

Credit Ratings for Firms listed on the Oslo Stock Exchange – are ratings leading or lagging?

An event study

Michael Baumann and Erik Olaf Hille

Supervisor: Eirik Gaard Kristiansen

Master's thesis – Department of Finance and Management Science

NORGES HANDELSHØYSKOLE

This thesis was written as a part of the Master of Science in Economics and Business Administration program - Major in Financial Economics. Neither the institution, nor the advisor is responsible for the theories and methods used, or the results and conclusions drawn, through the approval of this thesis.

Executive summary

This paper studies the effect of announcements by credit rating agencies (CRAs) on daily stock returns for firms listed on the Oslo Stock Exchange (OSE) and rated by S&P, Moody's and/or Fitch. The analysis is performed by utilizing event study methodology. Our main focus is announcements of core credit rating changes, but we also examine watch list announcements and aggregated announcements¹.

We find a significant negative abnormal return in the case of credit rating downgrades, while we find no positive abnormal return in the case of upgrades. The same pattern is revealed, although with a smaller negative abnormal return, regarding both watch list and aggregated announcements.

The analysis is performed on several samples of sub-categories. We find that the effects of negative announcements are more significant and larger for small firms than for large firms. There is evidence that an unexpected rating downgrade, meaning if the issuer is not put on a negative watch prior to the rating change, has a larger impact.

Our results indicate that CRAs, to some extent, provide the financial markets with new information. In particular, this applies for negative announcements. The reason for this is possibly that good news travels faster than bad news. Issuers might publish good news immediately, while they are not in the same hurry with bad news and use a 3rd party like a CRA for this purpose. Although our study shows a significant negative abnormal return on the day of announcement, a substantial part of the total negative return occurs within a 120 day period prior to the announcement. This indicates that most of the information provided by the CRA is already known in the market.

We describe and discuss the most well-known points of criticism against CRAs and their role. Many of these cause potential conflict of interest. The close relationship between the issuer and the CRA, and the fact that the issuer pays for their own rating is one of them. Other potential conflicts of interest are caused by the major CRAs' dominating role in the market and the establishment of ancillary businesses in addition to the rating business.

¹ "Aggregated announcements" include rating changes, watch list placements and outlook placements

Preface

The idea for this paper was born out through the subject Financial Contracts at NHH. We developed an interest for this theme, and hence it was natural to ask course responsible Eirik Gaard Kristiansen for ideas concerning a potential master thesis. His immediate response was a thesis regarding credit rating agencies role in the financial market. We felt this was an interesting topic, and over some time of research and brainstorming we came to the conclusion that an event study on the impact of rating changes for firms listed on the Oslo Stock Exchange, to our knowledge, never had been performed.

Through the process of writing this thesis there are several people who made various contributions to our work. First of all we would like to thank Eirik Gaard Kristiansen for inspiring us and for his support. Further we want to thank the credit rating agencies for their help and assistance, and especially Moody's and Fitch who provided us with the necessary historic data free of charge. David Cliffe, Communications Officer IOSCO, helped us with questions regarding credit rating agencies' regulatory role. The same applies for Eirik Bunæs and Tore Waseng at Kredittilsynet (The Financial Supervisory Authority of Norway). Lars Jacob Braarud, Vice President Listing at Oslo Børs, was also very helpful. Tommy Stamland at NHH kindly assisted us with questions concerning event study methodology.

Bergen 22.09.2008

Michael Baumann

Erik Olaf Hille

Table of Contents

EXECUTIVE SUMMARY	2
PREFACE	3
TABLE OF CONTENTS	4
TABLE OF FIGURES	6
1. CHARTS.....	6
2. FIGURES.....	6
3. TABLES.....	6
1. INTRODUCTION	7
2. BACKGROUND	8
2.1. DEFINITION OF A CREDIT RATING AGENCY AND A CREDIT RATING.....	8
2.2. CREDIT RATING AGENCIES MAIN ROLE.....	9
2.3. DEVELOPMENT.....	9
2.4. MARKET.....	11
2.5. IMPORTANCE OF RATINGS FOR MARKET PARTICIPANTS.....	11
2.5.1. <i>Issuers</i>	11
2.5.2. <i>Buy-side firms and investors</i>	12
2.5.3. <i>Sell-side firms</i>	12
2.5.4. <i>Private contracts</i>	12
2.5.5. <i>Regulatory use of ratings</i>	13
2.6. ENTRY BARRIERS TO THE CRA MARKET.....	13
2.7. RATING PROCESS AND PROCEDURE.....	14
2.8. DATA USED BY CRAS.....	15
2.8.1. <i>Financial and Non-financial factors</i>	15
2.8.2. <i>Public and non-public information</i>	16
2.9. CRAS NOTIFICATION TO ISSUER REGARDING RATING ACTION.....	16
2.10. DISCLOSURE AND TRANSPARENCY.....	16
2.11. RATING SYMBOLS AND TERMS.....	17
2.11.1. <i>Rating symbols</i>	17
2.11.2. <i>Rating outlook</i>	18
2.11.3. <i>Watch list</i>	18
2.12. PERFORMANCE.....	19
2.13. CRITICISM.....	20
2.13.1. <i>Slow reaction</i>	21
2.13.2. <i>Close relationship between CRA and issuer</i>	21
2.13.3. <i>Performance</i>	23
2.13.4. <i>Oligopoly</i>	23
2.13.5. <i>Ancillary business by CRA</i>	24
2.13.6. <i>Transparency</i>	25
2.13.7. <i>Structured products</i>	25
2.13.8. <i>Level of public disclosures by issuer</i>	27
2.14. POSSIBLE SOLUTIONS TO CRITICISM.....	28
3. PREVIOUS LITERATURE	30
3.1. US STUDIES.....	31
3.2. OTHER STUDIES.....	32
3.3. OUR STUDY VS. PREVIOUS STUDIES.....	33
4. METHODOLOGY	34
4.1. IDENTIFY THE EVENT DATE.....	35
4.2. DEFINE THE EVENT WINDOW.....	35

4.3. DEFINE THE ESTIMATION WINDOW	37
4.4. SELECT THE SAMPLE OF FIRMS	38
4.5. CALCULATE “NORMAL” (NONEVENT) RETURNS	39
4.6. ESTIMATING THE MARKET MODEL	40
4.7. CALCULATE ABNORMAL RETURNS	41
4.8. AGGREGATION OF ARS	41
4.9. DETERMINE THE STATISTICAL SIGNIFICANCE OF THE ARS AND THE CARs	42
5. DATA	43
6. RESULTS	47
6.1. RATING CHANGES	47
6.1.1. <i>Estimation window reflections</i>	48
6.1.2. <i>Downgrades</i>	49
6.1.2.1. All events	50
6.1.2.2. Anticipated vs. Unanticipated announcements	51
6.1.2.3. Small Firms vs. Large Firms	52
6.1.2.4. Downgrades of 1 Notch vs. Several Notches	54
6.1.2.5. Changes within Investment Grade vs. Speculative Grade	56
6.1.2.6. From Investment to Speculative Grade vs. Within Investment / Speculative Grade	57
6.1.2.7. Downgrade & put on Negative Watch List @ same time	59
6.1.3. <i>Upgrades</i>	60
6.2. WATCH LIST	62
6.2.1. <i>Negative watch list</i>	62
6.2.2. <i>Positive watch list</i>	64
6.3. OUTLOOK	64
6.4. AGGREGATED RATING ANNOUNCEMENTS	65
6.4.1. <i>Aggregated Negative Announcements</i>	66
6.4.1.1. All events	66
6.4.1.2. Small Firms vs. Large Firms	68
6.4.2. <i>Total Positive Announcements</i>	69
6.5. INCLUDING CONTAMINATED DATA	70
6.5.1. <i>Downgrades</i>	70
6.5.2. <i>Upgrades</i>	71
7. FUTURE WORK	73
8. CONCLUSION	74
9. APPENDIX	76
10. REFERENCES	78

Table of Figures

1. CHARTS

CHART 1: MARKET DEVELOPMENT ISSUERS (HABIR 2004).....	10
CHART 2: AVERAGE CUMULATIVE 5-YEAR PROBABILITY OF DEFAULT	19
CHART 3: SURVEY REGARDING CHOICE OF CRA	24

2. FIGURES

FIGURE 1: TIME LINE OF AN EVENT STUDY (MACKINLAY 1997).....	38
FIGURE 2: TIME LINE OF OUR EVENT STUDY	38
FIGURE 3: CUMULATIVE MARKET-ADJUSTED AVERAGE EQUITY RETURNS PRIOR TO RATING CHANGES	48
FIGURE 4: CUMULATIVE AVERAGE ABNORMAL RETURN.....	49

3. TABLES

TABLE 1: DATA - NEGATIVE ANNOUNCEMENTS	45
TABLE 2: DATA - POSITIVE ANNOUNCEMENTS	46
TABLE 3: SAMPLE: ALL EVENTS.....	50
TABLE 4: SAMPLE: ANTICIPATED VS UNANTICIPATED.....	51
TABLE 5: SAMPLE: SMALL FIRMS VS. LARGE FIRMS	53
TABLE 6: SAMPLE: 1 NOTCH VS SEVERAL NOTCHES	55
TABLE 7: SAMPLE: WITHIN INVESTMENT GRADE VS. WITHIN SPECULATIVE GRADE.....	56
TABLE 8: SAMPLE: FROM INV. TO SPEC. GRADE VS WITHIN INV./SPEC. GRADE.....	57
TABLE 9: SAMPLE: DOWNGRADE & PUT ON NEGATIVE WATCH LIST @ SAME TIME.....	60
TABLE 10 SAMPLE: ALL SAMPLES.....	61
TABLE 11: SAMPLE: ALL EVENTS.....	62
TABLE 12: SAMPLE: ALL EVENTS.....	64
TABLE 13: SAMPLE: ALL EVENTS.....	65
TABLE 14: SAMPLE: ALL EVENTS.....	67
TABLE 15: SAMPLE: SMALL FIRMS VS LARGE FIRMS	68
TABLE 16: SAMPLE: ALL SAMPLES.....	69
TABLE 17: SAMPLE: ALL EVENTS (INCL. CONTAMINATED DATA).....	71
TABLE 18: SAMPLE: ALL EVENTS (INCL. CONTAMINATED DATA).....	72

1. Introduction

This paper seeks to study the effect on firms' stock price related to announcements made by credit rating agencies (CRAs). We look at firms listed on the Oslo Stock Exchange (OSE), and which are rated by the major CRAs S&P, Moody's and/or Fitch. If there is significant impact on stock returns this could indicate that the CRAs are superior compared to the market both in terms of information access and information processing skills, thus implying leading ratings. On the other hand there has lately been speculation of lagging ratings, suggesting that the CRAs adjust their ratings according to information already reflected in a firm's stock price.

We use daily data around the press release of the rating action. Our main focus is on specific rating changes, meaning up or downgrades. These rating changes can be within a rating class, across rating classes and across investment/speculative grade. In addition to testing the impact of direct rating changes we look at the impact when a firm has been put on a CRA's watch list. To compensate for the limited number of rating changes in our sample, we perform additional sub-studies where we examine the effect of all positive and all negative announcements respectively, meaning rating changes, watch list placements and outlook placements.

CRAs role and performance in the financial market has been highly debated, especially over the last decade with several large financial scandals like Enron and the ongoing subprime crises. Through the background presentation and the data analysis, we seek to give an insight in the CRAs role in the financial market.

Most previous studies performed over the years deal with US data, although there has been an increasing interest for the topic in other parts of the world too. To our knowledge, this is the first study so far that focuses on firms listed on the OSE.

The structure of the paper is as follows. In section 2 we provide background information regarding CRAs. This involves an explanation of their role, how they operate and interpretation of the ratings. We also try to enlighten and discuss the most important criticism raised against CRAs. In section 3 we present earlier studies on this topic, including results and

potential weaknesses. Section 4 presents the methodology we use to analyse the data material, and describes how this is done in various steps. In section 5 we present and discuss our data material more closely. Section 6 presents the results of our study. Section 7 discusses possible future studies involving this topic. In section 8 we conclude and sum up the results.

2. Background

2.1. Definition of a credit rating agency and a credit rating

A CRA is a company that assigns credit ratings to issuers of debt and to the debt itself. Issuers are mostly companies and governments, but can also be non profit organisations and other users in need of funds. The rated debt can be issues such as bonds, preferred stocks and commercial paper. A credit rating reflects a CRA's opinion, at a specific date, of the creditworthiness of the particular issuer or issue. More specific one could say that for issuers the rating reflects the capacity and willingness to meet financial obligations, while for a single issue it is the specific creditworthiness for the given issue. The creditworthiness is the ability to pay back debt.² Hence the risk measured in a rating is the probability of default.

Long term ratings apply for the medium and long term horizon meaning 3-5 years. Over this horizon the objective of the rating is stability and it is not necessarily reflecting market volatility. Hence especially short term market volatility could be misleading in terms of creditworthiness. The rating should be globally consistent and measured on a standard scale.

S&P states³ that a rating is *not*

- i) A recommendation to buy or sell investments. A high rating does not imply that the issue or issuer is a good investment, and vice versa. A rating is just an opinion how likely it is that given issuer or issue is going to meet its obligation.
- ii) A way of defining good or bad companies. The risk measured is not trading risk or loss given default, it is the probability of default for the given issuer or issue.
- iii) An audit. CRAs normally rely on the information given by the issuer and its own auditor. CRAs are neither liable as auditors are.

² Creditworthiness can also be defined as the expected loss rate, which again is the product of expected default rates and expected loss severity rates in the case of default (Moody's Investors Service (2002).

³ Habir (2004)

2.2. Credit rating agencies main role

The main role of CRAs is to provide the financial market with an independent and objective framework, or benchmark, for comparing the credit quality of securities. This is done by grading the creditworthiness of an issuer or issue within an alphabetical system. By differentiating creditworthiness the market becomes more transparent, which again leads to greater efficiency in the capital market. CRAs serve as a third party who, through their independent position and access to management, sort information available in an objective way. By doing so, CRAs reduce the asymmetry of information between issuers and investors. “To the extent that they are specialists in obtaining and processing information about default risk, the actions of rating agencies reduce lenders’ information-gathering costs and thereby facilitate the operation of security markets”⁴. Thus, CRAs help minimize volatility without firms having to disclose all product secrets and strategy choices to the market.

In addition CRAs have a major disciplinarian effect. Without the existence of CRAs, issuers would have fewer incentives to publish bad news, as it would be less likely to be revealed. As the issuers want to seem credible towards the market they have to publish bad news as the CRAs most likely will publish this anyway. If bad news only was published by the CRAs this would lead the market to believe that the issuer is trying to hide information, resulting in lost credibility for the issuer. Hence, the existence of CRAs disciplines the issuers and makes them publish non-favourable information to a greater extent.

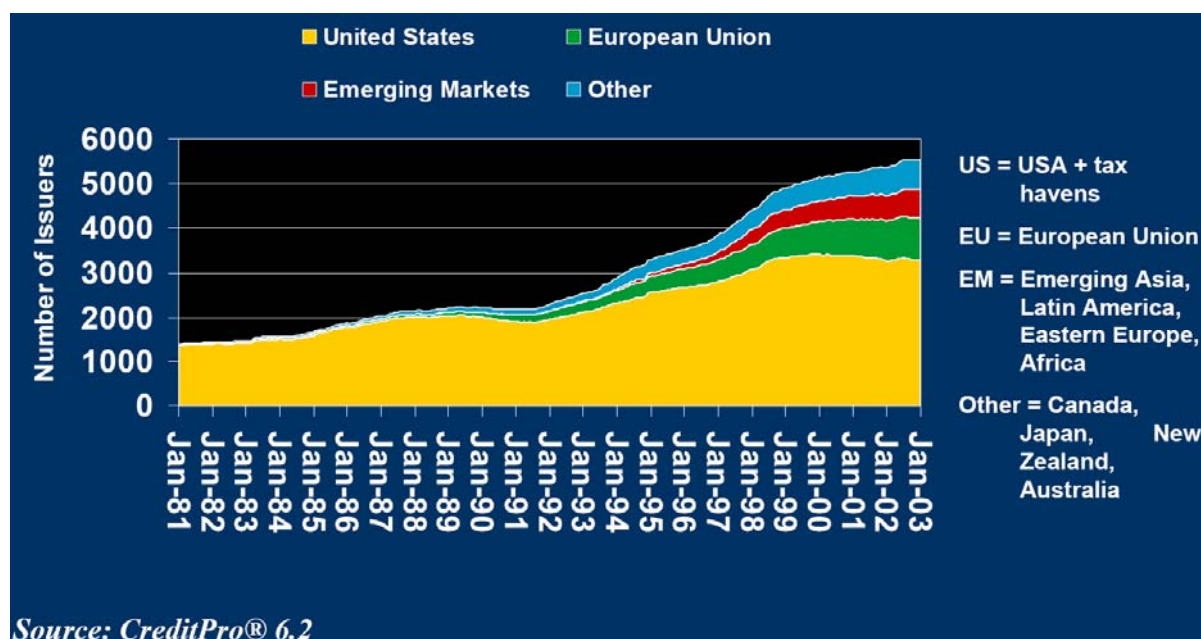
2.3. Development

CRAs have over almost a century become an essential part of the international financial system. In the US, where the major CRAs have their origin, CRAs made their “breakthrough” earlier than in the rest of the world. As their opinion of creditworthiness over the years has become more important for investors and other markets participants seeking information, there has been an increased use of CRAs. There are several reasons for this increase in numbers and influence of CRAs⁵. First of all there has been a tremendous amount of new issues that need to be rated. Especially the latest years there has been an increased leverage amongst issuers. As shown in *Chart 1* below the number of issuers has in addition grown

⁴ Creighton et al. (2004)

⁵ Habir (2004) and U.S. Securities and Exchange Commission (2003)

substantially. The chart also shows the development in different parts of world, implying the more recent growth of issuers in other parts of the world than the US.



Source: CreditPro® 6.2

Chart 1: Market development issuers (Habir 2004)

Second, there has been an increase in new and different issues, like structured papers, which require ratings⁶. The increased numbers of issuers and issues has made the debt market much more liquid, and thus created an escalated need for CRAs.

One could also argue that globalization has contributed to the increased importance and influence of CRAs over the years by causing a free flow of capital. This free flow of capital is one explanation behind the increased number of issuers and issues, which again require credit ratings from CRAs.

