The Quality of Financial Disclosure and Its Implications on Stock Prices for Credit Downgraded Firms

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ABSTRACT

Over the last decade, financial disclosure and its impact on equity markets has increasingly become an area of interest. Firms suffering from poor operating performance have been shown to disclose bias earnings estimates as a means of evading negative market reactions. In this thesis, we attempt to discern whether managers purposefully bias their earnings estimates in periods of credit quality deterioration. Furthermore, we investigate the potential link between the quality of financial disclosure and the subsequent market reactions associated with firms having experienced a credit rating downgrade.

We base our study on a sample of credit rating downgrades from January 2010 to December 2015 by Standard and Poor's for public firms in the United States. We find that there are no systematic changes in the quality of disclosure in the periods closest to the credit rating downgrade. Additionally, the evidence for the possible association of a change in disclosure quality and equity returns remains ambiguous akin to previous works on the matter. Through a sub sample of times-series and cross-sectional analyses, we reconfirm previous results on control variables and their respective associations to equity returns. We control for variables playing the role of proxies for the announcement effects and market anticipation. In general, we discuss the possible discrepancies between the option based view of debt and equity, the Wealth Redistribution Hypothesis, and Tversky and Kahneman's (1991) "Loss Aversion" theories with regards to our observations.

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Keywords: Quality of financial disclosure, credit rating placement, downgrades, investment decisions, stock market, mandatory and voluntary disclosure, information asymmetry

Purpose: To empirically investigate if the credit rating downgrade has an impact on the quality of financial disclosure and how such changes affect the firm's stock

Methodology: The methodology provides an overview of the approach taken for inference making in this thesis. The first part tests the significance between the disclosure samples. The second part runs a multiple linear regression model on the chosen variables.

Theoretical perspectives: The theoretical framework consists of the previous research on the quality of financial disclosure, both mandatory and voluntary, and its impact on stock prices, as well as main theories such as agency theory (information asymmetry), loss aversion, Wealth Redistribution Hypothesis, contingent claims and the main issues connected to credit rating actions.

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1. Introduction

In this chapter we will discuss the background of our research. We will give a detailed presentation of the main topic of the research and the aim of this thesis. We will then extend into highlighting the contributions of our findings to the academics' community, identify our target group, limit the scope of our research, and briefly outline the content of further chapters.

1.1 Background

In the aftermath of the 2007–08 financial crisis, financial institutions started to pay more attention to financial statements hence demanding more comparability and transparency which resulted in re-evaluating accounting standards and the role that accounting information had in the financial crisis. "Financial information serves as an important input and guide for informed decision making in an economic environment" (Gaffikin et al 1998). As a consequence of increasing financial disclosure scandals, this debated field in academics has grown to become of utmost prominence in recent years. The extent to which financial disclosure quality impacts investors' expectations of a firm's stock returns is a highly contested topic. Previous research papers propose two ways of interaction between disclosure quality and stock returns. The first one is refers to stock liquidity and is not based on asset pricing models (Diamond and Verrecchia, 1991). The second one states that disclosure quality is driven by information risk and therefore influencing the stock's beta and its expected returns (Barry and Brown (1985), Coles, Loewenstein and Suay (1995)). Globalisation is hitherto another factor which raised concern for regulators and market players in financial reporting quality. According to Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB), excellent financial reporting is essential for decision making in financial organisations (FASB, 1999; IASB, 2008) It helps stakeholders in choosing the right investment and credit opportunities thus improving overall market efficiency (IASB, 2006; IASB, 2008). Financial reports play a critical role in an investor's decision making (Barton, 2005) therefore relevant and transparent information forwarded by market participants is essential for an orderly and efficient market, and it is one of the most crucial prerequisites for enforcing market regulations.

From a theoretical standpoint, one of the fundamental objectives of financial reporting is to facilitate asset allocation by reducing information asymmetry and increasing contracting efficiencies between market participants (Watts and Zimmerman 1978; Kothari et al. 2009).

Thereby, improved quality of financial reporting can expand a company's access to external sources of finance whilst stimulating investments and improving efficiency. Agency theory disputes the costs associated with managers' interaction with investors. In fact, agency costs are often regarded as one of the reasons behind financial information disclosure (Chow & Wong-Boren, 1987; Hossain & Adams, 1995). The debate revolves around information asymmetries and their role in contributing risk to owners when managers are able to make decisions at their expense. The Special Committee on Financial Reporting of the American Institute of Certified Public Accountants (1994) states that an increasing disclosure quality is followed by a reduction in the cost of equity capital. This is supported by Klein and Bawa et al. (1976) who suggest that increased disclosure quality reduces the estimation error which investors are exposed to when valuing asset returns. Annual reports, company websites, press releases & shareholder meetings are only a few of the means by which managers can reduce information asymmetries between themselves and investors directly. Financial analysts, credit rating agencies (CRAs) and financial intermediaries act as complementary sources available to investors. Whether companies strategically disclose information to the credit rating agencies remains debatable. Credit rating agencies and banks have access to information that is not accessible to the general public or equity investors (Bushman et al. 2010; Plumlee et al. 2014). However, managers are known to bias information that is publicly disclosed, likewise, they can bias their private communications. It is a very difficult task to measure the truthfulness of any disclosure, especially in the case of private disclosure. For such measurements we would need to assume the level of information known to the manager, which is particularly difficult as often the information is private. Past research in this area has mostly focused on finding evidence of biased disclosure by searching for asymmetric responses to positive and negative news (Kothari et al 2009) and forecast asymmetries (Ajinkya and Gift 1984). The information environment of the firm is a function of both quality and quantity which derive from a manager's combination of mandatory and voluntary disclosures. Voluntary disclosure is highly discretionary in its nature and has prompted a vast amount of literature on the topic of managers' willingness to divulge information in excess of their mandate (Healy and Palepu 2001; Beyer et al. 2010).

The U.S. Securities and Exchange Commission (SEC) has consistently strived to ensure that market participants receive fair and timely corporate disclosures with the use of new regulations such as the Regulation FD against "Selective Disclosure" and the Sarbanes-Oxley Act which

focuses on internal control, conflicts of interest and information that may influence financial results. As a consequence, disclosure power has progressively shifted into the hands of the SEC.

This paper draws heavily from the research about the real effect of disclosure in the capital markets. Additionally, this paper examines how credit rating changes impact manager's earnings announcements and the role of a change in financial disclosure quality on equity investors. In the first part of the paper, we outline the literature and research that have been produced up to this point. We approach the topic and the literature with financial disclosure quality as the central variable to be controlled. We observed that a large gap in the literature exists for the financial disclosure quality (FDQ) and its impact on capital market equity returns. We consider managerial incentives for FDQ induced by credit changes as a predominant factor.

In the second part of the paper, we develop a regression model that examines how a change in financial disclosure quality is perceived by equity investors. The model seeks to explain the attitude equity investors have in the face of managerial earnings misinterpretation. The model seeks to control for additional variables such as leverage, book-to-market ratios, firm size and firm-specific beta.

1.2 Problem discussion

The quality of financial disclosure and its effect on asset prices has been studied by numerous researchers. One of the pioneers in this area was Cerf (1961) who examined company-specific features which define the level of disclosure. Particularly, Cerf's goal was to evaluate qualitative information in annual financial statements. Many researchers (Adina et al., 2008; Barako et al., 2006; Ahmed et al., 1994; Buzby, 1974; Owusu-Ansah, 1998; Akhtaruddin, 2005; Belkaoui et al., 1978; Omar et al., 2011 and others) followed his ideas in their own investigations, namely they were looking for empirical evidence for the link between certain characteristics of firms and their level of disclosure. Subsequently disclosure has been studied using numerous theories, such as agency theory, political economy theory, stakeholder theory and the legitimacy theory (Choi, 1973). Despite the fact that the aforementioned theories resulted in different outcomes, Cooke (1989) argues that the reports released by firms are mostly aimed at investors, creditors and financial analysts, as disclosed information is crucial in their decision-making process.

There exists two types of disclosure: 1) mandatory disclosure, when companies are forced by authorities to disclose particular information; and 2) voluntary disclosure, when companies deliberately disclose more information thinking that it will be beneficial for them. According to Entwistle (1997), due to various benefits, such as better reputation of the firm, less regulatory and political intervention and higher stock liquidity, managers need to mindfully plan their disclosure policy. Voluntary and mandatory disclosures are equally important (Omar et al., 2011), nonetheless voluntary disclosure has received by far more attention than mandatory disclosure (Einhorn, 2005). According to Bruslerie et al. (2010), voluntary disclosure increases a firm's value, decreases the cost of capital and eliminates asymmetry of information. Several research papers studied earnings per share anticipation and voluntary disclosure correlations (Healy et al., 1999; Healy et al., 2001). The outcomes of these papers suggest that when firms start to disclose more information, the stock market predictions of future earnings significantly improve. Due to considerable interaction between voluntary and mandatory disclosure (Yu, 2011), one might ask whether stock liquidity depends on mandatory disclosure. It is not clear whether mandatory disclosure has an economic implication as very little evidence has been found in studies to support this claim (Healy et al. 2001). The aim of previous studies was to examine the connection between mandatory disclosure and firm value in terms of share price, and the way mandatory disclosure affects a company's performance, its size and leverage, our study will contribute to this area by investigating such connections for downgraded firms.

1.3 Research Purpose

The aim of this master thesis is to investigate whether firm's quality of financial disclosure differ for the period prior to a possible credit downgrade. In addition to the already acknowledged factors from previous research, we want to analyze the role of the quality of financial disclosure in the stock market for companies sustaining a change in credit ratings (downgraded). Through exploring a scope of firms, we expand existing research by being the first in the field observing and linking three dimensions simultaneously: quality of financial disclosure, credit rating downgrade and share price. Furthermore, we complement existing literature which currently focuses mostly on voluntary disclosure and credit placement. To the best of our knowledge, this study is the first to attempt to explain the information costs that the quality of financial disclosure has on an equity investor for firms experiencing credit rating downgrades.

1.4 Contributions

This paper brings contributions to the existing literature. First, our evidence supports the findings from a growing body of research on the relationship between the quality of financial disclosure, share price and credit rating downgrades. Second, there is limited evidence regarding the quality of financial disclosure during credit rating changes. Our study fills this gap by exploring and explicitly showing the links between credit placement and the quality of financial reporting. Third, the vast majority of existing studies in this area focus on U.S. companies during the financial crisis 2007-2008 whilst there is a lack of analysis of US companies in 2010-2015. Therefore, our research will focus on the quality of financial disclosure in the post-financial crisis period. Fourth, according to Lang and Maffett's (2011) findings, the majority of the companies that practiced more transparency suffered less liquidity volatility and experienced less illiquidity events during the financial crisis of 2007-2008. However, as they used multinational firms in their study, the difference in liquidity at the company level may have been due to national diversity rather than differences in accounting quality. To address this issue, we chose a national setting for our research, which has several advantages: 1) firms in our sample apply the same accounting standards; 2) this approach eliminates national institutions differences which could affect financial report attributes such as ownership concentration, disclosure requirements and legal protection for investors; 3) evidence suggests that the impact of the financial crisis on financial markets, namely the stock market, significantly varied across different countries, thus choosing national settings removes these deviations. Thus, we think that our findings will add to the evidence provided by previous researches.

