Master Thesis

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An investigation to the announcement impact from right issues on stock prices in the Dutch Capital Market

"*Seasoned equity offerings (SEO) represent one of the most important sources for publicly listed companies to raise additional capital either from existing shareholders or from new investors*".

(Andrikopoulos, 2009, p. 190).

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Preface

After 1.5 year of studying at the University of Twente I started my Master thesis you have in front of you in May 2013. I wrote this thesis as final part of the Master in Business Administration (Specialization: Financial Management). Although this thesis was a start of something new in my academic student time, it was also an end of my time in the east of the Netherlands. In February 2013 I moved back to Amsterdam, but I will never forget the inspiring time and educational experiences in Enschede at the University of Twente. I want to thank all my teachers for their high involvement during my study.

For the support regarding this thesis I would firstly thank my 1st supervisor, mister G.C. Vergeer.

Also I want to thank my family. During my time at the University of Twente in Enschede and writing my Master thesis I got great support from my father (Ruud), mother (Monique), sister (Sammy), grandfather (Opa Hugo) and grandmother (Oma Hetty). Without the cheering, help and support they gave me, I think I would not be as far as I am now. Without them it would be much harder for me to perform.

One person I want to thank in particular is my girlfriend Florance. The great time we have when we are together always has a great influence on me. I want to specially thank her for the support and help after the death of my grandmother (Oma Bep) during my first exam week at the University of Twente in November 2011. This was not an easy time for me, but she was there for me and gave me enough power to go on. Besides this, we both study and graduate at the same time, which gives me a buddy who I can talk to and share ideas with. This always motivated me!

Nick Onclin

April, 2014

Abstract

This study examines the announcement impact (market reaction) from right issues on stock prices and investigates three hypothesis; Information Asymmetry hypothesis, Free-Cash-Flow hypothesis and the Window of Opportunity hypothesis. Data from 34 Dutch right issues is used from the period between the years 2001 and 2013. First, the announcement impact is examined and the announcement impact per industry. In general, a negative announcement impact is found and no significant deviation in the announcement impact was found for different industries. Then, evidence was found for the information asymmetry and partial evidence for the free-cash-flow hypothesis. It shows that high discount and big right issues signal bad information to the market, what results in greater negative stock performance. Also right issues that create a big difference in leverage result in greater negative stock performances. No evidence was found for the window of opportunity hypothesis. The results indicate that the market reaction in a "*good*" market does not differ from the market reaction in a "*bad*" market.

Key words: Seasoned Equity Offering, Rights Issue, Announcement Returns, Information Asymmetry Hypothesis, Free-Cash-Flow Hypothesis, Window of Opportunity Hypothesis, Market Reaction.

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Glossary

AEX	Amsterdam Exchange Index
AD	Announcement Day
AFM	Autoriteit Financiële Markten
AMX	Amsterdam Midcap Index
AScX	Amsterdam Small Index
CAR	Cumulative Abnormal Return
GDP	Gross Domestic Product
IPO	Initial Public Offering
NPV	Net Present Value
ROA	Return on Assets
SEC	Securities and Exchange Commission
SEO	Seasoned Equity Offering

Introduction

Research to the behavior of stock prices is one of the most intriguing topics in research that has a lot of attention in the media. How do stock prices behave when companies announce new information to the market or what influences stock price movements are a couple of subjects that has the attention of a lot of scholars in the field. Recently, the Nobel prize for Economics went to the research of Fama, Hansen & Shiller (2013) about predicting the behavior of stock prices over longer periods. Following Shiller it is not harder to predict the stock price behavior over several years than over shorter periods. Since the research to stock price behavior gets a lot of attention in the media and counts as an important research topic, the researcher of this thesis wanted to do something in this research field.

Investment decisions

In general, companies have the goal to create value for their stockholders. In order to create value, companies consider different kind of projects to expand their existing operations with. They seek to profitable projects with a positive Net Present Value (NPV) that create extra value for their stockholders (Hillier et al., 2010) like for example acquisitions. With an acquisition, companies are able to benefit from economies of scale and complementary resources (Brealey, Myers & Allen, 2008). But, in order to invest in those projects companies need to make financing decisions like; "*how to finance these projects?*".

Roughly speaking, new investments can be financed via two ways; internal or external sources. Internal sources of financing are for example retained earnings plus depreciation (Brealey, Myers & Allen, 2008; Eckbo & Masulis, 1995) or external ways of financing like taking loans (debt) or issuing securities to the market; common stock, preferred stock, bonds and convertible stocks (Eckbo & Masulis, 1995; Smith Jr., 1985). Companies that do not have sufficient internal resources, must went outside the company to finance investments and therefore use external sources.

The amount of securities sold to the markets increased extensively during the last 11 years in the Netherlands. Following an article of the website Plein+ (Stijgende lijn aandelenuitgifte, 2010) the activity of emissions in the Netherlands increased from €2.00 billion in 2002 to €10.3 billion in the second half of 2009. This phenomena indicates that companies fund their projects more than ever before with issuing new equity. A possible reason for this phenomena is the fact that banks do not provide any loans to companies in times of crisis. On the other hand, also the digitalization creates possibilities for investors to invest in foreign markets. For example, the Foreign Direct Investment in the Netherlands grew from €51.327 million in 1990, to €256.787 million in 2000 and even to €434.278 million in 2012 (DNB, 2013). Also the investments of Dutch investors in foreign markets

was worth €80.591 million in 1990, €328.276 million in 2000 and increased to €739.391 million in 2012 (DNB, 2013).

A method of issuing new equity and used in the Netherlands, are right issues. With a right issue, companies issue new stocks to the market. For every stock a stockholder holds he or she gets a right to buy new offered shares. Like already outlined, companies issue new equity to finance new investments, but companies also issue equity to modify the capital structure, to repay the debt, finance reorganizations or to finance acquisitions (Eckbo et al., 2007). With a right issue, on the one hand liquidity increases, since more cash is available to the company, but on the other hand, dividends has to be divided to more stocks (AEX, 2013). The research to equity offerings can be classified in two main research topics following Armitage (1998):

1. Flotation methods for issuing new equity and their related costs
   and
2. The reaction of the market after the announcement of seasoned equity offerings

Different forms of flotation methods are for example firm commitment offers, cash offers and right issues. Scholars in the field performed research to the related costs of these issuing methods but also to the reaction of the market when announcing a seasoned equity offering. In literature, this is called the announcement impact. This thesis focuses on this impact and especially on the announcement impact from right issues.

Problem statement

First of all, the Dutch capital markets had not much attention concerning the impact that right issues have on stock prices. Compared to other stock exchanges like for example the United Stated (Asquith & Mullins, 1985; Masulis & Korwar, 1985; Smith Jr., 1985), the United Kingdom (Andrikopoulos & Daynes, 2008; Armitage, 1998) or Asia (Agarwal & Mohanty, 2012; Mathew, 2002), the Dutch capital markets got less attention concerning the effects of seasoned equity offerings.

Besides, in as far as the researcher knows, the only research that has been done in the Netherlands concerning the *announcement impact* of equity issues is performed by Kabir and Roosenboom (2003). Following the researcher, this study can be updated since Kabir and Roosenboom (2003) analyze right issues from January 1984 till December 1995. In addition, Kabir & Roosenboom (2003) did not analyze if the announcement impact deviates per industry and they only looked at the Gross Domestic Product. Besides the lack of evidence in the Netherlands, the research in this area is not conclusive (Agarwal & Mohanty, 2012).

General research question and sub-questions

Based on the problem statement, this thesis examines the short-term stock price performance from companies listed on Dutch capital markets during the announcement of right issues. In particular the thesis investigates three subjects.

1. The first subject this thesis will analyze is the announcement impact. The impact from the announcement of right issues on stock prices will be analyzed and if the announcement impact has significant influence on stock prices from issuing companies.

2. The second subject this thesis will analyze is whether the type of industry has a significant influence on the relation between the announcement of right issues and stock returns from issuing companies. More specific, the announcement return from different types of industry will be analyzed, to conclude if different type of industries are more sensitive to right issues.

3. The third subject this thesis will investigate is whether the economic condition has a significant influence on the relation between the announcement of right issues and stock returns from issuing companies. With this research it is possible to analyze if the announcement impact of right issues during different market sentiments deviates. Based on four proxy variables, which indicate the state of the economy, the relation will be analyzed between the state of the economy and the announcement impact. The aim is to provide evidence whether the announcement returns are deviating during different type of market sentiments.

The central question then becomes:

- **What is the short-term impact from right issue announcements on stock prices from Dutch listed companies during different economic circumstances?**

Basically three different relations will be investigated. First, the announcement impact of right issues on stock prices from listed companies will be examined (Figure 1). Within this relation, the dependent variable is the stock price performance from the issuing company and the independent variable is the announcement of right issues to the public.

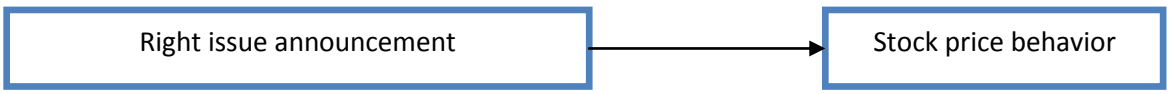


Figure 1. Visual representation of the first central question

Second, the impact from the type of industry on the announcement impact from right issues will be investigated (Figure 2). With this question the researcher investigates whether the factor *industry* has any influence on the stock price impact occurred by right issues. The purpose is to examine if some industries are more sensitive to right issues than others. The dependent variable is the average stock price performance of the issuing companies from the same industry and the independent variable is the announcement of the right issue to the public.

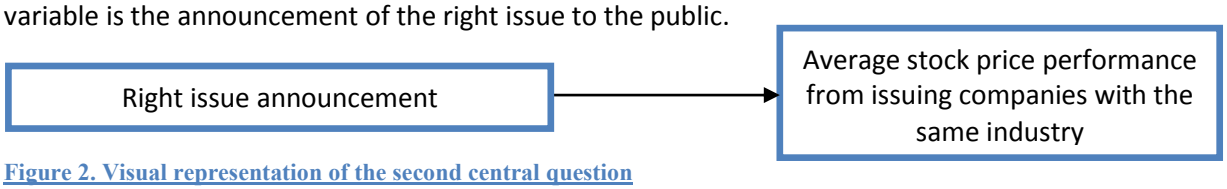


Figure 2. Visual representation of the second central question

Third, the announcement impact, caused by the announcement of right issues, will be investigated during different market sentiments (Figure 3). With this question the researcher explores if different sentiments of the economy lead to different stock price reactions when companies announce right issues. The dependent variable is the stock price from issuing companies and the independent variable are the announcement effects of equity issues during different sentiments in the market.

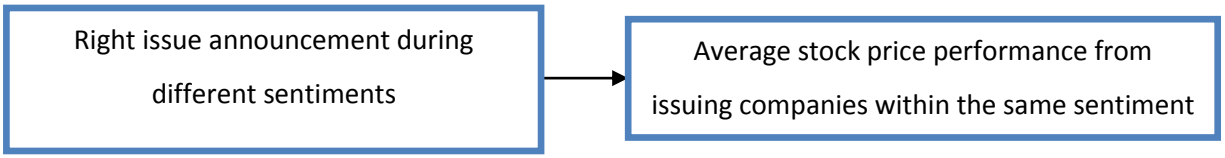


Figure 3. Visual representation of the third central question

To answer the general research question, the following sub-questions have been formulated:

1. What are right issues?

2. How do stock prices from listed companies behave when companies announce right issues to the market? And what are the explanations for this behavior?

3. What kind of industries can be distinguished from each other? And what influence does the type of industry have on the announcement impact of right issues?

4. What kind of variables define the state of the economy? And what influence does the state of the economy have on the announcement impact from right issues?

Relevance

By empirically examining right issues, I hope to produce a more complete understanding of the short-term announcement effects. With regard to the academic relevance this thesis complements the current body of knowledge, because it provides further evidence on the relationship between the announcement of right issues and stock prices and how this relationship behaves during different sentiments and for different types of industries. Besides the lack of evidence in the Netherlands, the

research in this area is not conclusive (Agarwal & Mohanty, 2012) so the researcher is motivated to complement the current body of knowledge with this research. With this research, additional material will be added to the already broadly discussed topic.

For the practical relevance this research is interesting for Dutch listed companies that want to raise capital via right issues. Based on the results of this thesis, equity issuing companies have any knowledge about the impact that equity issues have on their stock prices. Besides that, listed companies also know what kind of effect the sentiment in the market has on the announcement impact of right issues and how the industry they belong to in general reacts to right issues. This information is valuable, because it is important for companies to know how the market reacts when choosing to issue securities (Fama, Hanssen & Shiller, 2013; Smith Jr., 1985).

Structure

The thesis is structured to four parts in order to create a logical report for the reader. The layout is as follows:

- **Part 1:** Overview of the literature and hypothesis.
- **Part 2:** Methodology, data collection and data analysis.
- **Part 3:** Results of the analysis.
- **Part 4:** Conclusions and discussion of the results. This includes theoretical implications, practical implications, some limitations of this study and further research ideas.
- **References**
- **Appendix**

PART I

"There is little point in reinventing the wheel... the work that you do is not done in a vacuum, but builds on the ideas of other people who have studied the field before you. This requires you describe what has been published, and to marshal the information in a relevant and critical way"

(Saunders, Lewis & Thornhill, 2009, p. 59)

Literature review

Hypotheses

Literature review

The aim of the literature review is to develop understanding of the research performed in the field of seasoned equity offerings. This ensures the researcher to make relationships between different studies and to come up with testable hypothesis. Appendix I contains a search plan which has been made in order to search for relevant literature. The search plan is derived from the search plan described by Saunders, Lewis & Thornhill (2009).

Content

The first paragraph in the literature review provides an overview of the research that has been done concerning seasoned equity offerings (SEO). The aim of this paragraph is to provide an overall picture of the research performed in this field (Birdseye-view). The second paragraph provides further information about the market reaction after the announcement of an SEO. Evidence about the long- and short-run stock and operating performance after the announcement of an SEO is described. The paragraph about the short-run stock performance provides evidence about the stock reaction after the announcement (the announcement effect), an interpretation of the evidence and explanations for the stock price effect. Theoretical arguments are given which explain the announcement effect. In addition, an extra paragraph describes the timing of equity issues, which focuses on different time periods (positive versus negative). The theoretical framework ends with a short overview of the evidence mentioned in the literature review and all hypotheses.

Overview

In literature, many studies performed research to the impact of SEOs on stock prices. Different scholars from all over the world performed research to this phenomena from several decades ago (Stigler, 1964) till today (Sugiana & Surya, 2013). Research in the field concerning SEOs can be classified in two main research topics following Armitage (1998):

1. Flotation methods for issuing new equity and their related costs

   and

2. The reaction of the market after the announcement of seasoned equity offerings

In literature, the issuance of new equity is called on different manners like; seasoned equity offering, seasoned equity issue, secondary stock offering, seasoned securities offering, secondary issues, seasoned public offering, seasoned private offering and new equity issue. In this research seasoned equity offerings (SEOs) is used to describe the phenomena of issuing *"new equity"* . In the benefit of this research the researcher clarifies the theoretical definition of an SEO. Based on Hillier et al. (2010), Leach & Melicher (2011) and Eckbo (2007) the researcher comes to the following definition:

"*A seasoned equity offering describes the process whereby existing public traded companies raise capital by issuing new equity to the market. An additional amount of stocks is issued to the public or private market*".

Flotation methods

Seasoned equity offerings are issued publicly or privately in the second market via different kind of flotation methods. A variety of flotation methods described by Armitage (2008), Eckbo et al. (2007) and Hillier et al. (2010) are for example firm commitment issues, shelf issues, private placement issues, direct offering issues, right issues, auction issues, equity financed acquisitions, equity for debt offers and swap issues. The way new equity is issued in the market is an important aspect for the company, because "*the stock market reacts differently to an announcement of new equity issues, depending on whether the private placement or public offering method is used*" (Lee & Kocher, 2001, p. 23).

Two types of public issues that are extensively discussed in literature and relevant for this research are firm commitment offers and right issues (Agarwal & Mohanty, 2012; Armitage, 1998; Asquith & Mullins, 1985; Eckbo & Masulis, 1995; Kabir & Roosenboom, 2003; Smith Jr., 1985). By means of firm commitment offers the new equity is sold to banks, who on their turn sell the shares to the public markets (*investors)* and when talking about right issues the new equity is initially sold to its *current stockholders* (Hillier et al., 2010; Smith, Jr., 1977). The firm commitment offering is dominated in the US (Armitage, 1998). These kind of issues do not have the privilege for its current stockholders to buy additional stocks that protect them from dilution. Otherwise, in the UK, the Netherlands and the rest of Europe SEOs are dominated by rights issues (Armitage, 1998; Eckbo & Masulis, 1995; Kabir & Roosenboom, 2003), because regulation in these countries states that existing stockholders must have the privilege to buy additional stocks first. In the Netherlands, law concerning the issuance of securities is listed in the "Wet op het Financieel Toezicht" since 2007. Before listed companies offer stocks to the market, they are required to publish a prospectus which has to be approved by the Autoriteit Financiële Markten (AFM). The AFM is like the Securities and Exchange Comission (SEC) in the US. Besides the approval, public companies need to inform its current stockholders about the issue. Appendix II covers associated laws from the "Wet op het financieel toezicht" which are applicable to the issues in the Netherlands.

A right issue protects stockholders from dilution, since *rights* are given to its current stockholders to keep their equity ratio in the company on the same level as before the SEO. In most cases existing stockholders receive a discount of 15-20%, to buy the additional stocks issued, compared to the market stock price (Armitage, 1998; Eckbo & Masulis, 1995). With a rights issue stockholders can

make the decision to buy or sell the new offered stocks. For example, when a company announces a one-for-two rights issue, one new stock is issued for every two existing stocks and the stock holder needs to buy one extra stock for every two stocks he holds. He or she receives one right for every two shares he or she held.

In contrast to a public issue, only a small number of investors are involved in a private offering. The private market is dominated by banks, mutual funds, pension funds and insurance companies (Brealey et al., 2008). It sounds logical that these institutions are active in the private market, because the amount every institution invests is on average much higher than with public issues with only a few investors. Much more capital is needed per investor. When the *new equity* is issued privately, it is sold directly to its purchasers without any prospectus (Hillier et al., 2010; Eckbo, 2007).

Flotation methods vary from country to country. Following Eckbo et al. (2007, p. 239) the method depends on the legal system, tax codes, securities regulations and the way investors are treated. On the other hand, Lee & Kocher (2001) also found evidence that private placements are mostly used by smaller companies and firms that do not pay dividend to its stockholders. And right issues are found to be used in smaller capital markets (Eckbo & Masulis, 1995). As already indicated, in the Netherlands right issues are the most used (Kabir & Roosenboom, 2003).

Related flotation costs

The costs associated varies for each flotation method. Two forms of costs that comes with equity issues are direct and indirect costs. A few examples of direct costs are banker fees, legal fees, underwriting fees, accountant fees, advertisement fees, management fees, the underwriter spread and taxes (Eckbo & Masulis, 1995). A few examples of indirect costs are the negative stock price reactions, issue underpricing or offering delay/cancellation costs (Eckbo et al., 2007; Hillier et al., 2010; Lee et al., 1996). In general, the direct costs of seasoned equity offerings count for 6 or 7% of the amount raised and even 13 to 15% for smaller issues (Armitage, 2008; Decamps et al., 2011). Lee et al. (1996) found evidence for the economy of scale effect for the cost of SEOs. Companies, relatively, pay less cost (%) when the issue size gets bigger.

The biggest cost difference between firm underwritten offers and right issues is that the initial offering method is associated with underwriter fees. Those fees are paid, because banks guarantee to buy all of the offered stocks and sell these to the public. This increases risk, because if the bank does not sell all stocks to the market it has to sell those with a higher discount (Smith Jr., 1977). To minimize the risk of not selling all stocks, banks cooperate with each other and form a syndicate to make sure they increase their network of potential investors and increase the likelihood to sell all new securities (Hillier et al., 2010). In order to compensate the risk of not selling all shares to the

public, it is normal that the offering company sell the stocks with a discount to the bank and pays an underwriter compensation which are together the underwriter fees (Eckbo & Masulis, 1995).

Right offers are less expensive than other (underwritten) offers (Eckbo et al., 2007; Smith Jr., 1977), because the stocks are offered to their existing stockholders and (investment) banks are only used to determine the offering price and as a standby underwriter to assist when not all rights are sold to existing stockholders (Eckbo & Masulis, 1995). The offering companies normally know their stockholders so normally all rights are fully subscribed so that failure cost decreases (Eckbo & Masulis, 1995). Sometimes companies choose to insure their rights. This is a so called standby right offer. The company pays an extra fee to the underwriter, who makes sure all non-sold rights are offered in the subscription period. Those fees off course increase the direct costs, and therefore the direct costs for uninsured rights are lower than costs for insured rights (Eckbo & Masulis, 1995). In general, firm commitment offers are found to have the highest direct cost. Following Eckbo & Masulis (1995) the direct costs count for 6.1% of gross proceeds of industrial companies and 4.2% of gross proceeds for utility companies. Compared to the direct costs of standby rights (Industrial: 4.0% and Utility: 2.4%) and uninsured rights (Industrial 4.0% and Utility 2.4%) this difference is huge. This research will not go further on the costs associated with SEOs. From here, the literature research will focus on the market reaction when companies announce an SEO.