Due to the Basel II agreement⁷ regulators allow banks to use certain CRAs when calculating their net capital reserve requirements. As a consequence of this, CRAs are also used outside

⁶ Habir (2004) also claims that there has been disintermediation and a growing interest in credit among investors. In addition the greater volatility of bond spreads and its impact on equity has contributed to the increasing influence of CRAs.

⁷ Basel Committee on Banking Supervision issued, through Basel II, recommendations on banking laws and regulations. Basel II was initially published 2004, but has been updated several times. Its main purpose is to create an international standard for banking regulators to be used when creating regulations on how much capital banks need to put aside to guard them against various types of financial and operational risks. The rule in Basel II imply that the greater risk a bank is exposed to, the greater the amount of capital the bank needs to hold to insure its solvency and overall economic stability

the capital market which creates more need for their services. According to S&P there is a strong demand for CRAs services which is likely to persist.

2.4. Market

The global market of CRAs is highly dominated by the major US agencies Standard and Poor's Division of the McGraw-Hill Companies (S&P), Moody's Investor Service, Inc (Moody's) and Fitch Inc (Fitch). Moody's started rating bonds in 1909, while S&P and Fitch both got into the business in the early 1920s. S&P have credit ratings outstanding of about 32 trillion, and Moody's and S&P both have ratings in over 100 countries⁸. S&P, Moody's and Fitch are all "national recognized statistical rating organisations" or *NRSROs*.

A NRSRO is a CRA that the Securities and Exchange Commission (SEC) permits other US financial firms to use for regulatory purposes. NRSRO status is meant to show that the CRA is considered to be reliable, and is hence a global sign of quality. In addition to S&P, Moody's and Fitch there are four other, smaller, NRSROs around the world⁹.

2.5. Importance of ratings for market participants

Credit ratings play an important role for the financial markets, and the various market participants utilize ratings in different manners.

2.5.1. Issuers

Issuers use credit ratings to ensure the market of their creditworthiness and thereby attract capital at a more favourable price. By using CRAs they disclose information of their business to the market, and hence make it transparent. This should provide the market with an independent judgement of creditworthiness. In most cases involving major issues the issuer uses several CRAs. A study by the bond market association¹⁰ even shows that some market participants prefer three ratings. By using several CRAs the issuers assures the market of their creditworthiness. In the long term corporate debt market, a single rated issue would most likely be priced below an issue with more ratings. Hence the absence of multiple ratings could be interpreted negatively in a way that the issuer is not capable of obtaining several equivalent

⁸ www.sap.com, www.moodys.com and www.fitch.com

⁹ www.sec.gov/answers/nrsro.htm

¹⁰ The Bond Market Association (2006)

good ratings. Sometimes CRAs make ratings without being requested to do so by an issuer, this is often referred to as an “unsolicited” rating.

2.5.2. Buy-side firms and investors

The largest buyers of issues are large institutional investors as mutual funds, pension funds and insurance companies. These firms make extensive use of credit ratings in their investment decisions. The information from the CRAs is included in their own analysis. Here it is functioning both as a benchmark and a supplement in portfolio monitoring. In a survey¹¹ amongst investors, it is stated that the most important function of CRAs for these is internal risk management. Ratings are also used to adapt to internal or regulatory rules which many of these buy-side firms have to comply with. Many pension funds can for example not invest in issues below investment grade, or need an issue to be rated by several CRAs in order to be allowed to invest in it.

Despite the fact that CRA assessments on creditworthiness are not intended to be used for equity purposes¹², it seems likely that stock holders, to some extent, consider ratings when investing in equity. If this is the case, our study should show effects on stock prices in the case of rating actions by CRAs.

2.5.3. Sell-side firms

A typical sell side firm is a broker or investment bank which makes recommendations of issues and trades these. Ratings are used when calculating the risk for a portfolio. In addition to their own analysis they use credit ratings in a similar way as the buy-side firms and investors. They may also use credit ratings in an overall assessment when analyzing a stock.

2.5.4. Private contracts

The use of conditional rating criteria as a debt covenant in private contracts is common. This is when ratings are being used as triggers to protect the investor from an issuer losing creditworthiness. Through implementing debt covenants like rating triggers in a private contract the investor can demand accelerating repayment of his loan in case the rating goes under a specified level.

¹¹ The Bond Market Association (2006)

¹² As mentioned under section 2.1 what S&P states that a rating not is

2.5.5. Regulatory use of ratings

In general the object behind ratings having a regulatory role is to use ratings to measure and limit risk taken by regulated entities. As described under section 2.3, Basel II gives CRAs a role in the determination of banks regulatory capital¹³. The regulatory use of CRAs can roughly be divided into an US and EU approach¹⁴. Norway, although not a member of the EU, follows through the membership in the IOSCO¹⁵ and CESR¹⁶ the same guidelines as EU countries.

In the US the regulatory role of CRAs is substantial, and only the NRSROs can be used for regulatory purposes. For instance, money market funds can only invest if the security is rated in one of the four highest classes¹⁷. Hence, the decisions of large US investors are directly affected by the CRAs rating actions.

In the EU the regulatory role of CRAs is not as developed as in the US¹⁸. Bank regulators can use external credit assessment institutions (ECAIs) recognized as eligible by the national authorities for regulatory purposes. If an ECAI is considered eligible by one EU country this ECAI may be used in the other EU countries as well. However, contrary to the US and its NRSROs, ECAIs do not have to be CRAs. Other criteria are also somewhat different as the SEC to a great extent look at the market acceptance when deciding on NRSRO status, while ECAIs on the other hand are rather picked based in the credibility of their ratings¹⁹. Hence, this contributes to a weaker regulatory role in the EU, and Norway, compared to the US.

2.6. Entry barriers to the CRA market

One could assume that the entry barriers to the CRA market should be quite low, as anyone in theory can rate issuers and issues, and publish the rating. But, as when building up any other

¹³ In Norway Basel II has been implemented over the latest years and is expected to finalize during 2008 (Kredittilsynet 2007)

¹⁴ Champsaur (2005)

¹⁵ International Organisation of Securities Commissions

¹⁶ The Committee of European Securities Regulators

¹⁷ The Investment Company Act of 1940 ensures money market funds only invest in securities rated in the two highest categories (Creighton et al 2004).

¹⁸ Champsaur (2005) refers to the Basel Committee on Banking Supervision, Credit rating on Complementary Sources of Credit Quality Information, Working paper No. 3 (200) which states that most EU countries do not rely on the CRAs for regulatory purposes, except for the purpose of evaluating market risk.

¹⁹ Champsaur (2005)

business, a good reputation and credibility are crucial factors. This applies maybe even stronger for the CRA market, as there is an asymmetric information problem between CRAs and the investors, who are the customers making decisions based on the assessment product. CRAs base these assessments often on non-public information, thus leading investors to trust the rating blindfolded. This creates a significant trust factor within the market for CRA, consequently making it difficult for new agencies, with no track record, to enter. In addition there is a great need of expertise and knowledge when assigning a rating. Hence the entry barriers in the market are very high, and S&P, Moody's and Fitch are, as mentioned under section 2.4, highly dominating the market.

The biggest barrier for entering the CRA market is the NRSRO criteria. The NRSRO label is a sign of reliability, and is also a necessary condition for regulatory purposes. Thus, having a CRA without this status rate an issue can give the market a reason to doubt its creditworthiness, consequently creating a problem for the issuer when raising funds. Therefore most issuers want their CRA to be a NRSRO. To achieve NRSRO status the CRAs first have to achieve national recognition status, which is hard to accomplish when issuers prefer NRSROs. It is the SEC that determines this status²⁰. Likewise it is crucial for CRAs to have ECAI status in order to overcome market barriers. Although, one could argue that the NRSRO's criteria is more acknowledged.

Nevertheless there has been an increase in the number of smaller CRAs. As of today there are about 130 CRAs worldwide²¹. Though, in spite of this increase in CRAs, the dominance of the major agencies still remains, mainly caused by the market barriers of recognition in the market.

2.7. Rating process and procedure

S&P, Moody's and Fitch approach the rating process in a similar way. The issuers and issues to be rated are categorized by i) industry and ii) type of issue, like commercial paper or senior unsecured. A rating committee is usually formed to initiate, withdraw or change a rating. The committee supervises the given issuer and issue in the case of new information which could

²⁰ According to Champsaur (2005) the SEC has proposed more precise criteria for granting NRSRO designation. If this is adopted a CRA will not be recognized as a NRSRO based only on the national recognition criteria but also need to be recognized depending on the credibility of their ratings. This may lead to lowering entry barriers.

²¹ Basel II study

affect the rating. A committee usually consists of a lead credit analyst, junior analysts and managing director or supervisors. Each member's opinion is then heard and taken into account. The rating decision is then based upon a majority vote by the committee. The frequency on which a rating is changed, or reconsidered, varies depending on the type of issuer and the security being rated. Specific events, like mergers or other major transactions, are watched and considered for implications on creditworthiness, and these can typical lead to an uneven frequency of rating actions.

2.8. Data used by CRAs

The rating committees' decision is based on an ongoing contact with the issuer and periodic meetings with the management are common. Usually it is the lead credit analysts' responsibility to present the available information and data to the rest of the committee. The amount of information which is reflected by the rating symbols is significant, and this information can be financial and non-financial, as well as public and non-public.

2.8.1. Financial and Non-financial factors

Information involves both financial and non-financial risk factors²². Financial risk is the risk that a firm's cash flow will not be sufficient to meet its obligations. This consists amongst others by the issuer's financial measures as cash flow and leverage. Non-financial risk is the risk that the cash flow of a firm will be negatively affected by adverse economic conditions, making it difficult to meet operating expenses. This is typically factors like market conditions and potential outside risks as government regulations.

²² U.S. Securities and Exchange Commission (2003) sums up the typical subcategories of i) financial and ii) business risk factors

i) Financial risk: Cash generation or use, balance sheet strengths, debt ratios, interest coverage ratios, operating cash flow to total debt ratios and fixed charge ratios

ii) Non financial (business risk): stability of markets, diversity of markets, efficacy of operation, peer group analysis, competition and market positions and government regulations

2.8.2. Public and non-public information

The information used by the CRA can be both public and non-public²³. Public information is obviously information that the public has full access to. Stock price trends, interest rate levels or financial statements are examples of such public information. Non-public information is typical information that the company does not want to reveal to the public. Typical non public information can be information on a possible merger or acquisition. A reason for keeping this information secret is due to the firms competitors. Hence non-public information is usually only given based on a contract of confidentiality between the CRA and the issuer.

2.9. CRAs notification to issuer regarding rating action

The CRA normally notifies the issuer about rating action, and gives the possibility of appealing before the rating is made public. The issuer has then the opportunity for a certain amount of time (few hours to a few days) to review the information. During this time they can ensure that the information contained in the rating report is not inappropriate or discloses confidential information to the market. If they decide to appeal, the issuer has the opportunity to present new or additional data. However, the CRA only changes the rating if the presented data is relevant and/or if publishing the rating-report would cause disclosure of confidential information.

2.10. Disclosure and transparency

S&P state²⁴ “In accordance with industry rules and regulations, information about ratings changes is not released to anyone else prior to it being published. Once the information has been published and the press releases have been sent out, it is available in the public domain.” The major CRAs make the rating action available from their websites free of charge once it is released. Normally the basic assumptions regarding a rating change are disclosed with the

²³ U.S. Securities and Exchange Commission (2003) sum up the typical subcategories of i) public and ii) non-public information

i) Public: News reports, industry reports, bond and stock price trends, data from central banks and proxy statements

ii) Non-public: Credit agreements, acquisitions, private placement memoranda, business projections and other information that is not revealed to the public.

²⁴ S&P analyst Sarah Frommlet in an e-mail to us

press release free of charge. For more details, like the full rating rapport regarding the action or historical ratings, there is typical a fee for subscribers. The rating report specifies the assumptions and rationale for the given rating change.

The general rationale and methodology behind the rating and the procedure are available at no cost from the CRAs website. CRAs also publish default studies for the various rating categories.

2.11. Rating symbols and terms

The system for symbols and terms regarding the ratings is similar for S&P, Moody's and Fitch.

2.11.1. Rating symbols

Ratings are based upon giving alphabetical combinations symbolizing the creditworthiness. There are two main categories of creditworthiness; investment grade and non investment grade, or speculative grade. Speculative grade is also known as junk bonds. S&P and Fitch use the classes AAA, AA, A and BBB as investment grade, and BB, B, CCC, CC, C and D are speculative grade. For Moody's investment grade are the classes Aaa, Aa, A and Baa, while speculative grade are Ba, B, Caa, Ca and C. To modify the classes into specific notches the CRAs utilize additional symbols. S&P and Fitch use plus and minus, while Moody's uses numbers from 1-3 with 1 indicating that the given rating is in the higher end of the rating category, 2 indicating mid range and 3 indicating that the rating is in the lower end. There is a nonlinear relationship between default rates and rating classes. The increase in default probability in association with a one notch downgrade within speculative grade is larger than for a notch change within investment grade²⁵.

CRAs distinguish between ratings of long term and short term issues. Short term issues are normally debt with a maturity of one year or less, as commercial paper. When rating commercial papers the main focus for the CRA is the issuers' liquidity, or in other words how easy it is for the issuer to supply cash to repay the issue at maturity²⁶. Long term issues are normally issues with maturity beyond 1 year, such as senior unsecured papers. Our focus is on

²⁵ As indicated in *Chart 2* in section 2.12

²⁶ Tirole (2006)

the impact of long term rating changes, as we explain under section 5, and we don't pay more attention to short term ratings. Long term ratings are based on a creditworthiness assessment for a medium to long term horizon²⁷

2.11.2. Rating outlook

In addition to ratings CRAs publish rating outlooks determined by the rating committee to indicate the future ratings. A rating outlook is based on a medium term horizon. Moody's typically uses an 18 month horizon²⁸. Outlooks are usually categorized as negative, positive or stable. S&P also uses the category developing meaning that the direction of the rating is uncertain. Outlooks do not necessarily imply a rating change, or that the issuer or issue is put on *watch list*.

2.11.3. Watch list

The watch list is used during the continuous work with the ratings. It focuses on more short term trends or identifiable events. If an issuer is put on watch list it implies that its rating is under consideration. The possible change in rating will normally take place within 90 days. To maintain an objective view there normally is a separate committee for placing an issuer on the watch list and one for removing it. The different categories are positive, negative or developing, meaning that the direction is uncertain. S&P, Moody's and Fitch use somewhat different terms, but the interpretation is the same. The watch list hence gives a signal to the market that the rating is under active review for change. Historically between 66% and 76%

²⁷ To illustrate the exact interpretation of the long term ratings we show S&P definitions, but both Moody's and Fitch definitions are quite similar. S&P (Habir, 2004) interprets the long term ratings symbols as follows (Habir chooses not to articulate for all classes)

AAA: "Highest rating... obligor's capacity to meet financial commitment is extremely strong."

A: "Somewhat more susceptible to adverse changes in economic conditions... capacity to meet financial commitment is still strong"

BBB: "Adequate protection... but changes in economic conditions could lead to weakened capacity..."

BB: "Faces uncertainties during adverse economic conditions.. "

B: "Possesses current capacity... but likely to be impaired..."

CCC: "Vulnerable to non-payment... needs favourable business climate to meet obligations..."

²⁸Moody's Investors Service (2002)

of all ratings put on the watch list have been changed in the indicated direction²⁹. As with rating changes issuers are notified in advance before being placed on the watch list.

2.12. Performance

The work performed by the CRAs raises the question whether they actually are correct in their opinion on creditworthiness. Data show that bonds with higher ratings have lower subsequent default rates than lower rated bonds³⁰, which hence should imply that the CRAs' performance actually is good. This is illustrated in *Chart 2* below showing the average cumulative 5 year probability of default for ratings by S&P.

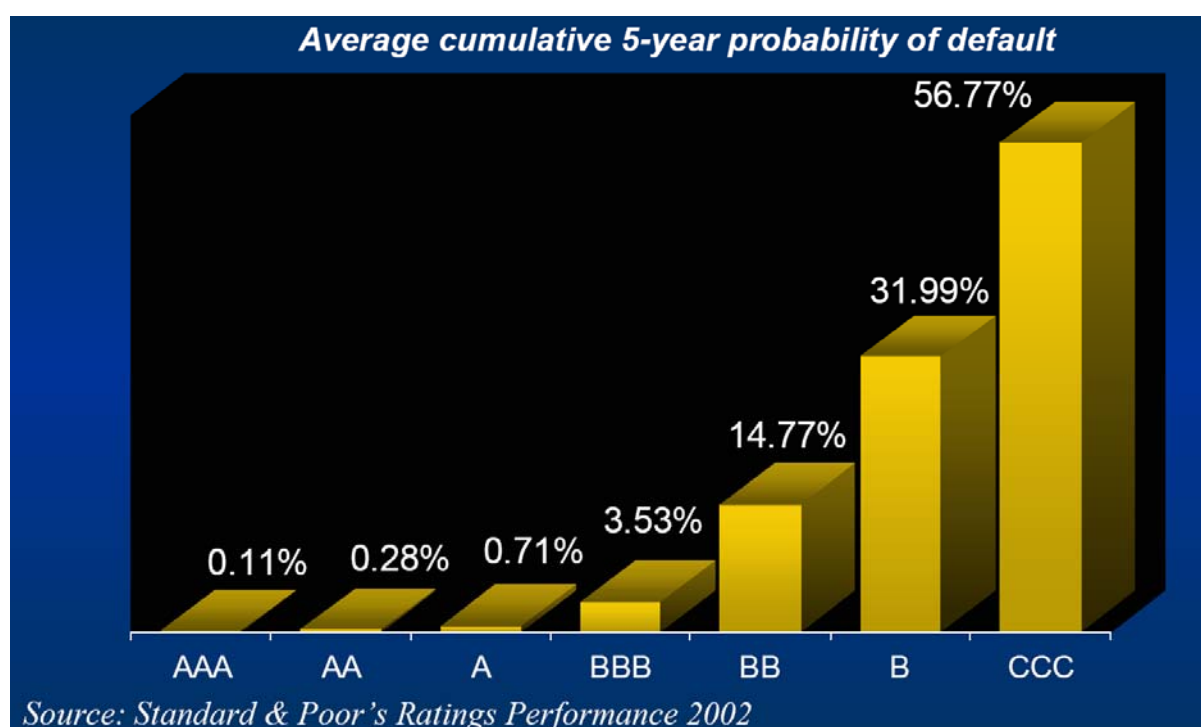


Chart 2: Average cumulative 5-year probability of default

Data for Moody's show that companies recently upgraded are about twice as likely to be upgraded again the following year compared to companies recently downgraded or which had no rating action³¹.

