The Decision of Debt or Equity Financing

An Empirical Examination of Capital Structure Theories

Authors:

Joakim Berglund and Matthew Parsonage

Supervisor: Anders Vilhelmsson

Abstract

Different approaches have been used to test capital structure theories empirically. In this paper the statement that Myers and Majluf (1984) discussed, that a low risk debt issue should affect the firm value less than a high risk equity issue, is explored and tested by applying an event study approach similar to the one Eckbo (1986) carried out on different kinds of debt issuances. There are also some important assumptions are tested for comparable reasons. A sample of all firms on the NYSE from the period January, 1 in 2007 to December, 31 in 2012 is used. The findings are that the Pecking Order Theory holds rather well when looking at a two-day event window from issuance announcements of debt and equity. The Traditional Trade-off Theory also holds, but only under the fairly rough assumption that specific firms have very different capital structure value adding-optima. Interestingly, it is found that the market reaction effect of an announcement is delayed by one day and only visible on the day after the announcement.

Keywords: *Capital Structure, Pecking Order Theory, Traditional Trade-off Theory, Event Study*

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1. Introduction

1.1 Background

Ever since the 1950s, when Modigliani and Miller (1958) published their groundbreaking paper on a perfect market with no frictions, academics still argue about the effects that capital structure has on a firm's value. The main problem with the original Modigliani-Miller (MM) framework is that it assumes several unrealistic assumptions hold, such as a friction free and perfect market. This has led to other theories evolving and opposing the conclusions that are reached when applying the MM framework, theories such as the Pecking Order Theory and the Traditional Trade-off Theory.

The Pecking Order Theory, as is put forth by Myers and Majluf (1984), is based on asymmetric information. Basically, managers will try to exploit their advantage of better information to try and maximize their position when it comes to capital structure. The Traditional Trade-off Theory, as Frank and Goyal (2007) explain, is a trade-off between the tax benefit from each additional dollar of debt, and the cost of bankruptcy that additional dollar carries.

According to Myers and Majluf (1984) the Pecking Order Theory would affect the capital structure and financing decisions in several ways. One of these ways would be that the value of a firm should fall after a decision to issue equity, while a risk-free debt issuance would have no effect on stock value. In practice, a debt issuance is seldom completely risk free, but generally assumed less risky than an equity issue.

There are many possible ways to measure the value change of a firm due to an issuing event. The event study approach is generally used to calculate abnormal returns of firms, which indicates a change in the market value of a firm (Brown & Warner, 1985). By using this approach, it should then be possible to compare the market and valuing effects of a debt and equity issuance announcement, under the assumption that the kinds of firms that are issuing debt and equity are somewhat similar.

Eckbo (1986) uses the event study approach to estimate the abnormal return effects, from a debt issuing announcement, which included signaling effects. A similar framework could be applied to make a comparative study between equity and debt issuing announcements.

1.2 Problematisation

The problem is that there are two opposing views, the original, frictionless MM view, and the views that stem from both the Pecking Order and Traditional Trade-off Theories. Both theories exploit a very different, but nonetheless, very real aspect of the market that the MM framework assumes is not there. This makes it unclear as to whether changes in capital structure actually affect the value of the firm. Both theoretical backgrounds are sound, but which effect is actually happening in practice? If capital structure truly has no effect, then there should be no preference to how a firm finances a project, and therefore no difference between financing between internal cash, debt issues or equity issues.

In practice, the uncertainty in the field may affect management's choices of financial activities. A further investigation and mapping of these decisions could bring more clarity, to both the academic and business worlds. This will then ultimately lead to a clearer picture as to which financing alternatives may be better in a certain situation to build the optimal capital structure for a firm. This will contribute to the literature regarding how managers make decisions, and why they make those decisions when it comes to external financing. Value maximization should always be the ultimate goal when it comes to investment decisions, and a clear, concise theory related to capital structure could help to maximize shareholder value and help potential shareholders make decisions about the firm.

1.3 Purpose

The purpose of this study is to investigate whether capital structure has any effect on the value of a firm. The basic methodology that is followed by Eckbo (1986) will be used in order to ascertain the effect capital structure has on the abnormal stock returns of a firm.

1.4 Research Question

"Are there any significant differences in the abnormal returns of firms that issue equity compared to firms that issue debt and how do the results align with the established capital structure theories?"

A compelling answer to this may help to answer some questions that have arisen in the literature about information asymmetries, self-selection biases and other financing related activities that firms in the marketplace take part in, including monitoring, speed of information and managerial decision making. There is a gap in the literature, whereby there is no study done on both equity

and debt in this particular way, as a comparative side by side analysis using the event study approach.

1.5 Restrictions

This paper pools many kinds of debt and equity issuances into the same sub-sample, since the primary purpose is to map the difference between the two main kinds of financing alternatives. It does not take convertibles into account. Eckbo (1986), for instance, specified different kinds of debt issuances and convertibles, since his paper was based mainly on debt financing decisions. This kind of division could give a larger spectrum of analytical angles to tackle issues with, for instance, different risk levels in different kinds of debt issuances.

Another restriction is that the event study in this paper is only performed following the market adjusted return model. This is since the focus is put on the theory application to the results rather than testing and comparing of different market model approaches for estimating the abnormal returns in event studies.

A geographical restriction was made to isolate the sample to the NYSE index. This was to receive a comparable and manageable sample, both in size and other practical dimensions such as time differences between global stock exchanges, and similar firm characteristics.

The paper also restricted industries in the sample so that financial and real estate firms were not included. This is because those kinds of firms tend to issue debt more frequently, without affecting their capital structure in the same way as regular industries.

1.6 Disposition

Chapter 2 will discuss some of the current literature and theories that are relevant in this study, giving an overview of both theories, and arguing through the reasons as to why the respective theories produce the corresponding effects. A more in-depth discussion into how leverage ratios, asymmetric information and other related phenomena will be further discussed, and finally empirical studies will be scrutinized in order to support the empirical study conducted in this paper.

Chapter 3 will discuss the methodology and data collection, the where, when and why of the study, followed by chapter 4 where the empirical study is conducted and discussed.

Chapter 5 will analyze the findings from chapter 4, and provide an in-depth discussion on how the results link to literature and other relevant information.

Finally, chapter 6 will wrap up the study, and provide some suggestions for future research.

2. Literature Review

2.1 Capital Structure

2.1.1 General Foundation

Modigliani-Miller (1958) propose that under certain assumptions, the choice of financing is irrelevant. Their two original propositions show that the value of a firm stays constant with increasing leverage, even though cost of debt, generally, is considered lower than cost of equity. This is because when a company chooses to increase their leverage, this causes an increase in risk to the existing equity holders, whom therefore demanded a higher return on equity. This will then outset the lower costs of debt and keep the weighted average cost of capital constant, regardless of the financing source. This, in turn, means that the firm value stays the same when using weighted average cost of capital as the discount rate in, for instance, a discounted cash flow model. The assumptions that MM used to build up the model include the absence of taxes and bankruptcy costs (later implemented in the Traditional Trade-off Theory). They also assume no agency costs and symmetric information (implemented in the Pecking Order Theory) and finally a completely efficient market.

Fama and French (2002) explain that there are two competing theories when it comes to modeling financial decisions, especially related to outside financing. There is the Traditional Trade-off Theory, and the Pecking Order Theory, developed by Myers and Majluf (1984). While these theories are different, they are not polar opposites of each other in that they are built out of similar assumptions, but diverge at a point to give different results (Welch, 2007). The Trade-off Theory tends to be thought of more as an optimization model for capital structure, while the Pecking Order Theory is built on asymmetric information and adverse selection. Below is an in-depth review of both theories.

2.1.2 The Traditional Trade-off Theory

Frank and Goyal (2007) discuss that the original version of the Traditional Trade-off Theory actually grew out of the MM framework. Corporate taxes were introduced to their perfect world, and this destroyed their proposition that capital structure adds no value. Tax shields protect earnings from tax, and therefore debt becomes attractive. This creates the implication that 100 % debt financing is optimal. This is clearly against intuition, and once bankruptcy costs were introduced, the Traditional Trade-off Theory was created, trying to achieve the optimal level of

leverage by weighing up costs and benefits. When accounting for the complexity of the tax codes and the fact that bankruptcy costs cannot be transferred, different optimal leverages can be reached depending on how the variables are interpreted.