Market reaction

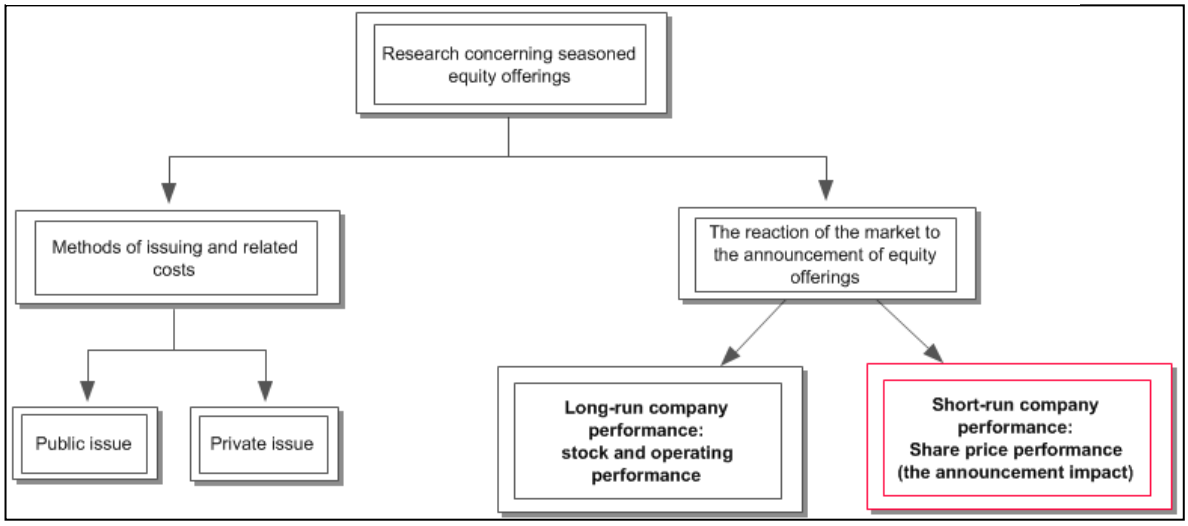
The evidence about SEOs highlighted in the literature review as far, were about flotation methods and the additional costs. Another area of research is concerned about the market reaction. Armitage (1998) stated that the reaction of the market following the announcement of equity offerings is a separate area of interest. Whether or not this is a separate field of interest is criticized. Some scholars believe this is a new field of interest where other think this is a form of indirect cost (Eckbo et al., 2007; Iqbal, 2008). Iqbal (2008, p. 152) for example, stated that "*the decline in the stock price denotes an indirect cost of equity issuance*". Figure 4 (next page) represents an overview of the research following Armitage (1998). Although it is arguable, the researcher holds to the overview of Armitage (1998) and treats the market reaction as a separate form of interest. The market reaction can be classified in two main points to which scholars perform(ed) research in:

1. The long-run stock- and operating performance following the seasoned equity offering

   and

2. The short-run stock performance following the seasoned equity offering.

Figure 4. Overview of the research in the field of Seasoned Equity Offerings (Armitage, 1998).



The long run stock and operating performance

The long-run performance from issuing companies received less attention in the beginning of the research to SEOs (Brown et al., 2006). But now, the long-run performance has been studied by researchers in a lot of different studies all around the world. The period of the long-run performance differs from only a couple of months to 480 days (Asquith & Mullins, 1985), three years (Loughran & Ritter, 1995) and five years (Loughran & Ritter, 1995; Spiess & Affleck, 1995) following the announcement day and later on also to longer periods (Allen & Soucik, 2008).

In general, a relative stock and operating underperformance of public companies was found for issuing companies in the first five years after the issue relative to non-issuers. Loughran & Ritter (1995) found that equity issuing companies underperform significantly at the 1% level in comparison to non-issuing companies by 8.0% per year. The annual return for non-issuing companies was on average 15% per year, while the average annual return for equity issuers was only 7.0%. Therefore, 44% more investment was required in issuers compared to non-issuers to receive the same return after 5 years. This underperformance holds when Loughran & Ritter (1995) tested the returns of SEOs to alternative benchmarks like the NYSE, Nasdaq, size and the market-to-book value. Also Spiess & Affleck (1995) report evidence for stock underperformance in contrast to matched non-issuing firms. Evidence was found for a difference of 42.4% in the five-year holding return between issuers and non-issuers, controlled for the industry-and-size benchmark. They reported a premium return above T-bill's of only 2.0% for equity issuing companies, which is far below the average risk premium of 7.4% for matched non-issuing firms. In addition, other scholars in the field from other countries stated that listed companies face long-run underperformance like for example in Australia (Brown et al., 2006), the UK (Ngatuni et al., 2006) and Germany (Stehle et al., 2000).

On the other hand, the outlined research about the long-run stock performance can be criticized. Scholars started to reformulate the long-run period. Instead of 5 years they defined the long-run post period as 12 years (Allen & Soucik, 2008). Surprisingly, in years 6 and 7 after the SEO the stock performance turned around and becomes even better than non-issuers. With a positive cumulative abnormal return of 15.3% in year 6 (sign. 10% level) and 13,6% in year 7 (sign. 10% level) the issuers outperform the non-issuers. And even after 12 years the positive trend even holds (CAR = 3.3%), al be it not-significant. Allen & Soucik (2008) therefore concluded that the underperformance is not a persistent phenomena and depends "*on the definition of the long-run*" (p. 153).

Besides the stock underperformance, Loughran & Ritter (1997) provide evidence for the operating performance of issuing companies. The profit margin, Return On Assets (ROA) and the operating-income-to-assets ratio for equity issuers decline more than non-issuers in the five-year post period. For example, the (median) profit margin of issuers fall 2.9% in five years, while the profit margin for non-issuers only drops 0.6% and also the (median) ROA of issuers decreases more (3.0%) than the ROA of non-issuers (1.5%) in the following five years what leads to a higher profit margin and ROA for the non-issuing companies from year 2. Kabir & Roosenboom (2003) also studied the ROA and extended their research with the Return On Sales (ROS). Benchmarked to non-issuing listed firms, the results shows that almost all abnormal ROA and ROS measures were negative. Within the five preceding years after the offering, every year, 8 proxies were measured. It turns out that 41 of 48 times the proxies were negative, with 15 significant at the 10% and 3 significant at the 5% level. The operating performance for right issuers was in general more negative compared to non-issuers.

The short-run performance (announcement effect)

Besides the long-run performance, the short-term stock performance has been the subject of many studies (Armitage, 1998; Asquith & Mullins, 1985; Kabir & Roosenboom, 2003; Masulis & Korwar, 1985; Shahid et al., 2010; Smith, Jr., 1985; and many more). The studies about short-run stock performance started in 1985 and are studied till today.

The announcement effect

Multiple studies that performed research to the short-run announcement effects of SEOs indicated that the announcement effect is comprised out of three variables, namely the stock price, the announcement day and the event period (Asquith & Mullins, 1985; Eckbo & Masulis, 1995; Iqbal, 2008; Masulis & Korwar, 1985; Slovin et al. 2000).

Stock prices are important for companies, since they represent the value of the company. Stock prices from listed companies vary every day so also the market value of these companies varies every

day. In general, the demand and supply of stock prices ensure that stocks rise (high demand, low supply) or fall (low demand, high supply).

But what causes investors to buy or to sell shares?

In an efficient market, the stocks reflect all information that is publically available so that prices immediately adjust to positive or negative information (Fama, 1970; Hillier et al., 2010). The stock prices change directly when for example a company announce; an increase/decrease in dividends (Gunasekarage & Power, 2006), adjusted profit expectations (Sprenger & Welpe, 2011), seasoned equity offerings (Asquity & Mullins, 1985; Kabir & Roosenboom, 2003; Shahid et al., 2010) or when general economic indicators like interest rates, consumer behaviour or growth of the economy change (Investopedia, 2009; Sprenger & Welpe, 2011). When companies announce news or when economic factors were pronounced to the public, it is called the announcement day (AD). The announcement day in this research represents the day when the right issue is announced to the public. Lots of scholars, named at the beginning of this paragraph, performed research to the effects of the announcement. They investigated how stocks perform when SEOs were announced to the public. This short-run impact is mostly measured within a time frame of ten days before and after the announcement day or within a time frame of two/three days (Eckbo et al., 2007). In general, the cumulative announcement day returns are calculated in three different ways;

1. Two-day announcement return — Returns from day -1 till Announcement Day. Returns from Announcement day till day +1.
2. Three day announcement return — Returns from day -1 till day +1.
3. Twenty day announcement return — Returns from day -10 till day +10.

Evidence from the US for short-run stock performance

Research starting from 1985 concluded a decline in stock prices when common stock offerings were announced to the public (Asquith & Mullins, 1985; Masulis & Korwar, 1985). Asquith & Mullins (1985) studied the announcement effect from cash offers on stock prices from Utility and Industrial firms in the US. The two-day announcement return (-1, AD) for 128 Industrial offerings between 1963 and 1981 showed a negative cumulative abnormal return (CAR = sum of abnormal returns) of -3.00% (sign. 1% level). The evidence for the announcement return is quite clear, since the stocks only drop 0.5% after the AD resulting in a CAR of -3.50% at day +10 after the announcement. The largest drop in stock prices was observed during the announcement period (-1, AD) when analyzing the twenty-day event period (-10, AD, +10). Masulis & Korwar (1985) indicate a negative two-day announcement return (AD, +1) of -3.25% (sign. 1% level) for Industrial companies and -0.68% (sign. 1% level) for Utility companies based on 972 secondary public cash offerings. On the announcement date 71% of the Industrial firms reported a negative stock return and 50% of the public Utility firms. Besides the

cash offers, Eckbo & Masulis (1995) also showed a decrease in stock returns for standby rights and rights issues in the US. Firms that make use of a standby right issue, face on average a -1.45% two day announcement return (-1, AD) and firms conducting a right issue on average a -1.40% decrease in stock prices. On the other hand, Eckbo & Masulis (1995) reported a 0.20% positive announcement return for public Utilities. All results from Eckbo & Masulis (1995) mentioned are highly significant on the 1% level.

Evidence from Asia for short-run stock performance

Shahid et al. (2010) studied the announcement effect of rights issues and public offerings made in China between 1998 and 2008. Although the average abnormal return (AAR = average of all abnormal returns) was found to be negative during the announcement of the right issues, a positive cumulative abnormal return of +1.23% for right issues was found during the longer event period (-10, AD, +10 days). In addition, also Agarwal & Mohanty (2012) found evidence for a positive mean abnormal return (MAR = mean of abnormal returns from all securities) during their chosen event period (-5; +5 days) resulting in a positive CAR (9.01%), although not significantly. Kang & Stulz (1996) performed research to the effect of public offerings, private offerings and right issues in Japan. For all these issue methods a positive effect was found during different event periods (-1, AD; AD, +1). Especially private offerings and right issues were found to have positive stock returns. Within the event period (-1, AD) the cumulative abnormal return for stock prices issued via right issues were +2.21% (sign. 1% level) and +2.02% (sign. 5% level) for the three-day announcement return (-1, AD, +1).

Evidence from Europe for short-run stock performance

Evidence from the UK by Slovin et al. (2000) indicated that the two-day (-1, AD) cumulative return for 220 right issues were on average -3.09% (sign. 1% level). In addition, the study shows that uninsured rights react more negatively (-4.96%; sign. 1% level) than insured right issues (-2.90%; sign. 1% level). Iqbal (2008) studied the three-day announcement return for Industrial and Financial listed companies in the UK that issued right offers between 1988 and 1998. A highly significant (1% level) negative CAR of -1.75% was observed for 914 Industrial companies and a little less for Financial companies (-1.48%; sign. 1% level). On average, all investigated firms reported a 1.87% (sign. 1% level) loss during the event period and Iqbal (2008) found that the abnormal return following an offering became less when companies issued more than once. Kabir & Roosenboom (2003) performed an event study to determine the effect of right issues in the Dutch capital market. They also concluded that the announcement of right issues have a negative effect on stock prices and holds for different time periods. By comparing the *Market Model* and the Dutch stock market index with the real stock returns during the announcement period they determine the cumulative abnormal stock return.

They found that stocks significantly decreases with -2.79% (sign. 5% level) within the two-day announcement period (0, +1 day) and decreases even more in the first 30 days following the issue (-5.34%; 5% significant level). Also Gajewski & Ginflinger (2002) found evidence for a negative announcement effect in France during the first day and five days following the issue for uninsured and standby rights. Between 1986 and 1996 the cumulative excess returns for the two-day period were -1.11% (sign. 1% level) for uninsured rights and -0.74% (sign. 5% level) for standby rights. But when taking the period between 1990 and 1996 these average excess returns went more negative, to -2.84% (sign. 1% level) for uninsured rights and -1.28% (sign. 1% level) for standby rights. On the other hand, also positive announcement effects are measured in Europe like the evidence stated from Asia. In Greece, Tsangarakis (1996) observed a positive CAR of 3.96% (sign. 1% level) for right issues in the two-day announcement period (-1,0) and even a 12.40% CAR when looking to a longer event period (-10, AD, +10).

Interpretation of the negative announcement day results

Evidence from the previous paragraphs stated that on average stock prices decline when companies announce right issues. Although it seems only to be a 1, 2 or 3% decline in stock price, Asquith & Mullins (1985) present some interesting figures about the effects of this negative return. They call it the offering dilution. They investigated the offering dilution, companies face when the offering was pronounced to the public. The average dilution for Industrial companies that perform their first SEO is on average 31% of the offering value. This number is much lower for Utility offerings (12.3%), but this is logical, since these companies also face lower announcement day returns (see evidence above). When companies raise for example 50 million euro, the offering dilution for industrial firms is more than 15 million euros and more than 6 million euros for utility firms. The decline in stock prices at the announcement day leads to lower market values, which count for a substantially amount of the total amount offered.

In general

Studies from the US, the UK, the Netherlands and France provide evidence for a negative reaction when right issues are announced to the market. Whether the used flotation method is a rights offer or public offer (underwritten cash offer), the negative effect remained. Only Eckbo & Masulis (1995) mentioned a positive 0.2% CAR on the two-day announcement return (-1, AD) for right issues offered by Utility offerings. In China (Shahid et al., 2010), India (Agarwal & Mohanty, 2012), Japan (Kang & Stulz, 1996) and Greece (Tsangarakis, 1996) a positive signal after the rights issue was found. Agarwal & Mohanty (2012) stated that a positive announcement return is a normal phenomena in developing nations and in line with multiple other studies performed in developing nations. Table 1 (next page) provides an overview of the evidence found in literature.

Table 1. Overview of the announcement impact from cash offers and right issues.

The table shows an overview of eleven different studies and the findings concerning the short-run impact of seasoned equity issues. Column 1 represents the country where the SEOs were issued, column 2 represent the study, column 3 represents the sample period, column 4 represents the flotation method, column 5 represent the type of industry that has been studied, column 6 shows the size of the sample, column 7 represents the event period in days prior to the announcement day (AD) and after the AD, and column 8 provides the cumulative excess stock returns found in the event period of those studies. CAR = Cumulative Average Abnormal Return. *, ** and *** represent the significance level of respectively 10%, 5% and 1%. N.N. = Significance level "not known". N.S. = Not significant.

Country	Study	Sample period	Flotation method	Issuer type	Sample size	Event period		Findings	
US	Asquith & Mullins (1985)	1963 – 1981	Underwritten cash offer (public)	Industrial	128	-1, AD	(-10, +10)	CAR = -3,00% ***	(-3,50%) N.N.
			Underwritten cash offer (public)	Utility	264	-1, AD	(-10, +10)	CAR = -0,90% ***	(-2,10%) N.N.
US	Masulis & Korwar (1985)	1963 – 1980	Underwritten cash offer (public)	Industrial	388	AD, +1	(-1, AD, +1)	CAR = -3,25% ***	(-3,43%) N.N.
						-10, +10		CAR = -1,39% N.N.	
			Underwritten cash offer (public)	Utility	584	AD, +1	(-1, AD, +1)	CAR = -0,68% ***	(-0,80%) N.N.
						-10, +10		CAR = -0,91% N.N.	
US	Eckbo & Masulis (1995)	1963 – 1981	Firm commitment	Industrial	220	-1, AD		CAR = -3,1% **	
				Utility	415	-1, AD		CAR = -0,8% **	
		1963 – 1985	Standby rights	Industrial	32	-1, AD		CAR = -1,5% **	
				Utility	84	-1, AD		CAR = -1,4% **	
		1963 – 1981	Right issue	Industrial	26	-1, AD		CAR = -1,4% **	
				Utility	27	-1, AD		CAR = +0,2% **	
China	Shahid et al. (2010)	1998 – 2008	Right issue	All	545	-1, AD	(-1, AD, +1)	CAR = +0,02% **	(+0,01%) N.S.
						-10, +10		CAR = +1,23% N.N.	
			Underwritten cash offer (public)	All	152	-1, AD	(-1, AD, +1)	CAR = -1,17% ***	(-1,64%) **
						-10, +10		CAR = -0,59% N.N.	
India	Agarwal & Mohanty (2012)	2000 – 2011	Right issue	All	205	-1, AD	(-1, AD, +1)	CAR = +2,21% N.N.	(+3,69%) N.N.
						-5, +5		CAR = +9,01% N.N.	
Japan	Kang & Stulz (1996)	1985 – 1991	Right issue	All	28	-1, AD	(-1, AD, +1)	CAR = +2,21%***	(2,02%)**
UK	Slovin et al. (2000)	1986 – 1994	Insured right issue	All	200	-1, AD		CAR = -2,90%***	
			Uninsured right issue	All	20	-1, AD		CAR = -4,96%***	
UK	Iqbal (2008)	1988 – 1998	Right issue	Industrial	914	-1, AD, +1		CAR = -1,75***	
				Financial	125	-1, AD, +1		CAR = -1,48***	
NL	Kabir & Roosenboom (2003)	1984 – 1995	Right issue	Non-financial firms	58	AD, +1		CAR = -2,79%**	
France	Gajewski & Ginflinger (2002)	1986 – 1996	Insured (standby) right	All	140	AD, +1	(AD, +5)	CAR = -0,74% **	(-1,10%)*
			Uninsured right	All	57	AD, +1	(AD, +5)	CAR = -1,11% ***	(-1,73%)***
		1990 – 1996	Insured (standby) right	All	57	AD, +1	(AD, +5)	CAR = -1,28% ***	(-1,44%)**
			Uninsured right	All	20	AD, +1	(AD, +5)	CAR = -2,84% ***	(-2,58%)**
Greece	Tsangarakis (1996)	1981 – 1990	Right issue	All	59	-1, AD	(-1, AD, +1)	CAR = +3,96%***	(+3,83%)**
						-10, +10		CAR = +12,40%***	

Like the UK and France, the Netherlands can also be characterized as a developed country. In addition, right issues are the predominant flotation method used (Kabir & Roosenboom, 2003) since preemptive rights are the norm in the Netherlands. In literature, scholars found a negative announcement effect in developed countries. Since, the Netherlands is a developed country in which right issues are the most common used flotation method, the expectation is that a negative stock price reaction after the announcement of the right issue will be found, which is in line with all other evidence. Therefore, the first hypothesis this thesis will test is:

$H_{1.}$ = If Dutch listed companies announce right issues to the public, then stock prices decrease (negative announcement impact).

Companies are classified in different industries. The Industry Classification Benchmark (ICB) is an example of a classification system with 10 Industries. With this system it is possible to identify the industry of a company and to monitor industry trends. Oil & Gas, Basic materials, Industrials, Consumer goods, Consumer Services, Telecommunications, Financials and Technology are different types of industries. A couple of examples whereby industries vary from each other are industry growth, profitability, dividend payments, liquidity ratios or leverage ratios (Leach & Melicher, 2011). Scholars in the field performed research to different type of industries. For example, Eckbo & Masulis (1995) performed research to Industrial and Utility firms, Iqbal (2008) to Industrial and Financial firms and Kabir & Roosenboom (2003) to Non-Financial firms. When analyzing the results of those scholars, it can be concluded that different types of industries react different to the announcement of right issues. In general, the type of industry has influence on the announcement impact. Therefore, the second hypothesis this thesis will test is:

$H_{2.}$ = The announcement impact (from right issues) differ for different industries.

Explanations for the announcement return

Besides studying the abnormal stock return also the *why* question have been studied in literature. "*Why does the market react negative or positive to the announcement of right issues?*" Different kind of theories/hypotheses have been developed and studied for in the last decades. In general, these theories and hypotheses can be classified into three main categories.

The first category predicts a stable announcement return (no price movement). The **Value Neutral Event hypothesis,** mentioned by Agarwal & Mohanty (2012), predicts that in an efficient market a right issue will have no effect on shareholder wealth. So therefore no abnormal return will be measured. The second category predicts a positive announcement return after the announcement of right issues. The **Increased Liquidity hypothesis** studied for by Agarwal & Mohanty (2012) predicts

that when prices went down it becomes more attractive to retail investors and therefore stock prices will increase. In addition, the **Corporate Finance theory** implies that companies only need capital for investment opportunities with positive Net Present Values (Hillier et al., 2010). Since positive NPV projects imply more value for stockholders, a decrease in stock prices is unexpected. Scholars suggest that firms only issue equity when they have the possibility of creating value for their stockholders.

Nevertheless, more literature with evidence for a price drop after equity issues was found. This makes the previous arguments to a theory, based on evidence, not applicable to reality. Therefore, the third category and very important for this thesis (since a negative return is expected) are the theories that predict a negative announcement return. Two of the most sited hypothesis are the:

a. **Overvaluation hypothesis** (Myers & Majluf, 1984). This hypothesis predicts that managers know more about the company than outsiders do and managers will issue equity when share prices are high. Therefore the reaction of investors will be negative.

b. **Free cash flow hypothesis or overinvestment hypothesis** (Jensen, 1986). This hypothesis predicts that managers want to invest in as much projects as possible. When companies announce an equity issue, investors will react negative, because they believe investment opportunities are of bad quality and agency costs increase due to more equity capital.