In total, CRAs' own performance data show good results regarding predicting default probability. As CRAs have incentive to only publish favourable information, and maybe

²⁹ Moody's Investors Service (2002)

³⁰ S&P (2001) referred to by Creighton et al. (2006)

³¹ Moody's Investors Service (2002)

present this in a misleading way, one could doubt these results. But also independent studies show similar results. Altman (1989)³² finds the cumulative default rate over the first ten years of a bonds life to be 0,1% for AAA and 31,9% for B.

Although the various data show that CRA ratings match the actual outcome, *the self-fulfilling nature of ratings* brings the results into doubt. The self-fulfilling nature of ratings is the possibility that a downgrade causes a negative market reaction leading to decreased creditworthiness. The same rational applies for upgrades. Hence, the rating action itself can lead to fulfilling the opinion reflected by the rating.

2.13. Criticism

The role of CRAs has been highly debated and criticized, especially the last decade. The last years of criticism has in particular been boosted by the Enron-scandal, which led to several reports on the role of CRAs. The most important reports are by the SEC³³ and the IOSCO³⁴. According to the SEC, CRAs “in some cases appeared simply to take the word of Enron officials when issues were raised, and failed to probe more deeply”³⁵

Charlie Brown, general counsel for Fitch Ratings, stated in an interview regarding Fitch’s role in the case of Enron: "We're not advisers, and we're not insiders," "We don't have any special relationship with the companies we rate. It's unclear to us what anyone thought we ought to have done differently"³⁶.

On a more general basis, CRAs further claim that their opinion of creditworthiness can be compared to a journalist engaged in free speech, implying that they cannot be held accountable for their belief. Einhorn (2007) conversely argues that the opinion from a CRA on a firm’s creditworthiness is based on special assumptions, since they can be considered as an insider due to their insight in non public information. In addition they should also, presumably, be experts in processing this information. Hence, the ratings cannot just be

³² Referred to by Tirole (2006)

³³ The SEC (US Securities and Exchange Commission) ordered in 2002, as a result of the Sarbanes – Oxley Act, “Report on the Role and Function of Credit Rating Agencies in the Operation of the Securities Markets”.

³⁴ IOSCO (International Organisation of Securities Commissions) Code of Conduct from 2004 came as a result of the “Report on the activities by Credit Rating Agencies”

³⁵ SEC refers to the Staff report issued in connection with the investigation of Enron by the Senate Committee on Governmental Affairs.

³⁶ Wyatt (2002)

ignored by investors like a journalist whom one doesn't agree with can be ignored. Increased criticism towards CRAs leads to a lack of faith in their ratings. As the market has less information than the CRAs, this creates a problem for market participants when making investment decisions. Some of the most common criticism against CRAs is presented below.

2.13.1 Slow reaction

One of the most discussed topics is the CRAs' eligible slow reaction to new information, and that they do not downgrade firms quickly enough. The collapse of Enron is a good example of this. Enron's rating remained at investment grade until just a few months before the collapse, this despite the fact that the CRAs were aware of many of the problems³⁷.

Moody's state³⁸ that they take rating action only "when it is unlikely that it will be reversed within a relatively short time". The CRAs explanation for this practice is due to the concern of stability in ratings. This seems plausible as a rating should reflect the long term creditworthiness and not short term volatility. Although this practice can seem beneficial for all parties, in the case of adverse development in creditworthiness it may benefit only the issuer, as the underlying problems will not be instantly revealed to the market. The issuer then has the opportunity to take care of the problems without having to worry about skeptical investors which would result in more expensive, or no, funding. A possible explanation for the slow reaction by the CRAs can hence both be the self-fulfilling nature of a downgrade and the *close relationship to the issuer*.

2.13.2. Close relationship between CRA and issuer

During the process of giving a rating, and maintaining this, the issuer and the CRA work closely together. Historically, subscribers paid for ratings from CRAs³⁹. This however changed during the 1970 when CRAs instead began charging issuer. The reason for this change was the need for more extensive and time consuming ratings which would be hard to deliver to single investors. In addition there was a great deal of free riding, in a sense that if one investor purchased a rating the other investors had less incentive to purchase the same

³⁷ Wyatt (2002)

³⁸ Löffler (2002)

³⁹ Tirole (2006)

rating. Normally CRAs charge issuers for the type of issue to be rated, which is divided in an initial amount and a periodically maintenance fee.

The fact that issuers pay for its own rating causes a substantial conflict of interests. It may lead to giving the CRA wrong incentives towards the issuer. By giving a rating that pleases the issuer, the CRA could make sure that their customer is happy and continues doing business with them. CRAs however claim that this is not the case, and to prevent it CRAs' revenues are supposed not to depend on a significant single issuer. Additionally, an analyst's payment is independent from what the issuer pays, meaning that the analyst receives the same payment no matter which issuer he rates.

By giving incorrect ratings due to a close relationship, CRAs would in the long run ruin their own reputation. The problem with this argument is that a CRA's reputation will not be damaged until there really is a problem, which can take a very long time. The situation can be compared with the topic regarding an airplane company's concern on safety; you don't know if it is safe or not until it actually crashes. One could argue that it might be profitable for the airplane company to focus less on safety since there is only a small chance of this being revealed by a crash. The same applies for CRAs as the profitability is weighted against the relatively small possibility of default for high rated issues or issuers.

A good example of CRAs' cautiousness towards downgrading major issuers is given by Einhorn (2007). S&P changed in August 2007 their long term credit outlook on Bear Stern from stable to negative. Bear Stern was having major problems and the decision was correct. The very modest change in the assessment of creditworthiness shocked the market. To avoid any damage to Bear Sterns the analyst from S&P, shortly after the announcement, made a comment that "the market reaction today is overplayed". In the time after this Bear Stern struggled with massive problems, which finally led to the purchase by JP in 2008 for a price far below the trading price before the crisis. In the light of Bear Sterns major problems there should have been a substantial downgrade. If S&P in fact had access to information indicating problems at an early stage, this downplay of the seriousness of the situation could possibly indicate the negative consequences of the close relationship between issuers and CRAs.

2.13.3. Performance

The performance of CRAs is related to the issue of the close relationship between the CRA and issuer mentioned above. The Enron scandal raised criticism about the performance of CRA analysts, and thus questioned the quality of the analysis.

In general, CRAs state⁴⁰ that a rating is not an audit, and that they rely on the information given them by the issuers. Through this confidence in the information given by the issuer the CRAs may, intentionally or non-intentionally, ignore flaws in the information that is crucial for the given rating. The Technical Committee of the IOSCO (2008) state that “some members of the task force believe that in some cases some CRAs relied on information that, on its face, appeared questionable or, in the broader context of rapid market changes, uncertain or of dubious quality.” Also in the case of performance the analogy for the airplane companies’ safety concern applies; it is hard to observe bad performance until it is actually revealed by a major scandal. Hence, the confidence in the issuer by the CRA can lead to poor performance by not investigating the information more thoroughly.

2.13.4. Oligopoly

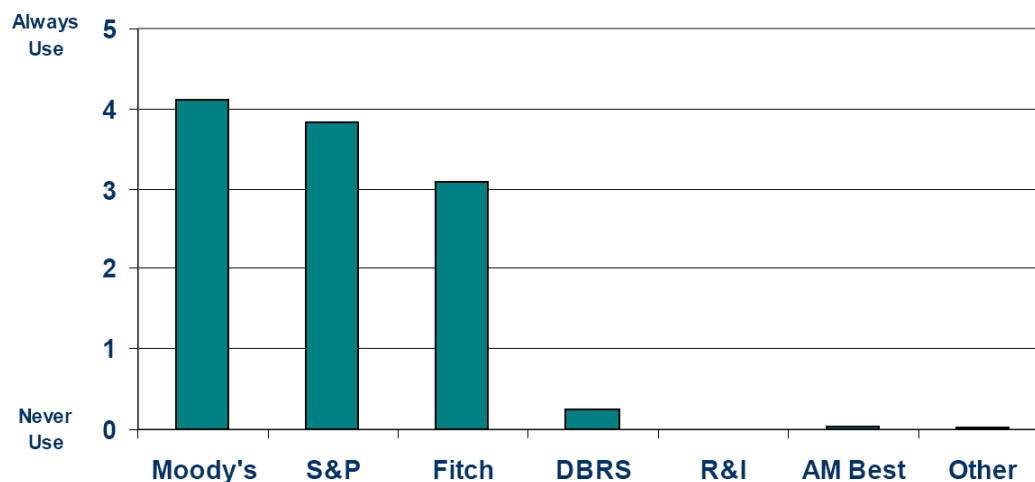
A survey⁴¹ amongst 41 major issuers all over the world shows that most issuers choose S&P, Moody's and/or Fitch. Minor CRAs used are DBRSs, R&I and A.M. Best. The chart below illustrates this survey. The number 1 to 5 illustrates the degree of usage, with 5 meaning that the average issuer always uses the particular CRA. Hence, *Chart 3* on the next page tells us that the average issuer uses Moody's, S&P and/or Fitch almost exclusively when issuing debt. A similar survey for the preferences of investors shows the same pattern.

This lack of competition in the market for CRAs can have several negative consequences. Firstly, it may have a harmful effect on the development of new CRA methodologies. As there is no competition the CRAs don't have to make an effort to come up with new and improved methods. This can lead to diminishing quality in ratings. Secondly, it may result in oligopoly or monopolistic pricing. If there is no competition and issuers are depending on ratings, the CRAs are free to price their services accordingly high. This can lead to issuers overpaying for ratings and thus a lack of efficiency in the market.

⁴⁰ Habir (2004)

⁴¹ The Bond Market Association (2006)

Which agency do you use for your debt issues?



Average response for each agency

TBMA Rating Industry Day - Issuers' Poll

Chart 3: Survey regarding choice of CRA

Data⁴² indicates that S&P, Moody's and Fitch control 85% of the market for CRAs. The CRAs' profit from this dominance is significant as the demand for credit rating has been increasing. For instance, Moody's has an operating profit on sales of 54%⁴³. The CRAs are of course not interested in losing their oligopoly position with such substantial profit margins.

2.13.5. Ancillary business by CRA

Over the latest years CRAs have started new lines of business in addition to the strictly rating business. Examples are risk management services and consulting to issuers. CRAs then get a role as an advisor on how a rating would change in the case of different endogenous and exogenous scenarios. This position as both the advisor and evaluator regarding structuring and rating issues may lead to perverse incentives for the CRA.

Ancillary business by CRAs can be compared with the conflict when an investment bank has both an analyst department and a brokerage department. In theory the departments should be totally separate, but one could argue that this is not always the case. Typically, the phrase that

⁴² The bond market association (2006)

⁴³ Einhorn (2007)

there are Chinese walls between the two departments is used. Chinese walls are thin and quite low so that one can still communicate in spite of the walls. This communication can be both intended and unintended. Chinese walls could be the case for CRAs also. CRAs however officially claim that the different departments are well divided, and state that the rating committee has no connection to the other businesses, and vice versa.

If the phenomena of Chinese walls is applicable for how CRAs operate the core rating service together with other ancillary business, this could result in ratings being impacted by whether or not an issuer choose to purchase other services provided by the CRA. Also, the analysts might feel pressure towards giving the same score as the advisors consulted for, if one of these hypothetical scenarios does occur⁴⁴.

2.13.6. Transparency

Over the years CRAs have been accused for not publishing enough information on how they operate and the methodology behind the rating decision. Knowing the logic behind the ratings is obviously crucial for investors. In addition, CRAs' exemption from regulation FD makes it hard, not to say impossible, for investors to observe what assumptions and data a CRA has founded their rating on. As a result of pressure by amongst others the IOSCO⁴⁵, CRAs have improved their transparency substantially over the latest years.

Although critics claim that especially market participants who don't have the same capability as major investors still struggle with the transparency issue. One of the most discussed topics is the need for more comparable historic rating data from the various CRAs. Through this it would be easier to evaluate the different CRAs against each other.

2.13.7. Structured products

Structured products are securities with various types of underlying assets as collateral, and with different rights and privileges. They can be used to raise more capital at a better price

⁴⁴ In the IOSCO Code of Conduct from 2004 the CRA is "encouraged to separate, operationally and legally, its credit rating business and CRA analysts from any other businesses of the CRA, including consulting businesses that may present a conflict of interest."

⁴⁵ The IOSCO had an impact on improving CRA transparency trough CRA code of conduct in 2004. Here there are described principals on which CRAs are meant to base their own code of conduct.

than might be possible through ordinary mechanisms⁴⁶. Einhorn (2007) argues that the main reason behind the subprime crisis is not as many believe, predatory lending- loans at high interest rates to individuals who are not able to pay back. In Einhorn's opinion the main reason is the fact that lenders of all sorts have lent too much money with too little interest to compensate for the risk involved. The reason for this again is structured products. Structured products should in theory be dispersing risk, but this is done by separating the loan originator from the outcome of the loan. The loan originator gets a fee upfront, while the risk is transformed over to for example structured products as CDOs⁴⁷. The risk of these is measured by a credit rating performed by a CRA.

The underwriter of a structured product gives the CRA information that is not revealed to the public because of the CRA's exempt from regulation FD⁴⁸. This makes the CRA the most suitable to evaluate them. Here lies a substantial conflict of interest. Einhorn makes a point out of the fact that Moody's state that a reason for investing in Moody's is to participate in the growth of structured products. By this Moody's say they believe in a growth for structured product, a growth that Moody's themselves can contribute to by giving convenient ratings.

The conflict of interest for the CRAs may lead to the observed tendency of *rating grade inflation* in structured finance. Instead of using the same rating scale for bonds, CRAs use so called idealized rating default rates for the various ratings. This idealized rate for a municipal bond at a given rating is less than for a corporate bond, which again is less than for an asset backed security which is less than for a CDO. More concretely put, it is more likely that a AAA-rated security of the CDO category defaults, compared to a municipal bond⁴⁹.

Hence, you cannot compare the ratings across categories. The system creates arbitrary opportunities for issuers through constructing instruments with a higher rating than the

⁴⁶ Technical Committee of The International Organisation of Securities Commissions (2008)

⁴⁷ Collateralized Debt Obligation, a structured security based on fixed-income assets

⁴⁸ Regulation FD prohibits an issuer of security, or person acting behalf of the issuer, from communicating non-public information. The SEC exempted CRAs from regulation FD so that they could develop credit ratings and make this public. (US SEC Final Rule: Selective Disclosure and Insider Trading (Regulation FD))

⁴⁹ According to S&P's long-term data the 10 year default rate on an A rated municipal bond is 1%, while a CDO's is 2,7% (Einhorn 2007).

original rating, and thus contributing to a growth in demand for structured products.⁵⁰ This, coincidentally, also happens to be CRAs most profitable product.

2.13.8. Level of public disclosures by issuer

There has also been raised criticism towards the issuers. The issuer might hold back relevant information if he feels there is a substantial risk of the CRA abusing the information in self-interest, or that it in another way will not remain confidential. This is a major conflict of interest as CRAs could profit from being in such an insider position. Issuers on the other side would of course suffer if the confidential information was leaked, but they are also dependent on sharing a certain degree of information so that the CRA can assure potential investors of their creditworthiness.

Further, due to certain debt covenants like rating triggers, issuers may be reluctant to disclose all relevant information to the CRA. If knowledge of the existence of such rating triggers leads the CRA to lower a rating score, it may create a vicious cycle. As mentioned a rating trigger accelerates the payback of a loan if a firm's rating goes under a specified level. Through the worsened liquidity, creditworthiness would be affected which again could have an adverse impact on other agreements. In worst case, several loans would become due at once which could drive firm to bankruptcy. Thus, rating triggers can cause additional volatility.

Hence, the existence of rating triggers is not favourable information for an issuer, and they have been accused for not disclosing this information sufficiently to the public. Rating triggers was one of the reasons behind the collapse of Enron. US government, through the SEC, now require the disclosure of such triggers⁵¹.

⁵⁰ In Einhorn's speech he illustrates an example of this pointed out by Nomura securities. "if you took a AA+ rated asset backed security and repackaged it all by itself and called the repackaged instrument a CDO, it becomes AAA, because the CDO has a higher idealized default rate than the asset backed security"

⁵¹ SEC (2003)

2.14. Possible solutions to criticism

A possible solution to several of the issues mentioned above could be a more competitive market amongst the CRAs. This would lead to more pressure on the CRA-margins and a more healthy market. First of all it would cope with the difficulties with the oligopoly position of the major CRAs described in section 2.13.4. Second, more competition would give incentives for the CRAs to improve performance to maintain their position. Through the existence of more CRAs the issuers would have to choose the ones with the best track record to convince potential investors. This again could lead to a faster reaction by the CRA in terms of downgrades, as the focus would shift from a close relationship with the issuer and satisfying him, to making the best possible analysis. The problem with creating a more competitive market is that market entry barriers are very high, as described in section 2.6. Market barriers could be lowered by abandoning the NRSRO status system. Though, this solution could lead to several negative consequences as the standards towards CRA would be lowered as a result. Thus, the lowering of market barriers would possibly lead to a lower standard for the total market. Contrary, the use of a governmental approved status for CRAs could also stimulate new entries. But the criteria for this status must be reformed if this is to be the outcome.

To prevent the problem of interest with ancillary business by the CRAs, one could simply make the CRAs focus strictly on the rating business by prohibiting ancillary services such as consulting⁵². This would, as for many of the other potential solutions, be opposed by the CRAs as they profit on the current situation.

A survey by the bond market association⁵³ show that regarding transparency investors say that CRAs have improved over the last years, but many feel there is still need for improvement. The survey shows that 39% of the issuers think that the quality of the analytical performance has improved. Also investors feel that the CRAs have improved on these topics. Further improvement could be achieved through more frequent reporting and increased public disclosure. The latter could consist of revealing even more info about the rating history of each CRA, and make this information more comparable among the various CRAs.

