to that variable. The result for the model as a whole in terms of R² and the F-value is the same as for Model 1 as the overall explanatory power of the model has not changed. The same applies for the control variables as their relationship with DA is unchanged. This is why these details are not included in Table 6. An interesting finding is that the standardized coefficients of CRISIS and POST CRISIS are nearly identical (-0.082 and -0.084 respectively) and both variables have a statistically significant relationship at the 1%-level with DA which confirms that these levels are very different for the crisis and post-crisis periods compared to the pre-crisis period. The slightly stronger t-value and standardized coefficient of POST CRISIS compared to CRISIS shows that there has been a slight further decrease in DA among the companies in the sample group but as the results of Model 1 confirmed, this decrease is not statistically significant.

### 4.3.2 Results of Model 3

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<tr>
<td>PRE CRISIS</td>
<td>0.090</td>
<td>3.176</td>
<td>0.002</td>
</tr>
<tr>
<td>POST CRISIS</td>
<td>0.007</td>
<td>0.249</td>
<td>0.803</td>
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</table>

*Table 7. Results of regression of model 3.*

The results of the independent variables when excluding the variable of CRISIS are shown in Table 7. R² and the F-value as well as the results for the control variables are not included in this table as they remain the same as in Model 1 so these results can be found in Table 5. The results reported in Table 7 are very similar to the results of when POST CRISIS was excluded with POST CRISIS taking the place of CRISIS. The relationship in this regression between PRE CRISIS and DA is significant at the 1%-level and the t-value is high (3.176). This indicates that DA levels during the pre-crisis period were much higher.
compared to the crisis and post-crisis period. The p-value of 0.803 and low t-value of 0.249 for the variable POST CRISIS indicates that there is not much difference between DA during this period compared to the crisis-period which confirms the results of models 1 and 2.

4.4 Implications of Regression Results for Hypothesis 2
Hypothesis 2 states that DA levels are expected to increase during the financial crisis compared to the preceding period and then to decrease to pre-crisis levels after the end of the GFC. The results of models 1, 2 and 3 however, indicate as stated above that the discretionary accrual levels for the PRE-CRISIS period were significantly higher than during the CRISIS period. This result supports the rejection of hypothesis 2. Furthermore, no statistically significant relationship can be found regarding any decrease of DA in the post-crisis period which means that no support can be found for hypothesis 2 in the results mentioned above.

4.4.1 Further Analysis
To illustrate the relationship between the time period crisis and DA more clearly, further analysis was made where both the PRE-CRISIS and POST-CRISIS variables were excluded from the model. The results from this model can be found in Table 8. The adjusted $R^2$ for this model is 0.086 which is expectedly lower than the previous models as the explanatory capability of the pre- and post-crisis periods have been removed. This means that 8.6% of the variation in discretionary accruals (DA) is explained by the variables within the model. The F-value is also slightly lower at 24,790 but is still statistically significant with a p-value of less than 0.001 which indicates that this model does have predictive capability over discretionary accruals and that the relationship is extremely unlikely to have occurred by chance.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized Coefficient</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLIDITY</td>
<td>0.000</td>
<td>-0.007</td>
<td>0.995</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.022</td>
<td>-0.761</td>
<td>0.447</td>
</tr>
<tr>
<td>BIG 4</td>
<td>0.041</td>
<td>1.782</td>
<td>0.075</td>
</tr>
<tr>
<td>CRISIS</td>
<td>-0.017</td>
<td>-1.862</td>
<td>0.063</td>
</tr>
<tr>
<td>LOSS</td>
<td>0.102</td>
<td>3.493</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>GROWTHASSETS</td>
<td>0.236</td>
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<td>&lt;0.001</td>
</tr>
<tr>
<td>LNASSETS</td>
<td>-0.108</td>
<td>-4.301</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Adjusted R²</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>F-value</td>
<td>24.790</td>
<td></td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 8. Regression results from further analysis.