Overvaluation hypothesis (information asymmetry)

The most cited theory in literature is the signaling theory from Myers and Majluf (1984). The theory assumes that equity offerings signal information about the firm to the market. It assumes that there is information asymmetry, whereby managers know more about the firm than investors or stockholders do. Managers have better information about the worth of the firm's assets. Therefore it is stated that SEOs *signal* bad information to the market following Myers & Majluf (1984, p. 47), because "*when managers have superior information, and stock is issued to finance investment, stock price will fall*". This hypothesis expects that declining stock prices after SEOs could be the effect of stockholders, who interpret the equity issue as a signal of overvaluation. They believe that information about the company is not widely spread and managers know more than they do. In general, investors feel uncertainty about the true value of the stocks, because equity issues may been announced when stocks are overvalued, since managers prefer to issue equity when they know their stocks are overvalued (Agarwal & Mohanty, 2012; Choe, Masulis & Nanda, 1992).

Studies that performed research to this theory named it as the overvaluation hypothesis or information asymmetry hypothesis (Agarwal & Mohanty, 2012; Armitage, 1998; Kabir & Roosenboom, 2003). Because managers know the real value of the company, they have incentives to

issue equity when stock prices are high. The amount raised per share is higher when stocks are overvalued. In addition, Myers and Majluf (1984) stated that share prices decline after an SEO, and therefore companies are likely to issue equity when share prices are high. For companies it is in their benefit to have a decline in stock prices when their prices are high instead of a decline in stock prices when the prices are low. With this strategy companies are able to regulate SEOs. Like Armitage (1998, p. 40) call it, "*it is in companies interest to try to reduce the price fall on announcement of SEOs*".

Kabir & Roosenboom (2003, p. 107) investigated the overvaluation hypothesis for Dutch right issues and stated that, "*The greater the overvaluation (information asymmetry), the higher would be the stock price decline*". In order to test the hypothesis they assumed that companies with high information asymmetry, try to raise as much **new equity capital** (proxy variable) with a **high discount** (proxy variable). The regression analysis provides evidence for a larger decline in stock prices when the issue size gets bigger and a larger decline in stock prices for issues that are made with a high discount. A bigger issue size and a higher stock discount signal bad information to the market. They found full support for the overvaluation (information asymmetry) hypothesis. Also Asquith & Mullins (1985) found a highly significant (1% level) positive relationship between the size of the issue and the negative announcement return. For every additional 100 million dollar the equity issue increases, a reduction of 8.675% (sign. 5% level) in firm value on the announcement day for primary offerings (first SEO for a company) was found. In addition, Karim et al. (2001) found that high discount firms experience higher negative returns. The difference between the average abnormal returns from high and low discount firms in five different time periods where statistically different from each other at the 1% (4 time periods) and 5% (1 time period) significance level.

The empirical studies in the US, the UK, the Netherlands and France reported a negative announcement return. It is hypothesized in the previous sub-chapter that stock prices in the Dutch capital markets are likely to decrease when right issues are announced. Since a bigger right issue and a higher discount signals greater information asymmetry to the market, it is hypothesized that:

$H_{3a.}$ = If the size of a right issue increases, then the abnormal return will be more negative.

$H_{3b.}$ = If the discount of the new stocks from the right issue increases, then the abnormal return will be more negative.

Besides, Brown et al. (2006) found that companies issue equity when their stocks are overvalued, which is in line with the overvaluation hypothesis. The market-to-book value of issuers compared with non-issuers at 1 year prior to the issue is 2.40 for issuers, while only 1.30 for non-issuers

(Loughran & Ritter, 1997). The overvaluation creates an opportunity for managers to attract more funds from the market. Since a higher market-to-book value signals greater information asymmetry to the market, it is hypothesized that:

$H_{3c.}$ = Companies with higher market-to-book values on the moment of a right issue announcement, face higher negative abnormal returns.

Free cash flow hypothesis (overinvestment hypothesis)

Another explanation for the negative announcement return is the free cash flow hypothesis developed by Jensen (1986). The hypothesis stated that "*conflicts of interest between shareholders ad managers over payout policies are especially severe when the organization generates substantial free cash flow*" (Jensen, 1986, p. 2).

When a company generates substantial free cash flows (FCFs), there may be pressure on the relationship between stockholders and managers. Stockholders want dividend and capital gains from their stocks, while managers are looking for growth. Managers benefit if the business grows, even when investing in negative Net Present Value (NPV) projects. Because when the company grows, also their power increases and their salary becomes higher (Jensen, 1986). This can be seen as "*empire building*" (Iqbal, 2008, p. 152). The effect of empire building *aspirations* leads to an increase in agency costs so that stock prices will decline, because a "*leverage-reducing transaction*" results in decreasing stock prices (Jensen, 1986, p. 5). While Jensen (1986) found full support for this hypothesis, Kabir & Roosenboom (2003) only found partial support for this hypothesis. In addition, Smith Jr. (1985) hypothesized that activities of the company which influence FCFs are important to stockholders. For example, a positive stock price movement occurs when companies perform activities that imply higher operational cash flow (e.g. common stock repurchases) and a negative movement when activities performed imply lower operational cash flow (e.g. security offerings) in the future. In addition, Smith Jr. (1985) found evidence for negative announcement reactions when companies announce leverage-decreasing activities and a positive announcement reaction when companies announce leverage-increasing activities. Besides, Choe, Masulis & Nanda (1992) did a multiple regression analysis and found that the CAR became more negative when the offer was greater and the decrease in leverage was higher.

The empirical studies in the US, the UK, the Netherlands and France reported a negative announcement return. It is hypothesized in previous sub-chapter that stock prices in the Dutch capital markets are likely to decrease when right issues are announced. Since greater leverage reducing transactions are received more negative by investors, it is hypothesized that:

$H_{4.}$ = Right issues that cause the greatest change in leverage, also face higher negative abnormal returns.

Equity issues and economic indicators

Besides the information asymmetry and free cash flow hypothesis, also another phenomena takes place with equity issues. Following the window of opportunity hypothesis it is stated that equity issues take place during some "*good times*". For example, Bayless & Chaplinsky (1996, p. 253) stated that equity offerings are clustered in certain periods, because "*capital can be raised at favorable terms*". Evidence for this hypothesis is mixed. Bayless & Chaplinsky (1996), Brown et al. (2006) and Choe, Masulis & Nanda (1992) found full support for this hypothesis, while Kabir & Roosenboom (2003) did not.

Choe, Masulis & Nanda (1992) performed research to the window of opportunity hypothesis. They performed a multiple regression analysis whereby the relationship between the CAR (AD, +1) and the issue, issuer and business cycle variables were studied. All fifteen regression formulas provide evidence for less negative CARs in a market run-up. In addition, when leading economic indicators and the industrial production rate went higher, the CAR went less. Also Bayless & Chaplinsky (1996) performed research to the issuance of equity issues and the abnormal returns in different time periods. They compared high volume markets with low volume markets. They found evidence for less negative abnormal returns in hot (high-volume) issue markets compared to cold markets (low-volume). The CAR within the two-day event period (-1, AD) for all industrial issuers was -2.0% in hot markets and -3.3% in cold markets. They concluded that the abnormal return was less, when more equity was sold to the public.

On the other hand, Kabir & Roosenboom (2003) did not found support for the window of opportunity hypothesis. In their study, only the Gross Domestic Product (GDP) was used as a proxy variable of the economic condition. The GDP rate had a slight positive relation of 0.01 with the excess returns, but was not significantly related. The window of opportunity hypothesis was therefore not accepted. The GDP was the only proxy the researchers used, while other scholars who did found support for the hypothesis also used other proxies. So, the research in this study is limited to one particular proxy for the economic condition and results should be interpreted with caution.

Economic indicators

To define "*good times*" in the market, different economic indicators are well known. Rila (2007), Ozyildirim et al. (2010), Subeniotis et al. (2011) and the CBS (2013) name economic growth, gross domestic product (GDP), work unemployment and consumer confidence as important economic indicators. In addition, Rila (2007, p. 177-178) stated that, "*Elke forse dreun op de financiële markten*

een belangrijk waarschuwingssignaal is. Het is een teken dat de financiële markten, de belangrijkste kapitaalbron van een economie, zich ongerust maken over de conjuncturele en/of politieke stabiliteit in de toekomst". Based on this statement of Rila (2007) it can be concluded that the stock market index also forms an important indicator for the state of the economy. The state of the economy can be classified to an economic upturn, economic downturn and a stable period. Based on the economic indicators each period can be separated from another.

1. **A positive macroeconomic condition** is in place when the stock market index rises, the growth of the economy increases, the annual GDP growth factor increases, consumer confidence increases and work unemployment decreases.
2. On the other hand, a **negative macroeconomic condition** is in place when the stock market index decreases, economic growth decreases, annual GDP growth factor decreases, consumer confidence decreases and work unemployment increases.

Table 2. An overview of economic indicators and different economic conditions

Table 2 displays market indicators and different economic conditions. A plus means that the indicator increases and a minus means that the economic indicator decreases. A 0 indicates that there is no real difference.

Economic indicators	Positive macro-economic condition	Negative macro-economic condition
GDP	+	-
Work unemployment	-	+
Consumer confidence	+	-
Stock market index	+	-

Table 2 summarizes all five indicators and displays what these indicate during different macroeconomic conditions. Based on the window of opportunity hypothesis it is hypothesized that the announcement impact of right issues will be influenced by the state of the economy. When right issues are announced during different economic circumstances, also the abnormal return will be different. Therefore, the following hypothesis is created:

H_5 = If the economic condition is positive, then the cumulative abnormal return (CAR) will be less negative, compared to the CAR from right issue announcements during negative economic conditions.

In general

From the previous evidence it can be concluded that stock prices decline after the announcement of right issues. Besides, the announcement impact of right issues on stock prices might be different per industry and economic condition. Therefore it is hypothesized that I will find evidence for the overvaluation hypothesis, free cash flow hypothesis and the window of opportunity hypothesis. Table 3 sums up all hypotheses that will be tested in this research.

Table 3. Overview of hypotheses.

Table 3 presents an overview of all hypotheses. Hypotheses 1 and 2 illustrate the announcement effect in general, hypotheses 3a – 3c are related to the overvaluation hypothesis, hypothesis 4 is related to the free cash flow hypothesis and hypothesis 5 to the window of opportunity hypothesis.

General hypotheses
$H_{1.}$ = *If Dutch listed companies announce right issues to the public, then stock prices decrease (negative announcement impact).*
$H_{2.}$ = *The announcement impact (from right issues) differ for different industries.*
Overvaluation hypothesis
$H_{3a.}$ = *If the size of a right issue increases, then the abnormal return will be more negative.*
$H_{3b.}$ = *If the discount of a rights issue increases, then the abnormal return will be more negative.*
$H_{3c.}$ = *Companies with higher market-to-book values on the moment of a right issue announcement, face more negative abnormal returns.*
Free cash flow hypothesis
H_4 = *Right issues that cause the greatest change in leverage, also face higher negative abnormal returns.*
Window of opportunity hypothesis
H_5 = *If the economic condition is positive, then the cumulative abnormal return (CAR) will be less negative, compared to the CAR from right issue announcements during negative economic conditions.*

PART II

The idea of an event study is to look closely at price behavior just before and just after new information about a particular asset has hit the market ("the event").

(Fama, Hanssen & Shiller, 2013)

Methodology

Data collection

Descriptive statistics

Data analysis

Methodology, data collection and data analysis

This part of the thesis describes the methodology, the data collection process, the data (descriptive statistics) and the data analyses. The methodology section covers the research design. The research design is the general plan that describes how the researcher answers the research question and hypotheses (Saunders et al., 2009). After that, the data collection method and descriptive statistics are given from the data. Part II ends with a paragraph that explains the way the data is analyzed. Each hypothesis is operationalized and the used statistical tools are presented to test these hypotheses.

Research design

The purpose of this research is to provide further evidence on the right issue announcement impact. In order to do so, seven different hypotheses are created. Following Saunders et al. (2009) a study can be called explanatory if it establishes causal relationships between variables. This study tests the relationship between variables, so this research can be called explanatory.

To measure the announcement impact of right issues on stock prices a typical event study is used. This method is used, because an event study focuses on the impact around a corporate event (Eckbo, 2007, ch. 1; MacKinlay, 1997). An event study measures the impact of influencers effectively, because calculations are based on stock prices which are accurately and less subject to human error (McWilliams & Siegel, 1997). In addition, event studies offer valid and reliable measurements, due to the use of daily stock returns and sophisticated statistical analyses (Eckbo, 2007, ch. 1). Event studies are widely adopted to analyze the impact of right issues. Gajewski & Ginglinger (2002) from France, Kabir & Roosenboom (2003) from the Netherlands, Iqbal (2008) from the UK, Agarwal & Mohanty (2012) from India and Eckbo & Masulis (1995) from the US used event studies to analyze the announcement impact from right issues on stock prices.

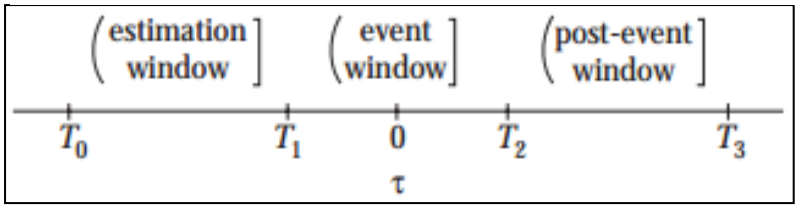
Basically two steps are involved in this study.

1. The first step is to calculate the **abnormal returns** from the stock prices of issuing companies during the event window. The abnormal returns during the event window are summed up to cumulative abnormal returns (CARs).

2. The second step is to analyze if there is any **coherency** between the cumulative abnormal returns and different explanatory variables (issue size, stock discount, M/B-value, leverage ratio and economic indicators) stated in the hypotheses. This is done with statistical tests and regression analysis.

An event study is divided into three periods, which are the Estimation window, the Event window and the Post-event window (Figure 5).

Figure 5. Time line for an event study (MacKinlay, 1997, p. 20).



The estimation window is used as a period that provides estimates for the market model to calculate the abnormal returns. The abnormal return is the difference between the expected return and the real return. From the estimation period it is possible to calculate the expected return. The estimation window does not overlap the event window, so that the model is not influenced by the announcement returns. The event window (T_1 till T_2) is the time period in which the event (right issue announcement) takes place. The post-event window (T_2 till T_3) is used to see how the stock price behaves after the event. There are a couple steps to be taken when performing an event study following MacKinlay (1997). These steps are:

1. Define the event of interest
2. Define the event period
3. Determine the selection criteria for the units of analysis

The Event of Interest

The event of interest in this research is the announcement of right issues. This is day τ (Figure 5) that listed companies announce the right issue **for the first time** to the public. Within this research it is the moment that the company presents a press release to the public (new information about the company is released to the public). Not necessarily with a lot of details about the right issue. This moment is chosen, to have one moment in time for all right issues. This creates comparability between the right issues. The research will analyze what happens with stock prices of those companies during the announcement.

The Event Window

The event window is the time period in which the researcher will analyze the stock returns of the issuing company. It is customary that the event window is larger than the specific period of interest, because this ensures the researcher to examine the period surrounding the event. An event window of 181 days (nine months) is not uncommon (McWilliams & Siegel, 1997). To enhance comparability with previous studies in the field of interest the event period is derived from previous studies (Eckbo & Masulis, 1995; Iqbal, 2008; Kabir & Roosenboom, 2003; Gajewski & Ginflinger, 2002). The event

period will be 20 days surrounding the announcement of the right issues. So, four weeks before and four weeks after the announcement. ***This is a so-called 41-day event window.*** Several sub-periods will be analyzed. The event window of this research is divided in three periods: The Pre-event period, the Event period and the After-event period. The after-event period is not the Post-event window named by MacKinlay (1997), but is the period immediately after the event. This research will not focus on the long-term.

1. **Pre-announcement period** 20-days before the announcement of the right issue.

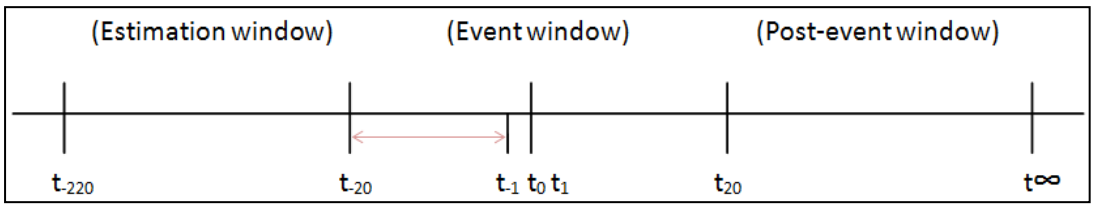


Figure 6. The figure outlines the pre-announcement period.

2. **Event period** Two- and three-day announcement return

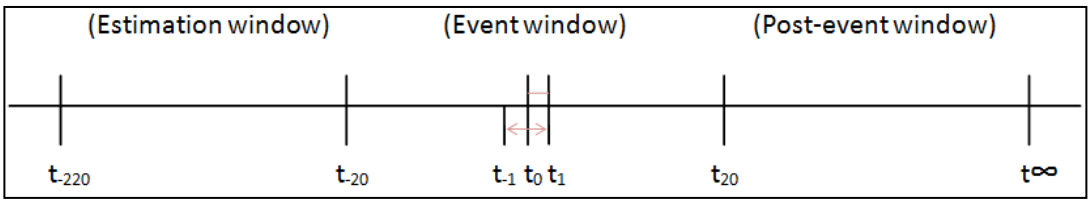


Figure 7. The figure outlines the two- and three-day announcement period.

3. **After-announcement period** 20-days after the announcement of the right issue.

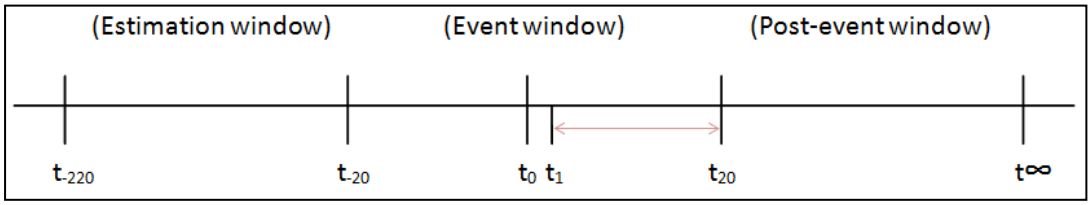


Figure 8. The figure outlines the after-announcement period.

The pre-event period (after-event period) will be used to capture the stock price performance from 20 days before (after) the announcement till one day before (after) the announcement of the right issue. The period before and after the event will be analyzed, since most studies in the field analyzes this periods and to get comparable results. During the event (announcement of the right issue to the public), a two (0, +1) and three-days (-1, 0, +1) announcement return will be calculated to analyze the real announcement impact.

The estimation window of this study runs from day -220 till day -20. Like many other studies it is normal to estimate the expected returns, based on the 200 days before the event window. Like

already outlined, the period does not cover the event window, to make sure the estimation window is not influenced by the event (right issue announcement).

McWilliams and Siegel (1997) argue that the usefulness of an event study depends heavily on a set of strong and clear assumptions. Therefore it is assumed that:

1. **Markets are efficient**, this means one cannot obtain excess returns on top of the average market return on a risk basis, given the information that is available at the moment of investment,
2. **The event was unanticipated**, there are no parties (except the issuing firm) who knows about the upcoming announcement, and
3. **There were no confounding effects during the event window**, no other factors are correlating with both the dependent and independent variables (excess return and issue announcement) like the firm was recently merged or acquired, the headquarter burned down or the CEO died.

In addition, MacKinley (1997, p. 13) argues that "*the usefulness of such a study comes from the fact that, given rationality in the marketplace, the effects of an event will be reflected immediately in security prices. Thus a measure of the event's economic impact can be constructed using security prices observed over a relatively short time period*".

Units of analysis and selection criteria

The units of analysis in the research are Dutch listed firms. The selection criteria for the inclusion of firms into the event study are:

1. The firm was listed on the Amsterdam Exchange Index (AEX) between 01/2001 and 06/2013.
2. The firm was listed on the Amsterdam Midkap Index (AMX) between 01/2001 and 06/2013.
3. The firm was listed on the Amsterdam Small Cap Index (AScX) between 01/2001 and 06/2013.

This selection criteria leads to a total of 84 firms that form the unit of analysis (see appendix III).

Data collection and descriptive statistics

The data set used in this study is characterized as primary data. The researcher did not make use of an existing data set, but constructed one by himself. In addition, the data used in the study is numerical and statistical tests are performed, what following Verhoeven (2004) indicates as a quantitative study.