According to Fama and French (2002), the Traditional Trade-off Theory is driven by an amalgam of different factors. It identifies an optimal leverage by weighing the benefit of one additional dollar in debt against the cost of that dollar. These benefits can include tax shields, and easier access to a cash flow, while the costs can include bankruptcy and agency costs. Bankruptcy costs can push this optimal leverage ratio lower while agency costs can push the same leverage ratio higher. This is a fairly basic interpretation of the theory, and there are expansions to the theory that can explain more of what is seen in reality.

Ju et al (2005) observed that many firms are actually underlevered when compared to the predictions of optimization in the Traditional Trade-off Theory. According to them, the general consensus amongst researchers is that the bankruptcy costs are actually insignificant when compared to the benefits and value of what a tax shield can obtain. So why are firms generally underlevered? Is it because the agency costs associated with a firm's capital structure must be taken into account? It turns out that there are many factors to consider, more than the basic interpretations of the Traditional Trade-off Theory suggest. Factors such as the underlying risk of the firm's assets, maturity of debt, debtholders right to force default for a given level of firm value and the increasing bankruptcy costs conditional of that default must be considered to explain the leverage ratios seen in real working firms.

2.1.3 The Pecking Order Theory

Myers and Majluf (1984) evolved a model to map the problems with management's information advantage against new potential investors when issuing and selling new equity. The model was founded under the assumptions that the issuing company's management favoured the existing shareholders and that those existing shareholders were passive in their trading behaviour and hold their shares under the whole issuing procedure. Under those assumptions, the authors showed that existing shareholders are not always better off when the company chooses to raise equity to finance a positive net present value investment opportunity. In a two-state scenario where the management has knowledge about the outcome at time zero, the new potential shareholders will demand a larger part of existing assets. Sometimes the existing shareholders

are more satisfied from not raising capital and therefore also miss the investment opportunity.

$$S + a \leq \frac{P^*}{P^*+E} * (E + S + a + b) \rightarrow \frac{E}{P^*+E} * (S + a) \leq \frac{P^*}{P^*+E} * (E + b) \qquad \textit{Equation 2.1}$$

In Equation 2.1, P^* equals the equilibrium value of the firm under the condition that an issue takes place. E is the minimum issue size value for the company to be able to undertake an investment. (Or the size of the investment minus company slack, so that $E = I - S$). a is the value of assets in place and b the net present value of the investment opportunities (Myers & Majluf, 1984).

This meant that if potential new shareholders received a large enough part of the existing value by investing, and if the investment opportunity generated a small enough b this would cause an unwillingness of the existing shareholders to go through with the issuance and the investment. This was since they would be better off with their pre-issuance equity value. Furthermore, the authors could conclude that an issuance of equity would be a signal to the shareholders that the share-value before the issuance is overpriced. Otherwise it would not be worth for existing shareholders to issue new equity. Therefore, an announcement of an equity issue should reduce the stock price if the new potential investors behave rationally (Myers & Majluf, 1984).

Myers and Majluf (1984) also showed that the lower risk to potential new investors, the larger possibility for the company's management to undertake the issue and the investment. They introduced the concept of debt issuance to show that a choice of issuing total risk free debt would mean that the company would undertake all positive net present value project as long as b is positive. This would also mean that the stock value would be preserved even after the debt issuance. When the risk of the issuance increases, the company would only undertake investments where the size of b is large enough to offset the increased risk. Since issuing of debt is considered, generally, to be less risky than issuing of equity, the model could then conclude that a company would prefer issuing debt before issuing equity.

Frank and Goyal (2003) tackle the Pecking Order Theory from a different angle in their study which explores the extent to which the Pecking Order Theory explains the capital structure behaviour of publicly traded American firms in the period 1971-1998. They observed that the

key claims of the Pecking Order Theory do not hold when examining firms from the same period and claim that equity financing tends to be a much more significant component of external financing than the Pecking Order Theory would suggest. In fact, they see that net debt issues are actually smaller than net equity issues and that these forms of external financing actually exceed the net investment. Their results showed that when examining a narrow, restricted range of firms, the Pecking Order Theory held, but when expanding the sample size to more firms, which include smaller firms, this changed. The smaller firms, which usually finance with equity, brought the average equity issues up, and therefore took some explanatory power away from the Pecking Order Theory.

2.1.4 Comparison
There are many different opinions in the literature when trying to pair off the two theories. Shyam-Sunder and Myers (1999) found that when considering profitability and leverage, there is a negative relationship between the two, which gives credit to the Pecking Order Theory's predictions. Fama and French (2002) managed to acquire the same result, but found that leverage is sensitive to changes in earnings, which is more in line with the Traditional Trade-off Theory. In contrast to this negative relationship, Hovakimian et al. (2001) reported that firms that were issuing debt over equity tended to be more profitable, and this give credit to dynamic trade off theories. They also managed to deduce that market-to-book ratios have a positive correlation on both probabilities of a debt vs equity issue as well as the observed debt ratio, which is consistent with both Pecking Order and Traditional Trade-off Theories. Disputing this, Baker and Wurgler (2002) suggest capital structure actually reflects more about the timing of the equity markets, and that the market-to-book ratios have no negative effects on the firm's leverages, so therefore neither theory is sufficient to explain the observations. Hovakimian et al. (2004) find that profitability actually has no effect on target leverage, and that the effect on stock returns are unrelated to leverage, which is due to the Pecking Order Theory. They do advise a caution when making assumptions about the capital structure decisions, since they speculate that firms may try to take advantage of overpriced stocks and issue equity, even when there is sufficient capacity for debt. So, in certain cases, overvalued stocks can overpower an equity issue's negative consequences.

2.2 Information Asymmetry, Adverse Selection and Agency Theory

2.2.1 Information Asymmetry

The Pecking Order Theory is based on an assumption of adverse selection and information asymmetry between managers and new potential shareholders. Akerlof (1970) highlighted this kind of problem in the automobile and insurance industry. He meant that one of the most crucial problems with adverse selection (in this case from management) is the welfare loss that it incorporates when; in this case, positive net present value projects are abandoned.

Asymmetric information models can be applied in a large field of studies. Tirole (2006) developed a model for corporate investments concepts where he used a bank's investment in an entrepreneurial investment opportunity as example for how probable it is for an investor to undertake a positive net present value investment under asymmetric information. He assumed that the investor and the entrepreneur were risk neutral and there were only two kinds of borrowers (good and bad). Under the assumption that the entrepreneurs had a greater amount of information about the state of the entrepreneur (and therefore indirectly the probability that the undertaking investment will generate positive outcomes), Tirole meant that investors would only invest as long as the known share of good entrepreneurs α was large enough. So that:

$$\alpha * (pR - I) + (1 - \alpha) * (qR - I) > 0 \qquad \text{Equation 2.2}$$

In Equation 2.2 α is a positive number smaller than 1. pR is the return times the probability of success under a good behaving agent and qR the same under a bad behaving agent. I is the investment size. A further condition is that $pR > I > qR$. This is in contrast to when the investor actually knows what entrepreneurs are good respectively bad. Then they would invest in good entrepreneurial investment opportunities as long as:

$$p(R - R_G) - I > 0 \qquad \text{Equation 2.3}$$

In Equation 2.3 R_G is the compensation for the borrower and R the total compensation.

2.2.2 Adverse Selection

Myers (1984) applies asymmetric information to external financing and comes up with some interesting insights. If the manager has favourable information, and investors have less information, then the manager will try to make sure that he can maximize the difference between the intrinsic value of the shares and the selling price of those same shares, thus meaning the shares will be overpriced or overvalued. This is assumed by investors to be the case, that the manager is not on their side, and the investors will therefore adjust the price they are willing to pay, in order to counteract this lack of information that they have.

Myers (1984) defined delta N as the amount the shares are under or overvalued. So, if delta N is negative, then the information available to the manager is unfavourable, so therefore the firm will always issue, even if there is a 0 net present value project, and the only good thing to do with the money from the issue is to put it into the bank. If there is favourable information available, then the manager will not issue, and may pass up on a positive net present value project rather than issue undervalued stocks. So, a situation occurs where the manager will try to use the information asymmetries to his/her advantage. This sends a signal to the investors that either way, whether buying new stocks that are issued, or holding onto old stocks, the price must be adjusted for in order to combat asymmetric information.