1.5 Scope and Delimitation

The limitations of this thesis can be divided into three parts starting with the secondary data approach of using annual reports as the data source. The sample is based on U.S. market downgraded firms and we limited the timeframe toa 5 years, 2010 – 2015, period after the financial crisis 2007 – 2008.

1.6 Thesis Outline

Chapter 1: The Introduction

In this chapter, we talk about the background of our research paper. We present the primary subject of the research and outline the objectives of this thesis. Subsequently we describe our

target audience, underline the contributions of the results on the academic society and outline the scope of this study.

Chapter 2: Theoretical Foundation

In the second chapter we will review existing literature on the quality of financial disclosure and its effects on the capital markets and credit rating theories.

Chapter 3: Hypotheses Development

The purpose of this chapter is to discuss the theoretical background necessary for the formation of main hypotheses of this study.

Chapter 4: Methodology

In the fourth chapter, we will justify the methodology of this research paper. We will also describe in great details the data sampling process for scoring transparency and disclosure of firms. We will therefore present variables necessary to conduct our research.

Chapter 5: Results and Analysis

In this chapter we will present the outcomes of our research based on the methodology described in chapter four such as the development of abnormal return, changes in financial disclosure scores and linear regression diagnostics. We will close this chapter with the analysis of the findings.

Chapter 6: Discussion and Conclusion

In the final chapter we will present the conclusion of our study. We will also talk about probable errors and possible improvements to the applied methods. Furthermore, we will provide propositions for further studies on the topic.

2. Theoretical Foundation

The intention of the second chapter is to analyze the previous research needed for understanding the main theory of quality of financial disclosure and its role in stock market followed by supporting theories regarding credit ratings.

2.1 Financial Disclosure

Healy and Palepu (2001) & Botosan (2006) come to the conclusions that the evidence for the impact that financial disclosure has on capital markets is mixed. A critical economic question is how to optimally allocate household & corporate savings to investment opportunities. According to Healy and Palepu (2001), matching savings and investment opportunities is complicated for at least 2 reasons. First, managers have a better understanding of the value of the investment opportunity and have an incentive to overstate its value. Secondly, managers have an incentive to expropriate the savings into their own personal objectives. Akerlof's (1970) "Market for Lemons" explains that uninformed buyers' prices create adverse selection costs and that the lack of transparency between the seller and the buyer drive away high-quality products and floods the market with lower quality goods. In the "lemons" context, a security buyer will overpay if he cannot accurately value the position's "true" unbiased price. Management forecasts, analysts' presentations, conference calls, press releases, firm websites and other similar means represent methods by which managers attempt to close the information gap (Healy and Palepu (2001). Security holders get compensated for this risk through the cost of capital. Research has backed the view that disclosure level is negatively associated to the cost of capital through 2 specific theoretical streams of research. The first supports the belief that greater disclosure increases the security's liquidity hence reducing the return required by the security holders (Demsetz 1968, Copeland and Galai 1983, Glosten and Milgrom 1985, Amihud and Mendelson 1986 and Diamond and Verrecchia 1991). The second argument postulates that increased disclosure reduces the estimation risk investors are confronted with when valuing the firm (Klein and Bawa 1976, Barry and Brown 1985, Coles and Loewenstein 1988, Handa and Linn 1993, Coles et al. 1995 and Clarkson et al. 1985). Disputing these theories is the Jenkins Committee (1994) who argues that the evidence is biased. They state that the empirical cases made up to date misinterpret the impact that disclosure has on the cost of capital by making use of variables that

are expected to be positively linked to the cost of capital and that play no role in explaining the cost of capital's variation.

In the first stream of research, Diamond and Verrecchia (1991) create a model of liquidity in response to disclosure quality. They observe that policies which aim at reducing information asymmetries consequently increase the liquidity of the firm's securities. It induces large institutional traders to increase their competitiveness over the security in question. As a consequence, this increases the demand for the security, increases its price, and reduces the volatility of future order imbalances. Additionally, they observe that there exists an optimal level of asymmetric information where further increasing disclosure would lead to increased short-selling and price reduction. The optimal information asymmetry point is highly discretionary to the firm and industry. Respective the second stream of research, Lambert et al. (2005) build a model consistent with the CAPM and allow for firms' with correlated cash-flows. They show that higher quality of disclosure affects the cost of capital both directly and indirectly. Firstly, as a direct effect, higher disclosure quality decreases the cash-flow covariance's between the firm and its peers hence decreasing the investor's portfolio risk. Secondly, the indirect effect occurs as increasing disclosure impacts the firm's decisions which as a consequence changes the firm's ratio of expected future cash-flows to the covariance of these cash-flows to the overall market's. These effects lower investors' estimation risks and lower the required return that an investor would need in return for their position.

2.1.1 Mandatory and Voluntary disclosure

Globalization and the increased awareness that potential investors have obtained through higher quality of disclosures have led higher demand for that information. Disclosure is a means of information communication from managers to the investors. Regulatory bodies are in control of mandatory disclosure (security exchange authorities, IASB, FASB, etc.), while managers are accountable for voluntary disclosure. Thus, investors need to know when voluntary disclosure is being applied by managers "as managers are likely to consider their own interests when exercising managerial discretion". (Akhtaruddin, 2005). Owusu-Ansah (1998) regards disclosure as the release of different kinds of economic information: financial, non-financial, fiscal or performance-wise. Disclosure is a mixture of continually interacting voluntary and mandatory elements. Mandatory disclosure is a liability to reveal a certain level of information in financial

reports in accordance with regulatory requirements (Wallace et al., 1995; Owusu-Ansah, 1998), while voluntary disclosure is a release of extra information aiming at improving the reputation and the performance of the company and eventually showing the true market value of the company. All over the world mandatory disclosure is controlled by regulatory agencies (Healy et al., 2001; Akhtaruddin, 2005). By means of mandatory disclosure rules, regulators force firms to disclose information that otherwise would be kept private. One of the principal ideas behind mandatory regulations is to protect ordinary investors (Watts & Zimmerman, 1986; Taplin et al., 2002). As regulatory bodies reduce the information gap by introducing mandatory disclosure, they eventually reallocate capital from more to less informed investors. Moreover, disclosure regulations positively affect the integrity of information in the financial markets, which in turn stimulates companies to comply with the regulations. However, at times mandatory disclosure is not enough to meet investors' expectations. Managers apply voluntary disclosure to share their knowledge with investors (Graham et al., 2005; Healy et al., 2001). Therefore, voluntary disclosure is about the provision of supplementary information, which is dependent on legal regulations, the company's privacy policy and the outer pressure from financial analysts, audit firms, financial markets etc. According to Omar et al. (2011) one should not separate mandatory and voluntary disclosures in terms of financial reporting as both items are very significant and also because they are frequently interacting as was shown in numerous research papers. Other researches claim that when regulators impose disclosure requirements which are either weak or lack clarity, companies have more incentives to elaborate their own disclosure strategies. Dye (1985) researched interactions between mandatory and voluntary disclosures in terms of proprietary expenses, namely the effect mandatory disclosure has on voluntary disclosure. He concluded that the link between the two types depends on they substitute each other or complement. If mandatory and voluntary disclosure substitute one another, larger mandatory disclosure requirements will result in less incentives towards voluntary disclosure, while the result is opposite when the two types complement each other. In his research Naser et al. (2003) proved the existence of strong and positive correlation between mandatory and voluntary disclosures, on the other hand Al-Razeen at al. (2004) found no evidence of such association, which can be potentially explained by absence of interactions between managers and board of directors. In summary, the association between the two concepts is not clear. According to Leuz et al. (2008) level of disclosure depends on the company, thus management have to choose

disclosure suitable for their needs. Companies can either decide to only comply with mandatory requirements on disclosure, or they can choose to disclosure extra information voluntarily.

2.1.2 Disclosure Purpose

According to Beyer et al. (2010), reasons for mandatory disclosure are not very obvious. However, it is possible to point out four primary cases such as financial externalities, externalities, agency costs and economies of scale. In terms of financial externalities a firm may disclose information concerning other companies along with its own financial. As such information can be treated as irrelevant for the firm, the competing company will try to limit access to this information. In this situation, imposed mandatory regulations would improve social welfare. Concerning real externalities company's disclosure may influence strategic decisions taken by its competitors. Therefore, having access to information released by other companies can improve decision-making process which in turn improves social welfare. Furthermore, in companies with powerful management and weak investors managers can take advantage of its shareholders by concealing useful information which thus occurrence of agency costs is unavoidable. In this case, mandatory disclosure would also improve social welfare (Beyer et al., 2010). Regarding economies of scale there is notion that conventional accounting standards ameliorate comparison of disclosed information between different companies thus information is much more accessible. As a result, company's performance can be assessed more thus achieving economies of scale.

Voluntary disclosure used by managers as a strategy to attract investors and new shareholders. There are five reasons for voluntary disclosure noted by Healy et al. (2001): capital market transaction hypothesis, corporate control contest hypothesis, the stock compensation hypothesis, the litigation cost hypothesis and the proprietary costs hypothesis.

By performing voluntary disclosure companies reduce overall information asymmetry which leads to reduced information risk, thus cost of external financing is mitigated, this is highlighted by capital market transaction hypothesis. With reference to corporate control contest hypothesis, by performing voluntary disclosure companies reduce overall information asymmetry which leads to reduced information risk, thus cost of external financing is mitigated. As concerns of hypothesis of stock compensation, since managers receive stock compensations, they promote voluntary disclosure to be able to trade their stock while reducing risk of insider trading

allegations. As a result, liquidity of company`s stock is increased. Meanwhile, contracting costs are reduced making voluntary disclosure also beneficial for the companies. The litigation cost hypothesis states that in order to avoid legal actions against them managers prefer to release bad news voluntary, they also refrain from reporting overestimated forecasts. And finally the prime idea of the proprietary costs hypothesis is that competition-wise voluntary disclosure may negatively affect company`s performance.

2.1.3 Disclosure Measurement

Disclosure is rather difficult to quantify as it is often treated in a qualitative sense. Very little is known about which measurements of high-quality disclosure are relevant for investors. Five main features of "quality" of disclosure are timing, readability, understandability, adequacy for a defined purpose and comprehensiveness. However, it is very challenging to put these characteristics in practice. Generally, disclosure is evaluated by examining what is valuable and useful for investors. One method to assess disclosure is by creating specific check-lists (Bruslerie et al. (2010), Cerf (1961), Omar et al. (2011) and others). All approaches have certain limitations such as: 1) research papers usually focus on particular examples of disclosure instead of their quality, 2) different pieces of disclosed information might have different significance, thus should be specifically weighted, 3) disclosure choice is generally biased. We can therefore conclude that more research needs to be conducted in order to improve current methods of measurements of disclosure.

2.1.4 Quality of Financial Disclosure and Equity Returns

The efficient market hypothesis suggests that market equity prices fully reflect the available information in the market and that investors are steadily exposed to the stock's fair value. In effect, stock prices are said to reflect all past, present and future information in conformity as to leave no arbitrage openings for an opportunistic investor. Cowles (1933) found that there was no significant evidence that investment professionals had ever beaten the market. Investors are hence said to be unqualified to "beat'' the market and are left at the mercy of the available information, more precisely its quantity and quality. To this day, the majority of research assumes that equity markets are efficient and accept that investors "see through" the limitations of accounting (Paul M.Healy et al. 1993). There has only been a small and silent participation of

empirical research which examines how capital markets impact accounting decisions (Paul M.Healy et al. 1993).

