Sovereign Credit Rating effects on equity markets: Applied on US Data

Bachelor degree thesis in financial economics, 15 hp

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Abstract

This paper is a study on how U.S stock market reacts on sovereign credit rating announcements, and if there is a significant difference between low or high debt firms. We have used an event study based on historical stock prices from 30 companies, 15 with high debt and 15 with low debt. All companies are taken from the S&P’s 500 index which we also use as a market index. We use a regression model with 10% significance level to see if there is a significant impact on high debt firms. Our result shows that the market will be affected by the downgrade. We also conclude that there was a significant negative impact on the high debt firms.

Key words:

Sovereign credit rating, event studies, cumulative abnormal return, abnormal return, regression model, High debt versus low debt. U.S stock market,
Acknowledge

We would like to thank Hans Mörner for the guidance and help during our thesis. We would also like to thank our friends and family for supporting us during this last semester when writing the thesis.

Axel Berglund and Carl Fransson
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1. Introduction

In the chapter introduction, we will briefly introduce our thesis and explain the role of credit rating agencies. We will also explain how Standard and Poor’s determine their ratings.

In today’s global economy with markets interacting across borders, countries and specifically their economies have become more connected and therefore more dependent on one another. Sovereign credit rating was first introduced 1975 by Standard and Poor’s (S & P’s) and has become an important indicator of a country’s default risk. A country’s credit rating is important because it affects the domestic market which means the companies and their stock prices. There are only a few credit rating agencies that have international recognition where S & P’s and Moody’s are by far the most influential. They have received criticism for their pro-cyclical, accuracy, and the tendency to be timeliness, the latter meaning credit rating agencies being late in announcing downgrade/upgrade. In spite of this critique the credit rating agencies provide a useful indicator of a country’s default risk and this information is heavily used by investors.

Previous research on the subject of credit ratings has focused on the timeliness, accuracy and the claim that credit rating agencies are pro-cyclical. There has also been some research about the determinants of sovereign credit ratings and the impact it has on sovereign bond spreads.

Our research will focus on how a downgrade of the sovereign credit rating affects the stock market. The market we have chosen is the US; the US has never been downgraded before which makes the consequences of the downgrade interesting and it is a recent event, which makes the research relevant. The research in this specific area is also limited. We will look at the effects of the S & P’s downgrade of the US credit rating, specifically what happened to a few US companies in different markets. We have collected data to perform an event study in order to investigate if there is an abnormal return as a result of the downgrade.
1.2 Credit rating agencies

Rating agencies are used heavily in today’s economy, and most investors depend on the information given by the rating agencies when considering investment opportunities. However, the ratings have not always been there and the power of the agencies have not always been as great as they are today. It was John Moody back in 1909 that first started to give credit ratings on railroad bond’s to give investors a clear picture of the railroad company’s debt level. They started to sell their bond ratings in 1916, short after this in 1924 Fitch followed. This was the beginning of what today is a billion-dollar industry. In the 1930’s federal regulators started using these private ratings to evaluate the safety of bank holdings, among other things. But back then the influence and power of the credit rating agencies was nothing compared to today. During the Second World War and the year after, the need for credit ratings was very low due to a minimal use of cross-border sovereign bond trading. Then the 1970’s came and the turmoil in the economy was back. In 1975 the Securities and Exchange Commission (SEC) gave credit rating agencies a national recognized level. During this time the industry changed from investors paying for the ratings to the bond issuer. This way of conducting business generated more profits than just having the investors pay for the ratings.

1.3 Determinants for sovereign credit ratings by Standard & Poor’s

S & P’s rate debt issuers on a scale of AAA (highest) which means extremely strong capacity to meet financial commitments to D which means payment default on financial commitments.

S&P’s analysis of sovereign credit rating is qualitative and quantitative and is based on the political and economic risk. The analysis is qualitative because S&P’s ratings indicate future debt-service capacity and the importance of political and policy developments. It is also quantitative because the analysis incorporates a number of measures of economic performance. Focus is on how appropriate the policy mix is, since inconsistencies can make a country vulnerable to shocks that can change the exchange rate for example.