Frank and Goyal (2003) say that financing behaviour is driven by adverse selection costs, which is what Myers (1984) was explaining in the above paragraph. So therefore, the Pecking Order Theory should be very apparent in firms that have severe adverse selection issues. Usually it is firms that are young, small with high growth that have the largest information asymmetries, which in turn suggests that there are the largest adverse selection costs in these firms. The empirical evidence rejects this theory. The evidence actually suggests that the large, mature firms actually display aspects of the Pecking Order Theory rather than the small young firms. This is strange because larger firms are usually considered to have very low adverse selection problems, and therefore low information asymmetries. This may be due to an effect that for firms of all sizes, the financing deficit becomes less and less significant over time.

2.2.3 Agency Theory

Easterbrook (1984) saw dividends as the best way to constrain agents. He suggested that forcing a firm into the capital markets sets up signaling and monitoring effects that will force the managers into good behaviour. Therefore, they will not misuse their power over the free cash in the firm, and make sure that the resources go towards sustainable growth and therefore less agency costs.

Jensen (1986) built upon the work of Easterbrook (1984) and suggested that free cash has substantial costs associated with it. This is because agents are inherently prone to misbehaviour, and if an agent has the opportunity, he or she will misuse that cash for his or her own personal advantage. This is mainly due to the fact that compensation is related to the size of the firm, so they may misuse the cash, to finance unsustainable growth over the short term. Easterbrook (1984) suggesting using dividends to achieve this constraint is very weak according to Jensen. This is because "permanent" dividends can actually be recalled at any time, so it still gives the managers huge power over the free cash. Jensen suggests taking on as much debt as possible to combat this, therefore restraining managers because there is a very strong signal, and there is no way for the managers to avoid the debt repayments if they have the funds on hand. This debt can be used to finance new projects or repurchase stocks, and serves as a monitoring effect since the debt holders can take the firm to bankruptcy if their debt obligations are not met.

2.3 Empirical Applications

2.3.1 Short Term Event Window

Eckbo (1986) wanted to estimate the short term signaling effect of debt issues on abnormal stock returns to see how the market reacts to a debt increasing capital structure announcement. He did so by using a regression model where he estimated the abnormal returns of four different kinds of debt offering events. The regression model was built up from a capital market model where he added 723 short term pre- and post-event window dummy variables of (2-20 days), one for each debt-offering event. The dummy variables took the value of 1 before the event happened (and during the day of the event) and the value of 0 after the event had occurred.

The dates of the events he found through a three-step process. Firstly, he sorted out yearly debt changes from the Compustat data-base. If the increase in debt in one year was large enough (over 50 million USD) he looked the company up in the Wall Street Journal Index to see if there had

been any indications of a debt issue announcement during the year. For those companies that had announced a debt issue he then used the announcement date as the event day in his regression model. He also adjusted his sample by dropping events for which the announcement date was unclear or unable to find out by looking in the Wall Street Journal Index. His results indicated an average drop of 0.06 % in abnormal returns for a straight debt issuance announcement (Eckbo, 1986).

2.3.2 Long Term Event Window

Spiess and Affleck-Graves (1998) find some problems with using short term abnormal returns over a long horizon. They feel that this method biases the results, which leads to incorrect statistical conclusion, and try to combat this by using long term abnormal returns over a long horizon. Their results, after several robustness tests, actually challenge what Eckbo (1986) found about debt issues on stock returns. They found that the market under reacts to the information, and therefore the effect is that the long term abnormal stock return, after the event has taken place, is of the same sign as in the announcement period. This all basically adds up the abnormal return changing significantly with a debt issue. It is worth noting that they found that many forms of events produce this same result, including equity issues, acquisitions, divestitures, stock splits and many other forms of corporate financial decisions. This effect could be due to the nature of short termism over the long term, or to unnecessary noise corrupting the results and biasing them towards the negative.

2.3.3 Self-Selection Bias

Dutordoir and Hodrick (2012), found three different effects that capital structure decisions have on the abnormal returns. Stock returns around straight debt announcements are related to proxies for debt related financing costs negatively and positively for proxies regarding equity related adverse selection costs. Seasoned equity offerings and their effects on stock returns have a negative relation to firms that have easy access and a large capacity for debt, and positive relation for firms with larger pre-announcement stock run-ups. Finally, announcements of convertible debt have a positive effect on firms that have large costs in attracting debt or equity financing.

The authors put this down to an issue of self-selection control. The firm's managers will use their advantage of information asymmetries to raise the funds that are needed in a way that will have

the least negative impact on their abnormal returns. This will all be due to the financial health of the firm, and to some extent, the industry or area that the firm is operating in. This helps to explain some of the properties of the Pecking Order Theory, namely the informational asymmetries aspect, yet there is also some evidence that goes against the theory. The evidence suggests that the stock returns are not completely explained by the equity related adverse selection costs. There is also evidence that debt related financing costs play an important role, as to why some firms choose equity over debt (Dutordoir & Hodrick, 2012).

2.3.4 Pecking Order Characteristics

Leary and Roberts (2010) tested another way to the estimate empirical relevance of the Pecking Order Theory. They started by assuming two ways that companies could build their capital structure in accordance to the Pecking Order Theory, a strict and a liberal way. The strict way assumed that a company would not use an inferior finance source, such as equity financing, until the superior financing source, such as internally generated cash flows, was entirely drained. From this assumption, they could build up a model that could predict the source of the upcoming financing decision according to the Pecking Order Theory. They found that just 20 % of the firms followed the Pecking Order predictions. They therefore tested a more liberal model, which included the addition of elements like tax adjustments and bankruptcy probabilities that are more recognized as measurements used in Traditional Trade-off framework. When using this model, they received an increased prediction ability of the test, up to 80 %. It is hard to say how much of this increased that was due to the Traditional Trade-off elements and how much came from the cooperation of the elements from the different theories.

One further finding from Leary and Roberts (2010) study was that the factors for the financial decisions in accordance to the Pecking Order were driven by incentive conflicts from management rather than from information asymmetry as the original framework states. This is an interesting note even though those drivers are directly affecting each other.

2.4 Critical Examination

2.4.1 Capital Structure Critics

There are problems with most of the models for estimating capital structure and changes in capital structure. Welch (2007) discussed three main flaws that he found in the most common empirical models. Firstly, he discussed the relationship between changes in debt over assets and

actual change in equity over assets. In theory those measurements should be clearly negatively correlated, since they seem to be the major financing alternatives for a firm. Strangely, he found no large correlation or explanatory power between those changes, but instead found that the relationship between change in non-financial liabilities (such as account payables, other liabilities, etc.) and change in equity, which implies that the firm in a high degree can affect those accounts as financing alternatives. Secondly, he questioned the linearity and partial exogeneity in the models for change in debt and equity ratios. He suggested that other factors that are affected by the capital structure change may, in turn, affect the ratios and therefore increase the effect of the ratio more for firms with relatively large changes in their ratios. Welch meant though that those kinds of non-linearity problems can be easily handled when more advanced statistical tools are available. Lastly, there is the problem with data flaws. Welch found that one of the main problems in the Compustat database is that about 10 % of the firms disappear and reappear annually. This makes it really hard to actually replicate studies and validate results in a feasible manner.

2.4.2 Event Study Approach Critics

The event study approach to estimate abnormal returns has been widely used and traced back all the way to the 1930´s (MacKinley, 1997). There are several ways to estimate the event formula and the calculation of abnormal returns in an event study. The data can consist of different observation intervals, such as daily or weekly data. Brown and Warner (1985) discussed some common flaws that may occur when using a daily data approach to the study. Some of the flaws mentioned are the non-normality problem, non-synchronized trading and variance estimation problems. The non-normality problem may be a problem for statistical tests with an abnormal return sample that gets fat tailed distributions. This is a common problem when estimating any kinds of financial data samples. The non-synchronized trading problem may occur when the event takes place under a time when the market cannot or will not react instantly. This becomes more of a problem when using daily returns as estimation, since those estimations often assume an instant reaction. In an empirical study, there is therefore good to include some margins when estimating an event and the effects of an event. Variance problems may occur for several reasons. There may be time series-biases, cross sectional biases or stationarity problems that can affect the variances and cause biases. This is something that needs to be taken in consideration when analyzing the results from hypothesis tests and regressions run with abnormal returns.

Brown and Warner suggest that some of these problems may be taken in account when estimating the t-statistics (for instance the time series-biases for longer event windows). Other problems may be minor and taken in account when discussing the results (Brown and Warner, 1995).