Manager's willingness to divulge information over and above their mandate consequently influences investors' valuations. This creates an incentive for managers with shareholder maximising goals to disclose value adding information ahead of value destroying information. When there is significant uncertainty about future performance, managers may issue biased information (Rogers and Stocken 2005). More clearly, when a firm experiences a setback, managers with shareholder maximising goals want to mitigate the information costs attributed to the setback and in turn "cover it up" with positive signals. Phillip C. Stocken (2005) examines the market's ability to detect the truthfulness of management's forward looking information. He observes that managers have varying incentives to misrepresent earnings as a consequence of litigation, insider trading activities, financial distress, and industry concentration. Additionally, the "expectations adjustment hypothesis" suggests that managers divulge forecasts which align investor's expectations with their own (Ajinkya and Gift 1984; Hassell and jennings 1986). A firm that experiences large negative returns is more likely to face legal action from investors at its earnings announcement hence managers tend to produce less optimistic earnings estimates when faced with large litigation costs (Phillip C. Stocken 2005). On the other hand, a firm facing large financial distress costs has an incentive to produce more optimistic looking earnings announcements in order to convince investors to entrust the firm with their capital (Phillip C. Stocken 2005).

2.2 Underlying Theory of Credit Ratings

2.2.1 Credit Rating Agencies & Capital Markets

Credit rating agencies (CRAs) are financial intermediaries which act as an information bridge between the firm and the investors. The major function of CRAs consists in providing guarantees for investors and creditors regarding solvency and creditworthiness of firms or financial securities (Champsaur, 2005). CRAs evaluate the firm's near-to-long term solvency through a credit rating which defines the firm's position within the solvency spectrum. The Credit Rating Agency reform Act of 2006 enforces CRAs to disclose their ratings' process and procedures to facilitate communication with capital markets. Studies have shown that CRAs may deter managers from issuing biased forecasts (Kai Wai Hui 2012). CRAs are sophisticated information

users and create value by engaging in private information production. This in turn reduces agency costs between managers and investors. Credit ratings have a direct effect on yields which implies that credit ratings contain information which is not available publicly, hence indicating that markets are not efficient (Gonzales et al. 2004). Pinches & Singelton (1978) observe stock prices and their movements in accordance to credit ratings. They show that CRAs lag behind the capital markets and that capital markets are more elastic to the change in a firm's financial fundamentals. Jorion et al. (2005) argues that the passing of the Fair Disclosure regulation at the start of the millennium in the US has enhanced the information effect that credit ratings have on capital markets. CRAs are exempt from this regulation hence the information content value that they provide has consequently increased. Following the FD regulation, CRAs now have access to more sensitive information which create more value to investors.

2.2.2 The Value of a Credit Rating

CRAs were one of the main actors in the Great Recession of 2008-2009. Many securities that were granted "AAA" ratings before the crisis were subsequently downgraded to the "junk" status. Therefore Griffin and Tang (2012) claim that overestimated "AAA" ratings were the major catalysts of the Financial Crisis. Credit ratings provided by the leading CRAs are used by a various parties such as lenders, investors, companies, financial intermediaries, government institutions etc. The presence of credit ratings facilitates to the transparency of capital market and reduces information asymmetry (Tang, 2009). CRAs can be regarded as an external provider of information crucial for investment decision-making. Furthermore, data provided by CRAs cannot be obtained by the investors themselves. According to De Haan and Amtenbrink (2011) CRAs play a major role in solving agency problems. Credit ratings are mainly used by investors for credit risk determination, comparison of different investment opportunities and portfolio management in general. Investment banks play a role of financial intermediary by facilitating transfer of funds from lenders to borrowers. These institutions use credit ratings to set a benchmark for credit risk of bonds and other debt issues including determination of bond price, its conditions and interest rate payments. Companies engaged in trading of debt securities are particular sensitive to insolvency events such as default on credit payments, thus these firms may use credit ratings to better evaluate counterparty risk.

Overall, all sort of financial institutions that issue debt (government organisations, federal states, investment banks etc.) require credit ratings to evaluate their creditworthiness, quality of their debt, their current financial position and also to forecast interest rate payments on new debt issues. Credit ratings are ordinal in that the difference in the solvency quality between a AAA and a AA is not equivalent to the difference between a AA and an A. Rating agencies utilize a through-the-cycle approach as opposed to a point-in-time approach. Through-the-cycle approaches are efficient in providing default probabilities which are less elastic to the business cycle effects on a firm's solvency (Alexander B. Mathies 2013). Effectively, Amato & Furfine (2004) report that through-the-cycle ratings have shown resilience to the influence of the business cycle hence showing that agencies achieve some form of rating stability.

2.2.3 Credit Revision Process

The credit revision process involves two steps. Firstly, the firm is put on credit watch which is an indicator by the CRA that the firm's financial solvency is deteriorating (improving). During this period, the financial strengths of the firm are revisited extensively. Credit watches are short-term events lasting on average 11.25 weeks ranging from 1 to 52 weeks and have overwhelmingly led to credit rating changes than rating affirmations (James W. Wansley et al. 1985). Credit watches play an important part in the information-supplying role of the CRAs. Credit watches increase the firm's stakeholders' default prediction accuracy and acts as an information symmetry tool (Kee H.Chung et al. 2007). Kee H. Chung et al. (2007) argue that CRAs are more likely to issue credit watches when the demand for information is larger. Furthermore, they show that negative watches occur more often as opposed to positive watches. The preceding supports the well-regarded theory of loss aversion by Amos Tversky and Daniel Kahneman (1991) who argue that losses and disadvantages have a greater impact on a consumer's choice than do upside potentials. CRAs state that their goal is to change a rating notch only when financial fundamentals for solvency have changed. Credit watches allow the CRAs to divulge information to capital markets in advance of the credit rating changes whilst facilitating the CRA's "Through-the-cycle" approach. Boot, Milbourn, and Schmeits (2006) (BMS) test the hypothesis that rating changes preceded by rating watches are more significant informational events than credit changes not preceded by a credit watch. The results are ambiguous in that BMS concludes that credit watches are non-informational events whilst Kee H. Chung et al. (2007) finds the opposite. Kee H. Chung

et al. (2007) support the view that the information impact on the market is stronger for ratings changes preceded by watches with little market impact. Thus, the concluding remarks are that watches reduce the volatility of the information content of the ratings change event by smoothing the information costs over a longer period.

2.2.4 Credit Rating Upgrades, Downgrades & Affirmations

Following the watch period, the CRA will reevaluate the firm's current rating and produce either an upgrade, downgrade or affirmation of the rating. James W. Wansley (1985) also found that capital markets differentiate between firms which were listed for negative (positive) reasons and had their ratings change than firms having their ratings affirmed. Thus, capital market investors have shown their ability to measure a firm's probability of default based on publicly available information and to differentiate between the specific watches. Short selling has shown to begin as much as 12 months before the downgrade event for firms on negative watch hence further strengthening the hypothesis that capital markets are relatively independent of the CRA's opinion (Tyler R.Henry et al. 2014). Nickel et al. (2002) make the assumption that a credit rating change probability exists and that this probability is reflected within a certain time period, typically one year and that the simplest estimation approach involves dividing the number of firms or bonds that change from rating "α" to "β" in time period x with the total number of firms in rating class "α''. They argue that this unconditional estimation exists for investment grade firms and bonds and does not for non-investment grade firms as there are fewer speculative firms and bonds and the latter are highly volatile. Likewise, Lando & Skodeberg (2002) test the momentum effects of ratings changes in continuous time. They find that downgrades have a higher probability of being followed by a subsequent downgrade than do upgrades being followed by upgrades. Additionally, Lando & Skodeberg (2002) test for the duration effect of a rating. They observe that the longer a firm occupies a ratings class the less likely it is to transition into another ratings class.

2.2.5 Ratings Estimates

Credit ratings are ordinal and hence describe an order of variable importance. Ederington (1985) discusses the accuracy of four different estimation methods for credit ratings namely OLS, Ordered probit, unordered logit and the multivariate discriminate analysis (MDA). Recent studies have focused on ordered logit models (Blume et al (1998), Amato & Furfine (2004)) as it

describes continuous time events with an aim to model ratings. The method takes into account the ordered structure of the credit ratings and the variables' cross-influence across the ratings categories. Ederington (1985) argues that the OLS regression takes into account the ordered structures but fails by defining the credit ratings as an interval scale and hence foregoing the cross-influence of ratings across classes. The order probit model works in continuous time and works with an interval scale which, on the contrary of the OLS, changes in size but fails to capture the influence that credit ratings have across ratings classes once again. The unordered logit model on the other hand captures the importance of the variables across ratings classes but fails in characterizing the order of the ratings. Lastly, the MDA approach differs in being a conjoint method but poorly specifies the variables by using the same classification equation as the unordered logit model.

2.2.6 Contingencies and The Wealth Redistribution Hypothesis

Conflicts of interest arise when a downgrade occurs, the Wealth Redistribution Hypothesis (WRH) suggests that information arising from a deterioration in the firm's credit quality will shift value from creditors to equity holders as a consequence of the capital's contingencies. A body of research has been done on valuing equity and debt as contingent claims. Clifford W. Smith, Jr. (1975) review the option pricing approaches based on the Black-Scholes model and the Merton Model in valuing these contingent claims. Creditors and shareholders have diverging incentives and risk-appetites. Creditors expect a fixed return and react negatively to an increase in risk whilst shareholders' returns are seen as a call option with debt as the strike for which the value is increasing in risk (volatility). Shareholders benefit in that the lower credit quality may increase cash-flow volatility thus a limited shareholder downside and an unlimited upside potential will increase the value of the claim. Following this rationale, share prices would consequently be expected to increase ensuing a credit downgrade. Somewhat contradicting this rationale are Gonzales et al. (2004) & Thomas Bergh et al. (2006) who observe that abnormal returns significantly fall upon a credit downgrade. They also show that abnormal returns are highly significant for downgrades as opposed to upgrades and argue that investors do so as a consequence of their risk-averse nature.

2.2.7 Corporate Governance

A firm's default opinion depends on the availability of information creditable to solvency risk and agency costs (Bhojraj & Sengupta 2003). Corporate governance evokes the conflicts between creditors and shareholders and the decisions made in their respective considerations. Bondholders and shareholders seek diverging upside potentials with their capital investments, hence their risk-tolerances differ. Credit agencies portray creditors' risk awareness through an issuer's credit rating which is essentially an aggregate rating of the firm's ability to repay its default risky debt. Bhagat & Bolton (2008) find that better governance scores lead to better operating performance. This in turn, reduces the firm's return volatility and increases the firm's rating. Return volatility is highly negatively correlated with bond ratings and issuer credit ratings and highly positively correlated with bond yields (Bhagat & Bolton 2008). When managers have the power to make decisions regarding an investor's capital this creates conflicts and uncertainty between external stakeholders and managers. Supporting this argument are Liu & Jiraporn (2010) who find that when managers exercise more decision making power, ratings were observed to be generally lower and bond yields larger. The benefits of the separation of ownership and control are ambiguous and diverse in the literature. Joseph P. Ogden et al. (2003) posits that the benefits lie in managerial disciplining effects of the source of capital. Managers who control the firm's operations are instructed to promote shareholder interest, which in turn is costly to creditors. Furthermore, managers who are constrained by the costs of debt are now further engaged through the disciplining effects of debt by reducing incentives to manipulate earnings to their personal advantage.