One aspect of the judgment that separate sovereign from other issuers is the willingness to pay. Sovereigns have limited legal redress, and because of that they sometimes default.
selectively on their obligations even though they had the financial capacity for timely debt service.

Some of the key political and economic risks that S&P’s consider in their analysis:

- Economic structure and growth prospects
- Political institutions and trends in the country and their impact on the effectiveness and transparency of the policy environment, as well as public security and geopolitical concerns
- Monetary flexibility
- General government revenue flexibility and expenditure pressures, general government deficits and the size of the debt burden, and contingent liabilities posed by the financial system and public-sector enterprises
- External liquidity and trends in public- and private-sector liabilities and nonresidents

All factors except the last directly affect the willingness and ability to ensure timely local currency debt service. However, fiscal and monetary policies ultimately influence a country’s external balance sheet. That affects the ability and willingness to service foreign currency debt, which is also affected by the last factor. One of the most binding constraints is balance-of-payments constraint.

There are nine categories that S&P’s take into consideration when grading a sovereign; the first is political risk, second and third are economic structure and growth, the fourth till sixth category is fiscal flexibility, number seven is monetary flexibility and the last two categories are external liquidity and the external balance sheet. Countries are ranked on a scale of one (the best) to six in each category but there is no exact formula for combining the scores to determine ratings. In addition, the score that a country receives can be relative with regard to how well it is performing. For example, a real GDP growth rate of 4% may be viewed as high for Germany but low for China due to their different stages of development. Higher rated sovereigns in Western Europe may have comparable or higher debt burdens than Turkey but still have less risk because of wealthier and more-diversified economies and the fact that Turkey has a speculative-grade rating.
2. Previous research

This chapter will go through relevant previous research that focuses on similar problems, giving you a deeper knowledge regarding the issues related to this thesis’ problem. The chapter contains 5 articles on previous research that we have chosen.

Previous research regarding sovereign credit ratings and their effects on equity markets have shown that a downgrade of a country’s credit rating will affect the domestic equity market in a negative way. We have chosen the following articles due to the relevance of their research and that the articles are often being referenced in similar articles and papers about credit ratings.

Changes in sovereign ratings affect country risk and stock returns

Kaminsky and Schmukler (2001) examine the possible cross-country and security-market spillover-effects of rating changes. They also examine the effect of domestic vulnerability as measured by the ratings of international agencies (S & P’s, Fitch, Moody’s). An event study was used to examine these effects. In the event study they looked at stock market spreads (they used domestic stock markets prices relative to the U.S S & P’s 500 index) and country risk with a time window of 10 days around an upgrade or downgrade. When performing the event studies they used “clean events” meaning downgrades and upgrades that didn’t overlap in event windows of +/- 10 days. This is important in order to isolate the effects of a downgrade or upgrade.

Data for the research contains Emerging Markets Bond Index (EMBI) spreads, interest rate, stock returns, credit ratings and was collected from 16 emerging markets including Latin America, East Asia and Eastern Europe economies. In the article they use ratings from S & P’s, Moody’s and Fitch-IBCA.

They conclude that rating changes significantly affect bond and stock markets; stock returns decrease 1 percent on average and yield spreads increase 3 percent on average. There is also a contagion or spillover effect as a result of rating changes, and the changes in yield spreads and stock returns have been observed and are of regional nature. They also show that domestic-country rating downgrades happen after market downturns, while upgrades occur following market rallies.
António Afonso, Davide Furceri and Pedro Gomes (2002) have written a similar research paper on the linkage between the financial markets and sovereign credit rating and its spillover effect on the European market. They have used the three big rating agencies (Standard & Poor’s, Moody’s and Fitch) when looking on specific events. When they measured the response in yield and Credit Default Swaps (CDS) spreads they had an event window of three days, one before (-1) and one day after (+1), the actual day of the event they used day 0. Their data was collected from January 1, 1991 to December 31 2000 and is taken from the site Bloomberg.com. To be included in the analysis there was only one criteria. They only included countries that had and was trading U.S dollar denominated debt and then they chose 34 countries that fulfilled this criteria. Credit rating information was collected from S & P’s since they perceived S & P’s to be more active in credit rating changes and thereby providing more data. They also point to the article of Reisen and von Maltzen (1999) saying that announcement from S & P’s is less anticipated by the market.