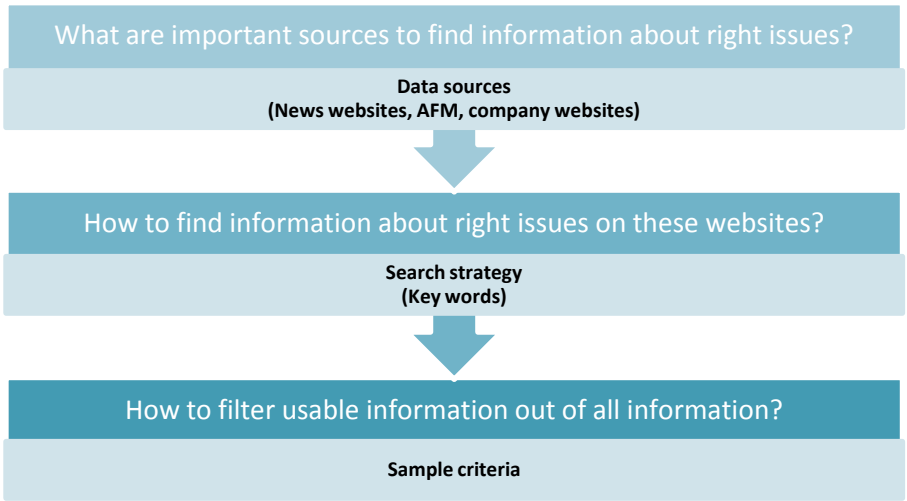
Data collection and construction of the sample

Based on the selection criteria for the units of analysis, a total of 84 firms were selected. The researcher performed an investigation to right issues of those companies. In contrast to other

scholars that performed research to the impact of right issues, this study does not make use of already established database. Typical databases used in other studies are the Bloomberg database or the Thomson & Reuters Securities Data Corporation Global New Issues database, but unfortunately the researcher had no access to those databases. Therefore, a desk research has been done. Like Kabir & Roosenboom (2003), the right issues were collected via archives of Dutch newspapers. But instead of real papers, this study performed a research to right issues via the Internet. Because of time and money related issues this is the most efficient way to collect the data.

To make sure the data collection was performed on a systematic way, the researcher constructed a data search plan (Figure 9; Appendix IV). First of all, the most important data sources were selected. Initially, eight different sources were used to collect data from right issues. From those eight sources, six of them are news websites, one is the Autoriteit Financiële Markten (AFM) and the last one are the company websites. The AFM in the Netherlands can be compared to the SEC in the US. After choosing those sources, a search strategy was created for every website. During the research to right issue announcements from Dutch listed companies, other important sources came up. Therefore, in total 15 different websites were used to construct the sample (Appendix IV).

Figure 9. Schematic overview of the search plan



In total a sample-size of 38 right issues was found. But the right issue announcements needed to meet the following criteria:

1. The right issue took place between 01 January 2001 and 30 June 2013
2. The firm does not make important new releases during the announcement of the right issue
3. Announcement dates and daily stock prices should be available
4. The right issue size was at least 5 million euro
5. The firm was listed for at least three years.

After excluding companies that performed a right issue with the mentioned criteria, a total sample of 34 right issues is left. Stock price data has been retrieved via www.finance.yahoo.com, www.fd.nl, www.analist.nl, www.aex.nl and www.dijksma.net. Not all stock price data was available on one particular website, since some companies have already been deleted from the indexes for several years. Therefore, a couple of extra websites were used to verify if the stock price data was right. To be more specific, all stock price related data within the event window is retrieved from those websites. The data is extracted from these web sites into Microsoft Excel and from there all relevant calculations and analyses of the stock prices are made. All other information about the company characteristics that were necessary for this thesis, were collected via the financial reports of the companies. Data like book values of debt, equity and the amount of outstanding stocks.

Descriptive statistics

The search process leads to a sample of 34 right issues from 28 different companies. Six companies performed two right issues during the time period . The 28 companies fit in nine different industries. Also Iqbal (2008) and Kabir & Roosenboom (2003) had multiple right issues for some companies. Table 4 describes the number of issues that took place in each year and the number or right issues by industry type. In 2009 and 2010, the most right issues took place. In 2006 no single right issue was found. The most right issues took place in the Industrial (11) and Financial industry (8).

Table 4. Amount of right issue announcement dates per year and per industry

Panel A displays the number of right issues in the sample by year from 01/2001 till 06/2013. Panel B displays the number of right issues by nine different industries.

Panel A

Year right issue	Right issues
2001	2
2002	2
2003	1
2004	2
2005	1
2006	-
2007	2
2008	1
2009	8
2010	7
2011	3
2012	2
2013	3
Total	34

Panel B

Industry	Right issues
Industrials	11
Financials	8
Oil & Gas	3
Telecommunications	3
Technology	3
Consumer goods	2
Basic materials	2
Consumer services	1
Health care	1
Total	34

Financial firms have different institutional and regulatory environments and are therefore difficult to compare, especially with non-financial firms following Kabir & Roosenboom (2003). On the other

hand, studies from Gajewski & Ginflinger (2002) and Tsangarakis (2006) did not made any difference between Financial and non-Financial firms. And in addition, Iqbal (2008) performed an investigation to the effects of right issues from both industrial and financial firms. Therefore also this study will look separately to Financial firms. Table 5 (next page) presents information about the right issues and present firm characteristics. The information presented are the;

- issue-size relative to the market capitalization,
- discount of the issue price relative to the announcement price,
- the market-to-book ratio and
- the change in leverage due to the right issue.

The average issue-size for the total sample of 34 right issues is 1.3 billion euro and 770 million euro for all non-financial companies. Since a couple of right issues were very large and the sample size is not very high, six right issues above 1 billion euro were excluded. The issue-size then becomes on average 238.6 million euro. For the market capitalization the same holds. For the total sample, the average market capitalization is 4.1 billion euro, for non-Financial companies 1.6 billion euro and without outliers 371 million euro. The average issue-size relative to the market capitalization is 43.7% (median = 31.9%) for the total sample, 48.3% (38.6%) for right issues from non-Financial companies and 35.0% (31.3%) for the total sample without values above 100%. Compared to Kabir & Roosenboom (2003) these figures are relatively high, since they found that the average rights issue represents only 21% (16%) of the firms outstanding equity. On the other hand, Tsangarakis (1996) found that the right issue size is on average 43.3% of common shares and Slovin et al. (2000) found that right issue-size is on average 40% of outstanding equity.

The discount on the issue price that stockholders receive relative to the announcement price, is on average 39.7% (42.3%) for the complete sample and 43.5% (43.0%) for all non-Financial companies. The results are in line with Tsangarakis (1996) who also found a discount of 37.4% on the issue price relative to the stock price one month before the announcement day and slightly higher than the discount fount by Alastair & Marsden (2000) of 33.1%.

The market-to-book ratio (market capitalization relative to the book value of equity) is 1.22 for the complete sample and 1.28 for non-financial companies. When clearing out one outlier of 5.81 from the Pharming Group, the market-to-book ratio becomes 1.07 (0.99). Since, these numbers are calculated on one day before the announcement day, on average companies market value is more worth than their book value on the moment companies issue new shares. Without the outlier of the Pharming Group, the results of the market-to-book ratio are in line with Kabir & Roosenboom (2003)

Table 5. Selected descriptive statistics

Panel A reports summary statistics for the total sample, panel B reports summary statistics for non-financial companies and Panel C reports summary statistics for the total sample without any outliers.

Panel A. Desriptive statistics for the total sample (N = 34).

Variable	Mean	Median	STD	Max.	Min.
Issue-size	€1.307.347.264	€190.466.205	€2.773.885.687	€13.200.000.000	€6.500.000
Market Capitalization	€4.107.612.905	€484.434.461	€9.101.328.168	€44.626.690.201	€5.360.062
Issue-size relative to MV Equity	43.7%	31.9%	35.4%	140.2%	7.7%
Discount 1: announcement price	39.7%	42.3%	26.9%	86.1%	4.3%
Market-to-book ratio	1.22	1.02	0.99	5.81	0.30
Change in leverage	-7.4%	-7.2%	4.9%	-0.3%	-18.1%

Panel B. Descriptive statistics for non-financial companies (N = 26).

Variable	Mean	Median	STD	Max.	Min.
Issue-size	€770.171.527	€101.000.000	€1.479.726.485	€5.000.000.000	€6.500.000
Market Capitalization	€1.637.497.447	€383.974.308	€3.147.631.065	€13.612.650.300	€5.360.062
Issue-size relative to MV Equity	48.3%	38.6%	36.8%	140.2%	7.7%
Discount 1: announcement price	43.5%	43.0%	26.3%	86.1%	4.3%
Market-to-book ratio	1.28	1.00	1.10	5.81	0.30
Change in leverage	-8.3%	-9.1%	4.2%	-1.8%	-18.1%

Panel C. Descriptive statistics for the complete sample without any outliers.*

Variable	Mean	Median	STD	Max.	Min.
Issue-size	€238.609.619	€100.000.000	€316.050.239	€1.170.000.000	€6.500.000
Market Capitalization	€371.092.993	€286.458.273	€334.338.415	€933.653.443	€5.360.062
Issue-size relative to MV Equity	35.0%	31.3%	23.8%	84.2%	7.7%
Market-to-book ratio	1.07	0.99	0.52	1.99	0.30
Change in leverage	-6.8%	-6.3%	4.3%	-0.3%	-13.5%

Issue-size is expressed as the total amount of funds issued in euro's. Issue-size relative to the market value of equity is expressed as the funds issued relative to the market capitalization. Discount 1 represents the discount of the issue price relative to the price one day before the announcement day (t = -1). The market-to-book ratio is expressed as market capitalization divided by group Equity. The change in leverage for the issuing companies has been calculated via the formula that is used by Masulis & Korwar (1985). $\Delta LEV = \frac{D-\beta*\Delta E}{D+E+(1-\beta)*\Delta E} - \frac{D}{D+E}$.

* In Panel C, the issue-size and market capitalization has been calculated for all right issue smaller than 1 billion euro, the issue-size relative to the market value of equity for all values smaller than 100%, the market-to-book values for all values smaller than 2.0 and the change in leverage for all values below 15%.

who reported an average market-to-book ratio of 1.05, with the same median found in those descriptive statistics.

The change in leverage is on average huge when looking to the total data sample. On average the leverage decreases with 7.4% (7.2%) for the total sample and 8.3% (9.1%) for non-financial companies. Panel C describes the change in leverage without two outliers. Then the change in leverage becomes less to 6.8% (6.3%). Relative to Masulis & Eckbo (1985) those change in leverage can be called high, since they found on average a decline in leverage for industrials of 5.1%.

Data analysis

This paragraph describes how the data will be analyzed in Part III of this thesis. To answer the major research question of this thesis, seven different hypotheses are created. To reject or to not reject the hypotheses this study employs mean, median tests and regression analysis. To analyze if the stock prices face any impact during the announcement of a right issue, the abnormal returns from the stocks are calculated (formula 2.). The abnormal return is the difference between the actual return (R_{it}) and the benchmark return (RBE_{it}).

$$AR = \sum_{t}^{t} (R_{it} - RBE_{it}) \quad (2.)$$

Subscript *i* and *t* represent the issuer and the cumulating period. The benchmark chosen in this research is the expected return. The expected return is calculated via the Market model (formula 3).

$$RBE_{it} = \alpha_i + ß_i * R_{mt} \quad (3.)$$

α and ß represent the market model parameters. These parameters are calculated from the estimation period (-220 days before the issue till -21 days before the issue). This period has been taken, to make sure that these parameters are not influenced by the possible announcement impact. The R_{mt} represents the explanatory variable, which is in this case the actual return of the index on which the stock is located. Since not all stocks are located on the AEX index, also the AMX and AScX-indexes are used. For companies listed on the AEX, the R_{mt} is the actual return of the AEX and for companies located on the AMX or AScX-index, the R_{mt} is the actual return of the corresponding market index. With this formula, it is therefore possible to calculate the expected return.

Like already outlined in the event window, the pre-period return (day -20 till -1), two-day announcement return (day 0 till day +1), the three-day announcement return (day -1 till day +1) and the after period return (day 1 till day 20) are investigated. Day 0 represents the announcement day. In order to make sure that all announcement dates are the same, this is the moment when the

company releases an official statement to the public. The cumulative abnormal return (CAR) is calculated for the four time frames.

Pre-period return	$CAR_i(\tau_{-20}, \tau_{-1}) = \sum_{\tau_{-20}}^{\tau_{-1}} AR_{it}$	(4.)
Two day cumulative announcement return	$CAR_i(\tau_o, \tau_{+1}) = \sum_{\tau_0}^{\tau_{+1}} AR_{it}$	(5.)
Three day cumulative announcement return	$CAR_i(\tau_{-1}, \tau_o, \tau_{+1}) = \sum_{\tau_{+1}}^{\tau_{+1}} AR_{it}$	(6.)
After-period return	$CAR_i(\tau_{+1}, \tau_{+20}) = \sum_{\tau_{+1}}^{\tau_{+20}} AR_{it}$	(7.)

To calculate the equally weighted cumulative average abnormal return (ECAAR) for multiple right issues the following formula is used.

$$\overline{\mathrm{ECAAR}_1} = \frac{1}{n} \sum_{\tau}^{\tau} CAR_i\,(\tau_t, \tau_t) \qquad (8.)$$

Whereby n represents the total amount of right issues.

Hypothesis 1

"If Dutch listed companies announce right issues to the public, then stock prices decrease (negative announcement impact)."

To outline the announcement impact from right issues, the stock returns will be investigated during the announcement period. Via formula 8 it is possible to calculate the ECAAR. The ECAARs will be calculated for the event period (day -1 till +1 and day 0 till +1). In order to test hypothesis 1, the null hypotheses and alternative hypothesis for the event period are:

H_0	=	Mean ECAAR is 0	mean ECAAR = 0
H_A	=	Mean ECAAR is smaller than 0	mean ECAAR < 0

To test if the ECAAR deviates significantly from zero a one sided t-test will be computed. A t-test is used, because the data is quantitative (De Veaux et al., 2011). With this statistical test it is possible to analyze if the ECAAR deviates significantly from 0.

$$t = \frac{\overline{ECAAR} - 0}{\frac{\sigma}{\sqrt{n}}} \qquad (9.)$$

Whereby, σ represents the standard deviation from the ECAAR and *n* is the number of observations. In the case of this research n = 34.

Since the sample size is smaller than 100 and a non-normal distribution could be expected it is recommended to calculate median excess returns beside the mean excess return (Kabir & Roosenboom, 2003). Therefore a non-parametric *Wilcoxon-signed-rank-test* is used to indicate

whether the calculated median abnormal returns differ significantly from each other (De Veaux et al., 2011). Following hypothesis 1, the null hypotheses and alternative hypothesis for the event period are:

H_0	=	Median ECAAR 0	median ECAAR = 0
H_A	=	Median ECAAR is smaller than 0	median ECAAR < 0

The Wilcoxon signed rank test is defined as:

$$z = \frac{W^+ - \mu_W^+}{\sigma_W^+} \qquad (10.)$$

$$\mu_W^+ = \frac{n\,(n+1)}{4} \qquad \sigma_W^+ = \sqrt{\frac{n\,(n+1)(2n+1)}{24}}$$

W^+ represents the sum of ranks for positive differences, μ_W^+ is the mean of W^+ and σ_W^+ is the standard deviation from W^+. To make sure that the analysis is not intervened by Financial firms, the hypotheses will be tested for the total sample and for non-Financial firms.

Hypothesis 2

"The announcement impact (from right issues) differ for different industries."

To investigate whether different type of industries react differently to the announcement of right issues, the ECAAR is calculated for all industries via formula 8. In this case the CARs of the right issues from the same industries will be taken together. In total therefore nine different industries will be investigated, namely Industrials, Financials, Oil & Gas, Telecommunications, Technology, Consumer Goods, Basic Materials, Consumer Services and Health Care.

During the event period (day -1 till +1; day 0 till +1) the abnormal return will be tested if the announcement return differs significantly from each other. Following hypothesis 2, the next null hypotheses and alternative hypothesis can be made up:

H_0	=	Mean ECAAR for different industries are the same	$\mu_{ind1} = \mu_{ind2} = \mu_{ind3} = \mu_{ind4} = \dots$
H_A	=	Mean ECAAR for different industries differ	$\mu_{ind1} \neq \mu_{ind2} \neq \mu_{ind3} \neq \mu_{ind4} \neq \dots$

To test if the ECAAR from the different industries deviate significantly from each other an Analysis of Variance is performed (ANOVA-test). With this test it is possible to calculate if more than two means deviate from each other (De Veaux et al., 2011). Since the sample size is not very big, also an extra analysis is performed. Within this analysis, the Industrials, Financials and others are tested. All other industries than Industrials and Financials are taken in one group, because for some industries only three or less *hits* are available (Table 4, panel B). During the event period (day -1 till +1; day 0 till +1)

the abnormal return will be tested if the announcement return differs significantly from each other. Following hypothesis 2, the next null hypotheses and alternative hypothesis can be made up:

H_0	=	Mean ECAAR for different industries are the same	$\mu_{INDUSTRIALS} = \mu_{FINANCIALS} = \mu_{OTHER}$
H_A	=	Mean ECAAR for different industries differ	$\mu_{INDUSTRIALS} \neq \mu_{FINANCIALS} \neq \mu_{OTHER}$

Also an ANOVA-test is used in this case.

Hypothesis 3a, 3b and 3c

"If the size of a right issue increases, then the abnormal return will be more negative."

"If the discount of a rights issue increases, then the abnormal return will be more negative."

"Companies with higher market-to-book values on the moment of a right issue announcement, face more negative abnormal returns."

In order to test the Information Asymmetry hypothesis, three proxy variables are used. These proxy variables are based on other research like investigated in the literature review. The first one is the **size of the rights issue** (ISSUE_SIZE). This variable represents the issue size of the right issue relative to the market capitalization of the company on the moment one day before the issue.

In order to test hypothesis 3a, Model 1 is used: $\overline{ECAAR} = ß_0 + ß_1$ ISSUE_SIZE

The second proxy variable is the discount of the stock price, which is calculated via the **discount of the issue price relative to the stock price** one day before the announcement day (DISCOUNT).

In order to test the hypothesis 3b, Model 2 is used: $\overline{ECAAR} = ß_0 + ß_1$ DISCOUNT

The last proxy variable that is used for the information asymmetry hypotheses is the **market-to-book value** (MB) just before the issue. This value represents the market capitalization (amount shares at t_{-1} * stock price at t_{-1}) divided by the book value (shareholders equity) of the company at the end of the previous year. t_{-1} represents the day before the announcement of the issue.

In order to test hypothesis 3c, model 3 is used: $\overline{ECAAR} = ß_0 + ß_1$ MB_VALUE

In order to test the information asymmetry hypothesis in general, also a multiple cross-sectional regression analysis is used. The regression analysis is used to identify if characteristics from the information asymmetry hypothesis explain the variation in abnormal returns. The regression formula is given below. Model 4 is used for the multiple regression analysis.

Model 4: $\overline{ECAAR} = ß_0 + ß_1$ ISSUE_SIZE $+ ß_2$ DISCOUNT_1 $+ ß_3$ MB

The explanatory variables in this regression formula are the issue size, the discount and the market-to-book value. The dependent variable is the ECAAR, which is the weighted sum of all abnormal returns. The regression analysis is performed with the ECAAR of the two-day announcement period.

Hypothesis 4

"Right issues that cause the greatest change in leverage, also face higher negative abnormal returns".

In order to test the Free-Cash-Flow hypothesis, the proxy variable "Change in Leverage" is used. The change in leverage can be defined in multiple ways. Within this thesis, two forms of change in leverage are taken. The first one is the change in debt relative to equity (ΔLEV1). The D/E-ratio before and after the issue is taken as the change of leverage. Since no data is available of debt and equity immediately before and after the issue, data at the end of the year before the issue and at the end of the year of the issue is used. Debt is defined as short-term plus long-term liabilities and equity as total group equity.

In order to test the Free-Cash-Flow hypothesis, a cross-sectional regression analysis is performed. The regression analysis is used to identify if the change in leverage characteristic explains the variation in abnormal returns. The regression formula is given below:

Model 5: $\overline{\text{ECAAR}} = ß_0 + ß_1\ \Delta\text{LEV1}$

A second proxy for the change in leverage is defined by Masulis & Korwar (1985). In their research the change of leverage is defined as:

$$\Delta\text{LEV2} = \frac{D+(1-\alpha)\Delta D - ß\Delta E}{D+P+E+(1-\alpha)\Delta D+(1-ß)\Delta E} - \frac{D}{D+P+E} \qquad (11.)$$

In formula 11, D, P and E stands for the market values before the announcement of debt, preferred stock and common stock. ΔD and ΔE are the size of the debt issued and the size of the equity issued and α and ß describe the amount of debt and equity that are used for outstanding debt. Because this research only focuses on right issues, ΔD and α are zero. Like the first proxy for the free cash flow hypotheses, a second model is created.

Model 6: $\overline{\text{ECAAR}} = ß_0 + ß_1\ \Delta\text{LEV2}$

The explanatory variables in these regression formulas are the change in leverage ratios. The dependent variable is the ECAAR, which is the weighted sum of the abnormal returns during the two-day announcement period.

Hypothesis 5

"If the economic condition is positive, then the cumulative abnormal return (CAR) will be less negative, compared to the CAR from right issue announcements during negative economic conditions."

In order to test the Window of Opportunity hypothesis, four proxy variables are used. These proxy variables indicate the macroeconomic conditions (CBS, 2014; Kabir & Roosenboom, 2003). The first proxy variable is the annual growth factor of the Gross Domestic Product (GDP). The second proxy that describes the macroeconomic condition is the Work Unemployment rate. This proxy variable points out the percentage of the workforce that has no job. The third proxy variable that describes the macroeconomic condition of the economy is Consumer Confidence. This is the opinion and gives expectations from households about the developments of the Dutch economy. The last proxy variable is the performance of the AEX-index during the announcement. The cumulative real return of the AEX-index is calculated for a 101-day event period. A period of 50 days before the announcement and 50 days after the announcement is taken to see the condition of the capital market during the announcement.

In order to test the window of opportunity hypothesis, a cross-sectional regression analysis is used. The regression analysis is used to identify if the four proxy variables significantly regresses with the two-day announcement ECAAR. The four proxy variables are tested separately and together.