3. Hypotheses Development

In chapter three we will highlight main theoretical background for development and generation of key hypotheses for our research.

3.1 Hypotheses Background

Increasing disclosure quality lowers the estimation risk by investors and hence firms can reduce the discount at which firms issue their shares (Diamond & Verrecchia 1991). As a consequence, incentives for investors to acquire costly private information is reduced and as a trade-off motives to acquiring the shares at a higher price are increased (Welker 1995). Compensation plans for managers are means by which boards tie agent's incentives to principals (shareholders). Profit-based compensation plans linked to earnings tie the executive's' wealth to performance and creates managerial incentives to bias earnings estimates in times of losses (Paul M. Healy et al. 1993). Gonzales et al. (2004), Thomas Bergh et al. (2006) & Ilia D. Dichev et al. 2001 show that significant negative stock abnormal returns are observed following downgrades. Additionally, evidence has shown that short-selling of the stock begins up to 12 months before the downgrade (Tyler R.Henry et al. 2014).

3.2 Hypotheses Formulation

Based on the aforementioned hypotheses background, we observe an opportune juncture in the literature. We recognize the importance of this gap within the 2 following hypotheses:

H$_1$: *The anticipation of a credit rating downgrade event leads to biased earnings estimates*

H$_2$: *Changes in financial disclosure quality lead to abnormal stock returns for downgraded firms*

4. Methodology

In this chapter, we will present the methodology of our research paper. The data sampling process for scoring transparency and disclosure of firms will be described. And lastly we will point out main variables in order to conduct our research

4.1 Research Design

We collected a sample of 40 U.S. firms with downgraded status between the years 2010 and 2015 (see Appendix B). We pick these years as to collect a uniform sample that have the same conditions post the FD regulation and the Sarbane-Oxley Act. The interval also provides us with a sample ensuing the 2008 financial crises and this strengthens the sample by portraying an economic recovery phase.

We gather downgraded firms through the Standard & Poor's credit rating history for corporate issuers which is available on their website to the public. The data provides firms and their specific debt tranches, their ratings, downgrade dates, credit watch direction and credit watch dates. We use only Standard & Poor's data as to mitigate any differences in the announcement effects of the CRAs. The observations correspond to "issuer credit ratings" which proxies the aggregate of the credit quality of the firm's debt. Thomas Bergh et al. (2006) classify each credit rating change into 3 subcategories according to the underlying motivation for the credit quality change, namely: ***change in leverage, financial performance and other***. We choose not to separate them as we intend to capture these differences within the regression model. The ratings are denominated in both domestic and foreign currency from which we choose to maintain only foreign denominated debt ratings as to allow the sample to describe a global currency equivalent rating. It is highly unusual for a foreign currency rating to diverge from a domestic currency rating. Nevertheless, we cross-checked and eliminated any differences between the ratings for both categories. One downgraded firm corresponds to one observation and represents our sample's initial filtering condition.

The following step involves collecting annual reports for the downgraded firms at interval t=-1 (annual report preceding credit event) and t=-2 (annual report preceding t-1 report). Assuming Tyler R.Henry et al.'s (2014) empirical results, we use the t-1 annual report as the "expected" biased proxy disclosure and t-2 as the unbiased disclosure report. Tyler R.Henry et al. (2014)

finds that short-selling of the stock can arise 12 months prior to the rating change and hence managers would be inclined to produce biased earnings estimates within this period as to cut negative information costs. Botosan (1997) state that although annual reports are only one means by which managers disclose information, it should serve as a good proxy for the overall disclosure quality. The argument is valid because annual reports have been shown to be positively correlated with the amount of disclosure provided by the media (Lang and Lundholm (1993). Pragmatically, Lang and Lundholm (1993) show that there is a significant rank-order between annual reports to other public disclosures and annual reports to investor relations disclosure, to respective coefficients of 0,62 and 0,41. Subsequently, Beyer et al (2010) state that management forecasts account for 66% of all accounting-based information made public.

The approach allows us to generate a panel data set with 40 cross-sections (firms) and 261 time periods representing the 261 working days average across 2010 and 2015. This approach allows us to contrast a time-series as a control group against a time-series as a treatment group across specific time intervals.

4.2 Data Collection

4.2.1 Standard and Poor's Transparency and Disclosure Study

Standard and Poor's produced a study in 2002 which examined the transparency and disclosure quality, T&D, for a sample of 1500 major public companies around the globe. The T&D study utilizes disclosure items that S&P's governance services uses for scoring firm's governance practices. The study focuses primarily on annual reports as the proxy for disclosure quality. The study extends the scope to include proxy statements as complementary sources of disclosure material. They report scores for annual reports separately and annual reports in unison with proxy statements as to differentiate between governance practices in jurisdictions. The study involves 98 disclosure items spread out amongst 3 general categories:

1. Ownership structure and investor rights
2. Financial Transparency and information disclosure
3. Board and management structure and process

Appendix A presents these 3 categories and their respective items. The study's results observe that U.S. disclosure levels were persistently high but that the disclosure level of the annual

reports separate of the proxy statements varied considerably. Furthermore, firms which made little use of the annual report as a disclosure tool used the proxy statements far more. The study observed that firms with larger T&D scores tended to have lower market risk and smaller book-to-market ratios. Financial disclosure was reported on more extensively than for the 2 other categories. They suggested that there was a clear indication that firms need to improve within these 2 categories. The firms that scored highest in their report had higher scores in the ownership and board categories of the checklist.

4.2.2 Accommodating the T&D study

Our study makes use of the T&D checklist approach to measure the quality of financial disclosure through both annual reports and proxy statements. For all downgraded firms, we apply the 98 disclosure items for t-1 and t-2 respectively. The aim is to contrast the "said" biased T&D scores at t-1 against the T&D scores at t-2. The 2 contrasting time intervals provides us with a change in the financial disclosure score, FDS between t-1 and t-2. This provides us with the ability to model a change in FDS as opposed to previous studies applying a cross-section approach to the modeling. The FDS culminates from the checklist's binary properties where the existence of a checklist item is given a 1 otherwise 0 and a score is created by dividing the quantity of 1's by the total of 1's and 0's.

4.2.3 Abnormal returns

Abnormal returns are obtained by recording the share prices for the downgraded firms and obtaining the daily returns which we then compare to an expected return model, namely the capital asset pricing model, CAPM.

$$E(R_i) = \alpha + \beta_1(R_M - \alpha)$$

Subtracting the expected returns from the realized returns yields an abnormal return equivalent. Alpha is the proxy for the risk-free rate of return (R_f).

$$AR_i = R_r - (\alpha + \beta_i(MR_i - R_f))$$

The US market had an average of 261 working days within our sample years. We record the returns between the time interval t-261 and t=0 (credit event) with the aim of capturing the

change in FDS within the time interval. We choose to use daily abnormal return intervals as shorter measurements intervals have been shown to detect informal effects more adequately (Morse 1984). The expected return model is adjusted periodically by adjusting the betas & risk-free yields on a daily basis. The market risk premiums are obtained from Stern.nyu.edu in a study conducted by Aswath Damodaran, a finance professor at the Stern School of Business of New York University, on a yearly basis where he computes yearly expected global risk premiums. Damodaran is a highly cited finance professor having written several well recognised works such as Damodaran on Valuation (1994) where he explains his risk premia computation approach.

4.2.4 Control Variables

Our main variable is financial disclosure score (FDS) and Abnormal returns (AR). Nonetheless consistent with prior studies, we intend to control for the natural log of firm size (lnfirmsize), the book-to-market ratio (B2M), the Leverage to market value of assets (Leverage) and beta (beta). Firm size is represented by the aggregation of total market equity and the book value of leverage as a proxy for the market value of debt. B2M is computed by dividing the book value of total assets by the market value of total assets. Leverage is computed by summing up all long and short-term debts and dividing the amount by the market value of total assets. Finally, betas are computed on a daily basis adjusted each day to the new market return and firm returns. We apply the Blume (1975) adjustment to beta to remove the effect of outlier values. These variables have been known to be significant risk factors (Easton 2004).

4.3 Accuracy

The T&D checklist is prone to user inaccuracies and is highly subjective to interpretation. The benefit of the checklist approach is that a single user will replicate his bias scoring scores across the disclosure items hence reducing the divergence in the quality of scoring one firm versus another. This maintains the variation in the disclosure quality across the sample, which is essential for inferences in the regression model.

Additionally, the approach is subject to inaccuracies between users. As a consequence, before beginning our checklisting approach, we tested our individual accuracies and compared our scores to each other. We recorded a 3% inaccuracy score between each other.

4.5 Event study

With the intention of testing the cross-sectional and time-series variation and thus permit us to understand the tendency behind disclosure quality for credit risk changes on shareholder returns, we perform a multiple regression on the collected data. We use the cross-section aggregated abnormal returns through the time-series as the dependent variable. Based on the arguments in the previous section, the multiple regression model is formulated as follows:

$$AR_i = \alpha + \beta_1 FDS + \beta_2 Leverage + \beta_3 Beta + \beta_4 B2M + \beta_5 LnSize + \varepsilon_j$$

The model is adapted from the approach applied in Musa Mangena et al. (2014)

FDS: This is a percentage score for financial disclosure quality. It captures whether the disclosure level has changed during the event window. The FDS range from 0 to 100% where the change in FDS is FDS at t-1 minus the FDS at t-2. We believe the coefficient to be positive for downgrades. The premise of which a decreasing disclosure quality would increase information asymmetries and consequently cause stock short-selling. AR would thus be expected to effectively share a positive slope with FDS.

Leverage: This variable represents both all long-term and short-term debts over total market assets. This will provide the general level of indebtedness of the firms within the sample. Its coefficients are expected to be positive for downgrades as past works have identified similar leverage relationships. The assumption is consistent with Easton (2004) and Botosan (1997).

Beta: This variable represents the riskiness of the firm as a function of the market. We use the S&P 500 index as the representative market proxy. The beta coefficient would be expected to hold a positive sign based on the Wealth Redistribution Hypothesis. This assumption is consistent with Hail (2002) and Botosan (2007).

B2M: This variable represents the book-to-market ratio for the sample. The variable is a measure of market anticipation. Larger firms are relatively more transparent and its shares more liquid, thus larger firms are less exposed to information asymmetry costs. We anticipate the coefficient to be negative for downgrades and less elastic for larger firms. The assumption is consistent with Gietzmann & Ireland (2005).

LnSize: This variable represents the market value for the sample firms. The variable complements the B2M variable in measuring the anticipation effect. A similar logic also applies in that larger firms are more transparent and less exposed to information asymmetry costs. The coefficient would be expected to be positive for downgrades as negative AR would increase as firm size decreases. The assumption is consistent with (Botosan 1997).

5. Results and Analysis

In this chapter we will present the finding of our research conducted from the methodology described in chapter four such as development of abnormal return, changes in financial disclosure scores and linear regression diagnostic. We will finalize this chapter with the analysis of the outcomes.