Their findings are that negative credit rating announcements have more impact on yields and CDS than positive announcement. Their result also shows that being put on a watch list also will have a negative effect on the bond yields and the CDS. Credit rating agencies put sovereign stats (issuers) on a watch list when thy see tendencies of economic fluctuation that might lead to a downgrading, an example would be increased sovereign debt. The opposite is true for positive watch list and positive credit ratings; the effects are far less noticeable compared to negative announcements. They also show evidence that markets are anticipating actual credit ratings and moving in direction to absorb some of the effects. This is not true on a 1 or 2 months period but evidence points to a bi-directional causality between sovereign ratings and spreads in a 1-2 week window. Finally they find information pointing to that a country that have been downgraded less than 6 months ago have higher spreads than other countries with the same rating but has not been downgraded the last six months.
News spillovers in the sovereign debt market

Gande and Parsley (2005) wrote this paper on how sovereign credit ratings can spillover to another sovereign. The time window for their paper was 1991 to 2000. The results show that negative announcements regarding downgrading or watch lists are far more shocking to the market than positive. They discuss the possibility for this being that a government has a big incentive in leaking positive information to the market, the opposite is true when it comes to the negative. This can lead to that negative information reaching the market will have a larger “surprise” factor than positive. This is one reason why asymmetric information (incomplete information) can be a problem. Credit rating agencies can also keep governments on high credit rating levels due to the fear of losing access to critical information for further ratings. Examples of such information is national debt levels, currency reserves etc.

Determinants and impact of sovereign credit ratings

Cantor and Packer (1996) presented the first systematic analysis of the determinants and impact of the sovereign credit ratings assigned by the largest and most influential U.S agencies, S & P’s and Moody’s Investors Service. More specifically, they asked two questions: How clear are the criteria underlying sovereign ratings, and how much of an impact do ratings have on borrowing costs for sovereigns state. Their result suggested that both agencies rating assignment could to a large extent be explained by a small number of well-defined criteria that the two agencies seem to weigh similarly.

Sovereign ratings are strongly correlated with market-determined credit spreads since they effectively summarize and supplement information contained in macroeconomic indicators. However, their event studies shows that the announcements of changes in the agencies’ sovereign risk
opinions are followed by bond yield movements in the expected direction that are statistically significant. In the 29 days preceding the announcement there is a significant increase or decrease in U.S dollar denominated bond spreads depending on negative or positive announcements respectively shown in figure 2.1. Leading up to a negative announcement relative spreads rise 3.3% and fall 2% in the 29 days before a positive announcement.

Below-investment-grade sovereigns are much more affected by rating announcements than investment-grade sovereigns. In addition, they also find that anticipated rating announcements (by their proxy measures) have a larger impact than less anticipated announcements, which is surprising. That suggests that the rating agencies provide the market with information about non-investment-grade sovereigns that is not publicly available.

*Does sovereign risk have an effect on corporate rating? Case study for emerging vs. developed countries*

Triandafil and Brezeanu (2001) show the linkage between sovereign and corporate credit ratings. They compared 150 firms where some are based in developing countries and others in already developed countries. There have been numerous discussions about how to deliver vial corporate credit ratings and what factors is most significant in deciding, meanwhile it has been underlined that corporate ratings have been affected by sovereign credit ratings making them multi-dimensional. It is not only the financial factors inside the corporation, but also the macro-economic level that affects. They state that the correlation between corporate and sovereign credit rating in developing countries are higher when determine corporate ratings, compared with developed countries where the sovereign rating don’t have the same relevance when determining corporate credit ratings. From a global perspective firms located in developing countries are more sensitive to macroeconomic events. They also state that a private entity will not be able to receive an upper level than the country it is located in creating a real asymmetric effect. They also found that a corporate will be downgraded if the sovereign rating of the country will go down, looking on upgrades there is not a guaranty for moving up in ratings due to positive sovereign rating announcement. This showing that a corporate is dependent on the sovereign rating, more if you are in a developing country but also for firms in developed countries such as the U.S.
3. Purpose

*In this section we show the purpose of our thesis, with problems and also the delimitations.*

The purpose of our thesis is to investigate the consequences of a downgrading of sovereign credit ratings on the domestic stock market. We have chosen 15 firms with low debt levels, and 15 with high levels to see if there is a difference between them after a negative credit rating.