Model 1: $\overline{\text{ECAAR}} = ß_0 + ß_1$ GDP

Model 2: $\overline{\text{ECAAR}} = ß_0 + ß_1$ WORK UNEMPLOYMENT

Model 3: $\overline{\text{ECAAR}} = ß_0 + ß_1$ CONSUMER CONFIDENCE

Model 4: $\overline{\text{ECAAR}} = ß_0 + ß_1$ AEX PERFORMANCE

Model 5: $\overline{\text{ECAAR}} = ß_0 + ß_1$ GDP + $ß_2$ WORK UNEMPLOYMENT + $ß_3$ CONSUMER CONFIDENCE + $ß_4$ AEX PERFORMANCE

In the case of the window of opportunity hypotheses it is expected that if the GDP increases, the ECAAR becomes less negative. So a negative relationship is expected. This also holds for the proxy variables consumer confidence and the performance of the AEX. If these variables increases, then it is expected that the negative ECAAR will be less negative. On the other hand, a positive relationship is expected for the work unemployment rate and the ECAAR. If the work unemployment rises, then it is expected (in line with the window of opportunity hypothesis) that there are less favorable economic conditions and therefore also companies face more negative ECAARs.

PART III

Results

Results

This part covers the empirical results from this thesis about the announcement impact from right issues. The results are separated for every hypothesis which means that every hypothesis is analyzed on its own. Four sub-periods are analyzed surrounding the announcement impact of the right issues. In total 34 right issues were analyzed within these sub-periods. The sub-periods are defined as the:

➢ Pre-period	Day -20	till	Day -1
➢ Two-day announcement period	Day 0	till	Day 1
➢ Three-day announcement period	Day -1	till	Day +1
➢ After-period	Day +1	till	Day +20

Day 0 represents the day that these companies announce the right issue to the public. Within this research this it is the moment that the company presents for the first time a press release about the right issue to the public.

Hypothesis 1. The announcement impact

The announcement impact, occurred by the announcement of the right issue announcement, for the four sub-periods are presented in Table 6. The expected returns are estimated via the Market Model. The results show a highly significant negative return for both the mean and median values in Panel A, B, C and D at the 1% level for the two- and three-day announcement period. On the other hand, the mean and median values of the abnormal returns from the pre-announcement period and the after-announcement period do not deviate significantly from the actual return.

Two- and three-day announcement period

As can be seen in Panel A, the mean value of the CARs is -7.77% for the two-day announcement period and -6.04% for the three-day announcement impact. Panel A shows that the CARs from the two- and three-day announcement periods deviate significantly from zero at the 1% level. The same holds for the median of the CAR values in Panel B, with a two- and three day announcement period of -5.50% (t = 4.28, p = 1%) and -1.94% (t = 2.71, p = 1%). On the one hand, these negative cumulative abnormal returns are high relative to the research of Kabir & Roosenboom (2003) who found a two-day announcement return of only -2.79%. But on the other hand, Slovin et al. (2000) found an average two-day announcement return of -4.96%.

When comparing the CARs of the stocks to the cumulative return of the Capital Market Index, it shows that these values deviate significantly from each other for the two- and three-day announcement period. The t-statistic from the two-sample t-test shows that the mean CAR value from the stocks deviate on the 1% level with the cumulative return of the Market index. In addition,

the z-statistic in Panel D from the Wilcoxon-signed-rank-test shows that the median CAR values from the stocks deviate on the 1% level (2-day, t = 3.99; 3-day, t = 2.94) with the cumulative return of the Market Index.

Table 6. Cumulative abnormal returns of all sub-periods

The table presents the cumulative abnormal returns for the pre-announcement period (t_{-20} till t_{-1}), the two- and three-day announcement period (t_0 till t_1; t_{-1} till t_1) and the after-announcement period (t_1 till t_{20}). The abnormal returns are calculated via the Market Model and the cumulative abnormal returns are expressed in percentages.

Panel A and Panel B present the CARs and the corresponding t- and z-statistics to see if the CARs deviate significantly from zero. A normal t-test (mean) and a Wilcoxon-signed-rank-test (median) are performed.

Panel C and Panel D present the CARs and the corresponding t- and z-statistics to see if the stocks deviate significantly from the Market index. A two sample t-test (means) and a Wilcoxon-signed-rank-test (median) are performed.

The symbols *, ** and *** indicate the statistical significance at the 10%, 5% and 1% level. If these symbols are not given, no statistical significance was found.

Panel A. Mean cumulative abnormal returns

Period	Cumulative abnormal return	t-statistic
-20, -1	-0.48%	-0.18
0, +1	-7.77%	-4.65***
-1, +1	-6.04%	-2.93***
+1, +20	-1.76%	-0.94

Panel B. Median cumulative abnormal returns

Period	Cumulative abnormal return stocks	z-statistic
-20, -1	0.65%	0.12
0, +1	-5.50%	4.28***
-1, +1	-1.94%	2.71***
+1, +20	-2.33%	0.93

Panel C. Mean cumulative abnormal returns

Period	Cumulative abnormal return stocks	Cumulative return Market Index	t-statistic
-20, -1	-0.48%	0.16%	-0.21
0, +1	-7.77%	-0.33%	-4.32***
-1, +1	-6.04%	0.01%	-2.87***
+1, +20	-1.76%	0.34%	-0.99

Panel D. Median cumulative abnormal returns

Period	Cumulative abnormal return stocks	Cumulative return Market Index	z-statistic
-20, -1	0.65%	0.67%	0.29
0, +1	-5.50%	-0.27%	3.99***
-1, +1	-1.94%	-0.20%	2.94***
+1, +20	-2.33%	-0.15%	1.19*

Panel A and B from Table 6 show that neither the mean and the median values of the pre- and after-period deviate significantly from zero. In Panel C and D, only the median of the cumulative abnormal stock return deviates significantly at the 10% level (t = 1.19) from the cumulative Market Index return. All other CARs from the pre- and after-announcement period do not deviate from the Market Indexes. As can be seen, the two- and three-day CARs have the most negative returns. The mean and median values vary somewhat, indicating that some very negative figures are part of the sample.

Table 7. Average abnormal return per day

The table presents the average abnormal return of all companies for each day. In addition, the amount of negative stock returns is given as a percentage of all abnormal returns. This value represents the amount of negative stock returns of all 34 companies on the specific day. The fourth column presents the average market index return during the announcement period.

Event day	Average abnormal return (%)	Negative stock returns (%)	Average market index return (%)
-20	0.07%	50%	-0.22%
-19	-0.27%	50%	-0.31%
-18	0.39%	41%	0.26%
-17	-2.00%	82%	-0.20%
-16	0.91%	43%	0.09%
-15	-0.50%	68%	0.25%
-14	0.01%	50%	0.10%
-13	-0.17%	50%	0.25%
-12	-0.57%	56%	-0.09%
-11	0.04%	38%	-0.24%
-10	-0.29%	50%	0.07%
-9	0.05%	50%	-0.01%
-8	-0.21%	53%	0.16%
-7	-0.82%	53%	-0.02%
-6	0.40%	50%	0.14%
-5	0.21%	47%	-0.22%
-4	0.71%	44%	0.12%
-3	-0.24%	44%	-0.05%
-2	0.08%	53%	-0.25%
-1	1.73%	38%	0.34%
0	-5.47%	82%	-0.44%
1	-2.30%	71%	0.11%
2	0.11%	50%	0.15%
3	0.04%	53%	-0.10%
4	0.29%	56%	0.16%
5	-0.12%	59%	-0.15%
6	-0.28%	53%	0.01%
7	0.76%	44%	0.02%
8	-0.08%	56%	-0.26%
9	1.00%	38%	-0.29%
10	0.17%	47%	0.29%
11	-0.93%	65%	0.28%
12	0.00%	59%	0.35%
13	-0.33%	53%	-0.18%
14	0.12%	50%	0.14%
15	-0.32%	47%	-0.24%
16	-0.03%	56%	-0.05%
17	0.48%	44%	0.00%
18	-0.52%	76%	-0.06%
19	0.22%	53%	0.09%
20	-0.05%	38%	0.06%

The complete event period

Table 7 present the average abnormal stock returns for each day of the 41-day event period (day -20 till day +20), the amount of negative stock returns per day and the average Market Index return. In addition, figure 10a (next page) show the stock returns during the announcement of the right issue (red line) and the return of the Market Index (blue line). Figure 10b shows the cumulative abnormal returns for both the stocks and the Market Index during the announcement of the right issue.

Table 7 shows that the most negative average abnormal returns are on day -17, day 0 and day 1. During these days, also the amount of negative stock returns are the highest. On day -17 a negative abnormal return of -2.00% was found with 82% of all stock returns being negative. This amount of negative stock returns also holds for day 0, where the average abnormal return is -5.47%. The table and figures show that companies lose the most value at day 0. On day 1, 71% of all stock returns are negative, with an average negative abnormal return of -2.30%. Masulis & Korwar (1985) also found that the abnormal return of the complete sample is the most negative at day 0 and day 1 with the most number of negative stock returns. Figure 10a and 10b show these negative abnormal returns of the total sample on those days. On figure 10a it is possible to see a decline at day -17, day 0 and day 1. The figure shows three big dips at these days. Also figure 10b, in which the average abnormal returns are summed up, shows a dip at these days. Figure 10b shows that the cumulative return for the stocks during the 41-day event period is -7.71% and 0.03% for the Market Index.

How about Financial institutions?

Since Kabir & Roosenboom (2003) does not include Financial institutions in their sample and Iqbal (2008) treat them separately, table 8 shows the mean CAR of Financial institutions (n = 8) and the rest of the sample (n = 26). The pre-period, two-day period and the three-day period differ from each other, although it is not statistical significant. On the other hand, the table displays the difference for the after-period to be statistical significant at the 5% level. With a t-statistic of 2.27 found with a two-sample t-test. Table 8 shows that no obvious difference in abnormal stock returns was found between Financial institutions and the rest of the sample.

Table 8. Mean CAR from Financial institutions and all other industries.

The table shows the mean cumulative abnormal return for Financial institutions and the rest of the sample (all other industries) for all four sub-periods. Panel A.

Period	Mean CARs Financial institutions (n = 8)	Mean CARs Others (n = 26)	t-statistic
-20, -1	1.13%	-0.97%	-0.62
0, +1	-5.34%	-7.38%	-1.03
-1, +1	-3.89%	-5.42%	-0.64
+1, +20	-4.49%	0.28%	2.27**

Figure 10a and 10b. Average return and average cumulative return during the announcement date

Figure 10a shows the daily stock returns for the 41-day event window. The average return is calculated via the formula $\frac{\sum Stock\ returns\ on\ day\ t}{n}$, whereby n is the total sample size (34). Figure 10b shows the cumulative daily stock returns for the 41-day event window. The average daily stock returns are added to each other.

At both figures, day 0 represents the day of the announcement. The red line indicates the returns for the total sample of 34 right issues and the blue line indicates the returns for the Market Index.

Figure 10a.

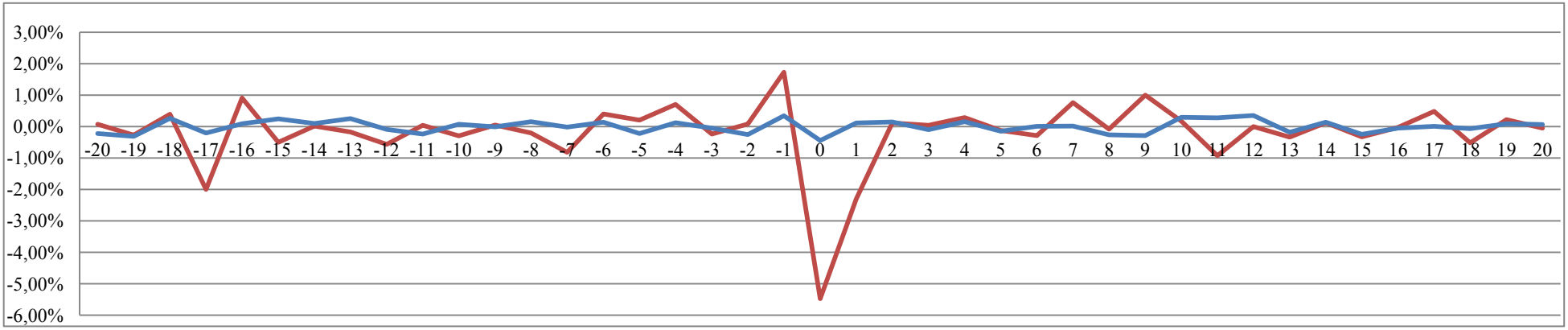
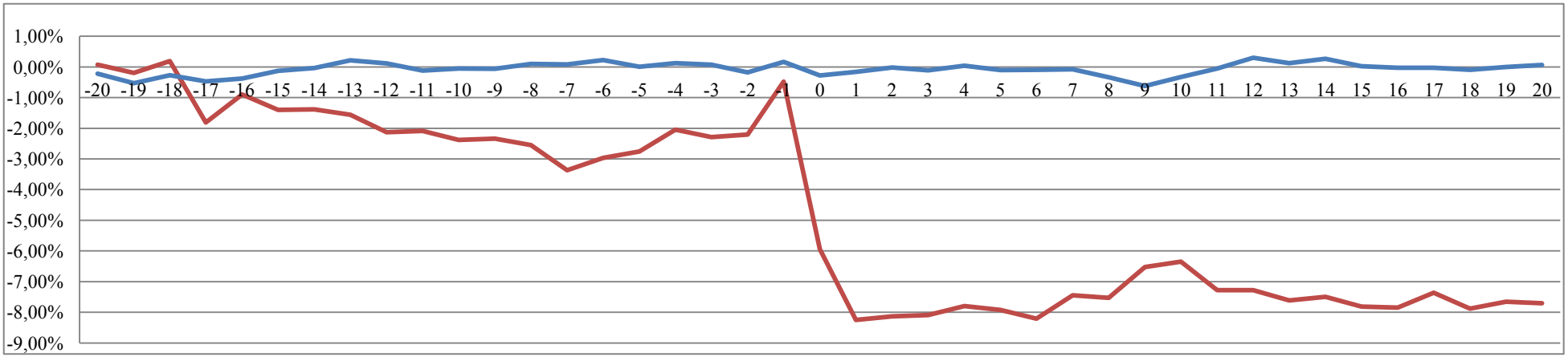


Figure 10b.



Hypothesis 2. Different type of industries

The sample of 34 right issues consists out of nine different types of industries. Table 4, Panel A, shows the cumulative abnormal returns for every industry within the four different sub-periods. It shows that the cumulative abnormal returns from all industries are negative on the two-day announcement period (100%). Compared to the negative stock returns in the pre-period announcement return (55.6%) and the after-period return (66.7%), the most negative cumulative stock returns are found at the two- (100%) and three-day announcement return (88.9%). Also, the table shows that 5 out of 9 industries face an overall decline for the 41-day event period.

The Telecommunications industry faces an on average -39.83% decline at the 41-day event period surrounding a rights issue. Especially the two-, three-day and the after-period are very negative. On the other hand, the Consumer Services industry faces a positive cumulative abnormal return of 17.21% during the 41-day event period. Although this industry like any other faces a negative CAR during the two-day announcement period, the pre- and after-period are both positive. Financials face a slight positive CAR in the pre-period and a negative return during the announcement of the right issue and afterwards. The Basic Material industry shows it the other way around. In the pre-period and during the announcement of the rights issue stocks decline, while the after-period CAR shows the highest positive return of all industries in the sample (+16.89%).

Table 9. Cumulative average return per industry

Panel A from table 4 presents the cumulative abnormal returns for every industry within five sub-periods. The last column shows the CAR of the industries for the total event period.

Panel B presents the cumulative abnormal returns of all Industrial firms, all Financial firms and all firms from other industries in different time periods.

Panel A.

Type of industry	N	Pre-period CAR	2-day CAR	3-day CAR	After-period CAR	41-day event period CAR
Industrials	11	-6.26%	-9.18%	-7.41%	1.44%	-11.01%
Financials	8	1.13%	-5.34%	-3.89%	-4.49%	-8.74%
Telecommunications	3	-6.95%	-19.31%	-20.45%	-20.26%	-39.83%
Technology	3	11.96%	-6.49%	3.38%	-0.95%	5.08%
Oil & Gas	3	11.51%	-1.57%	-0.01%	-3.64%	7.16%
Basic Materials	2	-2.94%	-3.89%	-7.06%	16.89%	11.08%
Consumer Goods	2	-4.81%	-5.09%	-1.70%	-1.05%	-8.02%
Consumer Services	1	15.95%	-5.87%	-8.75%	6.77%	17.21%
Health Care	1	-6.46%	-5.87%	-15.30%	-3.56%	-21.52%
Negative stock returns	-	5 (55.6%)	9 (100%)	8 (88.9%)	6 (66.7%)	5 (55.6%)

Panel B.

Type of industry	N	Pre-period CAR	2-day CAR	3-day CAR	After-period CAR	41-day event period CAR
Industrials	11	-6.26%	-9.18%	-7.41%	1.44%	-11.01%
Financials	8	1.13%	-5.34%	-3.89%	-4.49%	-8.74%
Others	15	2.61%	-8.12%	-7.13%	-0.83%	-5.40%

Since the sample is quite small, Panel B from table 4, shows the cumulative abnormal returns for Industrial firms, Financial firms and all Other firms. In this case, Others are all the companies from other industries than Industrials and Financials. Panel B shows that Industrials have the most negative reaction during the announcement of the right issue. This is especially the case during the pre-period in which the CAR of the Industrials is -6.26%, while the CAR of the Financials and Other industries is respectively 1.13% and 2.61% in the same period. Also when looking to the two-day announcement period of Industrials, the CAR is on average -9.18%, while all Other industries face a decline of -8.12% and Financials -5.34%. The total 41-day event period shows that Industrials face an average decline of -11.01%, Financials -8.74% and for Other industries -5.40%.

A real difference?

Table 10 displays the t-statistic for the difference between the mean value of each period and the CAR for each industry. A one-sample t-test is performed for every CAR-value. It shows that five CAR values from different industries deviate significantly from the mean of the particular periods at the 10%, two values at the 5% and four values at the 1% level. Three of four cumulative abnormal returns from the Telecommunications industry deviate significantly from the mean of the corresponding periods at the 1% level. Also the mean cumulative abnormal return of the after-period from the Basic Materials industry deviates highly significant (t = -4.93; 1% level) from the mean value of the after-period. In general, only 11 out of 36 CARs from the four different periods deviate from the mean CARs.

Table 10. T-statistics of the one-sample t-test for the difference in cumulative abnormal returns of industries

The table presents the t-statistics that describes if the CAR for every period deviates significantly from the mean of the sample. The figures presented in a red colour are significantly different than the mean of the specific period. The symbols *, ** and *** indicate the statistical significance at the 10%, 5% and 1% level. If these symbols are not given, no statistical significance was found.

Type of industry	Pre-period CAR	2-day CAR	3-day CAR	After-period CAR
Industrial	1.09	0.42	0.33	-0.84
Financial	-0.30	-0.73	-0.52	0.72
Telecommunications	1.22	3.48***	3.47***	4.89***
Technology	-2.35**	-0.39	-2.27*	-0.21
Oil & Gas	-2.27	-1.87*	-1.45	0.50
Basic Materials	0.46	-1.17	0.24	-4.93***
Consumer Goods	0.82	-0.81	-1.05	-0.19
Consumer Services	-3,11**	-0.57	0.65	-2.25*
Health Care	1.13	2.06*	2.23*	0.48
Mean	-0.48%	-7.77%	-6.04%	-1.76%
Standard Deviation	15.87%	9.94%	12.45%	11.36%

In addition, when looking to only three groups (Industrials, Financials, Other industries) no statistical

difference was founded between any of those values. The highest t-statistic found was 1.97 for industrial companies and no statistical significant difference was found. This table is for the readability of this thesis not given in the research.

Another test that compares all means with each other is the ANOVA test (De Veaux et al., 2011). Table 11 displays the p-statistics of the ANOVA test (analysis of variance) that describes if the means for of all industries deviate significantly from each other. The first row shows that only the mean of the CARs of all industries from the after-period (+1, +20) deviate significantly from each other at the 5% level. All other p-statistics are higher than 5%, so no significant difference is found for the means of all nine industries in those periods. Since the sample size of the industries other than Industrials and Financials is very small, a third group is created; Others. This is the group with all industries except Industrial and Financial companies. In none of the periods a significant difference was found for these three groups (Industials, Financials and Others).

Table 11. Anova-test for comparing all means from different types of industries

The table displays the p-statistics of the ANOVA test. The p-statistics indicate whether the means from all industries and from three groups deviate significantly from each other. The symbols *, ** and *** indicate the statistical significance at the 10%, 5% and 1% level. If these symbols are not given, no statistical significance was found.

	Pre-Period CAR	2-Day CAR	3-Day CAR	After-Period CAR
All industries	0.56	0.55	0.43	0.01**
Industrials, Financials and Others	0.33	0.70	0.82	0.47

Hypothesis 3. Information asymmetry

Hypothesis 3a.

Table 12 on the following page present summary results of the regression analysis for the two-day CAR with the size of the rights issue (Model 1; Appendix VII). The proxy variable for the information asymmetry hypothesis is the size of the issue, which is defined as the issue size divided by the Market Capitalization of the company at one day before the announcement of the right issue (t = -1).

The table reports that the regression is statistical significant at the 5% level, since the F-statistic of the regression formula is 4.25 with a p-value of 0.049. In addition, it shows that the relation between the two-day CAR and the size of the rights issue is negative since the correlation coefficient of -0.36 indicates a negative relationship between the two variables. When variable X (ISSUE_SIZE) increases, then variable Y (two-day CAR) decreases, which in this case means that the two-day CAR becomes more negative. Besides, the standard error of 0.038 for the slope is much smaller than the slope itself (-0.079) which indicates that the estimate is reasonably precise (De Veaux et al., 2011). Bigger right issues face on average also greater negative two-day announcement returns.