5.1 Development of Abnormal Returns

The abnormal returns observed over the 261 days prior to the credit downgrade had an aggregate daily mean of -0,0022% and a standard deviation of 11,19% when put together across all cross-sections. As a benchmark, the optimally diversified portfolio witnessed a daily mean abnormal return of 0,0197% with a standard deviation of 1,0037% across the 5 years between 2010 and 2015.
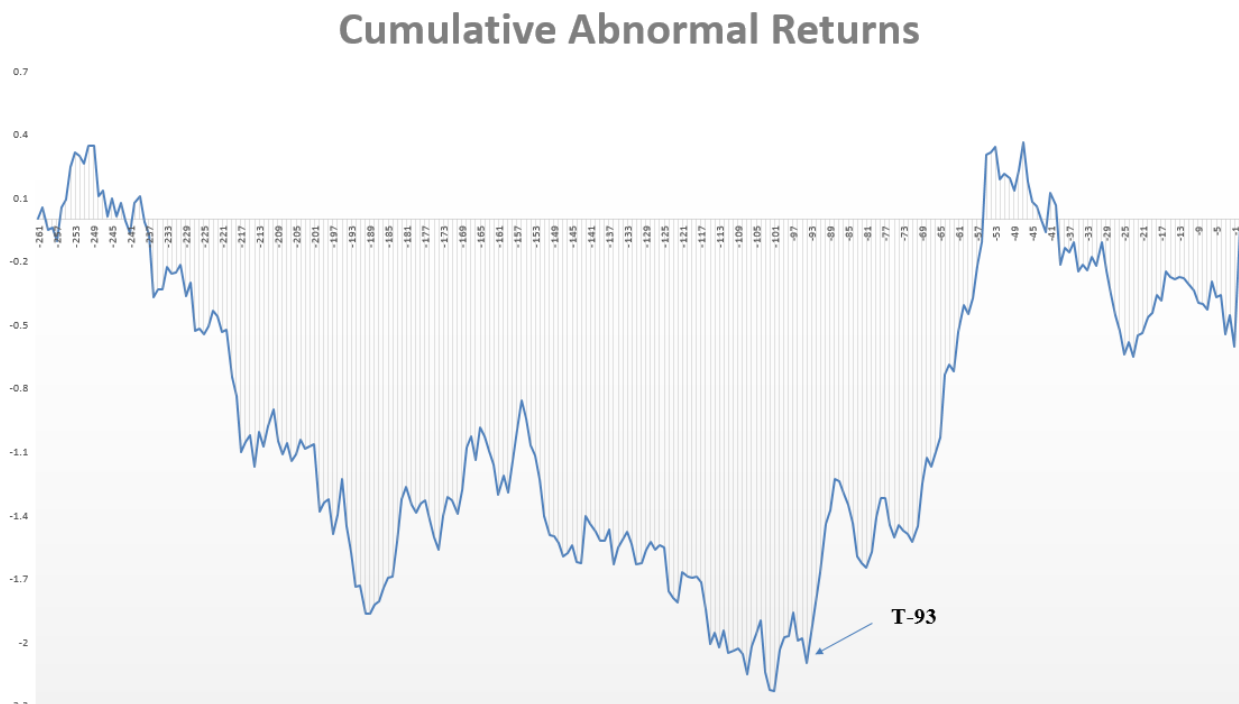
Graph 1. Cumulative Abnormal Returns

The graph above displays the cumulative abnormal returns of the portfolio for the sample of 40 downgraded firms. There is a clear pattern that the performance of the firms over the 261 days was poor, but it is insufficient to assume that the credit event is the leading cause. The problem

lies in that poor return performance may have been a leading cause for the downgrade event. The graph simply informs of the trends that such firms may have followed. The sample firms have their time periods intertwined in a manner that the representative date for firm A at T-1 is not the same as for firm B at T-1, but the time indicator represents the distance from the credit downgrade. This method aids in minimizing the macro-economic factors such as the business cycle and seasonality which may falsify any deductions. Graph 2, clearly shows that in the initial phase furthest away from the credit downgrade the returns are downward looking until a turning point at approximately T-93 where the returns seem to start improving. This is only short-lived till the returns 50 days from the downgrade perform poorly. Furthermore, it is intriguing to see that the abnormal returns rise suddenly in the 2 days prior to the downgrade by an amount of 4,88 standard deviations. Insider trading and speculation may explain this sudden spike, this would be in line with the Wealth Redistribution Hypothesis.

5.2 Changes in Financial Disclosure Scores

Table 1. Financial Disclosure Quality Changes

Changes in FDS	
Drop in FDS	26
Drop in A (Ownership structure and Investor rights)	23
Drop in B (Financial transparency and information disclosure)	15
Drop in C (Board and Management Structure and process)	17
Higher in FDS	10
Higher in A (Ownership structure and Investor rights)	9
Higher in B (Financial transparency and information disclosure)	12
Higher in C (Board and Management Structure and process)	16
Same in FDS	4
Same in A (Ownership structure and Investor rights)	8
Same in B (Financial transparency and information disclosure)	13
Same in C (Board and Management Structure and process)	7

The preceding table displays the number of firms within our sample that experienced deteriorations, improvements and remained the same in their T&D scores between the 2 disclosure periods. 26 firms out of our sample of 40 were seen as having a poorer disclosure score (FDS) in the annual & proxy reports in the period closest to the credit rating downgrade (T-1). The sample firms experienced more disclosure deterioration within the "Ownership structure and investor rights" section of the checklist with 23 deteriorations on a total of 40. The "Financial transparency and information disclosure" and the "Board and management structure and process" sections of the checklist reported 15 and 17 deteriorations respectively. Only 10 firms experienced improvements in the FDS scores amongst the sample, where the most improvements were found in the "Board and Management structure and Process'' section. Furthermore, only 4 firms had their disclosure levels remain the same. Section B, "financial transparency and information disclosure", seemed to be the most resilient section to any changes with 13 firms retaining at the same level. From this information, it seems possible that a decrease in the firm's credit health has an influential effect on the quality of financial disclosure. 36 firms out of 40, 90%, of the sampled firms had FDS changes between the 2 consecutive periods. Nonetheless, there remains the dilemma that financial disclosure quality changes may be a reoccurring theme for these sample firms and that the changes may not be attributed to solely the credit quality deterioration.

5.2.1 Descriptive statistics

Table 2. FDS Sample Statistics

	FDS T-1	FDS T-2
Mean	0.437	0.424
Median	0.435	0.418
Maximum	0.541	0.541
Minimum	0.353	0.329
Std.Dev.	0.054	0.049
Observations	40	40

The descriptive statistics of the 2 samples above show very similar means and standard deviations. We ran an F-test on the 2 series, FDS at T-1 and FDS at T-2

Where: H_0: not significantly different

H_1: significantly different

Letting T-1 (x) and T-2 (y) sample variances equal:

$$S_x^2 = \frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2$$

$$S_y^2 = \frac{1}{m-1}\sum_{i=1}^{m}(y_i - \bar{y})^2$$

$$F = \frac{S_x^2}{S_y^2} = 0,5283$$

Effectively, running an F-test for the null hypothesis being that the variances between the 2 samples are not significantly different yields a value of 0,5283. This confirms that the null cannot be rejected and that the 2 samples do not differ significantly. Consequently, the results from this f-stat confirms that we can reject the H_1 that "**The anticipation of a credit rating downgrade event leads to biased earnings estimates".** The sample did not perceive any differences between the 2 disclosure events and that managers were not inclined to bias their earnings estimates prior to a credit downgrade and/or a credit quality deterioration.

5.4 Diagnostic Testing
In the Classical Linear Regression Model approach, many truths about the data sample are assumed to hold. In this section, we test and correct for these assumptions with the goal to infer stronger sample representation within our BLUE (best linear unbiased estimate).

5.4.1 Multiple Regression Descriptive Statistics
Table 3. Descriptive Statistics

	AR	FDS	B2M	BETAS	LEVERAGE	LnFIRMSIZE
Mean	-0.0000054	0.428207	0.472095	0.650278	0.004271	9.313962
Median	-0.000131	0.423529	0.402093	0.640376	0.003464	9.089981
Maximum	0.616011	0.541176	1.825588	0.977593	0.021887	12.15835
Minimum	-0.125889	0.294118	-0.388917	0.349766	0.00000421	6.45556
Std. Dev.	0.018462	0.048089	0.344748	0.133649	0.003336	1.239992
Std. Dev. (%)	3418.9%	11.230%	73.025%	20.553%	78.108%	13.310%
Observations	10440	10440	10440	10440	10440	10440

The table shows that AR is highly volatile compared to its independent variables. The main cause of this are the formulations for the independents which are in part based on book values. This makes for a relatively static sample of observations. The independent's market value factors then create the variation that is needed within the sample.

5.4.2 Multicollinearity

The explanatory variables are expected to be orthogonal to each other, in other words the variables should not be correlated to one another. A small amount of correlation between the variables will always occur and will not cause a large loss of precision. Perfect multicollinearity occurs when there is an exact response by one variable to the movement of another. In this case, it would not be possible to use the data in the model. Near multicollinearity occurs when the variables are correlated to a certain extent but not perfectly. It is much more likely to observe near multicollinearity than perfect multicollinearity. In this case, we approached the issue by generating a correlation matrix; we use the general benchmark of 0.8 as the ceiling correlation which would render the variables non-inferable. A high correlation between the dependent and the independents is not a sign of multicollinearity.

Table 4. Correlation Matrix

	AR	FDS	B2M	BETAS	LEVERAGE	LnFIRMSIZE
AR	1.000					
FDS	-0.011	1.000				
B2M	-0.015	0.089	1.000			
BETAS	-0.036	0.106	-0.211	1.000		
LEVERAGE	0.005	-0.186	0.231	0.009	1.000	
LnFIRMSIZE	-0.022	0.047	-0.121	0.363	-0.244	1.000

The table shows no significant multicollinearity issue between the independent variables. The correlation matrix does not disprove the presence of multicollinearity but it gives clues as to whether the problem could be found between any 2 variables. The results suggests that it would be unlikely.

5.4.3 Pooling the Panel data

The benefits of this sample is that it is ordered across 40 cross-sections and 261 time periods hence providing 10 440 points of observation. Consequently, the large number of observations lead to more variation, degrees of freedom, higher efficiency, less collinearity and generalizability. The simplest approach to working with panel data is to estimate a single pooled regression on all observations at once. A chow test would permit us to test for the data's poolability. The test involves:

Defining the unrestricted model as N (40) times-series regressions for each entity

$$AR_1 = \alpha_1 + \beta_1 FDS_{1t} + \beta_2 Leverage_{1t} + ... + u_{1t}$$
$$AR_2 = \alpha_2 + \beta_3 FDS_{2t} + \beta_4 Leverage_{2t} + ... + u_{2t}$$
...
$$AR_{Nt} = \alpha_N + \beta_N FDS_{Nt} + \beta_N Leverage_{Nt} + ... + u_{Nt}$$

The α_i, β_i and u_i coefficients will be estimated differently for each cross-section where we want to aggregate the 40 different Residual Sum of Squares (RSS) for each individual regression.

The null hypothesis of this test is that FDS1 = FDS2 = FDS3 and that also applies to all our independents. Non-rejection of the null would imply that the data is poolable into a large cross-section.