3. Methodology

3.1 Data Set

The data set was constructed as a mix from two different data sources. Firstly, all market data was collected off the CRSP database. The market data consisted of all companies on the NYSE from the period January, 1 in 2007 to December, 31 in 2012. Daily data was extracted from this date range, with particular attention paid to stock prices, dates, market returns and company names. Other information that proved useful was the company's TIC numbers, but it did not feature in the final results. The data here, especially corresponding to the stock prices and market prices is measured from close of the day before to the close of that particular day, so in a closed to closed format.

The second part of the data set was collected from the Capital IQ database. Here the actual events were extracted, the dates on which those events transpired and the magnitude of the events, i.e., the size of the equity and debt issues. The events consisted of equity issues as well as debt issues. There was no distinction between the straight debt issues, but in the equity issue section, IPOs were excluded. This was because there was a lack of market information leading up to IPOs, so the event had no impact on any abnormal returns, since the company wasn't active on the market just yet. Financial institutions were also excluded from the data; this includes banks, insurance and real estate companies. These were excluded because these financial institutions tend to issue lots of debt without impacting their capital structure very much. Lastly, a restriction was put on the size of the issues, and only issues that were above $500 million were considered. This restriction on the issue size was chosen, because of the argument raised by Frank and Goyal (2003), where they find that empirically, larger firms have a higher possibility to display characteristics in line with capital structure theories. It is not uncommon to use restrictions of this sort in these kinds of studies, since Eckbo (1986) added a similar, lowest value threshold in his study.

Merging the two data sets proved to be quite time consuming. The data needed to be filtered into companies, and then the events, dates and issue sizes matched exactly, using the TIC numbers as a sorting instrument. A dummy variable was constructed to indicate when the event took place, which took the value of 1 on the day of the event and the relevant days afterwards, up to T+n days. T is the actual event day, that takes the value of 1, and n is the number of days directly

following the event day. A value of 0 was given to all other dates. Where an event took place, the magnitude of the issue was also matched to its respective event.

The data came from two different sources, so there were omissions that were necessary. Firstly, any event that took place on the very first, or very last day of the estimation period had to be omitted, since there was a lack of data on either the stock returns, or the preceding day after the event took place. Secondly any IPOs were omitted, as explained before. Thirdly, there were some events that did not match up. An example of this was that an event was registered, but there was no market data at all about the company, so these events had to be omitted as well.

This led to a data set during the period that had 604 debt events and 87 equity events spread over 258 companies.

3.2 Quantitative Method

3.2.1 Reliability
The reliability of the data is always an issue when conducting these kinds of statistical studies. The data set that was constructed in this study is large enough to give reliable results, and many of the issues that arise from the general problems that are present in data sets, such as heteroscedasticity, have been accounted for where possible. It is appropriate for what is trying to be achieved, is largely error free, and is not missing very many observations. One of the reliability issues that may occur when gathering data from different databases, as in this study, is that the possibility to replicate the study decreases. For the study to contribute with a high reliability it is important that the method section is clear with where observations were lost during the making and merging of the final data set. This is also so that future studies with the same methodological framework can get a comparable view of this study's findings for their own analysis (Saunders et al., 2009 p. 156).

3.2.2 Validity
To avoid validity problems, the data collection for this study was performed with the attempt to be as complete as possible. This was mainly to avoid subjectiveness and biases in the extraction of the empirical results (Saunders et al., 2009 p. 157). The only observation drops that occurred in the study were due to incomplete or non-matching data. Some variables have been winsorized to fit the purpose of the variable, for instance Equity Value to EBITDA.

The main databases used in the study, CRSP and Capital IQ, are reputable, and the data is widely available through many different sources.

To increase the validity of the study, some important assumptions are tested. First there was a test performed on the assumption that the results from companies issuing debt could be compared to results from companies issuing equity. A feasible outcome of this test would suggest a similarity between those kinds of firms in the time period when they are financially active with capital issuances. Other tests were performed on the abnormal return to see if the size of the issue and chronological changes in the macroeconomic environment could significantly affect the abnormal returns.

3.3 Method

3.3.1 Firm Similarity Tests

The firm similarity test was performed by measuring certain accounting measurements on the firm during the time period of the issuance, in order to see if they affected the decision to issue equity or debt. This is important since a comparison between the debt and equity issuing firms would be biased if the firms were not somewhat similar in terms of their profitability, valuation and capital structure before issuance and size.

The measurements used were a size measurement in terms of the natural logarithm of total assets, a leverage ratio and a market valuation measurement that would work as a proxy for Price-to-Earnings. A Price-to-Earnings ratio was chosen, since this is one of the most widely used valuation measurements and a good indicator on the firm attributes and an underlying factor to financial decisions (Jitmaneeroj, 2017). With the data available, this second measurement was measured as the market capitalization (or Equity Value of outstanding shares) divided by EBITDA. All negative values of the ratio were restricted and made to equal 0 because negative EBITDAs are inefficient at predicting firm values in this specific multiple. This is because the sign flips the interpretation of the coefficient, therefore is not feasible to have negative and positive ratios in the same parameter, in the same regression. The leverage ratio was estimated as non-equity financing over assets. A pure debt numerator would probably be a better measurement, but since it would be harder to estimate and the data would be harder to get for this large amount of companies, this study instead used the Equation 3.1 as a proxy for leverage.

$$(1 - \frac{EquityValue}{TotalAssets})$$ *Equation 3.1*

To adjust for differences in between industries, a vector of industry dummies was included, taking the value of 1 for a specific industry. There were 7 industry dummies included in the regression. The dependent variable was constructed by assigning a dummy variable taking the value of 1 for the equity issuing firms and the value of 0 for the debt issuing firms. A regression was then run using a probit model on the entire issuing sample. Furthermore, an assumption was applied that there was no present heteroscedasticity in the regression model. This since the left-hand side carried binary values meaning that possible heteroscedasticity would mean that the model was misspecified. The regression model was specified in Equation 3.2.

$$IssuingTypeDummy_{t,i} = \alpha + \beta_1 * Ln(TotalAssets)_{t,i} + \beta_2 * \frac{EquityValue}{EBITDA}_{t,i} + \beta_3 * (1 - \frac{EquityValue}{TotalAssets}_{t,i}) + [\beta_{n+3}] *$$

$$[IndDummy_n]_{t,i} + \varepsilon_{t,i}$$ *Equation 3.2*

3.3.2 Event Study

In accordance with Eckbo (1986), an event study approach was used to calculate the abnormal returns from the two samples. It must be noted that announcements of debt and equity is used, since the investigation will try to determine whether the news hitting the market has any effect on the abnormal returns. The actual issue date has no real relevance in this particular study. Instead of using Eckbo's market model with an annual estimation window per event, this study uses a market adjusted return model where the betas were assumed to be 1 and alphas 0. This kind of model should be used carefully (MacKinlay, 1997), but in this study, it was feasible from following arguments;

The market adjusted return model has several benefits and drawbacks compared to the regular market model. One benefit is that there is no need to include an estimation window. In this kind of study, where the events are spread out over a large number of different time periods, it causes problems when setting reliable estimation windows, especially since the time period stretches over a volatile period including financial market instability. To avoid the noise that may occur when applying the regular market model, an assumption of stock movements close to the market returns was made. In this kind of study, the market model would force the estimation windows to

be calculated separately for each event, which would be a time consuming and subjective procedure. There is also an estimation uncertainty in the beta that is so large that a beta value equals 1 can often not be rejected Blume and Friend (1973). The estimated returns were then subsequently estimated by Equation 3.3.

$$[E(R_s)] = \alpha + \beta * R_m \rightarrow [E(R_s)] = 0 + 1 * R_m \rightarrow [E(R_s)] = R_m \qquad \textit{Equation 3.3}$$

The errors are assumed to have an expectation of 0. So, no error term is included.

A small sample test was also performed to see how much the abnormal returns differed when using the market model versus the market adjusted return model. The outcome was that the average difference was very small. Assumingly, a larger sample would decrease the average difference even more. With these results in mind, the rest of the study, the analysis of the results and the theoretical background was based on the market adjusted return model.