The results of the control variables are very similar to models 1, 2 and 3 which is expected as this data has not been changed. SOLIDITY shows almost no predictive capability over DA and this variable could have been excluded without much impact on the overall model. ROA shows a slight negative relationship with DA (t-value: -0.761) but the relationship is not statistically significant (p-value: 0.447). Having a Big 4 firm as your auditor has a tendency to increase your discretionary accruals and this result is here also close to being statistically significant at the 5% level (p-value: 0.075). The control variables with a
a statistically significant relationship (all with a p-value of less than 0.001) with DA are the same as under previous models. *GRWOTHASSETS* has the strongest positive relationship (t-value: 10.321) followed by whether the company had a financial loss during the year (t-value: 3.493). The strongest negative relationship with DA was held with assets (t-value: -4.301) meaning that the larger the company in terms of assets, the lower is the level of DA.

As can be expected from the results of models 1, 2 and 3 the result of the modified model also indicates the result for the independent variable *CRISIS* ran in contrast to what was stipulated in the hypothesis. Instead of a positive relationship between the variable *CRISIS* and DA, the relationship was negative, indicating lower levels of DA during the crisis period compared to before and after. This finding was not quite statistically significant at the 5% level (p-value: 0.063) and also not very strong (t-value: -1.862) but since the relationship was in the opposite direction of what was hypothesized it is an interesting finding nonetheless. The reason for the relationship between the variable *CRISIS* and DA not being statistically significant is due to DA-levels during the crisis being similar to DA-levels in the post-crisis period but different to the levels in the pre-crisis period which was illustrated in models 1, 2 and 3.
5. ANALYSIS
The results from the data analysis reported above are here discussed and evaluated as to whether they support or reject hypothesis 1 which stated that audit quality, in terms of discretionary accruals, would improve during the GFC and continue to improve after the end of the GFC. Hypothesis 2 stipulated that audit quality, in terms of discretionary accruals, would decrease during the period of the GFC and would after the end of the crisis return to pre-crisis levels. The implications of the results for this hypothesis are analyzed under section 5.3. This chapter begins with an analysis of the results of the control variables which were the same under both hypotheses.

5.1 Control Variables
Cameran (2005, p. 134) suggested that financial distress could have an impact on audit quality since financially distressed clients pose a larger audit risk which leads to auditors increasing their procedures. Poor financial performance could be a sign of financial distress and one performance measure used in this study was ROA. No statistically significant relationship between ROA and DA was found, however, in this study which is similar to the study by Svanström (2013, p. 358). His result is from a large sample of private companies in Sweden during the fiscal years of 2004 and 2005, which occurred prior to the GFC. A difference between the two studies was that the relationship found by Svanström (2013, p. 355) was positive whereas in this study the relationship was negative. Due to the weakness of the relationships no definite relationship can be found between these two variables based on the data from this study.

Our result regarding the relationship between the variable LOSS and DA is aligned with the result from Ashbaugh et al., (2003, p. 626). This study finds that there is a positive relationship between LOSS and DA at the 1% significance level (p-value: <0.001). This means that firms which had a negative result had significantly higher levels of discretionary accruals, indicating lower audit quality. That poor company performance impacts audit quality has already been suggested by Cameran (2005, p. 134) amongst others. Choi et al. (2011, p. 170) suggested that poorly performing companies have higher incentives to engage in earnings management in order to hide the real result which this study supports.

It has been suggested that highly leveraged firms have lower quality in accounting and audit by for example Svanström (2013, p. 358). He finds a significant negative association between SOLVENCY and DA. The p-value between our control variable of SOLIDITY and DA is not significant and no relationship between the variables can be confirmed. This could be due to the different time periods studied or be attributed to a difference between private and public firms. Cameran (2005, p. 134) had also suggested that financial distress would impact audit quality, but as stated above, this relationship cannot be found in the data for this study.

We also find no significant relationship between discretionary accruals and companies which have been audited by the Big 4. Our result has a contradictory result compared with previous research which has found significant positive results between audit quality and companies audited by the Big N (Becker et al., 1998; Francis et al., 1999; Choi et al. 2010, DeAngelo, 1981). However, our result and the result from Svanström (2013, p. 357) are the same in terms of finding no significant association between the BIG 4 and DA. Both studies
focus on companies in Sweden and the finding is the same as in studies made in Belgium by Vander Bauwhede et al. (2003, cited in Svanström, 2013, pp. 357-358). This similarity could indicate that the result of our study is valid despite the limitations of the data regarding this variable. As mentioned previously, audit firm data was only available for 2012 and the assumption was made that the company had the same audit firm in the preceding years.