Table 12. Regression of Model 1: Two-Day CAR with the size of the rights issue

The table reports the regression results of the two-day CAR with the explanatory variable ISSUE_SIZE. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). The ISSUE_SIZE is expressed as the size of the issue divided by the Market Value of the company.

Model	Variable	Intercept	X- coefficient	F-statistic	p-value	Correlation	R^2
1	ISSUE_SIZE	-0.0407	-0.0790	4.25	0.048	-0.36	0.13

Four conditions/assumptions have to be met in order to guarantee the reliability of the results following De Veaux et al. (2011). These four conditions/assumptions are the:

1. Straight Enough Condition (no obvious bend in the scatter plot),
2. Independence Assumption (the CAR of right issue X_1 has no influence on the CAR of right issue X_2),
3. Does the Plot Thicken Condition (does the residual plot show any changes in the spread) and
4. Nearly Normal Condition (are the residuals normally distributed).

Appendix VIII shows the scatter plot and the plot of the residuals from the data used for hypothesis 3a, model 1. It shows that the scatter plot shows a negative relationship (no obvious bend is present). Also it is very unlikely that the CAR of one right issue influences the CAR of another right issue. The residual scatter plot of the CAR does not show any big changes in the spread. And last, also the histogram looks like a Normal model. Therefore it is assumed that all four conditions/assumptions are met and the results are reliable.

Hypothesis 3b.

Table 13 presents summary results of the regression analysis for the two-day CAR with the discount proxy variable (Model 2; Appendix VII). The proxy variable for the discount is defined as the discount of the issue price, relative to the stock price at one day before the announcement (t = -1).

The table reports that the regression is statistical significant at the 5% level, since the F-statistic of the regression formula is 4.32 with a p-value of 0.046. In addition, it shows that the relation between the two-day CAR and the discount of the new shares is negative since the correlation coefficient of -0.36 indicates a negative relationship between the two variables. When variable X (DISCOUNT) increases, then variable Y (two-day CAR) decreases, which in this case means that the two-day CAR is more negative when the discount of the shares was higher. Besides, the standard error of 0.056 for the slope is much smaller than the slope itself (-0.117) which indicates that the estimate is reasonably precise. The R^2 indicates that the explanatory variable DISCOUNT accounts for 13% of the

two-day CAR variation during right issues. This number almost correspond with the R^2 found by Kabir & Roosenboom (2003) of 0.17.

Table 13. Regression of Model 2: Two-Day CAR with the discount factor of the new issued shares

The table reports the regression results of the two-day CAR with the explanatory variable DISCOUNT. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). The DISCOUNT is expressed as the price of the new shares relative to the price of the shares one day before the announcement of the right issue (t = -1).

Model	Variable	Intercept	X- coefficient	F-statistic	p-value	Correlation	R^2
2	DISCOUNT	-0.0246	-0.1170	4.32	0.046	-0.36	0.13

Appendix VIII shows the scatter plot and the plot of the residuals from the data used for hypothesis 3b, model 2. It shows that the scatter plot shows a slight negative relationship. Also it is very unlikely that the CAR of one right issue influences the CAR of another right issue. The residual scatter plot of the CAR shows two outliers. And last, the histogram looks like a Normal model. Besides the two outliers, it is assumed that all four conditions/assumptions are met and the results are reliable enough.

Hypothesis 3c.

Table 14 presents the results of the regression analysis for the two-day CAR with the third proxy variable for the information asymmetry hypothesis; the Market-to-Book value (model 3; Appendix VII). The explanatory variable (M/B-value) is defined as the Market Capitalization at one day before the issue (t = -1) divided by the Book value (shareholders equity) at the end of the previous year.

The table reports that the regression is not statistical significant, since the F-statistic of the regression formula is only 2.26 with a p-value of 0.15. The relation between the two-day CAR and the Market-to-Book value is negative since the correlation coefficient of -0.29 indicates a slight negative relationship between the two variables. When variable X (M/B-value) increases, then variable Y (two-day CAR) slightly decreases, which in this case means that the two-day CAR becomes more negative when the M/B-value increases. Also the low R^2 of 0.08 indicates that the Market-to-Book value only accounts for 8% of the variation from the two-day CAR.

Table 14. Regression of Model 3: Two-Day CAR with the Market-to-Book values

The table reports the regression results of the two-day CAR with the explanatory variable MB_VALUE. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). The MB_VALUE is expressed as the Market Capitalization at day t = -1 divided by the Book Value at the end of the previous year (shareholders equity).

Model	Variable	Intercept	X- coefficient	F-statistic	p-value	Correlation	R^2
3	MB_VALUE	-0.0386	-0.0209	2.26	0.145	-0.29	0.08

Appendix VIII shows the scatter plot and the plot of the residuals from the data used for hypothesis 3c, model 3. The scatter plot shows a negative relationship, but also one outlier. As already outlined, it is very unlikely that the CAR of one right issue influences the CAR of another right issue. The residual scatter plot of the CAR shows also one outlier. And last, the histogram looks like a Normal model. Since not all conditions are met, an extra analyses is done without the outlier (table 15.). Table 15 reports that without the outlier the F-statistic, the correlation coefficient and the R^2 decreases. In addition, the P-value of 0.145 decreases to 0.301 which indicates that the outlier has much influence on the sample. But more importantly, both analysis (with and without outlier) shows no significant effect for the regression of the two-day CAR and the M/B-value.

Table 15. Regression of Model 3: Two-Day CAR with the Market-to-Book values (Without Outlier)

The table reports the regression results of the two-day CAR with the explanatory variable MB_VALUE without one big outlier. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). The MB_VALUE is expressed as the Market Capitalization at day t = -1 divided by the Book Value at the end of the previous year (shareholders equity).

Model	Variable	Intercept	X- coefficient	F-statistic	p-value	Correlation	R^2
3	MB_VALUE	-0.0277	-0.0317	1.12	0.301	-0.21	0.05

Model 4.

The regression results for model 4 (Appendix VII) are presented in table 16. The table reports that the regression is statistical significant, since the F-statistic of the regression formula is 3.25 with a p-value of 0.042. Which is less than the 5% alpha-level chosen. The relation between the two-day CAR and the three explanatory variables is negative since the correlation coefficient of -0.56 indicates a slight negative relationship between the variables. The R^2 increased very much in relation to all other variables on their own to 0.32. So, the three explanatory variables account for 32% of the variation from the two-day CAR. It shows that on average, evidence is found for the Information Asymmetry hypothesis, since Model 4 indicates a significant negative relation.

Table 16. Regression of Model 4: Two-Day CAR with three explanatory variables

The table reports the multiple-regression results of the two-day CAR and three explanatory variables. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). The ISSUE_SIZE is expressed as the size of the issue divided by the Market Value of the company. The DISCOUNT is expressed as the price of the new shares relative to the price of the shares one day before the announcement of the right issue (t = -1). The MB_VALUE is expressed as the Market Capitalization at day t = -1 divided by the Book Value at the end of the previous year (shareholders equity).

Model	Intercept	ISSUE_SIZE	DISCOUNT	M/B_VALUE	F-statistic	p-value	Correlation	R^2
4	-0.00098	-0.0611	-0.0504	-0.0174	3.25	0.042	-0.56	0.32

Appendix VIII shows the scatter plot and the plot of the residuals from the data used for hypothesis 3, model 4. The scatter plot shows a slight negative relationship, with an outlier. The CAR of one right issue does not influences the CAR of another right issue. The residual scatter plot of the CAR shows that all are within a acceptable range from the center line. And last, the histogram looks like a Normal model. From these scatter plots and the histogram it is assumed that all four conditions/assumptions are met.

Hypothesis 4. Free-cash-flow hypothesis

Table 17 presents the results of the regression analysis for the two-day CAR with the first proxy that is used for the change in leverage (Model 5; Appendix 9). The proxy variable for the change in leverage is defined as the change in Debt versus Equity. The leverage ratio (D/E) is calculated before the issue and after the issue. The difference of these ratios represent the change in leverage. The table (17) reports that the regression is statistical significant at the 5% level, since the F-statistic of the regression formula is 6.44 with a p-value of 0.017. In addition, it shows that the relation between the two-day CAR and the size of the rights issue is positive since the correlation coefficient of 0.43 indicates a positive relationship between the two variables. When variable X (ΔLEV1) increases, then variable Y (two-day CAR) increases, which in this case means that the two-day CAR becomes more negative when the change in leverage increases. So when the change in leverage is bigger, the CAR becomes more negative. The R^2 of this regression model is 0.18, which indicates that the change in leverage proxy accounts for 18% of the variance in the two-day CAR.

Table 17. Regression of Model 5: Two-Day CAR with the change in leverage (ΔLEV1)

The table reports the regression results of the two-day CAR with the explanatory variable ΔLEV1. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). The ΔLEV1 is expressed as the change in leverage before and after the right issue.

Model	Variable	Intercept	X- coefficient	F-statistic	p-value	Correlation	R^2
5	ΔLEV1	-0.0545	+0.0056	6.44	0.017	+0.43	0.18

When checking the assumptions, the plot of the residuals and the scatter plot of Model 5 (Appendix X, figure 11a) show two big outliers. The first one is from Kendrion, that faces a negative two-day CAR of -29.03% with a change in leverage of -31.98 and the second one is ING with a negative two-day CAR of -17.37% with a change in leverage of -16.78. These two outliers influence the results of model 5. Without these outliers the average decline in leverage is only -1.34 and with these outliers -2.82. Therefore an extra analysis is performed without these outliers. Figure 11b shows the scatter plot without the outliers. The positive correlation of 0.43 changes in a weak negative correlation of only -0.17.

Figure 11a and 11b. Scatterplot of model 5 with and without outliers

Figure 11a. Scatterplot of model 5

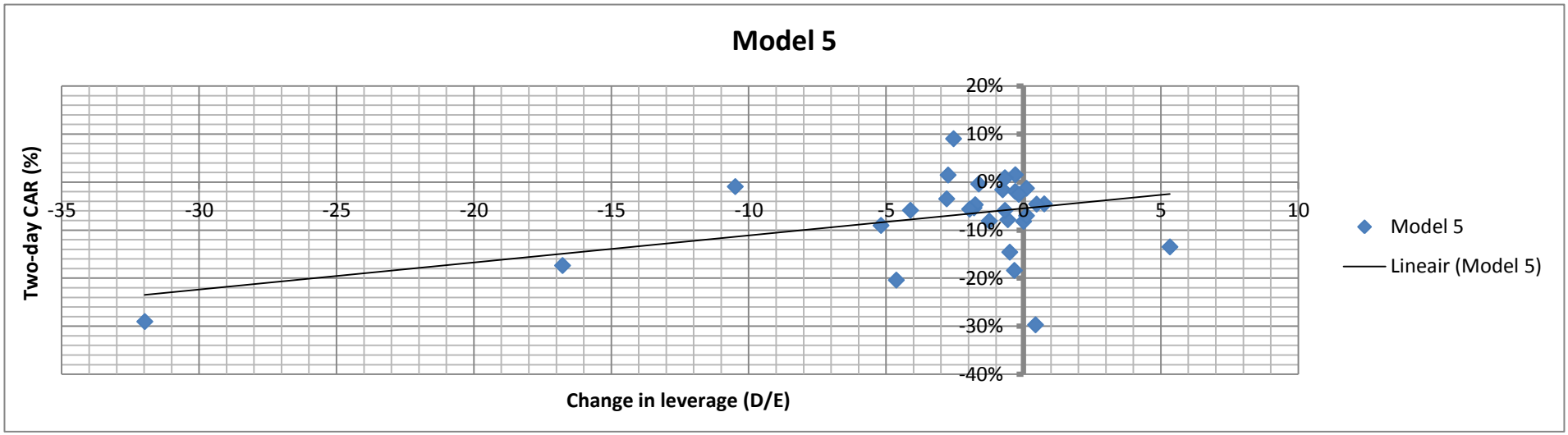


Figure 11b. Scatterplot of model 5 without outliers

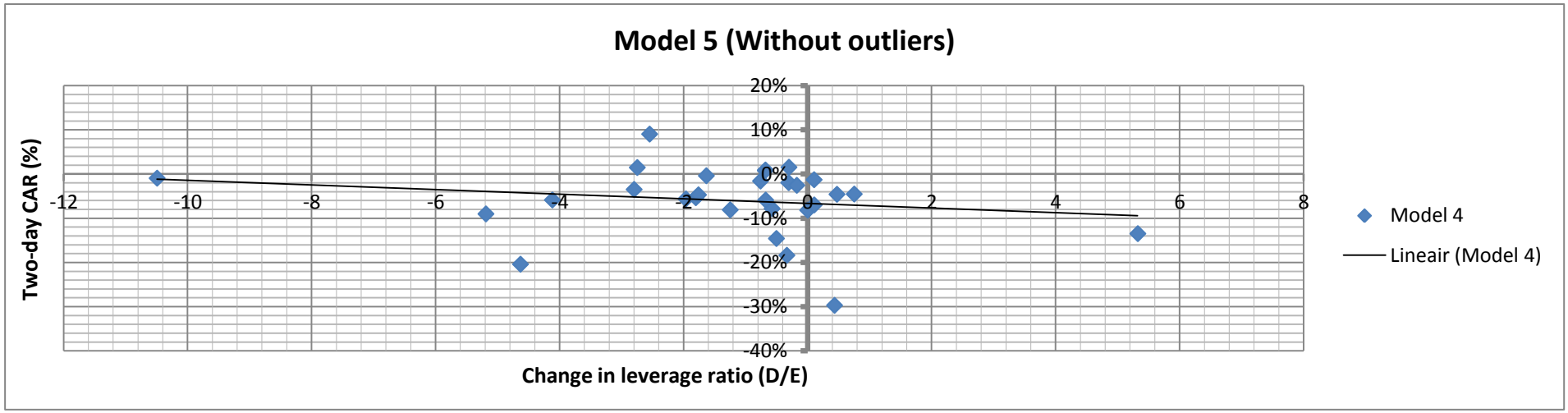


Table 18 reports the summary results for the regression analysis of model 5 (Appendix IX) without the outliers. While model 5 with the two outliers reports a positive X-coefficient, a negative X-coefficient was found for the model without the outliers. In addition, also the R^2 decreases from 0.18 to 0.03 and the F-statistic becomes much lower (0.885). The model also loses its significant value, since the p-value of 0.355 is higher than the maximum p-value of 5%.

Table 18. Regression of Model 5: Two-Day CAR with the change in leverage (ΔLEV1) without outliers

The table reports the regression results of the two-day CAR with the explanatory variable ΔLEV1 without two major outliers. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). The ΔLEV1 is expressed as the change in leverage before and after the right issue.

Model	Variable	Intercept	X- coefficient	F-statistic	p-value	Correlation	R^2
5	ΔLEV1	-0.0662	-0.0052	0.885	0.355	-0.18	0.03

A second proxy variable?

The results of model 5 with and without outliers present some conflicting results. Therefore a second proxy variable is presented; model 6 (Appendix IX). Table 19 presents the results of the regression analysis for model 6. Like model 5 (with outliers) the correlation factor is also positive, indicating a less negative two-day CAR when the change in leverage is also lower. The regression model is significant at the 5% level, since a F-statistic of 4.210 is founded with a corresponding p-value of 0.049. Also the R^2 increases in relation to model 5 without the outliers and indicates that the explanatory variable ΔLEV2 accounts for 13% of the variance of the two-day CAR.

Table 19. Regression of Model 6: Two-Day CAR with the change in leverage (ΔLEV2)

The table reports the regression results of the two-day CAR with the explanatory variable ΔLEV2. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). The ΔLEV2 is expressed as the change in leverage before and after the right issue calculated via the formula presented by Masulis & Korwar (1985); $\Delta LEV2 = \frac{D+(1-\alpha)\Delta D-\beta\Delta E}{D+P+E+(1-\alpha)\Delta D+(1-\beta)\Delta E} - \frac{D}{D+P+E}$

Model	Variable	Intercept	X- coefficient	F-statistic	p-value	Correlation	R^2
6	ΔLEV2	-0.0234	+0.6041	4.210	0.049	+0.356	0.13

Hypothesis 5. Window of opportunity hypothesis

For an investigation to the window of opportunity hypothesis a single and multiple regression analysis is performed. The regression in table 20 (Panel A) shows the results of the single regression analysis and Panel B the results of the multiple regression analysis. From table 20, panel A, it can be observed that the two-day CAR is slight positive related to the GDP and the Consumer confidence variables, while on the other hand, it almost has no relation with the Work unemployment rate (correlation: -0.02) and the AEX index performance (correlation: -0.01) variables. In addition, not one

of the four variables is significantly related to the two-day CAR. All p-values are much higher than the required 5%-level. The multiple regression analysis (Panel B) also indicates a non-significant relation with an F-statistic of 0.27 and a corresponding p-value of 0.89. The R-squared is also very low, indicating that the four variables only account for 4% of the variance in the two-day CAR. The results of Model 11 provide no evidence for the window of opportunity hypothesis.

Table 20. Regression of Model 7, 8, 9, 10 and 11

Panel A reports the regression results of the two-day CAR with four explanatory variables of the window of opportunity hypothesis. The two-day CAR represents the cumulative abnormal return from day 0 (right issue announcement day) till one day after the announcement day (t = +1). Variable 1, GDP, represents the annual growth factor of the Gross Domestic Product. Variable 2, WORK_UNEMPLOYMENT, represents the percentage of the workforce that has no job. The third explanatory variable, CONSUMER_CONF, represent the opinion and expectations of Dutch households about the developments of the Ducth economy. The last variable, AEX_INDEX_PERFORMANCE, presents the cumulate real return of the AEX index surrounding the announcement of the right issues. A 101-day event period is calculated.

Panel B reports the multiple-regression results of the two-day CAR with all four explanatory variables.

Panel A.

Model	Variable	Intercept	X- coefficient	F-statistic	p-value	Correlation	R^2
7	GDP	-0.0776	+0.2895	0.162	0.69	+0.07	0.0050
8	WORK UNEMPLOYMENT	-0.0670	-0.1981	0.018	0.89	-0.02	0.0005
9	CONSUMER CONFIDENCE	-0.0539	+0.0012	0.84	0.37	+0.16	0.0256
10	AEX INDEX PERFORMANCE	-0.0774	-0.0097	0.005	0.94	-0.01	0.0002

Panel B.

Model	Intercept	GDP	WORK_UN	CONS_CONF	AEX	F-statistic	p-value	Correlation	R^2
11	-0.0999	-0.3417	1.2089	0.0021	-0.0283	0.27	0.89	+0.19	0.04

When checking the assumptions (Appendix XII), it shows that only the scatter plot of model 9 shows a slight relationship and model 10 shows a bend. Besides, on all scatter plots some outliers can be seen. The residual scatter plot and the histogram of the CAR show also some outliers. On the other hand, the histograms look like a Normal model. In addition, it is assumed that the CAR of one right issue does not influences the CAR of another right issue. From these scatter plots and the histogram it shows that not all assumptions/conditions are met. Therefore, the results has to interpreted with caution.

Summary of results

Table 21 presents a summary of all empirical results of this thesis. The key findings concerning hypothesis 1, about the announcement impact of right issues, is that stocks face a significantly decrease in value when companies announce the right issue to the public at the 1% level. Compared to the period before and after the announcement of the right issue, the stocks have a negative abnormal return. Mixed evidence was found for hypothesis 2, since the results of the ANOVA test are not significant. On the other hand, two out of nine industries deviate significantly from the mean of the 2-day CAR at the 10% level and one out of nine industries at the 1% level.

The results for the Information Asymmetry hypothesis indicate that two of three proxy variables are significantly related to the 2-day CAR. The issue-size and the discount factor are both significant at the 5% level. Indicating that when the issue-size/discount increases, also the two-day CAR becomes more negative. Otherwise, the third explanatory variable is not significantly related, about the M/B-value. Although the results are in line with hypothesis 3c (higher M/B-value → two-day CAR becomes more negative), the results are not significant. But, in general, the multiple regression analysis (model 4) shows that the three explanatory variables are significantly related to the two-day CAR at the 5%-level ($F = 3.25$; $p = 0.042$).

Results were found for the Free-Cash-Flow hypothesis. A significant relation was found for both proxy variables. The ΔLEV1 proxy variable (D/E) has a p-value of 1.7% and the ΔLEV2 proxy variable ($\Delta LEV2 = \frac{D+(1-\alpha)\Delta D-\beta\Delta E}{D+P+E+(1-\alpha)\Delta D+(1-\beta)\Delta E} - \frac{D}{D+P+E}$) has a p-value of 4.9%. Both indicating, that when the change in leverage increases, the two-day CAR becomes more negative. On the other hand, an extra analysis was done without two big outliers for proxy ΔLEV1 and then the p-value becomes 35.5%. Indicating no significantly relationship between the change in leverage and the two-day CAR.

Hypothesis 5 about the Window of Opportunity hypothesis did not found any support for window of opportunity theory. The p-values for all four proxy variables (GDP, Work Unemployment Rate, Consumer Confidence and the AEX-index Performance) are very high (69%, 89%, 37% and 94%) and the correlation factor shows no or a really weak relation with the two-day CAR. Also the R^2 for every variable is very low. The multiple regression formula shows the same result with a p-value of 89% and an R^2 of only 0.04. So no evidence was found for hypothesis 5 about the window of opportunity.

Table 21. Summary of empirical results

The table presents the empirical results of all 7 hypotheses. Hypotheses 1 and 2 are general hypotheses, hypotheses 3a, 3b and 3c relate to the information asymmetry hypothesis, hypothesis 4 relate to the free-cash-flow hypothesis and hypothesis 5 relate to the window of opportunity hypothesis.