To calculate the abnormal returns, the estimated returns were subtracted from the actual returns during the event time frame according to Equation 3.4. The event time frame per event was decided by the day of the event and the days after the event up to T+3. The days after the event were included to account for issue announcements that had occurred after the NYSE's close. Those announcements will not be reflected in the changes of the stock price until the day after the event. That meant that the number of abnormal returns received was twice, three times or four times the size of the total number of events in each sample, depending on day T+n.

$$R_s - [E(R_s)] = Abn\ (R_s) \qquad \textit{Equation 3.4}$$

When the abnormal returns were received, an average was estimated per event to reflect and standardize the T+n abnormal return into a daily return measure in accordance with the framework from Eckbo's (1986) study.

Once the abnormal returns have been calculated, all the information that was needed in order to complete the empirical study was acquired. All the abnormal returns that occur on the dates that

events occur, when the dummy variable equals one, are moved onto a separate document to be prepared for statistical tests.

Firstly, the abnormal returns that occur only on the actual day of the event are assessed. Equity issues and debt issues are separated out, so that a difference can be found, if any exists. All relevant information needed to conduct a T-test is calculated, including mean, standard deviation, degrees of freedom and P-values. The T-test is then conducted for both equity and debt. Even though Brown and Warner (1995) mentioned problems with non-normality in the abnormal returns, there is an assumption made in this study that the sample is normally distributed in all hypothesis tests to make the empirical setup possible. The non-synchronized trading and variance problems are reduced due to the variety of event window setups in the study.

$$H_0: Mean = 0$$
$$H_1: Mean \neq 0$$

The tests were performed with an event window stretching from the day of the announcement event (T) to, T+n so that n=0, 1, 2 or 3. This was to estimate the total short term impact of the issuance activity. The average cumulative abnormal returns were estimated using a single day approach, as well as the average over the same estimation period to see if the abnormal return shock faded away gradually, or was present on only one day.

 Secondly a two sample T-test and a Satterwaite-Welch test were then conducted, in order to see if the values of the abnormal returns on equity and debt issuing companies are significantly different from each other. The null hypothesis was that the averages were equal.

$$H_0: Mean(S_1) = Mean(S_2)$$
$$H_1: Mean(S_1) \neq Mean(S_2)$$

3.3.3 Affecting Factors on Abnormal Returns

From a theoretically discussed view (for instance Eckbo (1986), the most accurate reaction results of the issuance should come from an average abnormal return of the T+n model where n=1. To test other factors that may affect the abnormal returns, a regression was therefore run with those average cumulative abnormal returns as the dependent variable. The explaining variables attached here were the size of the issue. Since the study excluded all issuances under a value of $500 million, this was then the minimum value in the regression. Additionally, a variable measuring the macroeconomic environment in the US over the time of the issuance was used. This measurement was the monthly change of CFNAI index. The CFNAI index includes an array of up to 85 macroeconomic variables such as housing supply, national retail revenues and industrial production, Chicagofed.org (2017). The regression was then run using OLS on the equity issuance sample, the debt issuance sample and a merged sample. A White test was applied to test if the variance of the residuals was constant or if there was any heteroscedasticity present in the estimation model. The regression model is specified in Equation 3.5.

$$Abn\ (R)_{t,i} = \alpha + \beta_1 * IssuingSize_{t,i} + \beta_2 * \Delta CFNAI_{t,i} + \varepsilon_{t,i} \qquad Equation\ 3.5$$

4. Empirical Results

4.1 Company Similarity Test

Dependent variable: Equity dummy	Coefficient	P-value	Descriptive Stats			
			Mean	Std. Dev	Min	Max
Ln Total Assets	-0.099	0.116	9.948	1.182	6.381	13.629
Equity Value/EBITDA	0.009	0.125	7.184	8.923	0	188.724
Leverage ratio	0.072	0.782	0.263	0.286	0	0.958
Industry dummies:						
Consumer Staples	-1.132	0.011	0.161	0.368	0	1
Consumer Discretionary	0.378	0.185	0.124	0,336	0	1
Energy	0.141	0.613	0.217	0.413	0	1
Healthcare	-0.112	0.733	0.101	0.301	0	1
Industrials	-0.234	0.452	0.137	0.344	0	1
Information technology	-0.912	0.069	0.082	0.275	0	1
Materials	0.389	0.206	0.092	0.344	0	1
Intersect	-0.287	0.672				
Number of obs.	644					
R^2	0.104					

Table 1

In table 1 the results from the company similarity test are shown which correspond to equation 1. There was an observation loss of 47 observations (about 7 % of the entire sample) due to incomplete data. None of the firm specifics seem to have a significant impact on the choice of financing. The only significance in the regression is coming from some of the industry specifics. From this it can be seen that Consumer Staples and Information Technology firms are significantly more likely to issue debt instead of equity at a 0.1 significance level. This is since

the coefficients are negative in those variables. Also, the explaining factor of the independent variables on the financial choice seems to be only about 10.4 %. Since there is no further significance in the test, the assumption is that the debt and equity issuing companies are fairly similar and no further adjustments should be needed in the abnormal returns calculation and interpretation.

4.2 Event Study Results

4.2.1 Average Effects

4.2.1.1 Results from Day of the Event

The average cumulative abnormal returns (ACAR) were calculated in accordance with equation 3 for all tests.

	Equity issues	Debt issues
ACAR (%)	-0.348	0.077
Std. Dev	0.033	0.022
T-stats	-0.994	0.933
P-value	0.161	0.175

Table 2

In table 2 the results from the two tailed hypothesis tests that were conducted for both equity and debt issues using the abnormal returns from the day of the event can be seen. While there is a difference in the ACAR, with equity issues giving a negative value, and debt positive, they are very small, almost zero. In fact, once the hypothesis test is conducted, the P-values for equity and debt are 0.161 and 0.175 respectively. Therefore, the null hypothesis cannot be rejected, which translates into the ACARs not being significantly different from zero.

	Degrees of freedom	T-statistics	P-value
Student's t-test	689	1.678	0.094
Satterwaite-Welch t-test	95.571	1.180	0.241

Table 3

The two sample T-test is shown in table 3, which is a test for the equality of means, returned similar results, and helped reinforce what was learned in the hypothesis tests. The mean is the ACAR. Using all the data about the abnormal returns on the event dates, it can be seen whether both means of equity and debt issues are equal. The t-test returns a P-value of 0.094, which means that the null hypothesis cannot be rejected on a 0.05 significance level. This translates into means that are different from each other at the 0.05 significance level, but not at the 0.1 significance level.

The Satterthwaite-Welch t-test, according to Spellman and Whiting (2014, pp. 174-175), tests for the same results as the traditional t-test, but it is more appropriate if there is a large difference in variance or sample size. In this study, this may be a more appropriate test, since there is a large difference in sample sizes between the equity and debt issues. The results are far more insignificant, which pairs up more closely to the results acquired from the earlier hypothesis tests, that the means are not significantly different from each other. The null hypothesis is not rejected at any significance level since the P-value is 0.24 so therefore the means are not statistically different.

4.2.1.2 Results Including Day after the Event

	Equity issues	Debt issues
ACAR (%)	-1.548	-0.015
Std. Dev	0.027	0.014
T-stats	-5.175	-0.264
P-value	>0.001	0.395

Table 4

In table 4 the average two-day returns in connection to the issuing events were measured. Here, the day of the event and the day after the event were used. This test resulted in a negative ACAR for both kinds of issues. The coefficient representing the ACAR for the equity issue was -1.550 % and for the debt issue -0.015 %. In this test, the coefficient for equity issues was clearly significant with a p-value far below 0.01. In the case of the debt issuance there was no significance in the results, even though the size of the standard deviation decreased somewhat.

	Degrees of freedom	T-statistics	P-value
Student's t-test	689	7.982	>0.001
Satterwaite-Welch t-test	92.760	5.027	>0.001

Table 5

Table 5 shows that when testing the means against each other in the two-day return framework, a significant difference was derived. The difference was significant both when using the traditional, student's t-test and when adjusting for unequal sample sizes in the Satterwaite-Welch t-test on a 0.01 significance level.

4.2.1.3 Results Including Two Days after Event

	Equity issues	Debt issues
ACAR (%)	-1.042	-0.033
Std. Dev	0.022	0.011
T-stats	-4.822	-0.001
P-value	>0.001	0.500

Table 6

Table 6 shows the results from the same hypothesis test carried out before. Here the effect two days after the event happened can be seen. There was still a very small change in the ACAR of the Debt issue, but the Equity issue was still significant and fairly large at -1.042 % with a P-Value of >0.001. This means that the ACAR of the debt issues, which carried a P-value of 0.5 and a non-rejection of the null hypothesis, is not statistically different from 0, while the equity issues ACAR is, since the null hypothesis can be rejected.