Our models show a significant negative relationship between \( \text{LNASSETS} \) and \( \text{DA} \). This means that as the size of the client increases the discretionary accrual levels decrease. Our result supports the findings from previous research regarding audit quality and client size (e.g. Choi et al., 2010; Svanström, 2013; Manry et al., 2008). Reynolds and Francis (2001, p. 375-376) suggested that audit firms might compromise audit quality to accommodate the wishes of management of their larger clients. Our data does not support this explanation but it does support the explanation by Shafer et al. (1999, pp. 97-98) which was that audit firms have a greater risk of reputation loss and face larger litigation threats when they improperly audit large clients compared to smaller and less visible clients. This would then lead to more audit effort being exerted on larger clients.

Furthermore, this study finds a significant positive relationship between \( \text{GROWTHASSETS} \) and \( \text{DA} \). This finding runs contrary to the finding by Manry et al. (2008, p. 566), who cannot find a significant correlation between discretionary accruals and growth in assets. Our finding does, however, confirm the study made by Madhogarhia et al. (2009, p. 1767) that growth firms tend to be more aggressive in their earnings management both upwards and downwards compared to value firms.

### 5.2 Hypothesis 1

Hypothesis 1 stipulates that audit quality, in terms of discretionary accruals, are expected to increase from the pre-crisis period to the crisis period and continue to improve during the post-crisis period. A study by Xu et al. (2013, pp. 301-302) in Australia found that auditors were more conservative in terms of audit effort and in their propensity to issue going-concern opinions during the financial crisis. This result can also be found in our data in terms of discretionary accruals which decreased significantly during the GFC compared to the preceding three years indicating a higher level of audit quality.

Kousenidis et al. (2013, p. 351) found that on average earnings quality increased during the financial crisis in countries hit the hardest by it. This finding holds also in Sweden during the same period. The explanation given by Kousenidis et al. (2013, p. 351) is that for companies that rely on external financing, such as the publicly traded firms that made up our sample group, there is a strong incentive to improve financial reporting quality when the firm has liquidity issues which increasingly was the case during the GFC. This appears to very possibly have been the case for why audit quality improved during the crisis period and gives support to the first part of hypothesis 1, that audit quality did increase during the financial crisis compared to the pre-crisis period.

The criticism that the financial crisis led to for auditors, including their inability to audit banks and financial service companies (Sikka, 2009, pp. 869-872) increased the pressure on them to improve audit quality after the GFC as well (Holm & Zaman, 2012, p. 51). This has
been done by re-evaluating accounting norms such as fair-value accounting, mark-to-market accounting and lax auditing practices that existed prior to the financial crisis (Bezemer, 2010, p. 677). In the UK there was an effort by auditors to put forth an ‘Audit Quality Framework’ specifically to improve audit quality.

In this study of publicly-traded firms in Sweden, no statistically significant difference in the relationship between DA and the time periods CRISIS and POSTCRISIS was found. This indicates that discretionary accrual levels were very similar during the GFC and after the GFC even though our data found results of a slight improvement in the post-crisis period. This slight improvement, at least indicates that the criticism of their performance leading up to the GFC led to auditors not returning to the lax audit practices that appeared to have existed before the GFC. This gives some, but not definite, support for the second part of hypothesis 1 that audit quality continued to improve after the financial crisis.

5.3 Hypothesis 2
Hypothesis 2 stipulates that audit quality, in terms of discretionary accruals, would decrease during the GFC and thereafter return to their pre-crisis levels. This would be indicated in the data by a positive relationship between discretionary accruals and the dummy variable CRISIS. Since discretionary accruals were measured in absolute numbers it would detect earnings management aimed at both decreasing earnings and increasing earnings. As stated previously, there are several reasons for earnings management, especially during bad macro-economic conditions, for example “big bath” accounting where the company uses the financial crisis as an excuse for the poor result (Kousenidis et al., 2013, p. 351) or to hide the real company performance, especially when the actual result puts the company in technical default situations or in violation of debt covenants (Choi et al., 2011, p. 170). Another finding suggesting higher levels of earnings management by using discretionary accruals when companies go through difficult periods was by Cohen et al. (2005, p. 0) who in a large longitudinal study found that companies in poor-performing industries accounted for most of the increases in earnings management from 1987 to 2002.