3.1 Problems

The main issues of our thesis are:

- Does a downgrading of the sovereign credit rating affect the domestic stock market?
- If it does, is there a significant negative effect on firms with high debt levels?

3.2 Delimitations

In our research we have chosen S & P’s 500 index to represent the market, and the 30 companies used in the thesis are represented in the same market index. Because we assume that any effect on the market is product of the downgrade we have chosen a small event window, to minimize the effect of other events. In the paper we only take the credit rating downgrade from S & P’s in consideration when conduction our research, no other event.


4. Method

In the chapter Method we will explain what methods we used, how we collected our data and our theoretical framework. We will conduct an event study with data collected from the United States equity market to see how the market reacts to a change in credit rating.

4.1 Event studies

An event study is a statistical technique that estimates the impact of events on stock prices, for example a downgrade of a country’s credit rating. The idea is to recognize the effect of firm-specific and market-specific information. In our case we focus on information that is market-specific.

Event studies are one of the most common used methods when it comes to research regarding stock prices and its fluctuation. We have chosen to use event studies in this paper due to its possibility to choose certain time windows in regard to the event. Our event study is based on normal return 180 days prior to 20 days prior to the event. This is to see if the market anticipates the downgrade. We also have the event window of the actual event including historical data 3 days prior to the event and 3 days after the downgrade.

The data that we use in the event study is collected in two sets, one where we go back 180 days prior to the event, and then 7 days during the actual event, 3 days before, day 0 (the day of the event), and 3 days after. The 7 days window is preferable compared to for example 30 days because it reduces the risk of contamination from other economic events that would have an impact on the data.

4.2 Data

For our event study we have chosen to only take firms that are listed on the S & P’s 500 index list, this is an index including 500 large-cap companies that are frequently traded on either of the two largest stock markets in the US, the New York Stock Exchange and NASDAQ. From this list we have selected 30 companies that we divided into two categories, high debt and low debt levels. In table 4.1 you can see the list of the companies used.
<table>
<thead>
<tr>
<th>High debt Firms</th>
<th>Industries</th>
<th>Low debt Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford Motors</td>
<td>Consumer Discretionary</td>
<td>AutoNation</td>
</tr>
<tr>
<td>Clorox</td>
<td>Consumer Staples</td>
<td>Walgreen</td>
</tr>
<tr>
<td>El Paso</td>
<td>Energy</td>
<td>Exxon</td>
</tr>
<tr>
<td>Tenet Healthcare</td>
<td>Health care</td>
<td>Humana Inc</td>
</tr>
<tr>
<td>SLM Corp</td>
<td>Financials</td>
<td>Assurat Inc</td>
</tr>
<tr>
<td>General electric</td>
<td>Industrials</td>
<td>3M Corp</td>
</tr>
<tr>
<td>AES Corp</td>
<td>Utilities</td>
<td>Integrys Energy group</td>
</tr>
<tr>
<td>Windstream Corp</td>
<td>Telecom - service</td>
<td>Verizon</td>
</tr>
<tr>
<td>PPG industries Inc.</td>
<td>Materials</td>
<td>Titanium metals</td>
</tr>
<tr>
<td>J.C Penny</td>
<td>Consumer Discretionary</td>
<td>Abercrombie &amp; Fitch</td>
</tr>
<tr>
<td>HP</td>
<td>Information tech</td>
<td>Apple</td>
</tr>
<tr>
<td>Wastemanegment</td>
<td>Industrials</td>
<td>W, W Graiger Inc</td>
</tr>
<tr>
<td>United state steel corp</td>
<td>Materials</td>
<td>Newmount Mining Corp</td>
</tr>
<tr>
<td>Synovus Financial</td>
<td>Financials</td>
<td>T.Rowe group</td>
</tr>
<tr>
<td>Linear Teachnology</td>
<td>Information tech</td>
<td>Intel</td>
</tr>
</tbody>
</table>