	Degrees of freedom	T-statistics	P-value
Student's t-test	689	-7.324	>0.001
Satterwaite-Welch t-test	92	-4.580	>0.001

Table 7

Table 7, shows once again that the null hypothesis can be rejected, so this means that the means are statistically different from one another, which corresponds to the hypothesis test conducted earlier.

4.2.1.4 Results Including Three Days after the Event

	Equity issues	Debt issues
ACAR (%)	-0.725	-0.043
Std. Dev	0.016	0.012
T-stats	-4.037	-0.891
P-value	>0.001	0.190

Table 8

Table 8 shows the effect is still present from the equity issue. With an ACAR of -0.725 % and a P-value of >0.001, the null hypothesis can be rejected, meaning the ACAR is different from 0. Debt issues ACAR once again were not different from 0.

	Degrees of freedom	T-statistics	P-value
Student's t-test	689	-4.684	>0.001
Satterwaite-Welch t-test	99	-3.666	>0.001

Table 9

Finally, table 9 shows that the equality test returns a result that the means are once again statistically different from each other, since the null hypothesis can be rejected, which means that they are not equal.

Day (T+n)	Equity Issue (%)	Debt Issue (%)
T+0	-0.348	0.076
T+1	-1.548	-0.015
T+2	-1.042	-0.033
T+3	-0.725	-0.043

Table 10

Table 10 shows the average change in the means over the days after the event, all the way up to T+3 which correspond to the event date + 3 days. The change in the ACAR that is averaged out over all the days can be seen. The debt issues hold quite steady, ranging very small amounts from 0.076 % to -0.043 % over T+3 days. Equity issues however show a different story, there are large changes in the magnitude of the changes in the ACAR, from -0.348 % at T, then jumping up to -1.548 % at T+1, and tapering down at -1.042 % at T+2 and -0.725 % at T+3. It is suspected that it is reverting back towards a mean, probably lower than before. The effect can be seen in Figure 1 below, where debt issues do not generate a large response, while equity issues generate a large movement in the negative direction, and then begin to come back towards where they started from.
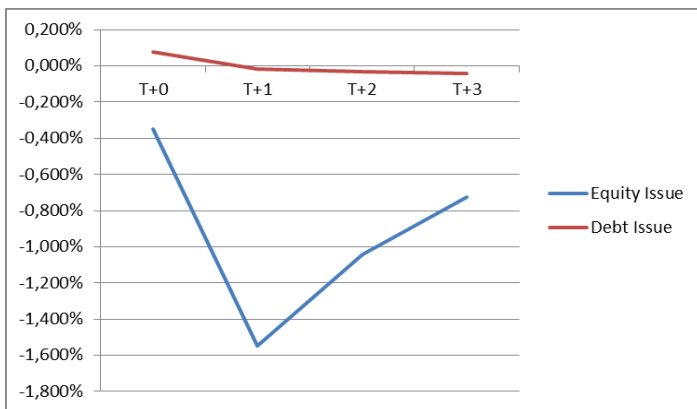

Figure 1

4.2.2 Individual Day Effects

4.2.2.1 Individual Day ACAR

When separating the actual individual days, the following effects are observed, shown in table 11. These are only values for equity issues, since debt issues are insignificant.

Equity Issues	T+0	T+1	T+2	T+3
ACAR (%)	-0.348	-2.747	-0.030	0.227
Std. Dev	0.032	0.057	0.023	0.024
T-Stats	-0.994	-4.431	-0.120	0.867
P-Value	0.161	> 0.001	0.452	0.806

Table 11

The only significance is on day T+1 which corresponds to the day after the event. It has a P-value of >0.001 and therefore the null hypothesis can be rejected. There is also the largest absolute change in ACAR, at 2.747 %. All other days have insignificant P-values and therefore cannot be rejected.

4.2.2.2 Individual ACAR Graphed

Day (T+n)	Equity Issue (%)	Debt Issue (%)
T+0	-0.348	0.077
T+1	-2.748	-0.108
T+2	-0.030	-0.068
T+3	0.228	-0.075

Table 12

Table 12 shows the changes in the ACAR for each individual day. Now, by breaking apart and separating the days, the actual effect that the event had can be isolated. As was discovered before the actual effect of the event happens at day T+1, and a large change in the ACAR for the equity issue on this date can be seen. The magnitude of the change is -2.748 % then moving back to a similar amount on day T+2 and T+3, which are both similar to day T. No large swings in the value of the debt issues are seen, with the magnitude ranging from 0.077 % to -0.108 %. In Figure 2 below, the effect can be seen a little more clearly. There is a large change in the ACAR

of equity issuing companies at day T+1, which reverts back to close to its previous value.
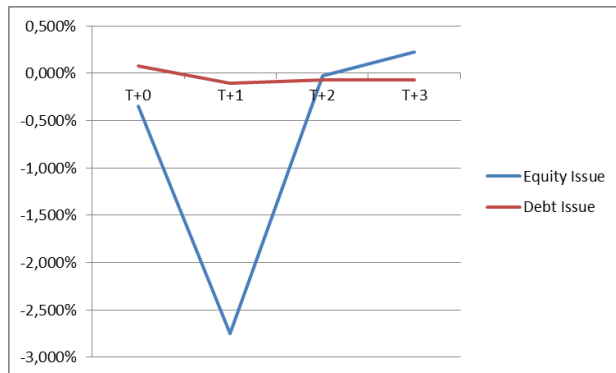

Figure 2

4.3 Effects on the Abnormal Returns

Dependent variable: T+1 ACAR	All issuances	Debt issuances	Equity issuances	Descriptive Stats (All Issuances)			
				Mean	Std. Dev	Min	Max
CFNAI (p-value)	-0.088 (0.164)	> 0.001 (0.970)	-0.007 (0.032)	-0.006	0.011	-0.047	0.007
Issuing size (p-value)	> 0.001 (0.906)	> 0.001 (0.799)	< -0.001 (0.318)	1500.546	1953.708	500	28139424
Intersect (p-value)	-0.002 (0.006)	< -0.001 (0.744)	-0.016 (0.002)				
Number of obs.	691	604	87				
R^2	0.003	> 0.001	0.059				

Table 13

In table 13, a regression in accordance to equation 4, is run on the two-day ACAR. The White-test for constant variance in the residuals did not generate any significant results, meaning that the null hypothesis of homoscedasticity could not be rejected. Therefore, no adjustments for heteroscedasticity in the standard errors were needed in any of the samples. All samples generated excess kurtosis in the residuals aligned with regular financial data and rejected null hypothesis in the Jarque Bera-test, but normality was assumed to be able to perform the tests. This ACAR-measure was chosen, since it was the one that generated most significant returns and differences between the issuance types. The table says that neither CFNAI nor the size of the issuance seems to have any significant effect on the abnormal returns, except when tested on the

equity sample alone. Here there is a negative relation at a 0.05 significance level between the abnormal return and the change in CFNAI. (Suggesting smaller abnormal return losses in times of financial uncertainty and instability).

5. Analysis and Discussion

5.1 Similarity Test

The goal with the company similarity regression was to get as few significant variables as possible. This is since a significant coefficient for an independent variable would suggest that similarity between debt and equity issuing firms can be rejected in that specific variable. From the results, none of the value, leverage or size variables carried a significant coefficient, meaning that similarity between firms cannot be rejected. This increases the validity of the two sample comparison tests performed on the abnormal returns in connection to the event study.

On the other hand, there was significance present in some of the industry dummy variables in the regression. The Consumer Staples dummy coefficient was negative and significant on a 0.01 level meaning that the number of debt issues (or debt issuing firms) was significantly larger than the number of equity issuing firms in this industry. This makes sense, since the consumer staples industry is relatively stable with a constant demand, meaning that debt holders do not take a large amount of risk by investing in those kinds of firms. From a Pecking Order perspective, this would then mean that the companies in that kind of industry should choose to issue debt before equity, as long as debt can be issued relatively risk free. The Traditional Trade-off Theory suggests the same effect, since low risk firms should mean a lower probability of default and bankruptcy, while the tax shield effects stay constant. Therefore, a debt issuance makes more sense to increase leverage than an equity issuance in most companies in this stable industry. There was also significance present on the negative industry coefficient for the Information Technology sector on a 0.1 significance level. This does not make as much sense as in the Consumer Staples case, since Information Technology traditionally has been a more unstable industry. (An example of this instability would be the Dot-com bubble bursting in 2001.) What may affect the credibility positively for Information Technology firms in this study is that there are only large issuances included. This may mean that investors have higher confidence in large Information Technology firms (issuing large amounts of money) than for the industry overall, which would explain the surplus of debt issuing Information Technology firms.