In contrast to these previous theories and empirical studies this study finds no positive relationship between discretionary accruals and the financial crisis for publicly-traded firms in Sweden. Instead, the relationship, while not quite statistically significant when isolating the variable CRISIS is negative, indicating that companies decreased their discretionary accruals during the GFC and thusly both audit quality and financial reporting quality increased. It appears that the incentives in the market to improve this quality to attract financing from external sources which is in line with the finding previously reported by Kousenidis et al. (2013, p. 351) when companies have liquidity issues. The reason for the result not being significant is that DA levels were similar in the post-crisis period to the crisis period whereas they were significantly lower in these periods compared to the pre-crisis period.

An interesting finding is that there was, as expected, a negative correlation between the performance measure ROA and the crisis period and a positive correlation between the variable LOSS and the crisis period indicating that companies had lower ROA and a larger tendency to perform with a negative financial result during the GFC. There was also as expected a negative correlation between well-performing firms in terms of ROA and LOSS
and discretionary accruals which is in line with the finding by Cohen et al. (2005, p. 0). In this sample group, that relationship was not statistically significant for ROA but it was however significant for the variable LOSS. This would lead to an expectation that discretionary accruals would increase during the period of the GFC but this was not the case as stated above. This means, potentially, that the conservatism of auditors, as suggested by Xu et al. (2013, pp. 301-302), or the incentives in the market place to provide higher quality financial reporting in order to attract investors, as suggested by Kousenidis et al. (2013, p. 351), outweighed the incentives to manipulate the earnings during a period of substandard financial performance. It is therefore possible, as suggested by Xu et al. (2013, pp. 301-302), that the increased overall business risk in the environment of the financial crisis led to higher quality financial reporting, either by companies voluntarily or on the insistence of auditors.
6. CONCLUSIONS AND CONTRIBUTIONS OF THE STUDY

This chapter will present the main conclusions of the study as well as its main contributions.

This study’s aim was to investigate the relationship between audit quality in terms of discretionary accruals and the time periods before, during and after the Global Financial Crisis of 2008-2009. Discretionary accruals was the chosen proxy measurement for audit quality since it reflects our view of audit quality as a continuum from high to low quality and captures small variations in audit quality which is suitable for our relatively small sample size. The sample group consisted of 226 publicly traded companies of Small Cap, Mid Cap and Large Cap size on the OMX Stockholm stock exchange. From a list of all companies traded on this stock exchange, banks and financial service firms were excluded due to their difference in asset structure which is in accordance to what has been done in previous research as well (Alexeyeva, 2012, p. 72). Data from the 226 chosen firms was analyzed from 2005 to 2012 leading to a total number of observations of 1760 company years.

The contribution of this thesis for company ownership and management is an analysis of whether auditors are fulfilling their role in solving the agency issue in a better way after the crisis compared to prior to the GFC. The implication for society is whether auditors are upholding their role in ensuring effective resource allocation during and after a financial crisis. The study contributes to prior research by analyzing the impact of large financial crises on audit quality and earnings quality, which is an area with very little prior research and none conducted for Swedish firms. An important contribution of the paper is therefore to provide data and analysis on how audit firms respond to financial crises in general and to the vast criticism that it has received regarding the level of audit quality leading up to the latest GFC in particular (e.g. Sikka, 2009). Based on our review of current scientific literature, no prior study could be found on how audit quality has developed after the end of the financial crisis. This is an important research gap that this study has been able to fill, at least regarding publicly traded firms in Sweden.