Our data is collected from Yahoo finance ([http://finance.yahoo.com/](http://finance.yahoo.com/)). We have used closing price for each stock starting from 2010-11-17 to 2011-08-10. To see if the market is anticipating downgrades from Standard and Poor’s we have collected historical data 180 days prior (-180) to 20 days prior (-20) the US’s downgrade date (2011-08-05). For the actual event we are using a window of 7 days, 3 days prior (-3) of the rating downgrade and 3 days after (+3) the event and day 0, the actual event (2011-08-05).

### 4.3 Theoretical framework

From the data collected we have calculated the abnormal return based on the method described by Bradley, Desai and Kim (1988) and Stambaugh (1995). First we calculated abnormal return on each stock during the actual event window (+/- 3 days of the announcement) with the formula:

\[ AR_t = R_t - E[R_t] \]

\( R_t \) is the actual return on the individual stock on a specific day, and \( E[R_t] \) is the expected return on the stock. To get the expected return we use the formula:

\[ E[R_t] = \hat{\alpha}_t + \hat{\beta}_t R_{me} \]
As we can see in the formula we add alpha $\alpha$ with $\beta$ (both were computed using a regression model, which we will mention later in this chapter) times the real rate of return of the market portfolio, in our case the S&P’s 500 index. These two formulas give us:

$$ AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{m} $$

To calculate the variance of abnormal return we use:

$$ \text{var}(AR_{it}) = \frac{1}{T} + \frac{(R_{mt} - \hat{\mu}_m)^2}{T \hat{\sigma}_m^2} \sigma_{\epsilon}^2 $$

$T$ = number of days in the estimation period (-180 to -20)

$\hat{\sigma}_m^2$ = variance of the market

$\hat{\mu}_m$ = mean return on the value weighted index (S&P’s 500)

$\sigma_{\epsilon}^2$ = the variance of the residuals over the estimation period

The average abnormal return is calculated in the following way.

$$ \overline{AR}_1 = \frac{1}{N} \sum_{i=1}^{N} AR_{it} $$

In this equation N represent the numbers of firms used in the sample. Than we add up the abnormal return from all seven days during the event window to get the cumulative abnormal return.

$$ CAR_{t, \tau, \tau+K} = \sum_{t=\tau}^{\tau+K} AR_{it} $$

$\tau$ is day one of the event window and K is the number of days in the event window (7 days).

To test the statistical significant of the average abnormal return and cumulative abnormal return all average abnormal return has to be standardized. This is done on the following way:

$$ SAR_{it} = \frac{AR_{it}}{\sqrt{\text{var}(AR_{it})}} $$

Then the test statistic will be calculated:
The cumulative abnormal is standardized in the same way:

\[ SCAR_{t, t+\tau+K} = \frac{1}{\sqrt{K}} \sum_{i=1}^{N} SAR_{it} \]

Finally the test statistic is computed:

\[ Z_{t, t+\tau+K} = \frac{1}{\sqrt{N}} \sum_{i=1}^{N} SCAR_{t, t+\tau+K} \]  

### 4.4 Regression model

As mentioned earlier in the chapter, we have used a regression model. Regression models are used to evaluate economic data with a set of one dependent and a number of independent variables to see how the independent variable correlates with the dependent variable. For analyses where you want to determine the impact of certain features on the dependent variable, you can use dummy variables. Dummy variables are often called binary or dichotomous variables as they take just two values, usually 1 or 0.

We have used a regression model to determine if there is a significant effect whether a company has low debt or high debt, using the CAR values of +/- 1 day as the dependent variable and dummy variables where 1 represents high debt and 0 represent low debt.

\[ CAR = \alpha + \beta x_i + \varepsilon_i \]

In this equation \(x_i\) represents the dummy variable and \(\varepsilon\) is the standard error. We also assume a 10% significant level when performing the regression model.
5. Estimation results

Here we will present our results from the calculations, which we will illustrate in 6 different tables.