5.2 Event study

5.2.1 General Comment

The event study returned both results that were expected, as well as a few surprises. In accordance with Myers and Majluf (1984), that was discussed earlier, the firms behaved according to the Pecking Order Theory under a certain assumption of low risk debt. This was present in both debt and equity issuances. The Traditional Trade-off Theory by Frank and Goyal (2007) had some similarities, with equity, and some divergences, with debt.

5.2.2 Debt

There are no significant results for any debt issuances, no matter how the hypothesis tests were conducted. All debt issuances had an ACAR that was not significantly different from 0. This means that the debt issuances have no effect on the actual return of the firm, and do not affect the stock price or value of the firm in any significant way, a textbook example of the Pecking Order Theory. This has large implications to managers and investors because information asymmetries are reduced when debt is issued. There are no ways for the managers to use their informational advantage to make the debt issuance work to their benefit. This is all in line with what Myers (1984) as well as Myers and Majluf (1984) discussed, where informational asymmetries lay at the heart of whether to choose debt or equity as a financing means. When debt is issued, there are several steps that the firm must go through in order to issue this debt, and much more information is available to investors. This leads to less adverse selection problems, since the informational asymmetries are reduced. Secondly, as was discussed by Jensen (1986), debt allows the debtholders to take the firm to bankruptcy if they default on their debt commitments, which is a very strong commitment from the firm. This further reduces problems that are caused by informational asymmetries leading to agency costs.

From a Traditional Trade-off Theory perspective, the results are not making much sense. The debt issuance announcements do not affect the abnormal returns of stock prices positively. This is under the assumption that the value gained from the tax shield, on average, would outset the value of default probability as Ju et al. (2005) suggested, and that both the companies issuing debt and equity initially are below their optimal leverage ratio. There are two possible explanations for the insignificant results in this study. The first is that the value of probability of default and bankruptcy is actually larger than Ju et al. claim, and that it neutralizes the tax shield

gains much more than previous theory would suggest. The second explanation would be that those kinds of large companies already have strategies for tax planning, for instance offshore tax havens, so that an increase in debt financing does not really affect the tax shield value as much as expected. On the other hand, it can be seen that the companies issuing debt and the companies issuing equity do not have significantly different leverage ratios before the issuing announcement. This would, according to the Traditional Trade-off Theory, mean that a drop in abnormal returns after the issuing announcement would mean the opposite for debt issuing companies. The results from the event study combined with the insignificance in leverage ratios in the firm similarity test would therefore suggest that the static Traditional Trade-off Theory does not hold, assuming that debt issuing companies and equity issuing companies have same leverage ratio optima.

When comparing the results of this study with the study of Eckbo (1986), it can be seen that the effects of debt issue announcements in the both studies are fairly similar for straight debt. This would, from a Pecking Order perspective, mean that there is a low amount of risk and information asymmetry in the debt issuances. It is interesting that the results are so similar, even though the samples are from rather different time periods. Eckbo's sample was collected from 1964-1981 and this study's sample from 2007-2012. This means that an assumption can be made from a Pecking Order standpoint that the amount of information asymmetry and adverse selection for those kinds of straight debt issuing firms has not changed significantly over time.

5.2.3 Equity

Opposed to the bond issuances, equity issuances seem to have tumultuous and violent effects on ACAR. When an equity issuance is announced, there are statistically significant results in the changes in ACAR that are in-line with the Pecking Order Theory. When allowing the event to be averaged out over T+3 days, as in table 8, it can be seen that the event of the equity issuance is still persisting, even three days after the announcement. When isolating each day, from T to T+3, as can be seen in table 11, the event is only significant on the day T+1, which is the day after the announcement. This is surprising. Since the data is from closed to closed calculated stock returns, the expectation is that any effect that the event has will take place at date T. The only reason that is plausible for why the information takes so long to have an effect on the market is that firms issuing equity are announcing their equity issues after the close of the market. This

would mean that the effect will only be present the next day. It is plausible because it may make it easier to measure the effect for the issuing firm, since there will be no overlap of data and a reduction in noise on the firm valuation. There is unfortunately no way to find exactly what time the information is released, making it difficult to give a definitive answer for this time lag. Brown and Warner (1985) also give some insight into a possibility for this lag with their non-synchronization problems. This may be a case where the markets either cannot or will not act when the event occurs. This is more unlikely, but it carries a small possibility.

The reason that significant changes in the ACAR are viewed is because informational asymmetries are playing a huge role in the price investors are willing to pay for the equity that is being issued. As Myers (1984) discusses, the managers of the firm will use their superior knowledge about the firm to benefit themselves, especially since Leary and Roberts (2010) claim, compensation is tied to firm value. This means that equity is being issued, it is very likely because the equity is overvalued in the market, and will therefore benefit the manager in the short term. Potential investors know this, and will therefore adjust the price they are willing to pay for that equity, assuming that the manager will be working against them, therefore reducing the agency as well as adverse selection costs that come with asymmetric information.

From a Traditional Trade-off Theory perspective, the equity issuances are behaving in line with the theory, assuming that the equity issuing companies on average are underlevered. As Fama and French (2002) and Welch (2007) state, the theories are not opposites, so just because the data is following one theory, it doesn't automatically mean that it will not follow the other. From this perspective, the firms are issuing equity in order to adjust their optimal leverage ratios. The act of issuing the equity is reducing the leverage ratio, bringing down the costs associated with bankruptcy, and reducing the relative size of the tax shield. The tax shield will decrease faster than the bankruptcy costs and therefore bring down the value of the firm, Ju et al (2005). This probably means that these firms are fairly close to maxing out their debt capacity, and they are turning to another form of financing.

This leads to the assumption that equity issuances are more risky than debt issuances, and that the equity issuance also carries a higher cost than debt issuances do.

5.2.4 Combined Analysis

The results are also in line with what was discovered by Frank and Goyal (2003) and Myers (1986), where they found that larger firms, empirically, tend to behave according to the Pecking Order Theory, while theory suggests that smaller firms should display more of these characteristics. There was a $500 million issuance size restriction placed on the debt and equity issuances, which leads to the assumption that all firms in this study are large firms.

All similarity tests returned results that were the same as the hypothesis tests. This means that the means were not statistically different from each other when there was no effect from the event. Conversely when there was an effect from the event, the means were statistically different from each other.

The drop in the values of the ACAR of the equity and debt (not significantly) issuance announcements may also be due to instability in the macroeconomic environment. The data set is drawn from a period of macro financial distress that may be having a bigger effect on the results than the change in capital structure decisions. The results of the regression in 4.3 points against this since there were no positive significant coefficients.

5.3 Effects on Abnormal Returns

The linear regression shows that issue size does not have a significant impact on the abnormal returns. This is in line with Eckbo's (1986) and others studies, meaning that this factor does not affect the outcome of the comparison between abnormal returns for debt issue announcement versus equity issue announcements. Since the sample period is covering the financial crisis of 2008, there was also an independent variable measuring the macroeconomic development in the US, added to see if the abnormal returns were affected more during times of macro financial distress. The variable used for measuring this is CFNAI. Surprisingly, this variable generated a negative coefficient, significant at 0.05, when the regression was run on the sample of firms abnormal returns that were announcing an equity issue. This would then suggest that the abnormal returns were less negative when issuing equity during the financial crisis than under times of economic growth. A Pecking Order perspective of this would mean that there is less information asymmetry present in times of national economic instability than usual. This could have to do with, for instance, increased levels of scrutinization and monitoring under times of financial distress. On the other hand, the coefficient is relatively small and the explanatory power

of the whole regression is rather small. This means that the significance in this case should be analyzed carefully. A further analysis of the reasons behind this negative relationship is outside the scope of this paper, but due to Jensen (1986) and Easterbrook's (1984) work on signaling and monitoring effects, some basic assumptions can be made.