Hypothesis	Empirical evidence
General hypotheses	
1. If Dutch listed companies announce right issues to the public, then stock prices decrease (negative announcement impact).	Evidence found from the mean and median tests. These tests show a negative two- and three-day CAR at the 1% level.
2. The announcement impact (from right issues) differ for different industries.	No evidence found from the ANOVA test and the mean test.
Information asymmetry hypotheses	
3a. If the size of a right issue increases, then the abnormal return will be more negative.	Evidence found from the regression analysis at the 5% level.
3b. If the discount of a right issue increases, then the abnormal returns will be more negative.	Evidence found from the regression analysis at the 5% level.
3c. Companies with higher market-to-book values on the moment of a right issue announcement, face more negative abnormal returns.	No evidence found from the regression analysis (p-value of 0.145).
Information Asymmetry hypothesis in general	Evidence found.
Free-cash-flow hypothesis	
4. Right issues that cause the greatest change in leverage, also face higher negative abnormal returns.	Evidence found for proxy variable 1 and 2 at the 5% level. Without two outliers no evidence was found from the regression analysis of model 5 (p = 35.5%) of proxy variable 1.
Free-Cash-Flow hypothesis in general	Partial evidence found.
Window of opportunity hypothesis	
5. If the economic condition is positive, then the cumulative abnormal return (CAR) will be less negative, compared to the CAR from right issue announcements during negative economic conditions.	No evidence was found from the regression analysis.
Window of Opportunity hypothesis in general	No evidence found.

PART IV

Conclusions

Sub-questions

Limitations: Reliability & Validity

Further research

Theoretical Implications

Practical Implications

PART IV Conclusion

Conclusions

In the introduction of this thesis, four sub-questions were created to answer the general research question. Based on the results, these research questions will be answered here.

Sub question 1.

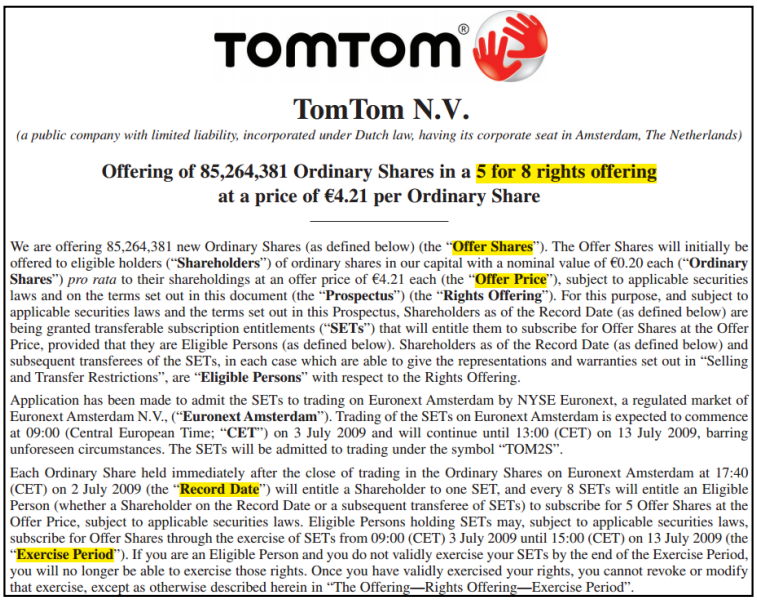
What are right issues?

A right issue is form of equity offering, in which companies issue new stocks to the market with emption for existing stockholders (Hillier et al., 2010). Companies increase their amount of stocks and give their stockholders *rights* which enables them to buy new shares. The new shares are called the O*ffer Shares* with a certain O*ffer Price*. Every stockholder that holds stocks (rights) at the Record Date, can claim new Offer Shares. The Record Date is the date on which rights are given to stockholders. People that buy stocks after the Record Date are not entitled to buy new Offer Shares. When existing stockholders make no use of the new shares, their owner-percentage in the company declines. This is called dilution. By executing those rights and buying new offered shares they can prevent their selves from dilution. Basically, stock holders have three options; 1. Execute the rights and receiving new shares, 2. Sell their rights to the public or 3. Let the rights expire (Beurscourant, 2007).

Before every right issue, which is conducted in the Exercise Period, a prospectus is spread to the public. Figure 12 shows the prospectus of the right issue of TomTom N.V. in 2009.

Figure 12. Prospectus from the right issue of TomTom N.V.

The figure shows a part of the first page from the right issue of TomTom N.V. The words that are marked in yellow are the ratio of rights for new shares, the amount of new shares (Offer Shares), the price of the new shares (Offer Price), the date that the rights are set (Record Date) and the moment that the right issue is executed (Exercise Period).



TOMTOM®

TomTom N.V.

(a public company with limited liability, incorporated under Dutch law, having its corporate seat in Amsterdam, The Netherlands)

Offering of 85,264,381 Ordinary Shares in a 5 for 8 rights offering at a price of €4.21 per Ordinary Share

We are offering 85,264,381 new Ordinary Shares (as defined below) (the "**Offer Shares**"). The Offer Shares will initially be offered to eligible holders ("**Shareholders**") of ordinary shares in our capital with a nominal value of €0.20 each ("**Ordinary Shares**") *pro rata* to their shareholdings at an offer price of €4.21 each (the "**Offer Price**"), subject to applicable securities laws and on the terms set out in this document (the "**Prospectus**") (the "**Rights Offering**"). For this purpose, and subject to applicable securities laws and the terms set out in this Prospectus, Shareholders as of the Record Date (as defined below) are being granted transferable subscription entitlements ("**SETs**") that will entitle them to subscribe for Offer Shares at the Offer Price, provided that they are Eligible Persons (as defined below). Shareholders as of the Record Date (as defined below) and subsequent transferees of the SETs, in each case which are able to give the representations and warranties set out in "Selling and Transfer Restrictions", are "**Eligible Persons**" with respect to the Rights Offering.

Application has been made to admit the SETs to trading on Euronext Amsterdam by NYSE Euronext, a regulated market of Euronext Amsterdam N.V., ("**Euronext Amsterdam**"). Trading of the SETs on Euronext Amsterdam is expected to commence at 09:00 (Central European Time; "**CET**") on 3 July 2009 and will continue until 13:00 (CET) on 13 July 2009, barring unforeseen circumstances. The SETs will be admitted to trading under the symbol "TOM2S".

Each Ordinary Share held immediately after the close of trading in the Ordinary Shares on Euronext Amsterdam at 17:40 (CET) on 2 July 2009 (the "**Record Date**") will entitle a Shareholder to one SET, and every 8 SETs will entitle an Eligible Person (whether a Shareholder on the Record Date or a subsequent transferee of SETs) to subscribe for 5 Offer Shares at the Offer Price, subject to applicable securities laws. Eligible Persons holding SETs may, subject to applicable securities laws, subscribe for Offer Shares through the exercise of SETs from 09:00 (CET) 3 July 2009 until 15:00 (CET) on 13 July 2009 (the "**Exercise Period**"). If you are an Eligible Person and you do not validly exercise your SETs by the end of the Exercise Period, you will no longer be able to exercise those rights. Once you have validly exercised your rights, you cannot revoke or modify that exercise, except as otherwise described herein in "The Offering—Rights Offering—Exercise Period".

In the case of TomTom N.V. for example 85.264.381 new shares are offered to the stockholders. For every 8 rights (stocks) the stockholders receive 5 new stocks which he or she can buy for € 4.21,-. Which is a discount of 43.7% relative to the stock price of €7.48 at the day of the announcement. At a right issue, companies normally give their stockholders a discount on the Offer Shares, since the amount of stocks increases and therefore in theory also the value of the stocks decreases (Hillier et al., 2010). Banks work together with the issuing companies to determine the price for the Offer Shares and they to sell the New Shares, if necessary, to the market. This is also called as a syndicate. Within a right issue, normally stockholders buy the additional stocks, so the banks only sell stocks of which the rights are not executed in a so called Rump Offering.

Sub-question 2.

How do stock prices from listed companies behave when companies announce right issues to the market? And what is the explanation for this behavior?

The investigation to the behavior of stock prices during the announcement of right issues leads to some interesting conclusions. In general, the results indicate that stock prices decline when right issues are announced to the market (Table 6), which is in line with the findings of Eckbo & Masulis (1995), Slovin et al. (2000), Kabir & Roosenboom (2003) and Iqbal (2008). And also in line with the theory outlined by Hillier et al. (2010), that the value of a stock decreases when more stocks are issued to the public. The mean and median values of the two-day and three-day announcement returns deviate significantly at the 1% level from zero and from the Market Index. This means that it can be concluded that when companies announce right issues, stocks decline below zero and stocks decline more than the Market Index.

Some explanations are found that explain the negative effect. In line with the Information Asymmetry hypothesis, which states that right issues signal information to the market, evidence is found for a greater negative effect for big right issues and high discount right issues. The study finds that if the size of the right issues and the discount of the right issues increases, also the negative effect is greater. Which is in line with Asquith & Mullins (1985), Karim et al. (2001) and Kabir & Roosenboom (2003). It can be concluded that big right issues and right issues with a high discount signals bad information to the market with a higher negative market reaction. On the other hand, no evidence was found for the third proxy variable; market-to-book value. It can be concluded that overvalued companies are not more sensitive for right issues and an overvalued company does not signals bad news to investors. This is the opposite finding of Loughran and Ritter (1997) and Brown et al. (2006) who did found support for this hypothesis.

Another explanation for the negative announcement effect is the Free-Cash-Flow hypothesis, which states that leverage decreasing activities lead to greater negative effects. Like Smith Jr. (1985) and Choe, Masulis and Nanda (1992) the regression models are statistical significant, only it has to be mentioned that model 5 becomes statistical insignificant when two major outliers are removed from the sample. On the other hand, model 5 (with outliers) and model 6 are statistical significant. And therefore the results indicate partial emperical support for the Free-Cash-Flow hypothesis.

Sub-question 3.

What kind of industries can be distinguished from each other? And what influence does the type industry have on the announcement impact of right issues?

Following the Industry Classification Benchmark (ICB), ten different types of industries can be distinguished from each other; Oil & Gas, Basic materials, Industrials, Consumer Goods, Health Care, Consumer Services, Telecommunications, Utilities, Financials and Technology firms (ICB, 2014). Industries vary from each other by industry growth, profitability, dividend payments, liquidity ratios or for example leverage ratios (Leach & Melicher, 2011).

Table 9 (page 56) displays the cumulative abnormal returns of the different time periods for all ten industries. It can be concluded that during the announcement of a rights issue all industries face negative returns. 100% of the two-day CARs are negative and 88.9% of the three-day announcement CARs are negative. The Anova-test does not display a significant difference between the means of the ten different industries. Therefore it can be concluded that the type of industry has not any influence on the two- and three-day announcement impact.

Sub question 4.

What kind of variables define the sentiment of the economy? And what influence does the market sentiment have on the announcement impact of right issues?

The market sentiment describes the state of the economy. Does the economy grows? or Does the economy declines? Based on From Rila (2007), Ozyildirim et al. (2010), Subeniotis et al. (2011) and the CBS (2013) four variables are defined that describe the market sentiment; Gross Domestic Product (GDP), Work unemployment rate, Consumer confidence and the Stock market index. To test the window of opportunity hypothesis, these four variables are regressed with the two-day CAR.

None of the models (7, 8, 9, 10 and 11) in this research found any significant relation between the two-day CAR and the variables. Therefore no evidence is found for the window of opportunity hypothesis. The thesis did not found support for greater negative cumulative abnormal returns when

the economic indicators indicate a negative sentiment. Like Kabir & Roosenboom (2003) I did not found support for this hypothesis.

General research question.

What is the short-term impact from right issue announcements on stock prices from Dutch listed companies and does the market sentiment influences this relationship?

From the sub-questions it can be concluded that the short-term impact from right issues on stock prices is negative. No matter what the type of industry is. The information asymmetry hypothesis and the free cash flow hypothesis are two explanations for this negative market reaction. This thesis found support for two of three proxy variables for the information asymmetry hypothesis and partial support for the free-cash-flow-hypothesis. It shows that the negative short-term impact from right issues is greater when:

1. the discount of the issue is higher.
2. the size of the issue is higher and
3. the change in leverage is higher.

On the other hand, no evidence was found for the window of opportunity hypothesis, which states that companies issue equity during favorable economic conditions. The results show that not one of the four proxy variables is significantly related to the two-day CAR. The market sentiment therefore does not influences the relation between the announcement of a right issue and the stock market return.

Limitations: Reliability and Validity

Every study has its limitations and therefore also this study.

Reliability

Is the data reliable? Is the research design reliable? Are the results reliable?

Data access. The data used in this study is not gathered together from one source. Different sources on the internet are used to get information about stock prices, market-to-book values, debt ratios and equity ratios. It has to be said, that only internet websites are chosen that are well known and marked as reliable (e.g. Yahoo, AEX.nl). This has to be taken in mind, but on the other hand no datasets were available because of money aspects. The researcher contacted Thomson Reuters to get access to the SDC Platinum database, but this database was only available if the University subscribed to the database. Since the University of Twente did not have this database in their portfolio, I chose to collect the data by myself via the internet. Therefore, it cannot be guaranteed

that all right issues are found in the selected time period between 2001 and 2013. For further research it should be noted, that they should use a database if available.

Test, Results and Time Period. This study uses an event study to capture the impact of the announcement of a rights issue on stock prices. Almost all other studies in the field (Table 1) also performed an event study to capture the impact. In addition, statistical tests like regression analysis are performed. Following Eckbo (2007, ch. 1) event studies offer reliable measurements, due to the use of daily stock returns and sophisticated statistical analysis. An event study just measures what it has to measure, like other studies. The results therefore, should be reliable and be the same when researching with the same research design. On the other hand, it has to be mentioned that the research period covers two major economic events; the Internet Bubble in 2000 and the Financial Crisis started in 2008 (The Economist, 2013). The period between 2001 and 2013 can be described as one of the most turbulent periods of the past 30 years. Therefore, since this Time Period might not be a "normal" time period, any conclusions of this thesis that are compared with other studies performed in a "normal" time period have to be made with caution. The results coming from this study can be different and other than studies performed in other time periods without any crisis or bubble.

Validity

Did this research measures what it intends to measure?

Internal validity

Testing. Event studies have been applied in finance research to a wide extent like mergers and acquisitions, earnings announcements, and issuing new debt or equity (MacKinlay, 1997). This methodology allows us to measure the exact information of the announcement and offering of new stocks. An event study provides this study the design to capture the announcement impact effectively. With this method this study measures what it wants to measure.

Face validity. In the opinion of the researcher it looks like that what is measured, also measures what it is supposed to measure. The task was to measure stock returns and three theories; information asymmetry hypothesis, free-cash-flow hypothesis and the window of opportunity hypothesis. The proxy variables for these theories (e.g. discount of new shares, market to book value, change in leverage, etc) are picked from multiple sources in theory. Therefore it is assumed that face validity is good, since daily stock prices and the proxy variables measure the concepts of the hypotheses.

Construct validity. As already outlined in the Face validity section, the proxy variables are chosen and based on different sources. Based on theory some theoretical expectations are developed, what is necessary to get valid constructs following Babbie (2010). The research from Loughran & Ritter

(1997), Armitage (1998), Kabir & Roosenboom (2003), Brown et al. (2006) and Agarwal & Mohanty (2012) provide evidence that other studies used the same constructs as this thesis did for the information asymmetry hypothesis; issue size, discount and market-to-book value. The same holds for the construct of the free-cash-flow hypothesis, in which the constructs are coming from Masulis & Korwar (1985), Smith Jr. (1985) and Choe, Masulis & Nanda (1992). And last, the constructs for the window of opportunity hypothesis are based on Rila (2007), Ozyildirim et al. (2010), Subeniotis et al. (2011) and the CBS (2013). All constructs (proxy variables) are related to the concepts and theories.

Content validity. The proxy variables that are used to test the hypotheses are based on theory and articles. The variables are chosen from literature and the same variables as other scholars in the field are used. On the other hand, when looking to hypothesis 5, the window of opportunity hypothesis, it has to be concluded that the chosen variables does not show any coherency with the two-day CAR. For this hypothesis it must be said that the proxy variables does not include all meanings of the concept (window of opportunity hypothesis). The R^2 and the correlation coefficients are much lower for hypothesis 5 than it is the case for all other hypotheses. The content validity for hypothesis 5 is therefore very low. It does not measure the concepts of the theory of the window of opportunity. For all other hypotheses, the R^2 is between 0.03 and 0.32 and the correlation coefficient between 0.18 and 0.56. The content validity of this study therefore can be called sufficient for hypotheses 1,2, 3 and 4, but the content used for hypothesis 5 has to be interpreted with caution.

External validity

Are the conclusions generealizable to the “real” world?

Sample size. Although one other study uses even less right issues (Kang & Stulz, 1996; 28 right issues), compared to most studies, 34 right issues is a low number. For example, Kabir & Roosenboom (2003) used 58 right issues, Tsangarakis (1996) used 59 right issues, Iqbal (2008) used 1039 right issues and Shahid et al. (2010) used 545 right issues in their research. The external validity (generalisability) of this study might not be very high, because of the limited sample size. In addition, when looking to the sample size of different industries in Table 4 (Panel A) it shows that only the group size of Financials and Industrials is bigger than three right issues. All other types of industries have only three or less right issues. Therefore, the conclusions about the CAR about these industries have to be taken with caution.

Further Research

Research in the field to right issues is not conclusive, but a lot of research has been done. In the opinion of the researcher, research have to be done to the reason of right issues and the relation with the two-day CAR. In as far as the researcher knows, not any research has done some research to

the reason of a right issue and its relation with the announcement impact. Possible reasons are for example, that it is necessary to recover the financial position, to finance an acquisition, to finance investments or to repay the debt. The relation between the "reason" of issuing and the announcement impact is interesting, since it can be investigated if positive reasons (new investments) have a less negative return than for example right issues that are made due to some negative reasons (recover financial position).

Besides, the announcement impact could be assessed for right issues in which big stockholders announce to buy new shares. I could imagine that investors would react more positive when big stockholders adopt a big percentage in the right issue, because this signals to the market that the stockholders are confident about the company.

And third, more research should be done to different industries. This study complements the current body of knowledge by separating all industries and calculating the CARs for different time periods. But a serious limitation of this study is the sample size. Therefore, more research can be done to the abnormal returns of different industries. And then also the relation between the CARs and the sentiment in the markets can be investigated, to see if some industries are more sensitive for economic conditions.

Theoretical and Practical implications

Theoretical implications

The research to the impact of equity offerings and especially to right issues is still developing. Till now, the research in this field is not conclusive (Agarwal & Mohanty, 2012). Research in the field concerning seasoned equity offerings can be classified in two main research topics (Armitage, 1998):

1. Flotation methods for issuing new equity and their related costs
   and
2. The reaction of the market after the announcement of seasoned equity offerings.

This thesis provides theoretical implications for the research conducted in the second topic noted by Armitage. The first implication is that new evidence is found for a negative announcement effect for right issues. In addition, evidence was found for two major theories; the information asymmetry hypothesis and partial evidence for the free-cash-flow hypothesis. An implication is that the models used in this thesis can serve as a framework for testing these hypotheses. Academics and others involved in theory building, have some models which they can use.

This theses also sheds light on the announcement impact for different industries. As far as the researcher knows, scholars in the field only performed research to Industrials and Financials. Although the sample size was limited, this research provides some methodology to test differences between the announcement impact of industries.

On the other hand, no evidence was found for the window of opportunity hypothesis. This theses adds some to the findings of Kabir & Roosenboom (2003), since they also did not found support for this hypothesis. Based on the R^2 it shows that the proxy variables (GDP, Work Unemployment rate, Consumer Confidence and the AEX return) do not explain much of the variance in the two-day announcement CAR. An implication of this study to theory is therefore, that these variables do not reflect the window of opportunity hypothesis. Since these variables were based on theory, an theoretical implication is that other variables have to be chosen, which reflect this hypothesis.

Practical implications

The study shows that companies that issue equity via a right issue face on average a decline in stock prices of 7.8% during the two-day announcement period. This period is the most viable when looking to the 41-day event period taken in this study (Figure 10a and 10b). And although no significant difference between industries was found, the results show that the magnitude between industries deviate some from each other (Table 9).

Also good to know for businesses is the fact, that the discount and the issue size are important indicators for the public with a significant influence on the stock price reaction. Businesses that give their stockholders a huge discount on their stocks, face a higher decline in stock prices. And the same is true for bigger right issues. On the other hand, no significant relation was found between the market-to-book value and the two-day CAR, so based on this research companies do not have to give much attention to this figure. Since it does not show to have any influence on the announcement impact.

The time in which companies issue equity, does not have any influence on the announcement impact. The four economic indicators did not had a significant relation with the two-day CAR. Although markets and economic conditions deviate, it does not have a significant influence on the announcement impact. Businesses therefore can execute the right issues in both a positive or negative market sentiment.

References

Articles

Agarwal, A. & Mohanty, P. (2012). The Impact of Rights Issue on Stock Returns in India. *Asia-Pasific Finance and Accounting Review*. Vol. I, No. 1, pp. 5-16.

Allen, D.E. & Soucik, V. (2008). Long-run underperformance of seasoned equity offerings*:* Fact or an illusion?. *Mathematics and Computers in Simulation,* 78 (2008). pp. 146 – 154.

Andrikopoulos, P. & Daynes, A. (2008). Rights Issues, Information Asymmetry and Equity Overvaluation: UK Evidence. *INVESTMENT IN A GLOBAL ECONOMY: ITS ENVIRONMENT, FINANCE AND ECONOMICS*, P. Koveos, ed., Vol. 1, pp. 141-156, Atiner, 2008.