⁵² IOSCO (2003) does not prohibit ancillary services but states: “The CRA should separate its credit rating business and CRA analyst from any other businesses of the CRA, including consulting business, that may present a conflict of interest”

⁵³ The Bond Market Association (2006)

Another suggested solution, regarding transparency, is to change the structure in the market by making the issuers share all information disclosed to the CRA with the entire market. This could be achieved by eliminating CRAs exemption from Regulation FD. Such a reform would make issuers react within following two extreme alternatives/scenarios. Either, issuers would choose the extremely conservative alternative, and eliminate all non public information-access for the CRA, in fear of sharing such sensitive information with competitors. Contrary, issuers could choose the extremely liberal alternative, and keep sharing non public information with the CRA, though this also would imply sharing with all competitors. Neither of the extreme alternatives seem very likely. The conservative one will impair a CRA's assessment data significantly, and the liberal alternative would probably ruin a firm's competitiveness. Thus, a likely outcome would be somewhere in between. As it is only if issuers choose the extreme liberal alternative that a CRA would have access to the same amount of information as it has with today's exemption of Regulation FD, such a reform would impair their rating assessments. In addition, by removing the exemption one would leave the CRAs with no advantages compared to the market. This would terminate CRAs' privileged position in the market, and make CRAs unnecessary in many ways. Hence, they would oppose this very strongly.

Regarding the lack of disclosure from the issuers, a proposed solution is to assure issuers of the confidentiality of the information shared. This could be done by CRAs increasing the focus on procedures and mechanisms to protect the non public information⁵⁴ given by the issuers.

The conflict of interest regarding the close relationship where the issuer pays for the rating can be solved by letting subscriber's pay for the rating⁵⁵. The major CRAs will of course oppose this, as their high margins would decrease as a consequence of possible free riding amongst subscribers. Thus, it would be challenging to charge subscribers for these services. Also, the issuers may want to keep the current system, as they in many ways benefit from the close relationship with the CRAs, as possibly observed for Enron or Bear Sterns. To improve

⁵⁴ Recommendation by the IOSCO (2003)

⁵⁵ Egan Jones is a CRA that is selling its ratings to subscribers instead of charging issuers. This is also the case for other smaller CRAs, but the logic behind this is that they are forced to charge subscribers as large issuers are not willing to pay for rating from a CRA that is not as recognized as the S&P, Moody's and Fitch.

the performance, which is closely linked to the relationship with issuers, CRAs should adopt procedures and mechanisms to promote quality and integrity in the rating process⁵⁶.

Regarding the problem with structured products, one solution could be to rate the different instruments at a single scale with the same implied creditworthiness. This would make the creditworthiness of structured product much more transparent and comparable. CRAs would resent dislike such a change because of their high profit on these types of ratings. But most importantly, the fact that there are so many different structured products with various underlying collateral and different rights and privileges would complicate an effort of creating a single rating scale.

As a result of both SEC and IOSCO reports, the consensus amongst market participants seems to be that most of the conflicts of interest are best solved through CRA self regulation and increased level of disclosure. This would result in improved reliability for ratings⁵⁷. Thus, there is a strong belief that there is no need for substantial new rules from the regulators⁵⁸, and that the market is best suited to improve itself, given that CRAs adopt some of the measures recommended. Although, it does not seem likely that the CRAs voluntarily will adapt measures that imply decreased profits.

3. Previous literature

A number of studies regarding the effect of rating changes and the role of CRAs in the financial market have been performed. Most studies look at the effect of rating changes for different financial market regions (countries). The studies often differentiate between the effect on stock returns and bond prices. In general the effect is quite small, but most studies show a certain effect of rating changes. Most studies find that the impact is greater for downgrades than for upgrades. Mtolcsy and Lianto (1995) say that the reason for this could be that good news travel fast compared to bad news, hence implying that investors place more weight on downgrades than upgrades. One could also argue that firms have incentive to promptly release positive information, but on the other hand downplay and postpone negative.

⁵⁶ Recommendations by the IOSCO (2003)

⁵⁷ Champsaur (2005)

⁵⁸ The CESR does in its Technical advice not recommend the increased use of regulatory requirements as the impact of this on the competition in the market is unclear (Champsaur 2005)

We separate between US studies and other studies.

3.1. US studies

Many early studies originate from the US and thus look at US data. The advantage with using US data is that there in general are more observations of rating changes due to the earlier developed market for CRAs. The minor disadvantage though is the strong regulatory role CRAs play in the US, as described in section 2.5.5, and how this has a large impact on which investments are made. Hence, the results in the US studies are partly a consequence of this.

One of the most referred papers on the topic is by Holthausen and Leftwich (1986). They use data for firms listed on the New York and American stock exchange, and which are rated by Moody's and/or S&P, over the period 1977-1982. In total they look at 1014 rating revisions. The paper finds significant negative abnormal returns as a consequence of rating downgrades. However, it finds little evidence that a rating upgrade is followed by a positive abnormal return. Holthausen and Leftwich additionally test watch list placement for abnormal returns. Also in this case, the findings are significant negative abnormal returns in association with negative announcements and positive, but not significant, returns with positive announcements. They also find that abnormal returns to a great extent occur in the period 300 days prior to announcement, meaning that the information the rating is based upon already is known in the market.

Hand et al. find the same results as Holthausen and Leftwich (1985) regarding stock returns. They also test for bonds and similarly find a greater negative impact by a downgrade than a positive impact by an upgrade. They find that for both bond and stock prices there is a significant larger impact of an unexpected rating, meaning when the issuer has not been put on watch list prior to a rating change. There is also evidence of a greater impact on the abnormal return by a downgrade below investment grade. Both studies have the advantage towards European studies that they utilize a much larger sample size. Hand et al. use daily data which makes it easier to isolate the event date.

Wakeman (1978)⁵⁹ looks at monthly data. He finds that there is no significant abnormal return at the time of a rating. This may be caused by the data infrequency, and is a potential

⁵⁹ Referred to by Holthausen and Leftwich (1986)

weakness of the study. Although, there are other studies that use a lower frequency in their data, such as Katz (1974)⁶⁰, and which do find significant impact on returns.

3.2. Other studies

Studies for other countries have made its entry as CRAs have become more established in other parts of the world. The most obvious weakness is the relatively small sample of events compared to US studies, especially for early studies.

Barron et al. focuses on the UK financial market, and on the effect of rating changes on stock returns. What makes the study quite unique is that they differentiate between ratings on long and short term (commercial) paper. Most other studies, and in particular American studies, just focus on long term papers. For long term papers they find, like Hand et al, and Holthausen and Leftwich, significant negative abnormal returns following a downgrade, while there is little evidence of impact by an upgrade. They find a similar tendency in the data for commercial papers. Regarding the effect for watch list data they find, contrary to most other studies, significant positive abnormal return followed by a positive watch list placement, while there is no evidence of any significant abnormal return in the case of negative watch list placement. A possible reason for this result, and also a potential weakness, is their limited sample of watch list events. They find that the change of a rating class has a significant higher effect than the change within a class. In this case there is also a stronger negative effect of a downgrade, than a positive effect of an upgrade. Unlike other studies they examine the effect of rating changes related to the firm's volatility and hence the cost of capital. The results give little support for the hypothesis that rating changes have effect on stock return volatility.

Creighton et al. (2004) examine the impact of announcements from the CRAs in Australian financial markets. More specifically they test the effect on stock prices and yield spreads. They find evidence that both prices move in the direction indicated by the announcement, or in other words that a negative announcement leads to negative abnormal return, while a positive one leads to positive return. As Barron et al. they also find a significant impact from changes across rating classes. This particularly applies for ratings crossing from investment to speculative grade. The effects are larger for small firms. Further they observe significant

⁶⁰ Referred to by Holthausen and Leftwich (1986)

negative abnormal return over the period (100 day window) preceding the day of announcement. This could imply that ratings only validate already known information. A weakness with the study is that it aggregates announcements, to compensate for a small sample. More precisely the aggregated sample includes actual rating changes as well as watch list placements and outlook placements. By doing so, they mix different types of announcements which each gives different information to the market. Through this they possibly get smaller, but more significant, abnormal returns.

Mtolcsy and Lianto (1995) also look at Australian data. They find like Hand, Holthausen and Leftwich, Creighton et al, that the effect of downgrades is significant, but that this is not the case for upgrades.

3.3. Our study vs. previous studies

The most obvious difference in our study compared to previous studies is that we look at firms listed on the OSE in Norway. To our knowledge this has not been done in any former study. An explanation for this lack of previous research is the limited use of CRAs by firms listed on the OSE. Our data shows that most of the rating action has been performed post year 2000 and also in the most recent part of this time period. The fact that we investigate a quite new market gives us the opportunity to look at the initial impact by the use of CRAs. The disadvantage of our study on Norwegian data is the limited amount of observation in our sample. The US studies represented by Holthausen and Leftwich and Hand et al. have a much higher number of observations in their sample which increase their reliability. Most of the other studies mentioned also have a somewhat higher number of observations compared to our study, but not nearly as high as the US studies.

Compared to the US studies an advantage for our study is that Norway does not have the same strong regulatory framework. In the US, this forces large institutional investors to sell issues related to specific downgrade intervals, and thereby creating an excess supply of the downgraded issue. Furthermore this affects the bond price and interest rate in an adverse manner for the issuer, resulting in higher financial cost. Also in regard of stock return this might have a negative affect for the issuer. On the contrary, our results can be said to be free from this biasing regulatory role, and lead to more isolated event results.

We differ from the study by Wakeman through using daily data which gives us the possibility to isolate the event to a greater extent. This is also done by all other mentioned studies. The use of daily data strengthens our test.

Like Hand et al and Creighton et al. we remove contaminated events that can influence our results. By doing so, we are able to a greater extent separate the effects caused by other events from the effect of the actual rating event.

The sub-categories we examine are mostly based on well-known and interesting categories from previous studies. To further distinguish our study we test sub-categories that have not been examined before. We test the effect of downgrades over several notches vs. only one, and investigate how the impacts from being placed at watch list and downgraded at the same time are. We also look at the effects of outlooks published by the CRAs, in addition to the effect of watch list placements performed by several other studies. Through this we try to discover if, presumably, increased severity of the announcement leads to stronger results. As a consequence of our low sample we test the effect of aggregated announcements⁶¹, positive or negative. This is previously only performed on the Australian financial market by Creighton et al.

4. Methodology

In theory stock prices should reflect all public known information about a firm's future. Hence stock prices in a perfectly efficient market should adjust immediately as new information reaches the market. This is, however, not always the case. Sometimes information is leaked prior to the public announcement by the firm, and often it might take some time for the market to fully interpret the news. To measure how a stock price responds to new information we make use of an *event study*.

The essence of an event study is to analyze the impact of new information. This is done by checking for abnormal return on a stock at the time of a news release. In our case such a news release is an announcement of a change in rating, watchlist or outlook status. To determine the abnormal return we must first find the stock's normal return. This is done by studying stock

⁶¹ Rating changes, watch list placements and outlooks

return and market return during an estimation window, and gives us the market model. The abnormal return is subsequently determined by deducting the normal return from the actual return during an event window. To test the statistical significance of the results we apply a two sided t-test. Our analysis is based on methodology from MacKinlay (1997), and we utilize the same formulas and notations used by him.

In the following we briefly describe the procedure, determine the various steps for our analysis and explain the rationale behind these.

4.1. Identify the event date

The event date is the point in time when the market first apprehends the new information. The more accurate you can identify the event date, the more powerful the test will be, and the more able you are to accurately measure the impact of the new information. Event studies can be performed using various data frequency. The most common however is daily data. The reason for this is that data with lower frequency (for example months) often is too infrequent to isolate the event from the period before and after the event. Thus other value-relevant events than the one we want to examine might influence the stock price, and consequently contaminate the event study.

In our study the event date is the date when a rating, watchlist or outlook action is announced by the CRA. We use daily data in our analysis to isolate our events effectively.

4.2. Define the event window

The event window is the number of trading days preceding and following the event date. This is the time period we suspect, and wish to analyze for, abnormal returns. In general, the more unnecessary days you include in the event window, the less powerful the test will be for the entire window. Hence, by being more certain about the event date we can minimize the needed event window and thus maximize the strength of the test. It is normal to include some extra days around the event to account for lags and leakages in the market, but more importantly to gather the effect from non-trading days, and news received in the market after trading has terminated for the day. When defining how large the event window should be it is necessary to consider the expected degree of information leakage. Leakages respond to a situation where information on a rating is leaked prior to the public announcement and thus giving individuals with access to this leaked information the possibility to adapt their

positions in the related firm accordingly. For extremely certain event dates, with little or no chance of leakage, the event window is often set to plus minus 10 trading days. For more uncertain dates with higher chance of leakages the window is often set to plus minus 30 trading days. In sum, the essence is that the event window should be wide enough to cover the entire effect of the event, but also be adequately narrow for the results to be statistical significant. By adding too many days one also risks including the effects of other events on the return.

In our case we can pinpoint exactly at which day the event occurs. In theory we could also narrow it down to the time of day the rating action announcement is made. Although, we do not have access to this information and hence concentrate us on the date the announcement is made on the CRAs website. We consider the amount of leakages prior to a rating change to be very limited due to industry regulations⁶².

Though the date of rating announcement is easy to define, we apply a plus minus 20 days event window to be certain of grasping over all the possible affected days. Despite assurance from the CRAs of minimal leakages one can never know if this is correct. Even if no leakages occur, the players on the financial market might anticipate a downgrade to some extent under certain circumstances and thus price reactions may occur prior to the event date. Another reason for expanding the event window is to account for the fact that rating announcements sometimes are made at a time when the market in Norway is closed, and that the financial market often use some time to fully reflect new information in equity prices. To improve our tests further we also analyze distinct time periods within the event window to detect abnormal return in more detail. These shorter event windows, referred to as event slots, also help improve statistical significance as mentioned earlier. The event slots we have chosen to focus on are the following ten periods:

-20 to 20 / -10 to 10 / -20 to -1 / 1 to 20 / 0 to 2 / -2 / -1 / 0 / 1 / 2

⁶² S&P state that “in accordance with Industry rules and regulations, information about ratings changes is not released to anyone prior to it being published. Once the information has been published and the press releases have been sent out, it is available in the public domain”. (S&P analyst Sarah Frommlet in an e-mail to us)

4.3. Define the estimation window

The estimation window is a period of time when no event has occurred. The intention is to estimate a stock's normal return, or in other words how it would have behaved in the absence of an event. Essential issues to consider are the statistical significance of the estimated parameters, and their relevance as predicting parameters for the event window. There is a trade-off between these two issues. From a statistical perspective a long estimation period would be preferable due to the significance of the estimators, while from the economical viewpoint it is of importance to keep the estimation window short enough to be relevant for the event window. We choose an estimation period of 100 days. This is in line with previous studies⁶³, and is an adequate compromise between reliability and relevance. With this estimation window we get very few regression parameters with less than 5% significance level⁶⁴, and the relevance for the event window should be adequately addressed. In sum this provides us with a statistically strong and relevant event study. We use daily data also for the estimation window, as this always should be in accordance with the frequency in the event window.

It is most common to define the estimation period as the period of time before the event window. Depending on the availability of data, it also occurs that the event window itself is used in the estimation window, but this should be avoided if relevant data in the time period preceding the event window is available⁶⁵. The reason for avoiding such overlaps is that the impact of the event itself should not be included when estimating normal return. Reflecting the abnormal returns from the event would be contamination. We have chosen the period prior to our event window, so that our estimation window is placed from day -120 to day -20, and are thus avoiding contamination in this case.

MacKinlay's model also opens for adding a post-event window to the estimation window to estimate the normal return model. By doing so the aim is to increase the robustness of the normal market return measure, to account for gradual changes in its parameters (i.e. alpha and beta). We do not consider rating changes to be a fundamental change in a firm's riskiness, and thus have not included such a post-event estimation window.

⁶³ Creighton et al. (2004)

⁶⁴ 10 of our 95 estimated β s have a p-value of more than 5%.

⁶⁵ This is a typical issue when detecting abnormal returns concerning an IPO

The time line for an event study can be illustrated as in figure X underneath, tying together the event date, event window and estimation window (and post-event window if relevant).

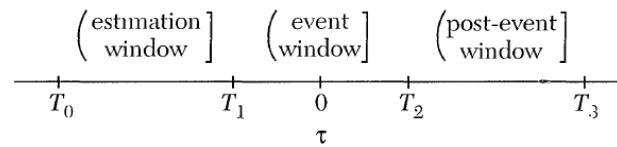


Figure 1: Time line of an event study (MacKinlay 1997)

The following notations will be utilized in our study⁶⁶. Returns will be indexed in event time using τ . We define $\tau = 0$ as the event date, in our case the rating action. $\tau = T_1$ to $\tau = T_2$ represents the event window, and $\tau = T_0$ to $\tau = T_1$ represents the estimation window. We let $L_1 = T_1 - T_0$ and $L_2 = T_2 - T_1 + 1$ represent the length of the estimation window and the event window respectively. This notation facilitates the use of abnormal returns around the event day in our analysis. Illustrated underneath is a more specific figure of our event study, and the parameters we have chosen.

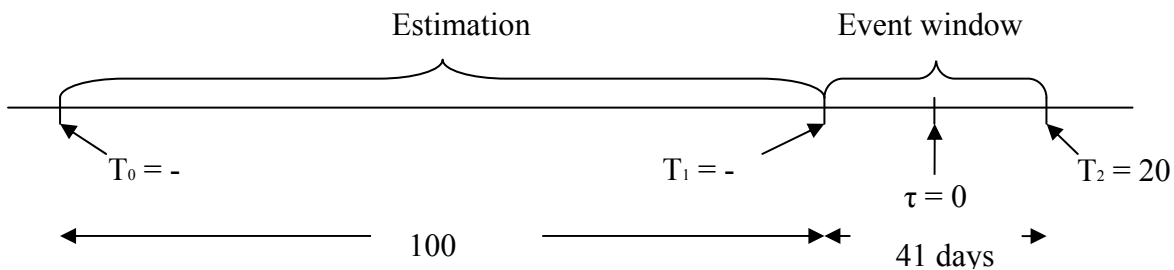


Figure 2: Time line of our event study

4.4. Select the sample of firms

There are some important screening criteria to consider when choosing the firms to be used in the event study. First, one must decide from which stock exchange and/or industry to gather firms for the analysis. Usually this happens as a natural step during the thesis formulation of one's study. Second, it is of importance to check that the firm has enough trading days to avoid problems of infrequent trading. Too low frequency biases the returns and the stock is thus not considered suitable for an event study. Another essential criterion is to avoid firms with more than one major event over the estimation period or event window. The implication of several value-impacting events is that it makes it difficult to distinguish between the

⁶⁶ MacKinlay (1997)

different events, and hence decide which event is driving the stock price. Hence we want to remove these events because of contaminating effects.

In our event study the sample of firms are listed on OSE and rated by S&P, Moody's and/or Fitch. We find these companies to have enough trading days to avoid problems with infrequent trading. The firms are checked for other major events⁶⁷.