The significance on CFNAI may be due to the time period that was chosen for the study. The data comes from a time when the global economy was in a financial crisis. This could lead to higher monitoring in the markets, due to financial uncertainty. Jensen (1986) and Easterbrook (1984) both discuss monitoring, and the effects that they have on asymmetric information. The increase in monitoring will lead to a reduction in information asymmetries, which would lead to a significant negative CFNAI coefficient.

5.4 Potential Flaws in the Empirical Setup and Results

The event window in this study is a short-term window, with the maximum at four days, used over a short horizon. This avoids the problems that Spiess and Affleck-Graves (1998) encountered, and keeps results away from negative biases. This method of using short windows and short horizons can however lead to missing some market effects. It may be possible that events that occur fairly close to each other, but do not overlap, may have a larger effect on the changes in abnormal return that is not captured using the short-short data configuration.

Another potential flaw with the event study is that the number of equity issuances is much smaller than the number debt issuances, meaning that the equity sample is more volatile to outliers or external factors that may affect the abnormal returns besides the issuing announcement. Therefore, a large drop in abnormal returns must be analyzed more carefully than in the debt issuing announcement sample. On the other hand, this will also increase the size of the standard errors in the equity issuance announcement sample meaning that a significant result from the t-test can be confidently used.

6. Conclusion and Future Research

6.1 Conclusion

To conclude, there is clearly a significant difference in the abnormal returns between firms that issue equity, and firms that issue debt. The results from this study present some very fundamental characteristics when considering external financing decisions. They are not as straight forwards as what the MM framework suggested them to be. Clearly, the results show that capital structure decisions do have an effect on firm value, and some financing decisions are clearly superior to others.

The interplay between the Traditional Trade-off Theory put forth by Frank and Goyal (2007) and Pecking order theory by Myers and Majluf (1986) are clearly complex and subjective to each case's particular situation. While more evidence for the Pecking Order Theory is found in the empirical results, there are hints of the Traditional Trade-off Theory matching up as well when applying certain assumptions, further lending credit to observations made by Fama and French (2002) about the theories not being polar opposites.

The findings help to explain how managers seem to make decisions when it comes to external financing and which form of financing to pursue, be it equity or debt. There is clearly a larger cost to equity financing, as the drop in company value associated with this type of financing decision is significant enough to observe an effect, making it more risky. Asymmetric information seems to be the cause of this cost, since high asymmetric information leads to agency and adverse selection costs, and potential investors try to mitigate the loss to themselves. Debt financing has no significant costs related to company value, and the effects seem to indicate that debt financing is relatively risk free in accordance with the Pecking Order Theory.

This constant battle between managers and potential investors for information leads to these financing decisions and ultimately to the effects that these decisions have on firm value. The effects that stem from theses debt vs equity financing decisions seem to follow the Pecking Order Theory most closely opposed to the Traditional Trade-off Theory.

6.2 Future Research

Further studies may include some extra instruments, instead of just debt and equity. Firstly, convertible bonds, as was included by Eckbo (1986), would be interesting to compare side by

side with debt and equity. This may give some more in-depth detail about each individual firm, since the instrument has both debt and equity components. It would also be possible to make some conclusions about the investors' views of the probability for other investors to convert their share of convertible debt into equity. This is under the assumption that the convertible bonds can be considered to carry risk somewhere in between the risk of equity and the risk of debt. That would then, according to the Pecking Order Theory mean that the drop in abnormal return should be somewhere in between the ACAR of debt and equity issuance announcements.

Secondly, a comprehensive comparative study of internal cash to debt issues could also provide further insights into the Pecking Order Theory. The expectation is that cash will have no adverse effects on value, but our research shows that debt issues also have no significant effect on the value (ACAR).

Thirdly, using different market models to estimate the alphas and betas could be used to see whether there is any significant difference when calculating abnormal returns to the model used in this study. Finally, different data may give an insight into the lag in the market reacting to the information. Open to open, or open to closed data may give a different perspective on this lag, and a comparison may yield different results.

7. References

Akerlof, G. (1970); *The Market for "Lemons": Quality Uncertainty and the Market Mechanism;* "The Quarterly Journal of Economics", Vol. 84, No. 3, pp. 488-500.

Baker, M. & Wurgler, J. (2002); *Market timing and capital structure;* "Journal of Finance", Vol. 57, No. 1, pp. 1–32.

Blume, M. & Friend, I. (1973); *A New Look at the Capital Asset Pricing Model;* "Journal of Finance", Vol. 28, No. 1, pp. 19-34.

Brown, S. & Warner, J. (1985); *Using daily Stock Returns - the case of Event Studies;* "Journal of Financial Economics", Vol. 14, pp. 3-31.

Chicagofed.org. (2017). *Chicago Fed National Activity Index (CFNAI) - Federal Reserve Bank of Chicago*. [online] Available at: https://www.chicagofed.org/publications/cfnai/index [Accessed 3 Apr. 2017].

Dutordoir, M. & Hodrick, L. (2012); *Self-Selection and Stock Returns Around Corporate Security Offering Announcements;* "Columbia Business School Research Paper", No. 12-11.

Easterbrook, F. (1984); *Two Agency-Cost Explanations of Dividends;* "The American Economic Review", Vol. 74, No. 4, pp. 650-659.

Eckbo, E. (1986); *Valuation effects of corporate debt offerings;* "Journal of Financial Economics", Vol. 15, No. 1-2, pp. 119-151.

Fama, E. & French, K. (2002); *Testing trade-off and Pecking order predictions about dividends and debt;* "Review of Financial Studies", Vol. 15, No. 1, pp. 1–33.

Frank, M. & Goyal, V. (2003); *Testing the Pecking order theory of capital structure;* "Journal of Financial Economics", Vol. 67, No. 2, pp. 217–248.

Frank, M. & Goyal, V. (2007); *Trade-off and Pecking order theories of debt;* "SSRN Electronic Journal".

Hovakimian, A., Hovakimian, G. & Tehranian, H. (2004); *Determinants of target capital structure: The case of dual debt and equity issues;* "Journal of Financial Economics", Vol. 71 No. 3, pp. 517–540.

Hovakimian, A., Opler, T. & Titman, S. (2001); *The debt–equity choice;* "Journal of Financial and Quantitative Analysis", Vol. 36, No. 1, pp. 1–24.

Jensen, M. (1986); *Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers;* "The American Economic Review", Vol. 76, No. 2, pp. 323-329.

Jitmeneeroj, B. (2017); *The impact of dividend policy on price-earnings ratio: The role of conditional and nonlinear relationship;* "Review of Accounting and Finance", Vol. 16, No. 1, pp. 125-140.

Ju, N., Parrino, P., Poteshman, A. & Weisbach, M. (2005); *Horses and Rabbits? Trade-Off Theory and Optimal Capital Structure;* "The Journal of Financial and Quantitative Analysis", Vol. 40, No. 2, pp. 259-81.

Leary, M. & Roberts, M. (2010); *The pecking order, debt capacity, and information asymmetry;* "Journal of Financial Economics", Vol. 95, No. 3, pp. 332-355

MacKinley, C. (1997); *Event Studies in Economics and Finance;* "Journal of Economic Literature", Vol. 34, No. 1, pp. 13-39.

Modigliani, F & Miller, M. (1958); *The Cost of Capital, Corporation Finance and the Theory of Investment;* "The American Economic Review", Vol. 48, No. 3, pp. 261-297.

Myers, S. (1984); *The Capital Structure Puzzle;* "The Journal of Finance", Vol. 39, No. 3, pp. 574-592.

Myers, S. & Majluf, N. (1984); *Corporate Financing and Investment Decisions when Firms have Information that Investors do not have*; "Journal of Financial Economics", Vol. 13, pp. 187-221.

Saunders, M., Lewis, P, & Thornhill, A. (2009); *Research Method for Business Students;* "Prentice Hall": New York.

Spellman, F. & Whiting, N. (2014); *Handbook of Mathematics and Statistics for the Environment;* "CRC Press": London

Spiess, K. & Affleck-Graves, J. (1998); *The long-run performance of stock returns following debt offerings;* "Journal of Financial Economics", Vol. 54, No. 1, pp. 45–73.

Shyam-Sunder, L. & Myers, S. (1999); *Testing static trade-off against pecking order models of capital structure;* "Journal of Financial Economics", Vol. 51, No. 2, pp. 219–244.

Tirole, J. (2006); *The Theory of Corporate Finance;* "Princeton University Press": Princeton.

Welch, I. (2007); *Common Flaws in Empirical Capital Structure Research;* "New Orleans Meeting Paper".