Pooled model: $AR_{it} = \alpha + \beta_1 FDS_{it} + \beta_2 Leverage_{it} + ... + u_{it}$

The RSS of this restricted regression is RSS$_R$- This is effectively an F-statistic which is defined as:

$$F = \frac{RSS_R - (RSS_1 + RSS_2 + ... + RSS_{40})}{(RSS_1 + RSS_2 + ... + RSS_{40})} * \frac{N(T-k)}{(N-1)k}$$

$$F = \frac{RSS_R - SSE_i}{SSE_i} * \frac{N(T-k)}{(N-1)k}$$

Where SSE = (RSS$_1$ + RSS$_2$+...+RSS$_{40}$)

Chow Test statistic

$RSS_r = 3,55094$

$SSE_i = 3,41816$

$F - stat = 0,220112$

The results of the Chow test give us an F-stat which is insignificant hence we cannot reject the null. The conclusion is that the data is approachable through generating a large cross-section regression of both the cross-section and period dimensions together.

5.4.4 Heterogeneity & Autocorrelation

Initially, we ran an OLS to provide us with a "benchmark'' regression to look for potential problems such as heterogeneity, heteroscedasticity and autocorrelation in the residuals.

Table 5. "Benchmark" OLS

Dependent Variable: AR
Method: Panel Least Squares
Total panel (unbalanced) observations: 10440

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDS	-0.001029	0.003900	-0.263839	0.7919
B2M	-0.001407	0.000560	-2.510521	0.0121
BETAS	-0.005543	0.001428	-3.881364	0.0001
LEVERAGE	0.056223	0.057243	0.982180	0.3260
LnFIRMSIZE	-3.03E-09	5.02E-09	-0.603939	0.5459
C	0.004538	0.001849	2.455038	0.0141

R-squared	0.001999	Mean dependent var	-5.40E-06
Adjusted R-squared	0.001520	S.D. dependent var	0.018462
S.E. of regression	0.018448	Akaike info criterion	-5.147161
Sum squared resid	3.550940	Schwarz criterion	-5.142992
Log likelihood	26874.18	Hannan-Quinn criter.	-5.145753
F-statistic	4.179315	Durbin-Watson stat	1.894812
Prob(F-statistic)	0.000854		

The first results suggest that FDS is insignificant, that B2M negatively affects AR, that betas negatively affect AR, that leverage and firmsize are insignificant. The R^2 is very low and suggests that the model has very weak explanatory power. The Durbin-Watson statistic suggests

weak autocorrelation problems. The benchmark D-W statistic lies around 2 for non-rejection of the null.

The Durbin-Watson approach tests:

$H_0: \rho = 0$ and $H_1: \rho \neq 0$

Hence, it can be assumed that the null cannot be rejected (DW close to 2) which signifies that autocorrelation is not a problem for this sample. It is important to bear in mind that the D-W stat is ill suited for accounting for panel data structures and could hence mean that the data is still prone to autocorrelation problems.

Heterogeneity occurs when the residuals for the observations are systematically either below or above zero. That would imply that errors are positive for some firms while being negative for others.

Graph 2. Residuals
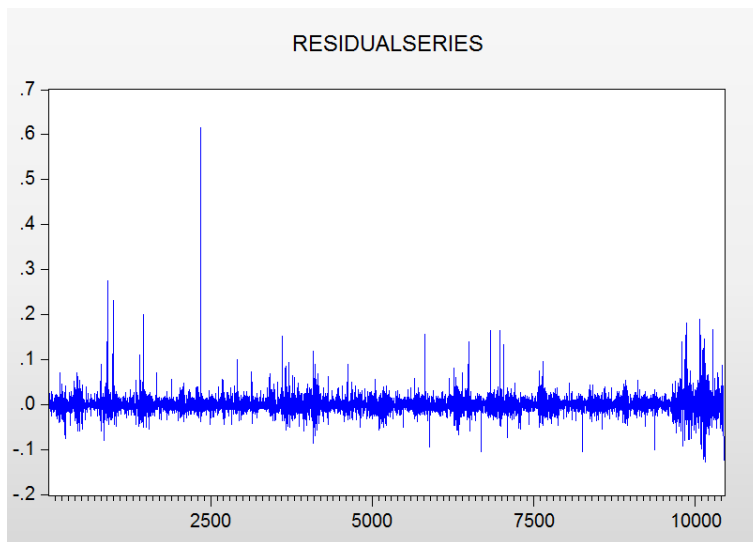
Graph 1 is a representation of the regression residuals. Graph 1 clearly shows that the residuals are not homogenous and that the errors lie systematically below or above zero. This is an initial sign of heterogeneity within the model. Some outlier values are additionally observable for which we treat by winsorizing the upper and lower 1% of the normal distribution. OLS estimates the parameters in order that across the sample the residuals will have a mean of zero. In this case there are some clear indications that systematic average deviations from zero are present for both the cross-section and the period dimensions. Furthermore, graph 1 shows that the residuals do not maintain a specific trend and are subsequently not dependent on each other hence further strengthening the Durbin-Watson results.

5.4.5 Introducing Dummy variables

A dummy variable is used as a tool to sort data into diverging categories. They are binary variables in that they take on the either one value or another usually 0 or 1. They are used to class data into a category with a specific characteristic and one without that specific characteristic. In this case, we introduced dummy variables within the cross-section and the period dimension to isolate systematic error deviations from each other.

Table 6. CS & Period Fixed Effects

Dependent Variable: AR
Method: Panel Least Squares
Total panel (unbalanced) observations: 10440

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDS	-0.017071	0.011888	-1.435980	0.1510
B2M	-0.000825	0.001656	-0.497873	0.6186
BETAS	-0.009645	0.007462	-1.292610	0.1962
LEVERAGE	-0.251652	0.178318	-1.411256	0.1582
LnFIRMSIZE	1.50E-07	6.43E-08	2.326708	0.0200
C	0.011360	0.008024	1.415739	0.1569

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.352913	Mean dependent var	-5.40E-06
Adjusted R-squared	0.261512	S.D. dependent var	0.018462
S.E. of regression	0.015865	Akaike info criterion	-5.333882
Sum squared resid	2.302371	Schwarz criterion	-4.435545
Log likelihood	29135.87	Hannan-Quinn criter.	-5.030451
F-statistic	3.861181	Durbin-Watson stat	1.880436
Prob(F-statistic)	0.000000		

This improved the R^2 of the regression which showed that the model needs to be controlled for either the cross-section or the period. Additionally, the coefficients' p-values have generally improved compared to the unconstrained regression.

The effect of using dummy variables is to push the residuals toward zero and effectively reducing the error's systematic deviations from zero. The fixed effects dummies modify the independents by demeaning each variable by its respective means, this process is also called the *"Within Transformation"'*. The dummy performs this by categorizing and explaining the average deviation of the errors. The dummies take up a binary value and hence the coefficients that these dummies take on will represent the average distance that the residuals are from zero for each cross-section. This approach allows us to also confirm the presence of heterogeneity by evaluating the relative size of the coefficients. We follow this application with a redundant fixed effects test. The redundant fixed effects test will essentially report the significance of the dummy within the cross-section and the period. It will report if both or a single dimension needs to be controlled for.

Table 7. Redundant Fixed Effects Test

Redundant Fixed Effects Tests
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.777899	(39,9147)	0.8379
Cross-section Chi-square	34.569293	39	0.6721
Period F	3.930009	(1248,9147)	0.0000
Period Chi-square	4482.038073	1248	0.0000
Cross-Section/Period F	3.854229	(1287,9147)	0.0000
Cross-Section/Period Chi-square	4523.370330	1287	0.0000

The test concludes that period dummies are highly significant, suggesting that heterogeneity is highly present and should be controlled for within the period dimension. The test also conveys that cross-section dummies are not significant and that heterogeneity is not an issue within the cross-sections.

Using the Hausman test, we can test the relevance of using random effects for solving our residual variation. First, we run the regression with period random effects.

Table 8. Random Effects Specification Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDS	-0.002947	0.003460	-0.851747	0.3944
B2M	-0.001444	0.000520	-2.778094	0.0055
BETAS	-0.006236	0.001425	-4.374521	0.0000
LEVERAGE	0.069691	0.050622	1.376695	0.1686
LnFIRMSIZE	-1.60E-09	4.78E-09	-0.335346	0.7374
C	0.005672	0.001719	3.299833	0.0010

Weighted Statistics

R-squared	0.002843	Mean dependent var	-7.41E-06
Adjusted R-squared	0.002365	S.D. dependent var	0.015849
S.E. of regression	0.015830	Sum squared resid	2.614766
F-statistic	5.949688	Durbin-Watson stat	1.874890
Prob(F-statistic)	0.000017		

The period random effects have effectively improved the significance of FDS, B2M, Betas, Leverage but worsened the p-value for Firmsize as compared to the benchmark OLS. The overall model's significance (F-stat) on the other hand has significantly improved in significance compared to the benchmark and still lies at the 1% level.

The second step involves generating a "correlated random effects" (Hausman test) on this period random effects specification where:

H_0: Random effects model is well-specified

H_1: Random effects model is mis-specified

Table 9. Correlated Random Effects - Hausman Test

Test period random effects

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random		4.100909	5	0.5350

Period random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
FDS	-0.003620	-0.002947	0.000001	0.3561
B2M	-0.001628	-0.001444	0.000000	0.4577
BETAS	-0.006676	-0.006236	0.000000	0.5158
LEVERAGE	0.075854	0.069691	0.000116	0.5672
LnFIRMSIZE	-0.000000	-0.000000	0.000000	0.8714

The p-value (0,5350) of the Hausman test for random effects on the period dimension cannot reject the null that the model is well-specified. Hence, the model is well specified with random effects. Random effects are as a rule of thumb preferable to fixed effects because they save degrees of freedom and are more efficient in ridding an optimal amount of "within-period" or "within-cross-section" correlation between the residuals. Although random effects are more efficient, random effects have been shown to work poorly for the period dimension and hence fixed-effects are usually preferable when given the choice. We hence chose to use the fixed period effects for the model at hand.

Table 10. The Period Fixed Effects model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDS	-0.003620	0.003536	-1.023708	0.3060
B2M	-0.001628	0.000576	-2.828120	0.0047
BETAS	-0.006676	0.001578	-4.230236	0.0000
LEVERAGE	0.075854	0.051755	1.465643	0.1428
LnFIRMSIZE	-1.22E-09	5.33E-09	-0.228998	0.8189
C	0.006360	0.001758	3.618110	0.0003

Effects Specification

Period fixed (dummy variables)

R-squared	0.350766	Mean dependent var		-5.40E-06
Adjusted R-squared	0.262209	S.D. dependent var		0.018462
S.E. of regression	0.015858	Akaike info criterion		-5.338042
Sum squared resid	2.310007	Schwarz criterion		-4.466801
Log likelihood	29118.58	Hannan-Quinn criter.		-5.043763
F-statistic	3.960884	Durbin-Watson stat		1.879914
Prob(F-statistic)	0.000000			

The period fixed effects model shows a very strong model significance with the F-stat at the 1% level. The FDS, Leverage and Firmsize are not significant whilst B2M and Betas are significant.

5.4.6 Heteroscedasticity

Heteroscedasticity refers to the variability of a variable across the range of values on a second variable. It can invalidate the significance of the coefficients because OLS assumes that the variance is constant and finite over all values of the independents. To test for it, we ran a manual representation of the Breusch-Pagan Godfrey test where we once again obtain the residuals of the model and run them against the independents without any effects.