4.5. Calculate “normal” (nonevent) returns

The normal returns are the returns which should occur in the absence of the event. This normal return is determined by using an asset-pricing model. There are several types of asset-pricing models, but MacKinlay (1997) loosely groups them into two categories, statistical and economic. Statistical approaches follow statistical assumptions and do not depend on any economic arguments. Economic models, such as the *Capital Asset Pricing Model (CAPM)* and *Fama-French three factor model*⁶⁸ are also based on statistical assumptions, but do in addition rely on assumptions concerning the investor's behavior. According to MacKinlay the advantage of using economic models lies in its possibility of including economic restrictions to calculate more precise measures of the normal return. However, MacKinlay also discuss biases related to economic models, and that the additional factors add relatively little explanatory power. Hence, the statistical *Market Model* is his preferred asset pricing model.

The market model is CAPM's empirical counterpart. Researchers debate on how many independent variables to use for predicting the expected returns in the regression. We have chosen to use one independent variable in our study, the single-index market model (risk adjusted return method). Our choice of only one is based on the fact that several independent variables have not proven to improve the predictability notably. As the name suggests, the single-index market model relates the return of a given security to the return of the market portfolio. A broad representative index is often used as a good approximation of the market portfolio. Though, in our study we have not used such a proxy, but applied the actual index, OSEBX (Oslo Stock Exchange Benchmark Index). We chose to use regular (nominal) returns for our study. Using excess returns are more in line with the CAPM but the difference is

⁶⁷ More on this under section 5

⁶⁸ Fama and French (1993) and (1996) referred to by MacKinlay (1997)

minor, and the previous studies we have looked into ignore this issue. For any security i the market model is

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

$$E(\varepsilon_{it}) = 0, \text{var}(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$$

Where R_{it} and R_{mt} are the security and market return in period t respectively, and ε_{it} is the residual disturbance term with constant standard deviation and zero mean. The parameters α_i , β_i and $\sigma_{\varepsilon_i}^2$ are to be estimated with the market model for each single event during the estimation windows.

When predicting normal return for a few of the earliest events in our sample we have applied the mean return approach. This is a simpler technique than the risk adjusted return method, and predicts normal return in the event window to be the same as the mean return in the estimation window. We have used this method due to lack of data on OSEBX in the related time period.

4.6. Estimating the market model

We use a linear Ordinary Least Squares (OLS) method to estimate the market model. This is a commonly used method, and is applied on the data from the estimation window to give us the necessary parameters for predicting normal returns in the event window. The regression given by OLS-method minimizes the sum of squared residuals. OLS assumes constant variance over time and no autocorrelation.

Given these assumptions OLS is unbiased and efficient. For company i the calculations of the parameters in the estimation window are

$$\hat{\beta}_i = \frac{\sum_{\tau=T_0+1}^{T_1} [(R)_{i\tau} [-\hat{\alpha}_i](R)_{m\tau} - \hat{\beta}_m]}{\sum_{\tau=T_0+1}^{T_1} [(R)_{m\tau} - \hat{\beta}_m]^2} = \frac{\text{cov}}{\text{var}}$$

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{L_1 - 2} \sum_{\tau=T_0+1}^{T_1} (R_{i\tau} [-\hat{\alpha}_i - \hat{\beta}_i R_{m\tau}])^2$$

In our study $\hat{\beta}$ measures the relationship to the OSEBX index and $\hat{\alpha}_\tau$ gives the intercept of the regression line with the y-axes.

4.7. Calculate abnormal returns

Abnormal returns (ARs) are the actual returns that occur over the event window because of the event, minus the normal returns that should have occurred over the event window without the event, that is, nonevent returns. Given the parameters from the market model one can measure and analyze the abnormal returns.

ARs for stock i can be defined as AR_{it} , where $t = T_1 + 1, \dots, T_2$ is the sample of L_2 for AR for firm i in the event window. By using the market model to find the normal return, the sample AR can be defined as

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$$

According to the null hypothesis, the abnormal returns are normal distributed with zero conditional mean and conditional variance equal to

$$\sigma^2(AR_{it}) = \sigma_{\epsilon_t}^2 + \frac{1}{L_1} \left[1 + \frac{(R_{mt} - \beta_m)^2}{\sigma_m^2} \right]$$

The conditional variance has two components, the disturbance variance and the additional variance due to the sampling error in the parameters, α and β .

MacKinlay (1997) claims that because of serial correlation on the abnormal returns the variance regarding the sample errors goes to zero as the estimation window, L_1 , increases. Hence the variance left will be the one caused by the disturbance

$$\sigma^2(AR_{it}) \approx \sigma_{\epsilon}^2$$

Given the null hypothesis that an event has no impact on the behaviour of returns (mean or variance), the distribution of the sample AR of a given observation over the event window is

$$AR_{it} \approx N(0, \sigma^2(AR_{it}))$$

In our study the null hypothesis hence is that a rating change has no impact on returns (mean or variance).

4.8. Aggregation of ARs

When testing the null hypothesis we aggregate the ARs over similar events and also cumulate over time. While explaining the methodology, we for simplicity note the average aggregated abnormal returns for \overline{AR} and the cumulative average abnormal returns for \overline{CAR} , like done by MacKinlay. When describing the results in other sections we use the terms AAR and CAAR respectively for the aggregated average. By utilizing different combinations of events and

time, we check for significant impacts within the sample of events and within the event window. To start with, the non-aggregated cumulative abnormal return (CAR) is the sum of the ARs, and can be defined as

$$CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{i\tau} \quad \text{with distribution} \quad CAR_i(\tau_1, \tau_2) \sim N(0, \sigma_i^2(\tau_1, \tau_2))$$

Asymptotically as L_1 increases, variance of CAR_i is

$$\sigma_i^2(\tau_1, \tau_2) = (\tau_2 - \tau_1 + 1)\sigma_{\varepsilon\tau}^2$$

In the process of accumulating across securities one has to assume that there are no overlaps in the event windows of the various securities to avoid clustering. The absence of clustering assures that the ARs and CARs will be independent across securities.

If the event window L_1 is small, the variance of the CAR should be adjusted for the effects of the estimation error in the normal model parameters.

The \overline{CAR} and variance aggregated for all companies is given by

$$\overline{CAR}(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^N CAR_i(\tau_1, \tau_2)$$

and

$$\text{var}(\overline{CAR}(\tau_1, \tau_2)) = \frac{1}{N^2} \sum_{i=1}^N \sigma_i^2(\tau_1, \tau_2)$$

In our study we assume that the event window L_1 is wide enough to assume that the variance regarding the sample errors goes to zero.

4.9. Determine the statistical significance of the ARs and the CARs

Inferences about the \overline{CAR} s can be drawn using

$$\overline{CAR}(\tau_1, \tau_2) \sim N[0, \text{var}(\overline{CAR}(\tau_1, \tau_2))].$$

As the real $\sigma_{\varepsilon\tau}^2$ is unknown, one can estimate the variance by using the variance for the market model. Finally, the null hypothesis $H_0: \overline{CAR} = 0$, that the abnormal returns are zero, can be confirmed or disconfirmed by a two sided t-test:

$$\theta_1 = \frac{\overline{CAR}(\tau_1, \tau_2)}{\text{var}(\overline{CAR}(\tau_1, \tau_2))^{\frac{1}{2}}} \sim N(0,1)$$

This distribution result is asymptotic with respect to the number of securities N and the length of the estimation window

When testing a null hypothesis one also has an alternative hypothesis to test against. In such a study the alternative hypothesis (H_1) would be that the average CARs are statistically different from zero, $H_1: \overline{CAR} \neq 0$.

The H_0 is normally tested on a 99%, 95% or 90% confidence level, with critical t-values calculated using $N-2$ degrees of freedom⁶⁹. N is here the sample size and 2 is the number of estimators. The p-values we extract from these t-values give the probability of obtaining a test result at least as extreme as the one actually observed, given that the null hypothesis is true. Based on the p-values one then can determine whether the null hypothesis should be rejected or not. A p-value of 0,05 or less implies that it is less than 5% probable to get this result if H_0 is correct. Thus, one rejects the null hypothesis for a p-value less than 0,05 at a 95% confidence level. The same logic applies for 99% and 90% confidence levels. We look for significance in our results for all three confidence levels.

5. Data

We examine companies that are both listed on OSE and rated by S&P, Moody's and/or Fitch. S&P and Moody's have captured almost the entire market for issuers listed on OSE. Fitch has only a small share of the rating activities. Our sample of rating announcements covers a time period from April 1991 to April 2008, though the majority of events are post year 2000. In total we found the following 10 companies that match our criteria:

- DnB NOR Bank ASA
- Norsk Hydro ASA
- Norske Skogindustrier ASA
- Ocean Rig Norway ASA
- Petroleum Geo Services ASA
- SAS AB
- StatoilHydro ASA (previously Statoil)
- Storebrand ASA
- Telenor ASA
- Yara International ASA

⁶⁹ Regarding samples of 3 events or less we have deducted 1 from the degrees of freedom. We acknowledge that this is a manipulation, and hence does not give us correctly estimated p-values.

Our focus is on long term credit ratings. In particular, from Moody's we use: Senior Unsecured – foreign ratings, or Long Term Issuer Rating – foreign, when the former is not given. From S&P we use: Issuer Credit Rating, and from Fitch we use a general rating class (no particular name given). We choose to not test the effect of rating changes for short term papers. The reason for this is the very limited amount of samples we have regarding this, and that most of this data complies with long term ratings.

We treat simultaneous rating changes by the different CRAs as one event. If there is both a rating change and a watch list or outlook placement on the same date, we also treat them as one event, and focus on the announcement type with strongest signalling effect⁷⁰. The reason for treating as one event is that though several CRAs react to the same information and choose to downgrade at the same time, it is still only one independent event. Intuitively we understand that if, hypothetically, there are 100 CRAs and all of them downgrade a firm at the same date, counting this as 100 independent events would give great significance for the result, without this being correct. Hence, we have removed these types of events.

It is also necessary to adjust for non-credit-rating-related events within the event window when choosing our sample of data. Typical events we adjust for are surprising earnings announcements (discovered by looking for extreme returns related to the earnings announcement), mergers & acquisitions and public offerings. We consider these events to be of such significance that they affect (contaminate) the stock return and thus make it difficult to isolate the rating announcement. We have also removed an event if the stock return, within the event window, acts in such an extreme way that it does not seem plausible that a rating action would impact in such strength. When categorizing these contaminated events we have distinguished between events which without any doubt should be removed, and the events which we have some doubts about removing, but still remove in our main study. In addition we have a small sub-study which includes these events that we were not sure about removing, called “including contaminated data”. The events we typical have added back in this sub-study are the ones related to earnings announcements and extreme volatility. For a detailed summary of events we have removed permanently and which we have used in the contaminated sample see *Table A-1* and *Table A-2* in the appendix.

⁷⁰ The signalling order is 1) Rating change, 2) Watch list placement, 3) Outlook placement.

To uncover the contaminating events we use the Newsweb service for OSE⁷¹. By doing so we find that some of the rating changes not are announced here. OSE states⁷² that there are no particular rules at OSE for informing the market regarding rating changes. Whether the rating is informed to the market through Newsweb depends on if the information is considered to be inside or not. If the information is regarded inside it is the company's duty to inform about it on Newsweb. Hence, some rating changes will reach the public either through word of mouth, media or the respective CRAs website, where the information initially is posted⁷³. If the market is not efficient regarding the announcement by the CRA, a lag would be created. Though, this seems unlikely considering the high efficiency in international financial markets. Also rating actions often occur in periods when a company already has high information activity. This is typical times of quarterly earnings announcements. Hence, there is often a certain degree of contamination at the time of a rating action, but this is impossible to account for in a study.

The following two tables summarize the event data we have for negative and positive announcements by CRAs. The contaminated events are also listed.

Table 1: Data - Negative Announcements

Firm	Downgrades (<i>cont.</i>)	Neg. Watchlist (<i>cont.</i>)	Neg. Outlook (<i>cont.</i>)	Total Neg. Obs.	(& incl. cont.)
DnB NOR Bank ASA	1	1	0	2	2
Norsk Hydro ASA	3	1	1	5	5
Norske Skogindustrier ASA	6	5	2	13	14
Ocean Rig Norway AS	0	3	1	4	4
Petroleum Geo-Services ASA	4	0	0	4	8
SAS AB	2	3	1	6	6
StatoilHydro ASA	2	0	1	3	3
Storebrand ASA	1	1	0	2	2
Telenor ASA	1	1	2	4	4
Yara International ASA	0	1	0	1	2
Sum:	20	5	8	44	50

⁷¹ Newsweb is where firms listed on OSE make announcements

⁷² Lars Jacob Braarud, Vice President, Listing, Oslo Børs ASA

⁷³ As mentioned earlier is our study based on the time a rating action is announced on the CRAs website.

Table 2: Data - Positive Announcements

Firm	Upgrades (<i>cont.</i>)	Pos. Watchlist (<i>cont.</i>)	Pos. Outlook (<i>cont.</i>)	Total Neg. Obs.	(& incl. cont.)
DnB NOR Bank ASA	5	1	6	12	12
Norsk Hydro ASA	3	0	1	4	4
Norske Skogindustrier ASA	0	0	0	0	0
Ocean Rig Norway AS	2	1	0	4	5
Petroleum Geo-Services ASA	1	1	1	2	3
SAS AB	1	0	0	1	1
StatoilHydro ASA	4	0	0	4	4
Storebrand ASA	1	1	0	2	2
Telenor ASA	0	0	0	0	0
Yara International ASA	1	0	0	1	1
Sum:	18	2	8	30	32

We acknowledge that the number of events is limited, especially compared to US studies. Our opinion is however that we have enough observations to reach significant results. The rather low amount of events in the study is reflected through the total volatility of our samples, so when we test for significance by performing t-tests and finding related p-values, the uncertainty regarding a relatively small sample is taken into consideration.

Daily historic stock prices for the companies are collected from Datastream. They are adjusted for dividends, splits and other factors which can bungle returns. Our benchmark index for measuring market returns is the OSEBX (Oslo Stock Exchange Benchmark Index).

We choose to only look at the impact on stock returns, and not the effect for bonds as some previous studies. Creighton et al. perform this particular study, but point out the difficulty of getting good daily data for bond prices and spreads. Bergh et al. (nr 12/2008) describe the bond market in Norway. They find that many of the firms listed on OSE, especially in the oil, rig and gas industry, have non-listed bonds where trading is not registered. The price data is obtained by the investment banks. Getting and structuralising this data is problematic, or virtually impossible. In addition, few of these bond issues trade on a regular basis which would force us to use a wider window and by this get less strong results. Hence, we have chosen not to focus on the effect on bond pricing of rating changes.

6. Results

In the following we present the results of our event study. The study consists of several components, referred to as sub-studies (a rating downgrade or a positive watchlist placement are examples of two such sub-studies). The sub-studies are also divided into many categories where we combine related events. Within these distinct sub-categories we examine different event samples on their own (for instance the difference between samples of small and large firms). The final detail of our event studies is that we examine different days and periods, event slots, within the event window.

Our main focus is the effect of credit rating downgrades and upgrades, with several sub-categories. We also look at the effect of watch list and outlook announcements. Finally we look at the effects of positive or negative announcements aggregated, meaning that all rating, watch list and outlook observations are added together and categorized as either negative or positive. We do not separate between the CRAs, and hence is the number of events the accumulated number from S&P, Moody's and Fitch.

6.1. Rating Changes

We look at downgrades and upgrades separately. For each of these sub-studies we divide related events into sub-categories. As mentioned under section 5, we have removed several events that bias our samples. In addition, there are events we are unsure whether to include or not, for instance those close to earnings announcements. We test the samples both with and without these data. The sample where the uncertain data is included is referred to as including contaminated data. Our main focus is however on the uncontaminated sample. As mentioned in section 5, the reason for this is that there are some returns in the contaminated sample that strongly influence the event study. We suspect stock returns at the time of these rating announcements to only partially be caused by rating changes, since the returns are very extreme compared to their corresponding modest rating changes. It does not seem economic plausible that a rating or watch list action has such immense effect on a stock price. Hence it seems more rational that these drastic returns also, or entirely, are related to other information brought to the market. The various events we have removed are described in *Table A-2* in the appendix. The results of the event study including the contaminated data are presented briefly in the very end in this result section.

6.1.1. Estimation window reflections

An interesting place to begin describing stock price movement related to rating actions is by starting with a broad time perspective. One interesting issue is to identify how the stock price moves over the longer time period prior to a rating announcement. We have examined individual equity returns deducted for the market index (OSEBX) during the estimation window and until the event date, days -120 to 0. This is a simple way (not risk adjusted) of observing out- or underperformance. The results are shown in *Figure 3*.

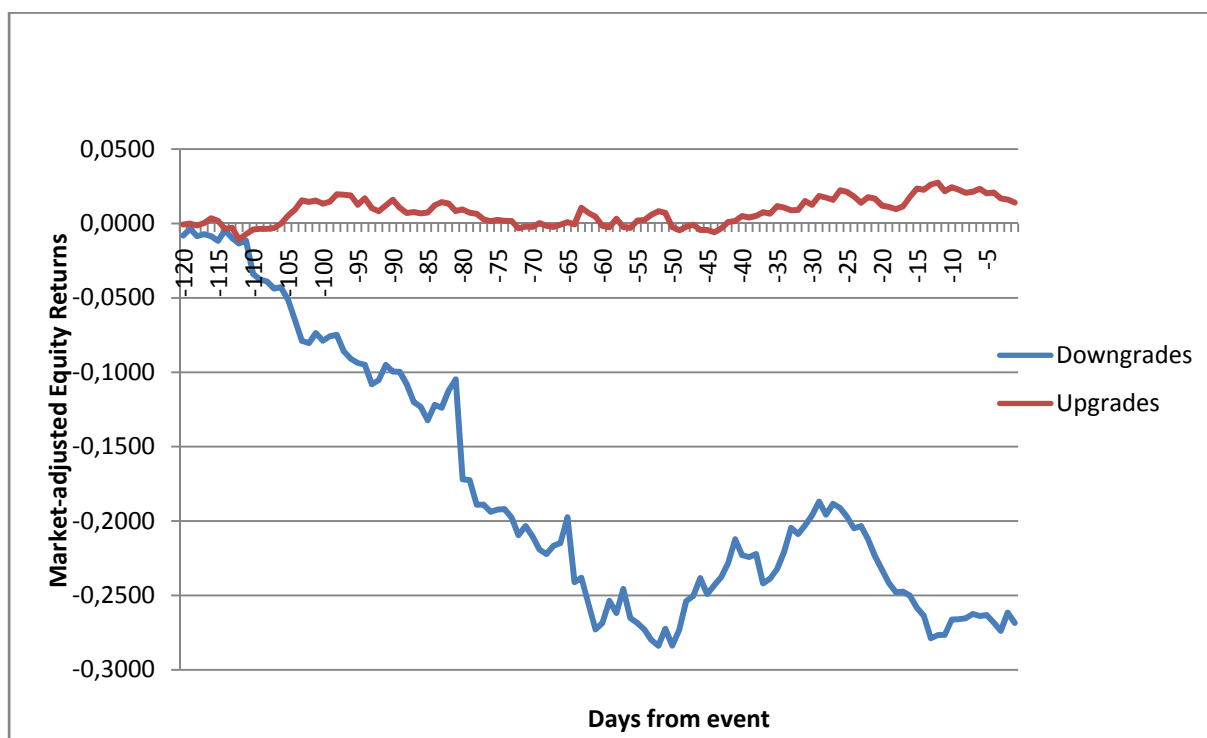


Figure 3: Cumulative market-adjusted average equity returns prior to rating changes

As we see, from the lower blue line in the chart, companies who are subject to downgrades on average underperformed the market index in the 120 day period prior to the announcement. This underperformance cumulates to approximately 26%. By contrast, companies soon to be upgraded do not outperform the broader market correspondingly. The market adjusted return for these firms are close to zero for the entire period. Further, *Figure 4* illustrates the cumulative average abnormal return within the event window. During these days (-20 to 20) we observe that the contrast between downgrades and upgrades is not nearly as distinct.