Table 5.1

<table>
<thead>
<tr>
<th>Percentage change</th>
<th>S&amp;P’s 500 index</th>
<th>Dag</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>-0.04415239</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>0.04740679</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>-0.06663443</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>-0.00057497</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1</td>
<td>-0.04782043</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-2</td>
<td>0.00501575</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-3</td>
<td>-0.02555675</td>
</tr>
</tbody>
</table>

The results from our data shows that the S&P’s 500 index went down by -0.06663443 % the first trading day after the announcement (2011-08-08), which was the greatest fall for the whole sample period (2010-11-17 to 2011-08-10). In table 5.1 we can see the percentage change for S&P’s 500 index during the 7 days that we used for the event study.

We also found results that the average abnormal returns (AAR) from the 30 companies in our calculations during the event window were negative from day -3 to day +1 and fell by -0.00283115 the day after the event. However, the last 2 days of the event window had a positive AAR and the largest fall was 2 days before the announcement. The Z-statistics for the event window show highest levels on day 3, with a value of 3.257428569 followed by -1.450499287 on day -2 and 0.879655292 on day 0. Day 1 has the second highest negative value, -0.862763284.

Table 5.2

<table>
<thead>
<tr>
<th>Days</th>
<th>Average Abnormal for all firms</th>
<th>Z-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0.007890422</td>
<td>3.257428569</td>
</tr>
<tr>
<td>2</td>
<td>0.000835595</td>
<td>0.626535151</td>
</tr>
<tr>
<td>1</td>
<td>-0.00283115</td>
<td>-0.862763284</td>
</tr>
<tr>
<td>0</td>
<td>-0.000998109</td>
<td>0.879655292</td>
</tr>
<tr>
<td>-1</td>
<td>-0.002792511</td>
<td>-0.573450957</td>
</tr>
<tr>
<td>-2</td>
<td>-0.003733292</td>
<td>-1.450499287</td>
</tr>
<tr>
<td>-3</td>
<td>-1.03068E-05</td>
<td>0.241014315</td>
</tr>
</tbody>
</table>

When comparing average abnormal return between low and high debt companies there is a large difference during +/- 1 day from the actual event. We can see that the largest average abnormal return fall is in the day after the event. This is shown in table 5.3.
Table 5.3

<table>
<thead>
<tr>
<th>Days</th>
<th>High debt firms Average Abnormal</th>
<th>Low debt firms Average Abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0,009220399</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>0,006560444</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>-0,001660042</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>-0,005707503</td>
<td>0</td>
</tr>
<tr>
<td>-1</td>
<td>-0,011369803</td>
<td>-1</td>
</tr>
<tr>
<td>-2</td>
<td>-0,00274521</td>
<td>-2</td>
</tr>
<tr>
<td>-3</td>
<td>-0,004796522</td>
<td>-3</td>
</tr>
</tbody>
</table>

We also performed a regression model analysis to determine the impact on companies with low debt versus high debt. CAR +/- 1 day was used as the dependent variable and we used dummy variables as independent variables, where the number 1 indicated high debt and 0 indicated low debt. Our results presented in table 5.4 show that there was a significant negative effect for companies with high debt, shown by the low p-value 0,069846108 which is larger than $\alpha$ and therefore the null is not rejected.

Table 5.4

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th>Standard error</th>
<th>t-quotation</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0,008537595</td>
<td>0,011373186</td>
<td>0,750677</td>
<td>0,459109305</td>
</tr>
<tr>
<td>X-variable 1</td>
<td>-0,030318729</td>
<td>0,016084114</td>
<td>-1,88501</td>
<td>0,069846108</td>
</tr>
</tbody>
</table>

We also performed a regression model analysis to determine the impact on companies with low debt versus high debt. CAR +/- 1 day was used as the dependent variable and we used dummy variables as independent variables, where the number 1 indicated high debt and 0 indicated low debt. Our results presented in table 5.4 show that there was a significant negative effect for companies with high debt, shown by the low p-value 0,069846108 which is larger than $\alpha$ and therefore the null is not rejected.
6. Analysis

In this chapter we will analyze the data from our research. The analysis is presented in two categories, market impact and high debt versus low debt significance.