To investigate whether the GFC had an impact on audit quality, two alternative hypotheses were formulated. The first hypothesis stated that audit quality in terms of discretionary accruals would improve from the pre-crisis period to the crisis period and continue to improve after the crisis period. The second and alternative hypothesis stated that audit quality in terms of discretionary accruals were expected to decrease during the crisis and then to return to pre-crisis levels. Both hypotheses were tested using three separate models. Since we had three possible values for time periods, each model could contain two of these dummy variables as the third variable would not add predictive capability to the model. However, all three dummy variables were in need of analysis in order to capture the difference in the relationship between these variables and discretionary accruals. In each model, one of the three dummy variables was therefore excluded in order to capture how the two included variables related to discretionary accruals compared to the excluded variable.
All models had an adjusted $R^2$ of 9.1% which is similar to models developed by Svanström (2013, p. 356). The F-value showed statistical significance levels with a p-value of <0.001 indicating that the relationship was extremely unlikely to be random. All three models incorporated additional control variables which were based on previous research. The control variables with the greatest predictive capability of discretionary accruals were, in order of magnitude of their predictive capability, growth in assets, natural logarithm of total assets and whether the company had a financial loss for the year. The natural logarithm of total assets was used as a proxy measurement of size as client size may have an impact on audit quality. This could be due to auditors compromising their independence to give in to requirements from their valuable client as suggested by Reynolds and Francis (2001, p. 375). However, this is not supported by the data in this study since there is a negative relationship between client size and discretion ary accruals. An explanation for this relationship is that audit firms might have a greater risk of losing their reputation if they improperly audit a large client as previously suggested by Shafer et al. (1999, pp. 97-98) and our result supports previous findings by Choi et al., (2010), Svanström (2013) and Manry et al. (2008).

Growth in assets had a statistically significant positive relationship with discretionary accruals, indicating that earnings quality and audit quality for these firms are lower than for companies with lower asset growth which runs in contrast to the finding by Manry et al. (2008, p. 566). This finding does, however, confirm the conclusion in the study by Madhogarhia et al. (2009, p. 1767) that growth firms tend to be more aggressive in their earnings management both upward and downward than value firms which could be due to growth firms suffering from larger drops in share price if they do not reach earnings estimates.

The strong positive relationship between loss and discretionary accruals confirms research by Cohen et al. (2005, pp. 0-1; 10) who found a higher increase in discretionary accruals among companies in poorly performing industries and Cameran (2005, p. 134) who claims that financial distress can impact audit quality. A reason for this is that poorly performing companies have a larger incentive to hide their real economic performance which has been suggested by Choi et al. (2011, p. 170). Solidity and Return On Assets (ROA) proved to not have a statistically significant impact on discretionary accruals which runs contrary to the research mentioned above by for example Cameran (2005, p. 134) who suggested that performance and financial distress could have an impact on audit quality as it might prompt further audit procedures. This study only showed slightly higher discretionary accruals for companies with lower ROA and higher solidity but none of these relationships were statistically significant. The insignificant result for ROA confirmed previous findings by Svanström (2013, p. 358) whereas the result for solidity ran in contrast to his findings.

Another interesting finding was the negative relationship between Big 4 audit firms and audit quality in terms of discretionary accruals. Even though this relationship was not quite statistically significant at the 5%-level it runs in contrast to previous research by for example DeAngelo (1981, p. 189) who claims that large audit firms should provide a higher quality audit since they are less economically dependent of any individual client. They have also invested more in building a brand (Choi et al. 2010, p. 73) and a large study in the USA by Francis and Yu (2009, p. 1521) showed that audits by big firms showed lower
quantities of abnormal accruals which is similar to the finding by Becker et al. (1998). However, the study mentioned by Svanström (2013, p. 357) and several other European studies have made similar findings as in ours, that Big 4-firms do not necessarily provide higher quality audits in Europe.

The main independent variables of models 1, 2 and 3 were the three variables for the time periods: pre-crisis, crisis and post-crisis. Due to their level of inter-correlation, only two of the variables could be put into the same model with each model highlighting the included variables’ relationship with the excluded variable. The results showed that discretionary accrual levels were significantly lower in the crisis and post-crisis period compared to the pre-crisis period indicating a strong relationship between these variables. The differences in discretionary accrual-levels between the crisis and post-crisis period were statistically insignificant but indicated a slight further improvement.