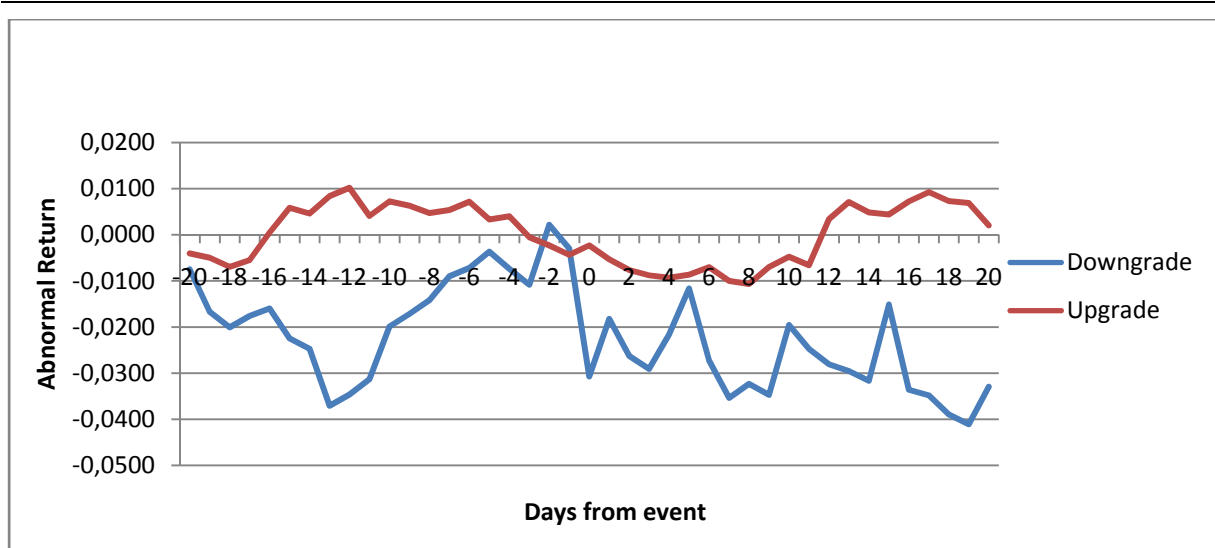


Figure 4: Cumulative average abnormal return

Still companies subject to downgrades underperform the market (now risk adjusted underperformance), and upgraded firms bounce over and under the zero return line, but the results does not seem as significant as for the window of 120 days prior to the event. As comparison the downgraded companies underperform with slightly more than 3% during the 41 days long event window, while during the 120 days pre event date window the same underperformance was 26%. Thus, this suggests that the information triggering rating downgrades already is reflected in a firm's stock price. And also indicate that credit rating agencies have minor impact on equity holders over the 41 day period. In the following sections we will examine in closer detail if this is the entire story, or if credit rating agencies, at least under certain circumstances, in fact do influence stock prices.

6.1.2. Downgrades

Our null hypothesis is that there should be no significant abnormal return related to a rating downgrade. Consequently, the alternative hypothesis is that there is significant abnormal return related to a downgrade. Intuitively this abnormal return should be negative in the case of a negative rating announcement, but still we test for abnormal return in *either* direction by applying a two-sided t-test. Results for rating downgrades are presented in a table for each sub-category. Comments are given for further description, in particular extensive when results are significant and interesting to elaborate on.

6.1.2.1. All events

Table 3 includes all events related to rating downgrades, and shows the average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) for the different event slots we have determined within the event window. It also shows the proportion of events with a negative return within the respective periods.

Table 3: Abnormal Returns related to Downgrades				
Sample: All Events				
Days Relative to Event	AAR		% Negative Returns	
-2	1,3 %		0,20	**
-1	-0,5 %		0,80	**
0	-2,8 %	**	0,65	
1	1,2 %		0,45	
2	-0,8 %		0,60	
	CAAR			
0 to 2	-2,3 %		0,65	
-20 to -1	-0,3 %		0,60	
1 to 20	-0,2 %		0,60	
-10 to 10	1,2 %		0,45	
-20 to 20	-3,3 %		0,75	**
Sample size	20		20	
Std dev daily AAR	0,0123			
Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test				

We see that most of the abnormal returns are negative, but that only AAR(0) is of any significance. The AAR on the event date is -2,8%, at a 5% significance level. None of the other daily abnormal returns in the time span -2 to 2 are close to significant. In fact, AAR(-2) and AAR(1) even show a positive return. For the CAAR we observe that period 0 to 2 (-2,3%) and -20 to 20 (-3,3%) are the most consistent to an negative impact, but that neither are significant.

Based on our results we reject the null hypothesis for AAR(0), the event date. Consequently we adopt the alternative hypothesis, which implies that rating downgrades have significant negative impact on stock prices. Hence, our first indication that CRAs convey some new information to the market is observed. These findings are in line with earlier studies like by Hand et al.

One can also note from *Table 3* that CAAR(-20 to 20) and AAR(-1) have a significant amount of negative returns (75% and 80% respectively), which indicates that a downgrade is related to a significant amount of more negative than positive returns. In contrast to this AAR(-2) actually indicates the opposite, as we find only 20% negative returns at this particular event window day. All three observations are at a 5% significance level. One drawback with our test of signs is the small event amount (which is extra problematic for binary studies) in the sample, so its relevance may be limited due to this issue.

6.1.2.2. Anticipated vs. Unanticipated announcements

In our study we divide rating downgrades into the sub-category anticipated vs. unanticipated, which is in line with the study by Creighton et al. An anticipated change in rating implies that the issue or issuer is put on watch list prior to the rating down- or upgrade. An unanticipated rating change conversely implies a rating change where the issuer has not been put on watch list prior to the rating action. Hence, an unanticipated change in rating should come as a larger surprise to the market than an anticipated rating correction.

Table 4: Abnormal Returns related to Downgrades		
Sample: Anticipated vs Unanticipated		
Days Relative to Event	Anticipated AAR	Unanticipated AAR
-2	1,0 %	1,8 %
-1	-0,9 %	0,1 %
0	-1,3 %	-5,0 %
1	1,1 %	1,5 %
2	-1,0 %	-0,5 %
	CAAR	CAAR
0 to 2	-1,2 %	-4,0 %
-20 to -1	-2,1 %	2,4 %
1 to 20	-3,8 %	5,2 %
-10 to 10	-0,4 %	3,6 %
-20 to 20	-7,2 %	2,6 %
Sample size	12	8
Std dev daily AAR	0,0157	0,0200
Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test		

In *Table 4* we present the abnormal returns for anticipated and unanticipated downgrades. Our results for anticipated changes show that the AARs and CAARs are for the most negative, but that none are significant. This lack of significance is consistent with our null hypothesis.

Hence, we find that an anticipated rating downgrade does not cause significant negative abnormal return.

For unanticipated rating changes the picture is slightly different. For AAR(0) we observe a negative abnormal return of -4,98%, which is significant at a 5%-level (p-value: 0,0474). In this case we reject the null hypothesis, which implies that an unanticipated announcement of change in rating has an impact on a firm's stock price, and that CRA accordingly convey new information to the markets in such cases. For the other event slots the returns are not close to significant, whether for the various AARs nor CAARs. The findings are also consistent with Creighton et al., although they find significant negative AAR both for day 0 and 1, and for CAAR(-20,0). The results also show that our AAR(0) (-4,98%) is quite much larger than their result, which was only -1%.

The results appear to make sense since an unanticipated event should have a greater impact than an anticipated event, as the former takes the market off guard to a greater extent. In the case of an anticipated event, the expected information should be reflected in the market-price prior to the actual announcement. In general this is a psychological factor like we see in other aspects of the economy. For example unexpected announcements from the Fed, or surprising changes in the interest rate from Norges Bank usually have significant impact on financial markets. Another interesting feature, though not of any significant confidence level, is that the anticipated firms in general do much worse over the entire event window (and the other cumulative event slots) than the unanticipated firms. This seems coherent as a poorly performing firm is more likely to be put on a watch list in the first place.

6.1.2.3. Small Firms vs. Large Firms

We test the impact of rating changes both for small and large firms. The reasoning behind making this distinction is the suspicion that small firms are more vulnerable to a rating downgrade. Relative to large firms they are often less monitored and thus more dependent of the signalling effect from a CRA. We divide the firms by their market capitalization. We find a clear distinction between the two categories, where Petroleum Geo-Services is the largest firm in the small category, with its 18 billion NOK. DnB NOR and Norsk Hydro are the smallest in the large category with roughly 75 billion NOK market capitalization each. A

detailed overview over the different firm's market capitalisation and given category is given in *Table A-3* in the appendix.

Table 5: Abnormal Returns related to Downgrades			
Sample: Small Firms vs. Large Firms			
Days Relative to Event	Small Firms		Large Firms
	AAR		AAR
-2	1,7 %		0,5 %
-1	-0,1 %		-1,2 % *
0	-4,1 %	*	-0,3 %
1	2,0 %		-0,1 %
2	-1,4 %		0,3 %
	CAAR		CAAR
0 to 2	-3,5 %		-0,1 %
-20 to -1	-2,3 %		3,4 %
1 to 20	-1,7 %		2,5 %
-10 to 10	0,8 %		1,8 %
-20 to 20	-8,1 %		5,5 %
Sample size	13		7
Std dev daily AAR	0,0188		0,0050
Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test			

For small firms we find a negative abnormal return of -4,08% for AAR(0) at a 10% significance level (p-value: 0,0527). For the other AARs and the CAARs there are no significant observations, though the returns are mostly negative as expected. The results for large firms give a slightly different result. In this category we observe a negative abnormal return of -1,25% for AAR(-1) also at a 10% significance level (p-value: 0,0537). Hence we should be able to reject the null hypothesis of no impact for both small and large firms at these respective days.

Though, we do find it hard to find sound economic logic behind the AAR(-1) result for large firms. Previous studies by of Creighton et al. only find significant abnormal returns related to the sample of small firms. The returns they find are smaller than ours, but still significant due to lower volatility.

The reason for large firms having significant negative abnormal returns on the day prior to announcement, while small firms on the other hand are affected at the day of announcement is difficult to explain. One possibility could be that bad news travel faster for large firms than

for small firms. This argument can be backed by the heavier monitoring of larger firms. Still, this should be a weak argument if we assume that markets are efficient. Whether this last assumption is true or not has been heavily debated since the early morning of financial markets, and is probably not going to be concluded any time soon. Hence, we will have to settle with the conclusion that according to our observations markets are a bit more efficient for large firms.

Our observation that smaller firms experience the largest negative return may be explained by the fact that small firms are more volatile compared to large firms (0,0188 vs. 0,0050). The increased volatility is caused by large firms often having strong and stable market positions and steady cash flows, so that negative announcements don't create such a large reaction in the market as for smaller and more vulnerable firms. The higher volatility is also caused by the earlier mentioned lower degree of monitoring and can make negative news, like downgrades, resulting in a greater impact for smaller firms. This could be interpreted analogous with the discussion of anticipated vs. unanticipated events, in a way that unanticipated events are more unanticipated for smaller firms, and hence have a larger impact, due to less monitoring. Though by saying so, one implicitly suggests that the market efficiency is higher for large than for small firms, which is a topic suitable for an entire thesis itself and we will hence not go further into here.

6.1.2.4. Downgrades of 1 Notch vs. Several Notches

In this sub-category we have differentiated between small and big downgrades, small being when a firm's rating drops with one notch⁷⁴, and big being when it drops with more than one notch. Intuitively this distinction should matter, and show a higher negative abnormal return for the several notches than for the single notch downgrade.

As *Table 6* on the next page indicates, our intuition is on to something, but the results are not exactly what we expected. For AAR(0) we find a negative abnormal return of -1,6% and -5,4% respectively for the one notch and several notch sub-categories. However, only the result for the first category is significant (1% level), due to different volatility. For downgrades of more than one notch we find no significant results at all.

⁷⁴ For example from Aaa to Aa1

Table 6:		
Abnormal Returns related to Downgrades		
Sample: 1 notch vs Several notches		
Days Relative to Event	1 Notch AAR	Several Notches AAR
-2	1,1 % *	1,8 %
-1	0,1 %	-2,0 %
0	-1,6 % ***	-5,4 %
1	0,3 %	3,4 %
2	-0,1 %	-2,5 %
	CAAR	CAAR
0 to 2	-1,3 %	-4,6 %
-20 to -1	1,5 %	-4,5 %
1 to 20	-2,6 %	5,3 %
-10 to 10	-0,6 %	5,4 %
-20 to 20	-2,7 %	-4,6 %
Sample size	14	6
Std dev daily AAR	0,0053	0,0393
Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test		

The results may seem surprising since one would maybe expect both more severe negative abnormal returns and more significant results associated with big downgrades. One possible explanation for our results not entirely being in line with these expectations could be the fact that we do not separate between notches downgraded within investment grade from notches downgraded within speculative grade. This may impact results due to the nonlinear relationship between default rates and rating classes. There is for instance a larger increase in default probability associated to one notch downgrade within speculative grade vs. a notch change within investment grade. This issue does nevertheless not seem to be a problem in this sub-category. The big downgrades seem overall to be related to larger negative abnormal returns, and is thus as expected.

The reason for the non-significant results for the big downgrade category is related to volatility. Firms that are downgraded more than one notch are usually in more severe financial trouble, and therefore tend to be more volatile regarding stock returns. We observe a volatility on stock returns of 0,0053 for the simple notch downgrades, while the volatility for the multiple notch firms is as high as 0,0393. The tendency of higher abnormal returns in the second category is also an indication of this matter. Due to this higher volatility (and a relative small sample) a significant result demands a very high observation of negative abnormal

return. Even the quite considerable negative abnormal return of -5,4% is not enough to create a significant result. The result would most likely increase in statistical strength if the sample size could be increased, though we can not say this for sure.

6.1.2.5. Changes within Investment Grade vs. Speculative Grade

In this sub-category we test for abnormal returns related to downgrades within the investment grade and speculative grade categories. In accordance with the mentioned nonlinear relationship between default rates and rating classes, our suspicion suggests that some significant negative abnormal returns will be found, and that these most likely will be larger for the speculative grade.

Table 7:			
Abnormal Returns related to Downgrades			
Sample: Within Investment Grade vs. Within Speculative Grade			
Days Relative to Event	Investment AAR		Speculative AAR
-2	0,4 %		2,5 %
-1	-1,0 %	*	-0,3 %
0	-0,4 %		-5,7 %
1	0,1 %		3,1 %
2	0,0 %		-1,9 %
	CAAR		CAAR
0 to 2	-0,3 %		-4,4 %
-20 to -1	2,3 %		-1,8 %
1 to 20	0,7 %		1,2 %
-10 to 10	0,5 %		4,2 %
-20 to 20	2,6 %		-6,4 %
Sample size	9		9
Std dev daily AAR	0,0048		0,0269
Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test			

Table 7 justifies to some extent this suspicion. For AAR(-1) in the within investment grade category we have a negative abnormal return of -1% at a 10% significance level (p-value: 0,0664). No other results in this category are significant. In the within speculative category we observe a negative abnormal return of -5,7% at a 10% significance level (p-value: 0,0718) for the event day, AAR(0). It also appears to be a clear pattern that negative abnormal returns within speculative grade are larger than the corresponding figures for investment grade.

In light of the non linear relationship between a decrease in credit rating and increase in default probability, and the suggestion that this disfavours speculative graded firms, the results appear to makes sense. Furthermore we observe that the volatility is much higher for speculative grade (0,0269) than for investment grade (0,0048), this also being in line with our comments on the one or several notches sub-category. If it had not been for the higher volatility the speculative firms would have higher statistical power related to their large negative abnormal return.

6.1.2.6. From Investment to Speculative Grade vs. Within Investment / Speculative Grade

We also here make a distinction between investment and speculative grade, but focus on the shift from one category to the other. Hence we define the first category as issues or issuers being downgraded from investment to speculative grade, and the second category as issues or issuers being downgraded within either investment or speculative grade. As the distinction between investment and speculative grade is often perceived as quite substantial in investors' eyes, we expect to find larger negative abnormal returns for the first category.

Table 8:			
Abnormal Returns related to Downgrades			
Sample: From Inv. To Spec. Grade vs Within Inv./Spec. Grade			
Days Relative to Event	Inv->Spec	Within Inv/Spec	
	AAR	AAR	
-2	-0,3 %	1,5 %	
-1	1,0 %	-0,7 %	
0	-0,2 %	-3,1 %	**
1	-2,2 %	1,6 %	
2	0,4 %	-0,9 %	
	CAAR	CAAR	
0 to 2	-2,0 %	-2,4 %	
-20 to -1	-5,2 %	0,2 %	
1 to 20	-10,8 %	1,0 %	
-10 to 10	-9,5 %	2,4 %	
-20 to 20	-16,1 %	-1,9 %	
Sample size	2	18	
Std dev daily AAR	0,0110	0,0137	
Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test			

As presented in *Table 8* our results are not all in line with our initial expectations. The daily abnormal returns, AARs, for the inter-grade category are both smaller and less significant

than what the case is for the residual category. This observation is fully in contrast with our intuition. There are no significant daily negative returns at all for the first category. Moving on to the cumulative results, we note that they are more in line with our opening expectations. Though still not showing sign of significance under the 10%-level, they are consistent negative over the different event slots, and also show quite considerable negative returns. This indicates that a downgrade from investment to speculative grade is related to a cumulative negative reaction on stock price. Even so, the fact is that our study shows no significant results for the inter-grade category. Hence we can not reject our null hypothesis.