If we look at the results regarding are first problem where we look for market reactions, our data indicate a negative impact of the downgrade. The fall on the day after the downgrade was the largest in our sample period indicating that the market was affected as a result of the downgrade. This trend was also noticeable in the data regarding the companies used in our research. The average abnormal return and the cumulative abnormal return from the event window show a negative trend from – 3 day to + 1 day. This is followed by a small rise in the abnormal return and the cumulative abnormal return from + 2 to + 3 day during the event window. In addition, the largest fall was two days prior (-2) to the event, in contrast to the market index that enjoyed a positive return during this day.

This could be explained by a leakage of information regarding the downgrade. Since a lower credit rating means higher costs of borrowing the companies with high debt in our research would be severely affected compared to the low debt. Because 15 of our 30 companies are high debt the negative effect of information regarding a downgrade of the US credit rating will be larger due to the ratio of high debt companies in our analysis compared to the ratio in the index. This could explain the relative large negative abnormal return two days prior compared to the first trading day after the event. In fact, if we look at the whole event window there is a negative abnormal return the days leading up to the event indicating that the market anticipate the downgrade and that some information has leaked. With this in mind, the combined result still shows that the downgrade has a negative effect on the market.

Companies with high debt levels have experienced larger falls in the abnormal return during +/- 1 day in the event window. This was also proven in our regression model where we used the CAR of all companies from +/- 1 day. We found a significant negative impact on companies with high debt levels. This clearly shows that high debt firms are much more sensitive to the downgrade compared to the firms with low debt levels.
7. Conclusion

_In this chapter we use the analysis to make a conclusion about our problems and to solve the purpose of our thesis._

Earlier in our thesis we presented two problems; does a downgrading of the sovereign credit rating affect the domestic stock market, and if it does, is there a significant negative effect on firms with high debt levels?

Our analysis shows that the market is affected by the credit rating announcement. We have reason to believe that the downgrade is anticipated by the marker as previously shown by Cantor and Packer (1996). This was also shown by António Alfonso, David Furer, and Pedro Gomes (2012). Our results from chapter 5 indicates that the market anticipates the negative downgrade and reacts prior to the actual event. The fact that the market anticipates the downgrade could be explained by a leakage of information regarding the downgrade. However, the market still shows the largest fall during the time we have collected data (-180 to -20 and +/- 3 days) the day after the downgrade. This shows that the downgrade still shocks the market.

When looking at the result from average abnormal return and cumulative abnormal return from the 30 companies used in our research it indicates that they also anticipated the downgrade, having the largest fall 2 days prior to the event. This could explain the recovery of the firms’ on day 2 and 3 after the event.

When comparing high versus low debt firms we have found that high debt firms are more affected by the downgrade, both prior and after the event. We could not find any previous research regarding the different effects on high debt versus low debt firms in a case of sovereign credit rating downgrade. In our research we found strong evidence of larger reactions on high debt firms compared to the low debt firms. An explanation for this is the fact that future borrowing will be more expensive and the current loans that are not in fixed rate will increase. This will affect companies with high debt more than companies with lower debt levels.
8. Suggested future research

During our thesis we have noticed that the research in the area of impact on domestic stock market due to changes in sovereign credit ratings is restricted. An interesting approach could be to apply the same problems on European data due to the financial crisis and turmoil. When using European data, one could compare the impact of sovereign credit rating changes across countries. Another approach could be to investigate the different impact of credit rating changes depending on what rating the country had, for example if there is a difference between a downgrade from AAA to AA compared BBB to BB.

The research could also be extended with more firms, looking for different effects across different industries in the same market. Or instead of extend the firms you can choose another rating agency to compare if there is different effect’s depending on which rating agency announcing the downgrade. One could also compare how the same industry across countries would react due to the change in sovereign credit rating.
9. Reference list

9.1 Books


9.2 Articles


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9.3 Web articles

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9.3 Data

Yahoo finance

URL: http://finance.yahoo.com/