Table 11. Manual Breusch-Pagan Godfrey Test

Dependent Variable: RESIDFP_SQ
Total panel (unbalanced) observations: 10440

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDS	-0.000154	0.000639	-0.240453	0.8100
B2M	-0.000134	9.18E-05	-1.458143	0.1448
BETAS	-0.001244	0.000234	-5.313780	0.0000
LEVERAGE	0.019702	0.009382	2.099877	0.0358
LnFIRMSIZE	-7.16E-10	8.22E-10	-0.870467	0.3841
C	0.001093	0.000303	3.606131	0.0003

R-squared	0.003536	Mean dependent var		0.000221
Adjusted R-squared	0.003058	S.D. dependent var		0.003028
S.E. of regression	0.003024	Akaike info criterion		-8.764135
Sum squared resid	0.095392	Schwarz criterion		-8.759966
Log likelihood	45754.78	Hannan-Quinn criter.		-8.762727
F-statistic	7.404746	Durbin-Watson stat		1.165266
Prob(F-statistic)	0.000001			

The significant F-stat suggests that the residual variance is non-constant in the independents hence indicating the presence of heteroscedasticity. To solve for this inconsistency, we apply the White's constant standard errors to the period dimension. White's constant standard errors will allow us to fit this model which contains heteroscedastic residuals. Doing so fulfills the requirements under the OLS assumptions for equal variance across all independents.

Table 12. Period Fixed Effects and White's Period Standard Errors Correction

Dependent Variable: AR
Method: Panel Least Squares
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDS	-0.003620	0.002407	-1.503665	0.1327
B2M	-0.001628	0.000328	-4.955224	0.0000
BETAS	-0.006676	0.000964	-6.924615	0.0000
LEVERAGE	0.075854	0.031117	2.437745	0.0148
LnFIRMSIZE	-1.22E-09	2.59E-09	-0.470999	0.6377
C	0.006360	0.001411	4.508070	0.0000

Effects Specification

Period fixed (dummy variables)

R-squared	0.350766	Mean dependent var		-5.40E-06
Adjusted R-squared	0.262209	S.D. dependent var		0.018462
S.E. of regression	0.015858	Akaike info criterion		-5.338042
Sum squared resid	2.310007	Schwarz criterion		-4.466801
Log likelihood	29118.58	Hannan-Quinn criter.		-5.043763
F-statistic	3.960884	Durbin-Watson stat		1.879914
Prob(F-statistic)	0.000000			

This Best Linear Unbiased Estimate (BLUE) is highly significant on an aggregate level. The final element to control for is the OLS assumptions of normality. In order for the linear model to work, the residuals of our sample data must be normally distributed. An advantage with using panel data such as in our case is that the model manages many observations at once and this causes the residuals to approach the mean and hence mimic the normal distribution. This is an assumption based on the Central Limit Theorem (CLT) which states that the mean of a sufficiently large number of residuals of independent variables will be approximately normally

distributed. We deem our sample of 10 440 observations to have normally distributed residuals across the firms and the time periods.

5.4.7 Endogeneity

The presence of endogeneity occurs when the explanatory variables are correlated to the error term. This biases inferences from empirical studies dealing with multiple variable regressions.

Our model is adapted from the model applied in MUSA Mangena (2014) where they test this possible endogeneity bias. Their procedure involves running a two-stage least squares regression where they introduce instrumental variables related to financial disclosure, namely analyst following, listing age, sector, return on assets, and multiple listing status. Botosan (1997), Li et al (2008), Orens et al. (2009) and Richardson & Welker (2001) had previously confirmed that these variables are associated to disclosure. In the first stage of the approach, they run the regression on their disclosure scores based solely on the exogenous variables against their dependent variable where they introduce the aforementioned instrumental variables. On the second step of the approach, they re-estimate their model but now with the help of the predicted disclosure value from the first step. They observe that the coefficients remain symmetrical to the ones obtained in the original model. Hence MUSA Mangena (2014) concludes that endogeneity does not significantly influence their results. We draw a parallel to our study which utilizes a very similar approach and hence we assume that endogeneity is not a significant problem within our multiple model.

6. Discussion

The last chapter presents the conclusion of our research. It looks over the possible errors and suggests the potential improvements. Furthermore, we will highlight several recommendations for future studies on the topic.

6.1 Best Linear Unbiased Estimates

Table 13. Coefficients & Significance

Variable	Coefficient
Constant	0.006512
	(4.422236)***
FDS	-0.00361
	(-1.502007)
B2M	-0.00162
	(-4.829432)***
BETAS	-0.006737
	(-5.519104)***
LEVERAGE	0.074774
	(2.223395)**
LnFIRMSIZE	-0.0000156
	(-0.149946)

*Significant at the 10% level. **Significant at the 5% level. ***significant at the 1% level

By contrasting 2 samples of FDS, we find that managers do not purposefully bias their earnings estimates in periods prone to credit deterioration. This is consistent at the 5% level of significance. Furthermore, our Best Linear Unbiased Estimate finds 3 significant values on which deductions can be made for H_2. First, FDS is assumed insignificant with a p-value of 0,1327. This does not permit us to make a relevant statistical assumption on the relationship that FDS hold with regards to AR. This is consistent with Musa Mangena (2014) and others studies on the matter (e.g. Amir & Lev (1996), Botosan (1997), Richardson & Welker (2001) & espinosa & Trombetta (2007)). They consistently show that the relationship between financial disclosure and the cost of capital is negative and only significant at a minimum of the 10% level. Moreover, the aforementioned studies separate disclosure quality into 2 separate sub-sections. The sub-sections include intellectual capital, IC, and financial disclosure, FD, which are argued to share a peculiar relationship. The Chartered Institute of Management Accountants (2001) defines IC as the knowledge base of the firm. This comprises supply-chain relationships, technological advantages, human capital and factors which lead to competitive advantages. Amir & Lev (1996) and Musa Mangena (2014) show that independently FD does not generate value in the eyes of the investors. IC on the other hand shares a significant negative coefficient with the cost of equity capital. They posit that an optimal combination of IC and FD disclosure in unison exists for each firm. Furthermore, when both elements are measured in combination they were successful in finding a significant relationship between disclosure quality and the cost of equity capital. The checklist approach for measuring financial disclosure in this thesis originates from a model which does not distinguish between both IC and FD.

B2M is highly significant at the 1% level with a negative coefficient of -0,001620. This result is consistent with our predictions based on the literature. As aforementioned, B2M is a measure of market anticipation and holds a direct relationship with an investor's valuation of the firm in question. The inference describes that firms with larger market valuations relative their book values experience less abnormal returns and hence lower value firms would experience larger information costs as a consequence of downgrades and credit deterioration. Musa Mangena (2014) finds that B2M holds a positive relationship with regards to the cost of equity capital which suggests that lower market values relative book values increase the information asymmetries between the firm and equity investors. Our model suggests that B2M holds a

negative relationship with AR. Abnormal Returns are a derivative of the cost of equity as both portray an investor's exposure to the stock. AR and the cost of equity would be expected to hold a negative relationship and thus a decrease in AR as a consequence of B2M is in line with the conclusions that Musa Mangena (2014) and Bergh & Lennstöm (2006) report.

Beta is highly significant at the 1% level with a negative coefficient of -0,006737. This implies that beta as a proxy for firm risk would share a negative relationship with AR. This contradicts our predictions and the predictions assumed by the Wealth Redistribution Hypothesis (WRH). The WRH states that the higher probability of defaults on the debts would consequently reduce the value of the creditors' claims whilst increasing the value of the shareholder's option on the firm's equity. The empirical results show the contrary and that an increase in the firm risk leads to abnormal negative returns for shareholders. This is in line with the loss aversion theory of Tversky and Kahneman (1991) where shareholders would be expected to perceive an increased probability of losing their stake more than the increase in the value of the option.

Leverage proxied by long and short-term debt to market value of assets was observed to hold a positive coefficient (0,074774) with regards to AR. The coefficient is significant at the 5% level. The result is in line with our expectations and past research on the matter. The WRH also suggests that this relationship exists as leverage would consequently increase the volatility of the cash-flows and hence increase the shareholder's equity option.

Firmsize was found to be highly insignificant. We tested removing firmsize from the model to observe if this variable was diluting the variability of our additional explanatory variables. We found that firmsize was not eliminating the significance of our additional explanatory variables. Larger firms would be expected to have less information asymmetries between them and investors. Musa Mangena (2014) and others show that Firmsize shares a negative slope with the cost of equity capital. In accordance, Firmsize should share a positive slope with abnormal returns as AR is negatively related to the cost of equity capital. Larger estimation risk leads to a larger required rate of return by equity investors, thus less estimation risk as a consequence of less information asymmetries by larger firms would increase the frequency of equity investors going long the stock. Correspondingly, Firmsize has been shown to be relatively related to AR. Our results on Firmsize are nonetheless consistent with the conclusions found in Standard and Poor's T&D study (2002). They find that T&D rankings based on regulatory filings are not correlated to Firmsize.

6.2 Conclusion

We conclude that disclosure quality does not significantly change prior to a credit downgrade for U.S. firms. Furthermore, the results are inconsistent with any disclosure influence on the stock returns.

We re-confirm evidence that B2M, betas, and Leverage have significant effects on equity returns in the context. B2M and Leverage results are consistent with our expectations whilst the direction of the Betas coefficient is inconsistent with our expectations. Furthermore, B2M and Leverage are consistent with past works and theoretical opinions. On the other hand, Betas show that their relationship with AR is more in line with the theory of "Loss Aversion" than the WRH. The coefficient's direction is nonetheless in line with the results reported in Musa Mangena (2014) and Bergh & Lennström (2006).

When controlling for the cross-sectional and period dimensions, FDS wasn't statistically significant enough to draw any conclusions upon the matter. The empirical results were nonetheless consistent with the stated directions and significances stated in previous works. Financial disclosure will continue to be a crucial factor in an investor's decision making process and researchers will continue in attempting to explain its fundamental role in capital markets.

The aim of this thesis was to answer the following research questions about financial disclosure:

H_1: *The anticipation of a credit rating downgrade event leads to biased earnings estimates*
H_2: *Changes in financial disclosure quality lead to abnormal stock returns for downgraded firms*

Based on the results, we can conclude that there is no systematic link between financial disclosure quality and the 1year period prior to a credit rating downgrade. The first hypothesis can thus be rejected that the anticipation of a credit downgrade event leads to biased earnings estimates.

Additionally, this thesis seeks to observe if financial disclosure quality changes has an impact on an investor's valuation of the stock. We can conclude that the empirical results are inconclusive on the matter. The results nonetheless re-confirm prior conclusions on the significance of the variables within similar multiple variable models. The second hypothesis stating that changes in financial disclosure quality lead to abnormal stock returns for downgraded firms is hence inconclusive and is rejected for the sample in question.

In the aftermaths of large disclosure scandals, this thesis provides insights on the links between degrading credit quality and a manager's incentives with regards to disclosure. It approaches disclosure through the perception of an equity investor and the extent to which they perceive a deterioration in the quality of disclosure on their estimation risk.