One should expect a firm to be affected negatively by such a substantial rating downgrade. As mentioned the gap between these two main credit-worthiness classes seem important for investors. In addition, there are regulatory matters like rating triggers that reinforce the negative effect of a downgrade from investment to speculative grade. For instance, many pension funds have rating triggers, and thus are forced to sell a bond when it falls underneath investment grade. This will again affect the stock price of the issuer due to higher financing cost. Rating triggers are not as widespread for Norwegian investors as they are in the U.S. This implies that one could expect an inter-grade downgrade to have less effect on stock returns on the Norwegian stock exchange (OSE)⁷⁵.

Another reason for expecting the impact to be large and significant is the previously stated nonlinear relationship between ratings and default probabilities. More precisely the difference in terms of creditworthiness between the different classes is bigger at the lower end of the rating scale. Hence one should expect downgrades from investment to junk to be associated with larger negative abnormal returns than the considerable amount of within investment grade downgrades that is included in the other category. Hence our results also here diverge from economic intuition.

The mismatch between economical expectations and our results for the inter-grade category has its explanation in the very limited sample. For this subcategory we have only 2 events. This makes it (almost) impossible to produce any realistic and significant results from this category. It is in fact theoretically impossible to conduct an event study on the sample since we have the same amount of estimators as events, and the degree of freedom thus is zero. We

⁷⁵ This is not necessarily straightforward as a Norwegian stock might have an U.S. owner. However, the Home-Equity-Puzzle suggest that there are a high ratio of Norwegian investors in their home market.

have manipulated the degrees of freedom to be one when calculating our results. We wished by this to get a vague indication of how this category reacted to a downgrade, knowing preliminary that it does not bear statistical power. Hence, we can not draw any conclusions on this category from our study.

As a supplement to studying the effects of downgrades crossing from investment to speculative grade, we also examine the residual sample (downgrades that happen within investment or speculative grade) for significant abnormal returns. For this sample we discover a negative abnormal return of -3,1% at announcement date at a 5% significance level (p-value: 0,0397). This result in itself is not surprising, as it is based on almost the exact same sample as the all events category⁷⁶, and also seems economical plausible. The interesting thing though is that one would suspect that if downgrades *within* the grades cause significant negative abnormal returns, then a downgrade *crossing* grades would cause at least results of equal magnitude. When our results show that this is not the observed relationship between these categories in our statistical study, we again point to the fact that the small sample for the first category makes it very hard to extract any significant results.

6.1.2.7. Downgrade & put on Negative Watch List @ same time

We have some observations of CRAs that at the same time both downgrade a firm's rating and put the firm on a further negative watch list. This should be perceived by the market as an extra negative announcement. In this section we sample these events and examine for negative abnormal returns for this sub-category.

As shown in *Table 9* in the left column our study points out that this double announcement is related to negative abnormal returns. For AAR(0) returns are -5,7% and for CAAR(0,2) they are -7,8%, significance level being at 5% and 10% respectively. As comparison we have disclosed the previously presented results for the sub-category "All Events". And as we notice the impact is larger for a downgrade combined with a negative watch list placement. To our knowledge this has not been tested in previous studies, but it seems like an economic rational result.

⁷⁶ Sample size: "All events sample (20 events)" – "From investment to speculative sample (2events)"= 18 events

Table 9: Abnormal Returns related to Downgrades				
Sample: Downgrade & Put on Negative Watch List @ same time				
Days Relative to Event	Down+Watch		All events	
	AAR		AAR	
-2	2,6 %		1,3 %	
-1	-1,1 %		-0,5 %	
0	-5,7 %	**	-2,8 %	**
1	-0,6 %		1,2 %	
2	-1,6 %		-0,8 %	
	CAAR		CAAR	
0 to 2	-7,8 %	*	-2,3 %	
-20 to -1	6,1 %		-0,3 %	
1 to 20	0,9 %		-0,2 %	
-10 to 10	-6,1 %		1,2 %	
-20 to 20	1,3 %		-3,3 %	
Sample size		3		20
Std dev daily AAR		0,0121		0,0123
Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test				

These observations are not surprising. As we found that a downgrade is followed by significant negative abnormal returns, one should assume that a downgrade followed by a negative watch should cause even larger negative abnormal returns. CRAs state the possibility of severe creditworthiness issues by both downgrading the credit rating *and* putting the firm on a negative watch list for possible further downgrades in the future. The additional significant finding for CAAR(0,2) is due to the very high abnormal return on the announcement day, and the relatively low volatility of the sub-category (compared to other sub-categories with high abnormal returns that we have examined). This is also an indication of extra market awareness for this sub-category.

6.1.3. Upgrades

Now we move on to the next matter in our study, which is if and how a rating *upgrade* affects stock return. Our null hypothesis is the same, that a positive rating action should not be related to significant abnormal returns for a firm's stock. As for downgrades we also here distinguish between contaminated and non-contaminated events, with focus on the latter. Our results for non-contaminated upgrades are in detail presented in table 4.4. The results are in general not showing any significant relation between an upgrade and abnormal return. Hence

we present all samples in this table. Some supplementary comments are given for further description of the sub-categories where we find it useful to elaborate.

Table 10:
Abnormal Returns related to Upgrades

Sample: All Samples						
Days Relative to Event	% Negative Returns	All Events AAR	Anticipated AAR	Unanticipated AAR	Small AAR	Large AAR
-2	38,9 %	-0,2 %	1,3 %	-0,5 %	-0,3 %	0,2 %
-1	66,7 %	-0,2 %	-0,6 %	-0,1 %	-0,3 %	0,2 %
0	44,4 %	0,2 %	0,0 %	0,2 %	-0,4 %	1,7 %
1	66,7 %	-0,3 %	-0,3 %	-0,3 %	0,0 %	-1,2 %
2	61,1 %	-0,2 %	0,3 %	-0,3 %	-0,4 %	0,1 %
		CAAR	CAAR	CAAR	CAAR	CAAR
0 to 2	66,7 %	-0,3 %	0,0 %	-0,4 %	-0,7 %	0,6 %
-20 to -1	66,7 %	-0,4 %	5,1 %	-1,5 %	0,2 %	-2,2 %
1 to 20	61,1 %	0,4 %	4,6 %	-0,4 %	0,2 %	1,1 %
-10 to 10	50,0 %	-0,9 %	5,1 %	-2,1 %	-1,0 %	-0,7 %
-20 to 20	55,6 %	0,2 %	9,7 %	-1,7 %	0,1 %	0,5 %
Sample size	18	18	3	15	13	5
Std dev daily AAR		0,0034	0,0076	0,0038	0,0035	0,0082

Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test

As we see from *Table 10* there are no significant results within any event slots suggesting abnormal returns, whether negative or positive, related to rating upgrades. This does not only apply for the main category “All Events”, but also all the other sub-categories. In short this implies that we in the case of upgrades keep our null hypothesis, that CRAs don’t convey any new information to financial markets causing abnormal returns. The results are consistent with most previous literature which finds weak or no significant abnormal return as a result of upgrades. Hand et al find like us no significant impact, while Creighton et al find a small abnormal return.

We also observe that none of the results from our analysis on proportion of negative returns are significant. Moreover, we observe only two event slots where there is majority of positive returns, day -2 (61,1%) and the actual event day (56,6%). All the others have more negative returns than positive, which obviously is against expectations. However, as long as no results are significant there are no final conclusions to make in this matter.

The most likely explanation for these non-significant results is the tendency towards that good news travels faster than bad news. The rationale behind this is that firms have a greater incentive of publishing good news as fast as possible, contra bad news which could be beneficial to wait to publish as long as possible. Hence it may very well be that the good news causing an upgrade is already published and reflected in the stock price at the time when the upgrade is announced.

6.2. Watch list

We also want to examine the effects of a watch list placement by the CRAs. This sub-study is not expected to reveal as large and significant results as the case for rating changes. Our null hypothesis for watch list events is the same as for previous sub-studies, that no significant abnormal return is related to when a CRA's announces that a firm is put on watch list. We test this for both negative and positive watch list announcements, but choose to only focus on one subcategory, the "All Events"-sample. Also, most of the previously applied categories are not possible to use on watch list events.

6.2.1. Negative watch list

Table 11: Abnormal Returns related to Neg. Watch list			
Sample: All Events			
Days Relative to Event	AAR		% Negative Returns
-2	0,7 %		0,44
-1	-0,2 %		0,63
0	-2,1 %	***	0,63
1	0,7 %		0,50
2	-0,1 %		0,44
CAAR			
0 to 2	-1,5 %		0,50
-20 to -1	-5,9 %	**	0,63
1 to 20	3,3 %		0,44
-10 to 10	-2,4 %		0,50
-20 to 20	-4,7 %		0,63
Sample size	16		
Std dev daily AAR	0,0058		
<i>Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test</i>			

Table 11 disclose our results for firms put on negative watch list. The results are close to expected, with abnormal return on the event day being largest and most significant. For AAR(0) we note a negative abnormal return of $-2,1\%$ at a 1% significance level (p-value: 0,0026). The study also indicate a significant (5% level) cumulative abnormal return of $-5,9\%$ for CAAR(-20,-1). Thus, we can reject our null hypothesis for these event slots, and conclude that a negative watch list announcement has a negative impact on stock return in these given periods. The results of proportion negative returns do not show any significance.

The results are consistent with the results from most previous studies, like for instance Hand et al, which also find significant negative abnormal return when a firm is placed on negative watch. Barron et al. on the other hand do not find significant abnormal returns. The rationale behind the findings seems obvious, as a negative view of a firm's creditworthiness on a medium term horizon stated by a CRA, should have an adverse impact on the stock price.

An interesting feature in this sub-study is that the negative abnormal return at AAR(0) for watch list announcements is only slightly lower than what is the case for rating downgrades ($-2,1\%$ vs. $-2,8\%$). And that the negative abnormal return actually is more significant for the watch list related (p-value: 0,0026 vs. 0,0375: due to lower volatility). One would perhaps believe that an actual downgrade would give a substantially larger negative and significant result than what would be the case for a negative watch list announcement. This not being the case indicates that watch list announcements are almost as influential on stock prices as actual rating movements. As mentioned, the cause of higher statistical power is owed to the lower volatility of the watch list sample. Without going too much into detail around why, we want to point out that this is probably to be expected for a watch list sample, as we believe that high volatility often is correlated with types of factors that lead to a credit rating downgrade rather than a watch list placement. Consequently this can be viewed as one explanatory factor for the higher significance.

We observe from the table that substantial and significant negative abnormal returns are observed prior to the event, and that the latter part of the event window has a positive abnormal return (though not statistically significant). This might indicate that a watch list announcement is largely reflected in the stock price prior to the event date, and that whatever value left in the watch list announcement is quickly absorbed by the market on the event date.

6.2.2 Positive watch list

Table 12: Abnormal Returns related to Pos. Watch list		
Sample: All Events		
Days Relative to Event	AAR	% Negative Returns
-2	0,2 %	0,50
-1	0,9 %	0,25
0	-1,3 %	1,00
1	0,4 %	0,50
2	-0,4 %	0,75
CAAR		
0 to 2	-1,3 %	1,00
-20 to -1	3,4 %	0,25
1 to 20	-2,7 %	0,50
-10 to 10	3,5 %	0,25
-20 to 20	-0,6 %	0,50
Sample size	4	
Std dev daily AAR	0,0088	
<i>Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test</i>		

For positive watch list placements we find no significant positive abnormal returns, neither for AARs nor for CAARs. From *Table 12* we also observe that there are no tendencies of results being strictly positive either, as we see five event slots with negative return. However, the weakness with this sample is obviously the low amount of events (only 4). Our results are still consistent with several other studies that also find no significant positive effect on stock return by positive watch list placements. Barron et al find positive returns, but their sample size (2) is very small. Hence we do not reject our null hypothesis for positive watch list announcements. As for upgrades, one can perhaps explain the result, and the divergence from the results related to the negative announcements, with the tendency of good news travelling faster than bad news.

6.3. Outlook

CRAs have a third type of announcement, by putting an issue or an issuer on an outlook list. This is an indication by the CRA that the rating might be up for an evaluation within a medium time horizon. Our null hypothesis for an outlook placement is the same as for earlier sub-studies, there should be no significant abnormal returns related to outlook announcements. We test this for both negative and positive announcements. Equivalent as for

the “Watch List”-study, we have only focused on the “All Events”-sample here, and due to modest expectations of significant results we have also chosen to combine both positive and negative announcement in one table.

Table 13:				
Abnormal Returns related to Pos. or Neg. Outlook				
Sample: All Events				
Days Relative to Event	Positive AAR	% Negative Returns	Negative AAR	% Negative Returns
-2	-0,2 %	0,57	-0,7 %	0,75
-1	0,1 %	0,57	-1,0 %	0,75
0	0,3 %	0,29	-1,7 %	0,75
1	-0,2 %	0,57	-0,2 %	0,50
2	0,3 %	0,29	0,8 %	0,50
	CAAR		CAAR	
0 to 2	0,3 %	0,43	-1,1 %	0,63
-20 to -1	0,8 %	0,43	3,6 %	0,25
1 to 20	-2,8 %	0,71	-2,7 %	0,50
-10 to 10	-1,2 %	0,57	-0,4 %	0,63
-20 to 20	-1,8 %	0,43	-0,8 %	0,50
Sample size	7	7	8	8
Std dev daily AAR	0,0061		0,0094	
<i>Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test</i>				

Our assumption that outlook announcements have a weak impact on stock returns is confirmed in *Table 13*. Neither positive nor negative outlook actions give significant results. Similar to what the previous presented sub-studies also have shown, it seems that a negative announcement is more consistent with a negative stock reaction, as the great majority of event slots in the event window confirms just this. For positive outlook announcements the results are however more volatile, and might as well be negative as the expected positive. It needs to be said that the samples for both categories are small in this sub-study. And it would probably reveal more reliable and interesting results if this amount would have been higher. For instance is AAR(0) for negative announcements (-1,7%) not far from being significant at a 10% level (p-value: 0,1183).

6.4. Aggregated rating announcements

As mentioned earlier, the most challenging part about testing the effect of rating changes for firms listed on the OSE is the limited size of the samples. Thus, to increase the size in this sub-study we have chosen to combine events from rating, watch list and outlook

announcements, as opposed to looking at these categories isolated the way we have done until now. We have called the two categories for Aggregated Negative Announcements and Aggregated Positive Announcements. A negative announcement is a rating downgrade, negative watch list placement or a negative outlook, and a positive announcement is consequently a rating upgrade, positive watch list placement or a positive outlook. The intention of combining events in such a way is to reach a higher number of events for each category, and by that hopefully increase the statistical power of our event study.

Still, we do acknowledge that there are weaknesses of such an approach. By pooling rating changes, watch list placements and outlooks in the same category we implicitly say that a change in one of the categories is equivalent and comparable with a change in the other two categories. Conversely our results so far show that this is not the case. For instance seems a rating downgrade to be a stronger signal of declining creditworthiness than a negative outlook is. Nevertheless, combining all negative announcements in one study and all positive announcements in another study may give us some additional answers, or at least increase the significance of results we already have disclosed. This type of announcement grouping has also been done on Australian equities in lack of a large sample size, by Creighton et al.

6.4.1. Aggregated Negative Announcements

We have studied the effects of aggregated negative announcements for the sub-categories “All Events” and for “Small Firms vs. Large Firms”. Our null hypothesis is as earlier, no impact on stock returns from rating announcements. Results are presented in tables, with further comments and discussions of interesting findings.

6.4.1.1. All events

We notice from *Table 14* that the increased sample size (44 events) has reduced the sample's volatility substantially. This affects significance levels in a positive manner, and leads to a statistical strong result for AAR(0). On the event day we observe a negative abnormal return of -2,3% at a 1% significance level. The p-value at this day is only 0,0005, which is a huge statistical improvement from AAR(0)/All Events/Downgrade in *Table 3* which had a p-value of 0,0375. Though still not presented as a significant result in the table, CAAR(0,2) is now very close with a p-value of 0,1030.

Table 14:
ARs related to Downgrade, Neg. Watchlist & Outlook

Sample: All Events				
Days Relative to Event	AAR		% Negative Returns	
-2	0,7 %		0,39	
-1	-0,5 %		0,73	***
0	-2,3 %	***	0,66	**
1	0,8 %		0,48	
2	-0,3 %		0,52	
CAAR				
0 to 2	-1,8 %		0,59	
-20 to -1	-1,6 %		0,55	
1 to 20	0,6 %		0,52	
-10 to 10	-0,4 %		0,50	
-20 to 20	-3,4 %		0,66	**
Sample size	44			
Std dev daily AAR	0,0062			
<i>Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test</i>				

The strong significance of AAR(0) leads us to reject our null hypothesis for negative announcements. Our results clearly indicate that negative announcements on creditworthiness are related to negative abnormal return at the event day. The borderline significant CAAR(0,2) puts at least doubt over the null hypothesis. Our suspicion is that increasing the sample additionally would lead to a result within 10% significance level for this event slot. In total it seems that pooling all negative announcements lead to higher statistical significance than in the case of only downgrades. It is in other words a more reliable event study. This is explained by the lower volatility. At the same time, the negative abnormal returns for the “aggregated negative announcements”-sample seem smaller for than for the strictly “downgrade”-sample. This does also make sense, as a downgrade is more drastic than the two other rating announcements, and hence should lead to a larger drop in stock price. Our results are consistent with the study by Creighton et al.

Due to the larger sample we also observe more statistical significant results from the test on proportion of negative returns. Here we notice that AAR(-1), AAR(0) and CAAR(-20,20) all contain a significant percentage of events with negative returns. And by this indicating that it is not only some heavy negative outliers who bias our results and create the negative

abnormal return. Thus, our suspicion that negative announcements lead to negative abnormal returns is being supported by this test.