The finding is of particular interest as the negative correlation between discretionary accruals and ROA would indicate that worse-performing companies should have higher levels of discretionary accruals and companies had a lower ROA during the crisis period, which means that other factors must explain the improvement in earnings quality during the GFC. An explanation suggested by Kousenidis et al. (2013, p. 351) is that companies are incentivized to improve their financial reporting quality when they have liquidity issues in order to attract financing from external sources. Xu et al. (2013, pp. 301-302) suggest that there are reasons for auditors to be more conservative during periods of increased business risk such as during a crisis and our data would suggest that this explanation holds true also among Swedish publicly traded firms. Auditors could be a factor in decreasing discretionary accruals especially during the financial crisis. This result leads us to confirm the first part of hypothesis 1 that stipulated that audit quality would improve from the pre-crisis period to the crisis period.

The statistically insignificant improvement of audit quality, in terms of discretionary accruals, from the crisis period to the post-crisis period at least shows that audit quality has not regressed to pre-crisis standards which could be in a response to the criticism that auditors were facing in the aftermath of the crisis (e.g. Sikka, 2009). This might have led them to continue efforts to maintain a higher level of audit quality after the GFC as suggested by Holm & Zaman (2012, p. 51) and Bezemer (2010, p. 677). However, since the relationship was not statistically significant, we cannot confirm nor reject the second part of hypothesis 1 that stipulated that audit quality would continue to improve after the end of the GFC.

Since previous research also suggested that companies might increase their earnings management in a period of financial crisis we decided to test an alternative hypothesis that stated that discretionary accruals would increase during the crisis period and thereafter decrease to pre-crisis levels. The statistically significant relationship between discretionary accruals and the crisis-period compared to the pre-crisis period was, contrary to what was stipulated in the hypothesis, positive. Audit quality, in other words, increased during the crisis period and as stated above, the data did not definitively support an increase in audit quality after the end of the GFC. This indicated that incentives for companies to manage earnings when their industry is performing poorly as suggested by Cohen et al. (2005, p. 0)
and to hide their real result during the financial crisis when they are performing worse than normal (Choi et al., 2011, p. 170) are outweighed by the considerations mentioned above. This is of particular interest since in general, companies that were performing poorly in terms of ROA did have higher levels of discretionary accruals and companies were also found to be performing worse during the GFC. It is therefore very interesting that Hypothesis 2 is rejected as no sign of a decrease in audit quality in terms of discretionary accruals was found during the GFC.
7. RESEARCH LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This chapter discusses limitations with this research which will lead to suggestions for future research within the area.

This study was made by analyzing data for 226 publicly listed firms in Sweden before, during and after the Global Financial Crisis. Due to limitations in time and resources, we were unable to expand the study and include different national contexts and to compare audit quality during this period between public and private firms. A larger study, preferably including several different national contexts analyzed separately, would therefore be interesting to conduct in the future. Another limitation is that we are still only a few years removed from the GFC and it is possible that the effects found in this study of the GFC on audit quality is only temporary and that audit quality levels will return to pre-crisis levels in the long-term. Another suggestion for a future study is therefore to see whether the changes in audit quality levels will continue to persist over time.

Another limitation of this study is that it only included one proxy measurement for audit quality. As recommended by DeFond and Zhang (2013, pp. 29-30) several different proxy measurements should be used in order to validate the findings. Discretionary accruals, while advantageous since it captures small variations in audit quality and can also be used for analyzing smaller samples suffers from the disadvantage that it is not within the immediate control of the auditor, like for example the audit opinion. Since some proxy measurements compensate for other weaknesses it is preferable to combine these measurements but this was not possible for this study due to data unavailability (for example audit opinion, audit fee levels, auditor tenure and limitations in audit firm information available) or because the data would be difficult to interpret due to the volatile economic period studied (for example stock market reactions). It would therefore be interesting for a future study to build on our results and include one or two additional proxy measurements of audit quality to see if the results still hold.

As mentioned previously, we were unable to retrieve audit firm information for the years prior to 2012 which was an important limitation in one of our control variables. The theoretical framework also suggests that variables such as audit tenure, audit office size, audit fees and non-audit service fee levels have a significant impact on audit quality. It would therefore be interesting in order to improve the goodness of fit for the overall model to include this data in a future study.
8. CREDIBILITY OF RESEARCH
This chapter talks about the credibility of our study such as replication, reliability and validity

Bryman and Bell (2011, p. 41) mention three important prominent criteria used to evaluate research and these are reliability, replication and validity. Saunders et al. (2009, pp. 156-157), on the other hand, only mention two criteria to evaluate the credibility of research which are reliability and validity. Reliability refers to the consistent findings of research results based on the data collection while validity refers to “whether the findings are really about what they appear to be about” (Saunders et al., pp. 156-157). Moreover, replication is concerned with whether the study can be replicated or studied by other researchers in the future and yield consistent findings (Bryman & Bell, 2011, pp. 41-42). These criteria and how they relate to this study will now be discussed further.