6.3 Suggestions for Further Research

6.3.1 Sources of error

Antonakis et al. States that most researchers ignore one key empirical problem for measuring parameter estimates, namely endogeneity. He also states that researchers fail to correct for 66% to 90% of estimation conditions that may foist the validity of the results. In our model, we limit our diagnostic of endogeneity by drawing a link to a similar model. The study, Musa Mangena (2014), from which the model originates is re-applied here in a similar fashion. By assuming the model is similar enough to draw conclusions on their exogeneity test (2-stage-least-square), we do not disprove the existence of endogeneity.

Financial disclosure is a highly debated issue which has increasingly had more importance for researchers in recent years. Due to the nature of the quality of financial disclosure, the topic becomes highly discretionary in its approaches to quantifying it. We made use of the S&P's T&D model which was applied in a large scale study in 2002. Li, Pike and Haniffa (2008, Singh and Van der Zhan (2007), Kristandl and Bontis (2007), Orens et al. (2009) and Musa Mangena (2014) make use of another checklist approach to measuring the financial disclosure quality. They disaggregate disclosure into intellectual capital (IC) and financial disclosure where instead the checklist is comprised of 96 items with 61 IC items and 35 financial disclosure items. Their model differs in how they approach an investor's perception of asset value. They claim that a combination of IC and Financial disclosure items have a multiplying effect when bundled up. The choice for measuring financial disclosure can hence induce error.

Furthermore, the checklist approach is susceptible to user inaccuracies. As aforementioned, we measured a 3% inaccuracy over the 98 checklist items when collecting the data. The inaccuracies of a checklist approach is continuously biased to the user's discretion, but an advantage lies in that a single user will repeat his checklist item assumptions across all graded disclosures which maintains a steady variability across all cross-sections for regression statistics.

Abnormal returns are computed using an expected return model which makes AR dependent on the efficiency of that model, namely the Capital Asset Pricing Model. The CAPM is a well-established expected return model which has been applied in countless researches.

Finally, firms across industries will perform differently and the approach in this thesis does not take into account the possible industry trends with regards to credit rating downgrades.

6.3.2 Improvements

In this thesis, we have attempted to observe the effects of disclosure quality changes for downgraded firms on equity returns. There exists only a limited amount of research on the area and none on this specific topic. Due to the specificity of the subject, it would be valuable to obtain increasing information in the overarching issues that exist.

Markets are assumed to be efficient and more compelling tests about the inefficiencies of financial markets would strengthen the basis for understanding how abnormal returns are connected to financial disclosure. Furthermore, specific issues such as insider trading and constraints on short-selling would add value to the abnormal returns response to external events.

A greater understanding of which models that mimic how investors compute a firm's probability of defaults would increase the ability to cancel out the effects that downgrades have on capital markets.

Financial disclosure quality in this thesis does not take into account the multiplying effect that intellectual capital has on subsequent financial disclosure items and so a model that encompasses disclosure quality in a more suitable manner is needed for further improving the reliability of the disclosure proxy.

The quality of the results would improve if the model was augmented by encompassing a control group. Correspondingly, a difference-in-difference approach would enhance the inference making potential of this study. It would simultaneously remove the endogeneity bias whilst eliminating the downgrade specific effects.

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Appendix A
Standard and Poor's Disclosure Checklist

Ownership Structure and Investor Rights
Transparency of ownership
1. Provide a description of share classes?
2. Provide a review of shareholders by type?
3. Provide the number of issued and authorized but non-issued ordinary shares? (2)
4. Provide the par value of issued and authorized but non-issued ordinary shares? (2)
5. Provide the number of issued and authorized but non-issued shares of preferred, nonvoting, and other classes? (2)
6. Provide the par value of issued and authorized but non-issued shares of preferred, non-voting, and other classes? (2)
7. Does the company disclose the voting rights for each class of shares?

Concentration of ownership
8. Top 1, 3, 5, or 10 shareholders disclosed? (4)
9. Shareholders owning more than 10, 5, or 3 percent is disclosed? (3)
10. Does the company disclose percentage of cross-ownership?

Voting and shareholder meeting procedures
11. Is there a calendar of important shareholder dates?
12. Review of shareholder meetings (could be minutes)?
13. Describe procedure for proposals at shareholder meetings?
14. How shareholders convene an extraordinary general meeting?
15. How shareholders nominate directors to board?
16. Describe the process of putting inquiry to board?
17. Does the annual report refer to or publish Corporate Governance Charter or Code of Best Practice? (2)
18. Are the Articles of Association or Charter Articles of Incorporation published?

Financial Transparency and Information Disclosure
Business focus
19. Is there a discussion of corporate strategy?
20. Report details of the kind of business it is in?
21. Does the company give an overview of trends in its industry?
22. Report details of the products or services produced/provided?
23. Provide a segment analysis, broken down by business line?
24. Does the company disclose its market share for any or all of its businesses?
25. Does the company report basic earnings forecast of any kind? In detail? (2)
26. Disclose output in physical terms?
27. Does the company give an output forecast of any kind?
28. Does the company give characteristics of assets employed?
29. Does the company provide efficiency indicators (ROA, ROE, etc.)?
30. Does the company provide any industry-specific ratios?
31. Does the company disclose its plans for investment in the coming years?
32. Does the company disclose details of its investment plans in the coming years?

Accounting policy review
33. Provide financial information on a quarterly basis?
34. Does the company discuss its accounting policy?
35. Does the company disclose accounting standards it uses for its accounts?

36. Does the company provide accounts according to the local accounting standards?
37. Does the company provide accounts in alternate internationally recognized accounting method? Does the company provide each of the balance sheet, income statement, and cash-flow statement by internationally recognized methods? (4)
38. Does the company provide a reconciliation of its domestic accounts to internationally recognized methods?

Accounting policy details
39.Does the company disclose methods of asset valuation?
40. Does the company disclose information on method of fixed assets depreciation?
41. Does the company produce consolidated financial statements?

Related party structure and transactions
42. Provide a list of affiliates in which it holds a minority stake?
43. Does the company disclose the ownership structure of affiliates?
44. Is there a list/register of related party transactions?
45. Is there a list/register of group transactions?

Information on auditors
46. Does the company disclose the name of its auditing firm?
47. Does the company reproduce the auditors' report?
48. Disclose how much it pays in audit fees to the auditor?
49. Disclose any non-audit fees paid to auditor?

Board Structure and Process
Board structure and composition
50. Is there a chairman listed?
51. Detail about the chairman (other than name/title)?
52. Is there a list of board members (names)?
53. Are there details about directors (other than name/title)?
54. Details about current employment/position of directors provided?
55. Are details about previous employment/positions provided?
56. Disclose when each of the directors joined the board?
57. Classifies directors as an executive or an outside director?

Role of the Board
58. Details about role of the board of directors at the company?
59. Is there disclosed a list of matters reserved for the board?
60. Is there a list of board committees?
61. Review last board meeting (could be minutes)?
62. Is there an audit committee?
63. Disclosure of names on audit committee?
64. Is there a remuneration/compensation committee?
65. Names on remuneration/compensation committee)?
66. Is there a nomination committee?
67. Disclosure of names on nomination committee?
68. Other internal audit function besides audit committee?
69. Is there a strategy/investment/finance committee?
Standard & Poor's Transparency and Disclosure

Director training and compensation
70. Disclose whether they provide director training?
71. Disclose the number of shares in the company held by directors?
72. Discuss decision-making process of directors' pay?

73. Are specifics of directors' salaries disclosed (numbers)?
74. Form of directors' salaries disclosed (cash, shares, etc.)?
75. Specifics disclosed on performance-related pay for directors?

Executive compensation and evaluation
76. List of the senior managers (not on the board of directors)?
77. Backgrounds of senior managers disclosed?
78. Number of shares held by the senior managers disclosed?
79. Disclose the number of shares held in other affiliated companies by managers?
80. Discuss the decision-making of managers' (not board) pay?
81. Numbers of managers' (not on board) salaries disclosed?
82. Form of managers' (not on board) salaries disclosed?
83. Specifics disclosed on performance-related pay for managers?
84. Details of the CEO's contract disclosed?

Appendix B

List of companies in the sample

№	Company	DG	Industry
1	AT&T	2015-02-02	Telecom
2	BIG LOTS	2012-11-09	Retail - Consumer Staples
3	AMGEN	2013-08-27	Biotech & Pharma
4	APACHE	2015-04-15	Oil, Gas & Coal
5	AUTOMATIC DATA PROC.	2014-04-10	Technology Services
6	AVON PRODUCTS	2012-03-16	Consumer Products
7	BAXTER INTL.	2012-12-06	Medical Equipment & Devices
8	BECTON DICKINSON	2011-11-02	Medical Equipment & Devices
9	BOARDWALK PIPELINE PTNS.	2014-02-10	Oil, Gas & Coal
10	BROWN-FORMAN 'B'	2012-11-28	Consumer Products
11	BUCKEYE PARTNERS	2013-01-28	Oil, Gas & Coal
12	DARDEN RESTAURANTS INC.	2013-10-02	Gaming, Lodging & Restaurants
13	DUKE ENERGY INDIANA INC.	2012-07-25	Energy and Gas
14	DUN & BRADSTREET CORP. (THE)	2012-07-13	Technology Services
15	GRAHAM HOLDINGS CO.	2011-08-01	Consumer Services
16	NOBLE CORPORATION	2011-07-12	Offshore drilling
17	LABORATORY CORPORATION OF AMERICA HOLDINGS	2013-01-09	Health Care Facilities & Svcs
18	LEIDOS, INC.	2013-09-27	Technology Services
19	MACK-CALI REALTY CORP.	2014-04-14	Real Estate
20	MARATHON OIL CORPORATION	2011-07-01	Oil, Gas & Coal
21	MONSANTO CO.	2014-06-25	Chemicals
22	PG&E CORP.	2011-12-08	Utilities
23	RAYONIER INC.	2014-07-08	Real Estate
24	ROCKWELL COLLINS INC.	2013-12-23	Aerospace & Defense
25	RYDER SYSTEM INC.	2012-08-10	Transportation & Logistics
26	SPECTRA ENERGY CAPITAL LLC	2013-11-04	Natural gas
27	STAPLES INC.	2014-06-11	Retail - Discretionary
28	SUNOCO LOGISTICS PARTNERS LP	2012-10-08	Oil, Gas & Coal
29	SYSCO CORP.	2013-02-28	Distributors - Consumer Staples
30	THERMO FISHER SCIENTIFIC INC.	2012-07-16	Medical Equipment & Devices
31	UNITED PARCEL SERVICE INC.	2012-09-21	Transportation & Logistics
32	SPECTRA ENERGY CORPORATION	2013-11-01	Natural gas
33	VALMONT INDUSTRIES INC.	2013-05-02	Manufactured Goods
34	VERIZON COMMUNICATIONS INC.	2013-09-02	Telecom
35	WASHINGTON REAL ESTATE INVESTMENT TRUST	2012-08-23	Real Estate
36	WASTE CONNECTIONS INC.	2012-10-19	Waste & Environ Svcs & Equip
37	ABBOTT LABORATORIES	2012-10-26	Medical Equipment & Devices
38	ADVANCED MICRO DEVICES INC.	2013-01-08	Semiconductors
39	AK STEEL CORP.	2011-12-21	Steel
40	BEST BUY CO. INC.	2012-08-06	Retail - Discretionary