6.4.1.2. Small Firms vs. Large Firms

As for some of the previous sub-studies we wish to separate small and large firms to check for significant results within these categories. Our suspicion is that announcements from CRAs have stronger impact and are more significant for small than for large firms.

Table 15:				
ARs related to Downgrade, Neg. Watchlist & Outlook				
Sample: Small Firms vs Large Firms				
Days Relative to Event	Small AAR		Large AAR	
-2	1,1 %		0,0 %	
-1	-0,5 %		-0,5 %	
0	-3,5 %	***	-0,1 %	
1	1,7 %	*	-0,9 %	**
2	-0,7 %		0,6 %	
	CAAR		CAAR	
0 to 2	-2,5 %		-0,4 %	
-20 to -1	-4,2 %		3,3 %	*
1 to 20	0,6 %		0,7 %	
-10 to 10	-1,3 %		1,4 %	
-20 to 20	-7,1 %		3,9 %	
Sample size	29		15	
Std dev daily AAR	0,0093		0,0035	
<i>Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test</i>				

Table 15 presents our results for these two sub-categories. We note that the left column shows a highly significant abnormal return at the event day of -3,5%. This abnormal return is well within a 1% significance level (p-value: 0,0008). More surprisingly the study also presents a positive abnormal return of 1,7% the day after the event at a 10% significance level. This finding is not in line with our expectations, but may be a correction for a systematic negative overreaction on the event day itself.

Furthermore the sample of large firms also provides some unexpected results. We observe that AAR(1) is a negative abnormal return of -0,9% at a 5% significance level. Detecting a negative abnormal return *after* the event day in this sample is not in line with Table 5 which showed that large firms have a significant negative abnormal return the day *prior* to the event

for downgrades. The other unanticipated result from this sample is the significant *positive* abnormal return found in the event slot -20 to -1. This abnormal return of 3,3% is well within a 10% significance level (p-value: 0,0566). Additionally we observe that CAAR(-20,20) has a positive abnormal return of 3,9%, and is close to a 10% significance level (p-value: 0,1058). These results are hard to explain with economic plausibility. *Ceteris paribus*, a negative announcement from a CRA should not lead to a positive abnormal stock return, and the shift in significance from day -1 to day 1 is also difficult to explain. Mathematically it implies that large firms have a strong negative abnormal return related to negative watch list and outlook announcements on the day after the announcement. In sum, these factors add up to a mixture that is hard to explain. Thus, we do not wish to draw any conclusions, but rather state that it seems like large firms can be impacted (significantly) both negatively and positively by a rating related negative announcement. It also leads to a suspicion that a CRA's opinion is less important for large firms than what is the case for smaller firms.

6.4.2. Total Positive Announcements

Positive announcements have thus far proved to be of less significance than negative ones. Hence we choose to present our results from this sub-study more briefly and in one table. Our null hypothesis stays the same, there should be no abnormal returns related to positive announcements from the CRAs.

Table 16:				
ARs related to Upgrade, Pos. Watch list & Outlook				
Sample: All Samples				
Days Relative to Event	% Negative Returns	All Events AAR	Small AAR	Large AAR
-2	0,45	-0,1 %	0,1 %	-0,2 %
-1	0,59	0,0 %	0,4 %	-0,2 %
0	0,48	0,0 %	0,5 %	-0,2 %
1	0,62	-0,2 %	-0,4 %	-0,1 %
2	0,55	-0,1 %	-0,2 %	-0,1 %
		CAAR	CAAR	CAAR
0 to 2	0,66	-0,3 %	0,0 %	-0,4 %
-20 to -1	0,55	0,4 %	-0,9 %	1,0 %
1 to 20	0,62	-0,8 %	-0,2 %	-1,0 %
-10 to 10	0,48	-0,4 %	-0,1 %	-0,5 %
-20 to 20	0,52	-0,4 %	-0,7 %	-0,3 %
Sample size	29	29	9	20
Std dev daily AAR		0,0029	0,0060	0,0031

Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test

Table 16 confirms our experience so far of positive announcements not being related to any significant abnormal returns at all. This is also consistent after increasing our sample up to 29 events. It also verifies that an expectation of positive announcements being related to positive abnormal returns does not hold. In fact there are more negative abnormal returns than positive ones within the three samples.

6.5. Including Contaminated Data

We will in the following present the results of our event studies *including* the contaminated data. For this section we will only present some of the sub-studies we previously have presented, and refer interested readers to the appendix for all our conducted studies with these data. Hence, we will not go into the same depth with this study as we did with the non-contaminated study. Contaminated data is not what we focus on in this paper, though we find it useful for the reader to see some of the results, and in particular how they may differ from the non-contaminated data-set. In the following we present our results for downgrades and upgrades.

6.5.1. Downgrades

For this sub-category we add five extra events to the initial sample when we conduct our new contaminated study. These five events were eliminated from the original sample because of other value impacting events within the event window, and might thus bias the effect of the rating announcement. For a more detailed description of these events see the appendix, *Table A-2*.

As we note from *Table 17* the five extra events does not alter the results from the non-contaminated study very much. AAR(0) is still significantly negative, but now to a greater and more significant extent (-8,0% vs. -2,8%, and 5% significance level vs. 1% level). Also CAAR(0,2) has become significant at a 1% significance level, which is a quite drastic change from being insignificant with only non-contaminated data. The general observation is that almost all abnormal returns are increased in magnitude. This is not surprising as the new events both have a downgrade element and a contaminating element (i.g. a negative earnings announcement) imbedded. It seems economic plausible that the latter element would further strengthen the effect of the downgrade.

Table 17: Abnormal Returns related to Downgrades			
Sample: All Events (Incl. Contaminated Data)			
Days Relative to Event	Contaminated AAR		Non-Contaminated AAR
-2	0,8 %		1,3 %
-1	0,4 %		-0,5 %
0	-8,0 %	***	-2,8 %
1	0,8 %		1,2 %
2	-1,5 %		-0,8 %
	CAAR		CAAR
0 to 2	-8,6 %	***	-2,3 %
-20 to -1	3,3 %		-0,3 %
1 to 20	2,0 %		-0,2 %
-10 to 10	-4,2 %		1,2 %
-20 to 20	-2,7 %		-3,3 %
Sample size	25		20
Std dev daily AAR	0,0119		0,0123
<i>Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test</i>			

6.5.2. Upgrades

Regarding rating upgrades we initially excluded two contaminated events that might bias abnormal returns related to this action. In general, our study has shown us that positive announcements from CRAs do not tend to impact stock return significantly. Thus, we do not expect to see drastic changes when we include the contaminated events to the sample.

Table 18 does not alter this view on positive announcements. Even with the contaminated data included we do not get any significant results. The only tendency, at least for the CAARs, is that the abnormal returns seem inflated in magnitude. This is in line with our findings on the contaminated downgrade sample. The seemingly irrational feature regarding the results in the table is that they are almost all negative, which is not intuitive when we examine *positive* rating announcements. Still, as long as none of these results are close to significant we do not draw any conclusions in this matter, but point out the potential anomaly.

Table 18:
Abnormal Returns related to Upgrades

Sample: All Events (Incl. Contaminated Data)		
Days Relative to Event	Contaminated AAR	Non-Contaminated AAR
-2	-0,4 %	-0,2 %
-1	-0,1 %	-0,2 %
0	0,2 %	0,2 %
1	-0,3 %	-0,3 %
2	-0,2 %	-0,2 %
	CAAR	CAAR
0 to 2	-0,3 %	-0,3 %
-20 to -1	-2,2 %	-0,4 %
1 to 20	-1,6 %	0,4 %
-10 to 10	-1,8 %	-0,9 %
-20 to 20	-3,7 %	0,2 %
Sample size	20	18
Std dev daily AAR	0,0044	0,0034
<i>Note: ***, **, * indicate significance of 1%, 5% and 10% level, two tailed t-test</i>		

7. Future work

During the work with this paper we found, both by reading other studies and through our own work, several topics that could be interesting for future work regarding the role of CRAs. We also acknowledge factors that can improve a similar study as the one we have conducted.

As pointed out earlier, a potential area of improvement would be having more observations on Norwegian firms. If OSE's demand for ratings increases in the future, additional aspects of bond ratings can be examined and with better precision. With more observations one could test the difference between long and short term paper ratings, as Barron et al. As done by the same paper, one could also look at the volatility and cost of capital. Dependent on easily accessed and accurate data for bond prices one could test the effect rating changes have on these prices for firms listed on the OSE.

We have also thought of studies that can be conducted as of today, and which are not limited to data from OSE. One interesting subject would be to examine market and investor preferences between the different CRAs. Although investors state⁷⁷ that they combine the opinions of several CRAs when analyzing a firm, it might be that one of these is considered particularly reliable and that the others are included as a supplement. This could be tested by seeing if any of the CRAs has a greater impact on bond and stock prices. It would also be interesting to see if there has been any change in impact on bond and stock prices over time, hence implying that the belief in CRAs and their role or performance has changed over the years. Through this one could also find if the criticism towards the CRAs has led to any change in performance. None of these studies are, to your knowledge, performed before.

Another topic suggested by Mtolcsy and Lianto (1995), which does not have to involve too many empirical studies, is to find out if, and in case why, there is a tendency that good news travel faster than bad news. Many studies do indicate this, as downgrades have a greater impact than upgrades.

⁷⁷ The Bond Market Association (2006)

8. Conclusion

Our study provides strong evidence that a negative credit rating announcement⁷⁸ from S&P, Moody's or Fitch leads to significant negative abnormal return for stocks listed on the OSE at the event day. The study does not show any significant results for the opposite being true for a positive announcement. Our findings are consistent with most of the results by previous studies performed on other financial markets. The rationale behind that only negative announcements have impact on stock prices is likely to be explained by the hypothesis of good news travelling faster than bad news.

When studying downgrades in greater detail our study also indicates that unanticipated events lead to more drastic negative abnormal returns than anticipated ones, and that they also are more significant. The tendency is further that small firms, firms downgraded with several notches and firms within speculative grade react more than their counter categories for downgrade announcements. If a firm is downgraded and put on a negative watch list at the same time we also observe a larger negative abnormal return than what the case is for simple downgrades. Furthermore, being put on negative watch list impacts a stock return significantly negative. On the other hand an outlook placement, whether negative or positive, does not prove to give any significant abnormal returns. To compensate for a small sample of events we performed an additional event study for all negative announcements. This increased the significance level of the results already indicated in earlier sub-studies. Including some of the contaminated events in an event study has the same confirming affect on the results. In common for results of near all negative announcements is that the significant day seems to be the actual event day, and usually only this day.

The observed substantial negative return in the 120 day window prior to the event indicates that the CRAs do not convey much new information to the market. The CRAs' ratings seem in a large extent to reflect information already absorbed by the market. Though, as we observe the significant negative effect announcements have on stock returns on the event day, CRAs' opinion does seem to matter for the financial markets. Still, this news seems to be efficiently reflected into the stock price, as no particular delays of abnormal return are observed.

⁷⁸ Credit rating downgrade, watch list placement or outlook placement

In total, our observations show that CRAs to some extent are both leading and lagging the financial market. This seems like a natural position/role for the CRAs in modern finance, as it is difficult to always be in front of a highly efficient market. In light of the current situation on the world's security markets it might seem as if this role is due for a small revision. The financial markets seem in profound need of more leading signals, to prevent bad securities from rotting the market from the inside. Hence, CRAs could play an even more important role in the future by focusing more on leading the financial markets away from danger, and less on echoing past sins.

9. Appendix

Table A-1: Permanently Removed Events		
Event #	Company	Comment
1.1.11	Telenor	IPO 15/12-00 & event 12/1-01
1.3.11	Storebrand	Put on negative watchlist but also downgraded at same time
2.1.15	Petroleum Geo-Serv.	N.R. Not rated anymore
2.2.7	Petroleum Geo-Serv.	From N.R.
2.3.4	Norsk Hydro	Same date as merger announcement between Statoil and Hydro
2.3.7	Ocean Rig Norway	Same date as Moody's put on negative watchlist
2.4.3	StatoilHydro	Same date as merger announcement
2.5.4	Norske Skog	Moody's downgrade 2/11-2007, event date 22/10-2007
2.5.8	Telenor	Moody's put on negative watchlist 31/10-2005, keep Moody's, remove this event (neg. Outlook 1/11-2005)
2.6.2	DnB NOR	Moody's has a negative watchlist announcement 3/4-2007
2.6.5	Petroleum Geo-Serv.	Same date as Moody's downgrade their rating on PGS

Table A-2: Events Incl. only in Contaminated Study		
Event #	Company	Comment
1.2.10	Ocean Rig	No good explanation on Newsweb, but so extreme (-50% in event window) that something else has to be affecting return
2.1.4	Norske Skog	Moody's downgrade 1/4-08 (Ba2-B1) + positioning of ownership due to voting power related to the upcoming annual general meeting
2.1.9	Petroleum Geo-Serv.	On event date: Preliminary 4th q results weaker than anticipated
2.1.10	Petroleum Geo-Serv.	Merger down the drain and negative 2nd q results on event date
2.1.13	Petroleum Geo-Serv.	EXTREMELY volatile stock
2.1.16	Yara	Strong 3rd quarter earnings announced 19.10.08, + in final negotiations regarding an acquisition (both events positively received)
2.2.8	Petroleum Geo-Serv.	27/07-2006: PGS disclosures disappointing 2nd quarter results
2.3.8	Petroleum Geo-Serv.	1st q results disclosed one day before event date

Table A-3: Small / Large firm distinction		
Firm	MarketCap (MNOK)	Category
DnB NOR	75 028	(Large)
Norske Skogindustrier	3 528	(Small)
Norsk Hydro	74 823	(Large)
Ocean Rig	7 428	(Small)
Petroleum Geo Services	17 997	(Small)
SAS AB	4 162	(Small)
StatoilHydro	532 962	(Large)
Storebrand	13 979	(Small)
Telenor	145 120	(Large)
Yara	102 926	(Large)
Note 1:	Data taken from www.oslobors.com Wednesday 16.07.2008	
Note 2:	We assume that the firms have been in the same category for the entire period we have based our event study on	

For further details on our study please see the enclosed CD-ROM. Here you will find spreadsheets containing our event study, more detailed results and the historic rating changes provided us by the CRAs.

10. References

- Barron, M.J. et al. (1997): The effect of bond rating changes and new ratings on UK stock returns.
Journal of Business Finance & Accounting, 24 (3) & (4), April 1997, 0306-686X
- Bergh, Finn Øystein et al. (2008): Investorguide, Høy effektiv rente på foretaksobligasjoner: Proffiter på kreditskvisen (Kapital nr 12/2008)
- Boot, Arnoud W. A. and Milbourn, Todd T. (2002): Credit Ratings as Coordination Mechanisms.
William Davidson Working Paper Number 457, March 2002
- Champsaur, Amelie (2005): The regulation of credit rating agencies in the US and the EU: Recent initiatives and proposals.
Seminar in international Finance, LL.M. Paper, Harvard Law School May 2005
- Creighton, Adam et al. (2004): The Impact of Rating Changes in Australian Financial Markets.
Research Discussion Paper (2004-2), Reserve Bank of Australia
- Einhorn, David (2007): David Einhorn`s Prepared Remarks, Helbrunn Centre for Graham and Dodd Investing, 17th Annual Graham and Dodd Breakfast.
- Habir, Manggi Director, Financial Services Rating, S&P (2004): The Role of Credit Agencies.
- Hand, John R. M et al. (1992): The effect of bond rating agency announcements on bond and stock prices.
The journal of Finance, Vol. 47, No2 (June 1992)
- Holthausen, Robert W. and Leftwich, Richard W. (1985): The effect of bond rating changes on common stock prices.
Journal of Financial Economics 17 (1986) 57-89. North-Holland.
- Kreditttilsynet (2007): Norway has completed the transposition of the Capital Requirements Directive
- Löffler, Gunter (2002): Avoiding the rating bounce: Why rating agencies are slow to react to new information
No 97, June 2002, Goethe-Universität Frankfurt
- MacKinlay, Craig (1997): Event Studies in Economic and Finance (Journal of Economic Literature Vol. XXXV (March 1997), pp 13-39)
- Moody`s Investors Service (1999) Rating Methodology, The Evolving Meaning of Moody`s Bond Ratings.
- Moody`s Investors Service (2002): Rating Policy, Understanding Moody`s Corporate Bond and Rating Process.

Mtolsy, Z.P. and Lianto, T. (1995): The incremental information content of bond rating revisions: The Australian Evidence.
Journal of Banking Finance 19 (1995) 891 -902

The Technical Committee of the International Organisation of Securities Commissions (2008): The Role of Credit Rating Agencies in Structured Finance Markets.
<https://www.iosco.org+IOSCOPD270.pdf> (02.08.2008)

The Technical Committee of the International Organisation of Securities Commissions (2004): Code of Conduct Fundamentals for Credit Rating Agencies
<http://www.iosco.org/library/pubdocs/pdf/IOSCOPD271.pdf> (02.08.2008)

The Technical Committee of the International Organisation of Securities Commissions (2003): Statement of Principles Regarding the Activities of Credit Rating Agencies.
<https://www.iosco.org+IOSCOPD151.pdf> (02.08.2008)

The Technical Committee of the International Organisation of Securities Commissions (2003): Report on the activities of credit rating agencies
<https://www.iosco.org+IOSCOPD153.pdf> (02.08.2008)

The bond market association in collaboration with the association of corporate treasurers (2006): Rate the Raters - issuers' poll (2005-2006)
<http://www.sifma.org/research/pdf/Rate-the-Raters-Issuers-polls.pdf> (15.07.2008)

The bond market association in collaboration with the association of corporate treasurers (2006): Rate the Raters - investors' poll (2005-2006)
<http://www.sifma.org/research/pdf/rate-the-raters-investors-poll.pdf> (15.07.2008)

Tirole, Jean (2006): The Theory of Corporate Finance

U.S. Securities and Exchange Commission (2003): Report on the Role and Functioning of Credit Rating Agencies in the Operation of the Securities Markets.
<https://www.sec.gov+credratingreport0103.pdf> (15.05.2008)

Wyatt, Edward (2002-02-08), New York Times ENRON'S MANY STRANDS: WARNING SIGNS; Credit Agencies Waited Months To Voice Doubt About Enron

Thompson Datastream at NHH

www.newsweb.no (15.07.2008)

www.sandp.com (01.06.2008.)

www.moodys.com (01.06.2008.)

www.ftchrating.com (01.06.2008.)

www.sec.gov/answers/nrsro.htm (01.07.2008)