8.1 Replication
One of the main preoccupations of quantitative researchers is replication (Bryman & Bell, 2011, p. 163). Bryman and Bell (2011, p. 165) highlight this as an important trait of a quantitative study and in order for it to be possible to replicate a study it needs to be unaffected by the scientists’ biases and expectations. It therefore has to be objective, but also, the method for the study has to be explained in detail in order for it to be possible to replicate the study. We have therefore in our method-chapter in particular and throughout this thesis in detail described the sources of our data, how we have structured and organized it and how we have worked to add the missing data from our initial extraction of data from Business Retriever in order to make it more correct. If any subjectivity has factored in to the creation of this study, it would be reflected in the method as it is described in the thesis.

This study is therefore available for anyone to replicate and can be done as long as all steps are conducted as they are described in this report. The exact list of companies included in the study can be obtained from the authors by contacting them. This list would enable an exact replication of this study as all additional methodological procedures are explained in detail in the thesis which makes it possible for the reader to identify any steps that cannot be considered as objective.

8.2 Reliability
Reliability in business research is about repeatable results of a study and is therefore closely related to replication (Bryman & Bell, 2011, p. 41). In our study, data has been retrieved from annual financial reports, which are publicly available, via the Retriever Business database. When reviewing the data from the database several omitted and incorrect company years of data were noticed by identifying outliers in different key ratios used in the study. This data was checked manually by verifying the annual reports of the affected firms. In this process, there is a possibility that not all incorrect and omitted data in the database were detected and corrected.

Discretionary accruals, which are the proxy measurement of audit quality that is used in this study, have been used to study audit quality several times previously, which is an indicator that it is a reliable way of measuring the concept. Furthermore, our results can be
re-created by other observers because the data is readily available which increases the reliability of this study.

8.3 Internal Validity
Bryman and Bell (2011, p. 42) explain that internal validity refers to whether or not causality can be identified in a relationship between variables. They further explain that if a study claims that x causes y, it could be that they only correlate with each other but that there is an additional variable z that is the actual cause of y. This study claims that the financial crisis and the increased risk levels in the business environment that it brought with it caused an increase in audit quality in terms of discretionary accruals. It is, however, possible that an unknown variable was the cause of the improvement. To minimize the likelihood of an unknown variable causing this effect, we incorporated other independent variables such as ROA, solidity, growth in assets etc. as control variables since previous research has shown that these variables affect audit quality. This isolates the effect that the GFC had on audit quality. We also tested for multicollinearity between our independent variables to ensure that they were not correlating too closely with each other. As mentioned among the research limitations, there are other variables, such as audit fees, non-audit services and audit office size that have also shown to have an effect on audit quality that could not be included in this study due to limitations in data availability. These variables might also have been the causes of the changes in discretionary accruals. It would therefore be interesting in a future study to incorporate these control variables into the models.

8.4 External Validity
External validity is related to whether the result from a sample group can be generalized to a larger population (Bryman & Bell, 2011, p. 43). Generalization can be achieved when we increase the sample size over the population (Saunders et al., 2009, pp. 217-218). In our study, we have selected a large sample size from the population. Among 296 listed companies on OMX Stockholm stock market, our sample is 226 listed companies. Thus it accounted for 76% of the whole population. Since the sample group is not randomly selected, however, generalizations to the entire population are not possible. In our case, banks and financial service firms have been excluded in the sample group but our data does capture all other industries that have firms trading publicly on the OMX Stockholm stock exchange. Generalizations beyond this population group cannot be made and therefore it would be very interesting to conduct similar studies in other national contexts in order to measure the impact internationally of the GFC on audit and financial reporting quality.
REFERENCES


APPENDIX A. MULTICOLLINEARITY RESULTS

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