Andrikopoulos, P. (2009). Seasoned equity offerings, operating performance and overconfidence: Evidence from the UK. *Journal of Economics and Business*. Volume 61, Issue 3, May 2009, Pages 189-215.

Armitage, S. (1998). Seasoned equity offers and rights issues: a review of the evidence. *The European Journal of Finance*, 4:1, pp. 29 – 59.

Armitage, S. (2008). Equity Issues by Listed Companies: Rights Issues and Other Methods. *QFinance, The ultimate financial resource.*

Asquith, P. & Mullins. Jr., W. (1985). Equity Issues and Offering Dilution. *Journal of Financial Economics*, 15, 1986, pp. 61 – 89. North-Holland.

Brown, P., Gallery, G. & Goei, O. (2006). Does market misevaluation help explain share market long-run underperformance following a seasoned equity issue? *Accounting and Finance 46*, (2006), pp. 191 – 219.

Choe, H., Masulis, R.W. & Nanda, V. (1992). Common Stock Offerings Across the Business Cycle: Theory and Evidence. October 6, 1992.

Décamps, J., Mariotti, T., Rochet, J. & Villeneuve, S. (2011). Free cash flow, issuance costs, and stock prices. *Journal of Finance*, 66(5), 1501-1544.

Eckbo, B.E. & Masulis R.W. (1995). Seasoned Equity Offerings: A survey. Published in *R. Jarrow, V. Maksimovic and B. Ziemba (eds.) Finance* (North-Holland, Series of Handbooks in Operations Research and Management Science), 1017 – 1072, 1995.

Fama, E.F. (1970). Efficiient Capital Markets: A Review of Theory and Capital Work. *The Journal of Finance*, Vol. 25, No. 2. Papers and Proceedings of the Twenty-Eigth Annual Meeting of the American Finance Association New York, N.Y. December, 28-30, 1969 (May, 1970), pp. 383 – 417.

Fama, E.F., Hansen L.P. & Shiller, R. (2013). Understanding Asset prices. *Kungl. Vetenskapsakademien*. The Royal Swedish Academy of Sciences.

Gajewski, J.F. & Ginglinger, E. (2002). Seasoned Equity Issues in a Closely Held Market: Evidence from France. *European Finance Review 6*: 291–319, 2002. Kluwer Academic Publishers.

Gunasekarage, A., & Power, D. (2006). Anomalous evidence in dividend announcement effect. *Managerial Finance*, 32, pp. 209−226.

Iqbal, A. (2008). The importance of the Sequence in UK Rights Issues. *Journal of Business Finance & Accounting*, 35 (1) & (2), 150-176, January/March 2008.

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

Kabir, R., & Roosenboom, P. (2003). Can the stock market anticipate future operating performance? Evidence from equity rights issues. *Journal of corporate finance*, Vol. 9, 93 – 113.

Kang, J.K. & Stulz, R.M. (1996). How differing is Japanese Corporate Finance? An Investigation of the Information Content of New Security Issues. *Review of Financial Studies*, 9: 109 – 139.

Karim, K.E., Rutledge, R.W., Gara, S.C. & Ahmed, M.U. (2001). An Emperical Examination of the Pricing of Seasoned Equity Offerings; A Test of the Signaling Hypothesis. *Review of Quantitative Finance and Accounting,* 17: 63 – 79.

Kim, D., Palia, D. & Saunders, A. (2005). Are initial returns and underwriting spreads in equity issues complements or substitutes?. *Working Thesis, Rutgers University.*

Lee, H.W. & Kocher, C. (2001). Firm characteristics and seasoned equity issuance method: Private placement versus Public offering. *The journal of applied business research*. Volume 17, number 3, pp. 23 – 36.

Lee, I., Lochhead, S., Ritter, J. & Zhao, Q. (1996). The costs of raising capital. *The Journal of Financial Research*. Vol. XIX, No 1, pp. 59 – 74.

Loughran, T. & Ritter, J.R. (1995). The New Issues Puzzle. *The Journal Of Finance*. Vol. L. No. 1. pp. 23 – 51.

Loughran, T. & Ritter, J.R. (1997). The Operating Performance of Firms Conducting Seasoned Equity Offerings.

MacKinlay, A.C. (1997). Event studies in economics and finance. *Journal of Economic Literature.* Vol. 35, pp. 13 – 39.

Masulis, R.W. & Korwar, A.N. (1985). Seasoned Equity Offerings; An empirical Investigation. *Journal of Financial Economics*, 15, 1986, pp. 91 – 118. North-Holland.

Mathew, P.G. (2002). Long-horizon seasoned equity offerings performance in Pacific Rim markets. *Review of Financial Economics,* 11 (2002), pp. 317 – 333.

McWilliams, A. & Siegel, D. (1997). Event studies in management research: theoretical and empirical issues. *The academy of management journal*, Vol. 40, No. 3, 626 – 657.

Myers, S.C. & Majluf, N.S. (1984). Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. *Journal of Financial Economics 13,* 1984, 187-221.

Ngatuni, P., Capstaff, J. & Marshall, A.P. (2006). Long Term Performance Following Rights Issues and Open Offers in the UK. *Journal of Business Finance & Accounting,* Forthcoming.

Ozyildirim, A., Schaitkin, B. & Zarnowitz, V. (2010). Business Cycles in the Euro Area Defined with Coincident Economic Indicators and Predicted with Leading Economic Indicators. *Journal of Forecasting,* J. Forecast. 29, 6-28.

Sawhney et al. (2006). Long-Run Relationship between Economic Growth and Stock Returns: An Empirical Investigation on Canada and the United States. MPRA Thesis No. 737, posted 9. November 2006.

Shahid, H., Xinping, X., Mahmood, F. & Usman, M. (2010). Announcement Effects of Seasoned Equity Offerings in China. *International Journal of Economics and Finance*. Vol. 2, No. 3; August 2010.

Smith Jr., C.W. (1977). Alternative Methods for Raising Capital: Rights Versus Underwritten Offerings. *Journal of Financial Economics* 5 (1997). pp. 273 – 307. North-Holland.

Smith Jr., C.W. (1985). Investment banking and the capital acquisition process. *Journal of Financial Economics 15* (1986). pp. 3 – 29. North-Holland.

Spiess, D.K. & Affleck-Graves, J. (1995). Underperformance in long-run stock returns following seasoned equity offerings. *Journal of Financial Economics*. 38. pp. 243 – 267.

Sprenger, T.O. & Welpe, I.M. (2011). News or Noise? The stock market reaction to different types of company specific news events. *Technische Universität München*, TUM School of Management.

Stehle, R., Ehrhardt, O. & Przyborowsky, R. (2000). Long-run stock performance of German initial public offerings and seasoned equity issues. *European Financial Management,* Vol. 6, No. 2, 2000, 173-196.

Stigler, G.J. (1964). A Theory of Oligopoly. *The Journal of Political Economy,* Volume 72, Issue 1, 44-61.

Subeniotis, D.N., Papadopoulos, D.L., Tampakoudis, I.A. & Tampakoudi, A. (2011). How Inflation, Market Capitalization, Industrial Production and the Economic Sentiment Indicator Affect the EU-12 Stock Markets. *European Research Studies*. Volume XIV, Issue (1), 2011.

Sugiana, B. & Surya, B.A. (2013). Implication of Right Issue Cum and Ex-Date Announcement to the Stock Returns (Emperical Study on Indonesia Stock Exchange period: 2009-2012). *The Indonesian Journal of Business Administration*. Vol. 2, No. 12, 2013: 1395 – 1410.

Tsangarakis, N.V. (1996). Shareholder Wealth Effects of Equity Issues in Emerging markets; Evidence from Rights Offerings in Greece. *Financial Management*, Vol. 25, No. 3, Autumn 1996, 21-32.

Wang, Y. (2012). The impact of private benefits on institutional ownership change; evidence from markets with different sentiments. J Econ Finan.

Books

Eckbo, B.E., Masulis, R.W. & Norlo, O. (2007). *Handbook of Corporate Finance: Empirical Corporate Finance*, *Chapter 6, Security Offerings.* Volume 1. First edition. North-Holland, Elsevier B.V, Amsterdam.

Brealey, R.A., Myers, S.C. & Allen, F. (2008). *Principles of corporate finance*. International Edition 2008. McGraw-Hill Higher Education.

Hillier, D., Ross, S., Westerfield, R., Jaffe, J. & Jordan, B. (2010). *Corporate Finance*. First European Edition. McGraw-Hill Higher Education.

Leach, J.C. & Melicher, R.W. (2011). *Entrepreneurial Finance*. 4th international edition. South-Western Cengage Learning.

Rila, M. (2007). Het groot beleggers handboek. 11e druk. Uitgeverij Elmar b.v., Rijswijk – 1996/2005.

Saunders, M., Lewis, P. & Thornhill, A. (2009). Research methods for business students. Fifth edition. *Prentice Hall*.

Veaux, De, R.D., Velleman, P.F. & Bock, D.E. (2011). Stats: Data and Models. Third edition. Pearson Education, Inc.

Verhoeven, N. (2004). Wat is onderzoek? Praktijkboek method en technieken voor het hoger beroepsonderwijs. Uitgeverij Boom, Amsterdam.

Websites

AEX (2013, November 2013). Claimemissie. Retrieved from http://www.aex.nl/nextupdate/claimemissie

Beleggen (2013). Retrieved October 25, 2013, from http://www.beleggen.nl/aex_index/grafieken

Beurscourant (2007). Fortis Kondigt 2 voor 3 claimemissie aan. Retrieved November 21, 2013, from http://www.beurscourant.nl/nieuws/persberichten/persbericht/2007/09/21/143512/Fortis+kondigt+een+2+voor+3+claimemissie+aan+met+een+omvang+van+EUR%0A13,4+miljard+waarbij+896.181.684+Nieuwe+Aandelen+worden+uitgegeven%0Avoor+EUR+15,00+

DNB (2013). Foreign Direct Investment. Retrieved 25 November 2013 from http://www.dnb.nl/home/index.jsp

Investopedia. (2009). Retrieved 23 November 2013, from http://www.investopedia.com/terms/a/announcment-effect.asp

Stijgende lijn aandelenuitgifte. (2010). Retrieved October 15, 2013, from http://pleinplus.nl/-/stijgende-lijn-aandelenuitgifte

The Economist (2013), http://www.economist.com/news/schoolsbrief/21584534-effects-financial-crisis-are-still-being-felt-five-years-article

Appendix

Appendix I. Literature search plan

The search plan for the literature review is made to narrow the focus for the researcher. Millions of sources exist with information, so it is important to delineate the subject. In order to do so, parameters are set, search tools are set and key words for searching are identified. The search plan is based on chapter 3 from the book of Saunders, Lewis & Thornhill (2009).

Parameters

Language of publication	English or Dutch
Subject area	Economics, Econometrics and Finance Business, Management and Accounting
Business sector	All
Geographical area	Europe, Asia, North and South America
Publication period	Last 30 years
Literature type	Journals and books

Search tools

In order to search for journals and books the researcher uses search tools. The search tools used are:

1. Google scholar (scholar.google.com)
2. Scopus (www.scopus.com/scopus/home.url)
3. Google (www.google.nl)
4. Q Finance (www.qfinance.com)
5. Library from the University of Twente
6. Literature from previous courses the researcher has completed (papers & books)
7. References in papers the researcher reads

Appendix II. Laws concerning equity issues in the Netherlands

Artikel 5:2

Het is verboden in Nederland effecten aan te bieden aan het publiek of effecten te doen toelaten tot de handel op een in Nederland gelegen of functionerende gereglementeerde markt, tenzij ter zake van de aanbieding of de toelating een prospectus algemeen verkrijgbaar is dat is goedgekeurd door de Autoriteit Financiële Markten of door een toezichthoudende instantie van een andere lidstaat.

Artikel 5:25k

1. Een uitgevende instelling behandelt aandeelhouders die zich in gelijke omstandigheden bevinden op dezelfde wijze bij het geven van informatie en bij het doorberekenen van daarmee gepaard gaande kosten.
2. Het is een uitgevende instelling verboden een aandeelhouder te beletten zijn rechten door middel van verstrekking van een volmacht uit te oefenen.
3. Een uitgevende instelling stelt in Nederland faciliteiten en informatie ter beschikking aan haar aandeelhouders ten behoeve van de uitoefening van hun rechten en zorgt ervoor dat de integriteit van gegevens bij die uitoefening gewaarborgd blijft.
4. Een uitgevende instelling:

a. stelt bij de oproeping voor de algemene vergadering de aandeelhouders in kennis van de plaats, het tijdstip en de agenda van de algemene vergadering alsmede het recht om de vergadering bij te wonen;

b. stelt uiterlijk bij aanvang van de algemene vergadering de aandeelhouders in kennis van het totale aantal aandelen en stemmen;

c. stelt aan iedere aandeelhouder die stemrecht heeft in de algemene vergadering al dan niet op verzoek een volmachtformulier ter beschikking;

d. verstrekt een volmacht aan een bank tot het voldoen van de vorderingen die de aandeelhouders op haar hebben;

e. maakt berichten bekend of verspreidt circulaires die betrekking hebben op de vaststelling en de betaling van dividenden; en

f. verschaft informatie aan aandeelhouders over de uitgifte van nieuwe aandelen, waarbij tevens informatie wordt verstrekt over eventuele regelingen voor de toewijzing, inschrijving, of conversie.

5. Een uitgevende instelling kan informatie langs elektronische weg aan de aandeelhouders verzenden, indien:

a. de algemene vergadering hiermee heeft ingestemd;

b. de verzending langs elektronische weg niet afhankelijk is van de locatie van de zetel of woonplaats van een aandeelhouder of een persoon als bedoeld in artikel 5:45, eerste tot en met zesde, achtste of negende lid ;

c. voorzieningen zijn getroffen opdat de aandeelhouder of de persoon die stemrecht uit kan oefenen, daadwerkelijk wordt ingelicht; en

d. een aandeelhouder of een natuurlijke persoon, rechtspersoon of vennootschap als bedoeld in artikel 5:45, eerste tot en met zesde lid , de mogelijkheid wordt geboden om de informatie desgewenst op papier te ontvangen

Artikel 5:25m

1. Een uitgevende instelling stelt gereglementeerde informatie op niet-discriminatoire wijze algemeen verkrijgbaar. De uitgevende instelling maakt daarbij gebruik van media waarvan redelijkerwijs mag worden aangenomen dat een snelle en doeltreffende verspreiding van de gereglementeerde informatie in alle lidstaten is gewaarborgd.

2. De algemeen verkijgbaar stelling, bedoeld in het eerste lid, vindt plaats door middel van een persbericht dat gelijktijdig wordt uitgebracht in Nederland alsmede in elke andere lidstaat waar de door de uitgevende instelling uitgegeven financiële instrumenten met haar instemming zijn toegelaten tot de handel op een gereglementeerde markt of waar ter zake van die instrumenten met haar instemming verzocht is om toelating tot de handel op een dergelijke markt.

3. De uitgevende instelling beschikt over een website en maakt informatie als bedoeld in artikel 5:25ionverwijld op deze website openbaar. Indien de uitgevende instelling een beleggingsinstelling of icbe is, kan deze informatie ook op de website van de beheerder van die beleggingsinstelling of icbe onverwijld openbaar worden gemaakt. De uitgevende instelling, beheerder van een beleggingsinstelling of beheerder van een icbe houdt deze informatie gedurende ten minste een jaar op de website toegankelijk.

4. Indien het gereglementeerde informatie betreft als bedoeld in artikel 5:25c , 5:25d of 5:25e , kan de uitgevende instelling in het persbericht volstaan met een aankondiging waarin wordt verwezen naar de website van de uitgevende instelling waar de informatie volledig beschikbaar is.

5. Onze Minister wijst een instantie aan die zorg draagt voor de centrale opslag van gereglementeerde informatie.

6. De uitgevende instelling zendt de gereglementeerde informatie gelijktijdig met de algemeen verkrijgbaar stelling aan de instantie, bedoeld in het vijfde lid, alsmede indien deze niet als zodanig is aangewezen aan de Autoriteit Financiële Markten.
7. De uitgevende instelling brengt geen kosten in rekening voor het algemeen verkrijgbaar stellen van de gereglementeerde informatie.

8. Indien door een persoon zonder toestemming van de uitgevende instelling om toelating tot de handel op een gereglementeerde markt van door de uitgevende instelling uitgegeven effecten is verzocht, rusten de bij of krachtens het eerste tot en met derde, zesde en zevende lid geldende verplichtingen op die persoon.

9. Het eerste tot en met derde lid zijn niet van toepassing op uitgevende instellingen waarvan uitsluitend effecten tot de handel zijn toegelaten op ten hoogste een in een andere lidstaat gelegen of functionerende gereglementeerde markt.

10. Het vijfde en zesde lid zijn van overeenkomstige toepassing ten aanzien van de informatie die op grond van het recht van een andere lidstaat ter uitvoering van artikel 6 van de richtlijn marktmisbruik algemeen verkrijgbaar moet worden gesteld door een uitgevende instelling waarvan Nederland de lidstaat van herkomst is.

Appendix III. All companies

Amount	Company name	Industry name	ICB Industry code
1	Aalberts Industries	Industrials	2000
2	Accell Group	Consumer goods	3000
3	Aegon	Financials	8000
4	Ahold	Consumer services	5000
5	Air France KLM	Consumer services	5000
6	AkzoNobel	Basic materials	1000
7	AMG (Advanced Metallurgical Group)	Industrials	2000
8	Amsterdam Commodoties (Acomo)	Consumer goods	3000
9	AND International	Consumer services	5000
10	Aperam	Basic materials	1000
11	Arcadis	Industrials	2000
12	Arcelor Mittal	Basic materials	1000
13	Arseus	Health Care	4000
14	ASM International	Technology	9000
15	ASML	Technology	9000
16	Ballast Nedam	Industrials	2000
17	BAM Groep Koninklijk	Industrials	2000
18	Batenburg Techniek	Industrials	2000
19	BE Semiconductor	Technology	9000
20	Beter Bed	Consumer services	5000
21	BinckBank	Financials	8000
22	Boskalis Westmin	Industrials	2000
23	Brill Koninklijk	Consumer services	5000
24	Brunel International	Industrials	2000
25	Corbion	Consumer goods	3000
26	Corio	Financials	8000
27	Crown van Gelder	Basic materials	1000
28	Cryo-Save Group	Health Care	4000
29	Delta Lloyd	Financials	8000
30	Doc Data	Consumer goods	3000
31	Dockwise	Oil & Gas	1
32	DPA Group	Industrials	2000
33	DSM Koninklijk	Basic materials	1000
34	Eurocommercial Prop	Financials	8000
35	Exact Holding	Technology	9000
36	Fortis (Ageas)	Financials	8000
37	Fugro	Oil & Gas	1
38	Gamma Holding	Industrials	2000
39	Gemalto	Technology	9000
40	Getronics	Telecommunications	6000
41	Grontmij	Industrials	2000
42	Heijmans	Industrials	2000
43	Heineken	Consumer goods	3000

44	Holland Colours	Basic materials	1000
45	ICT Automatisering	Technology	9000
46	Imtech	Industrials	2000
47	ING Groep	Financials	8000
48	InnoConcepts	Industrials	2000
49	Kardan	Financials	8000
50	Kas Bank	Financials	8000
51	Kendrion	Industrials	2000
52	KPN Koninklijk	Telecommunications	6000
53	LBI International	Technology	9000
54	Nedap	Industrials	2000
55	Nieuwe Steen NV	Financials	8000
56	Nutreco	Consumer goods	3000
57	OCI	Industrials	2000
58	Ordina	Technology	9000
59	Pharming Group	Health Care	4000
60	Philips Koninklijk	Industrials	2000
61	Porceleyne Fles Kon	Consumer goods	3000
62	PostNL	Industrials	2000
63	Randstad	Industrials	2000
64	Reed Elsevier	Consumer services	5000
65	SBM Offshore	Oil & Gas	1
66	Shell	Oil & Gas	1
67	Sligro Food Group	Consumer services	5000
68	Ten Cate	Industrials	2000
69	TKH Group	Industrials	2000
70	TNT Express	Industrials	2000
71	TomTom	Technology	9000
72	Unibail Rodamco	Financials	8000
73	Unilever	Consumer goods	3000
74	Unit4	Technology	9000
75	USG People	Industrials	2000
76	Value8	Financials	8000
77	Vastned Retail	Financials	8000
78	Vopak	Industrials	2000
79	Wavin	Industrials	2000
80	Wereldhave	Financials	8000
81	Wessanen Koninklijk	Consumer goods	3000
82	Wolters Kluwer	Consumer services	5000
83	Xeikon	Industrials	2000
84	Ziggo	Telecommunications	6000

Appendix IV. Data search plan for finding right issue announcement

Data sources

Sources	Google	www.google.nl
	Het Financieel Dagblad (archive)	www.fd.nl
	De Volkskrant (archive)	www.vk.nl
	RTL Nieuws	www.rtlnieuws.nl
	Autoriteit Financiële Markten	www.afm.nl
	Beurs	www.beurs.nl
	Financiele Telegraaf	http://www.telegraaf.nl/dft/
Additional sources	Company websites	

Key words

1. claimemissie
2. aankondiging claimemissie
3. claimemissie + company name
4. right issue
5. right issue announcement
6. right issue + company name

Keywords after finding some information

7. claimemissie + company name + year of right issue
8. right issue + company name + year of right issue

Search strategy

1. At Google and AFM all six key words will be searched for.
    a. At Google only the first 5 pages will be checked for every company.
    b. At AFM all pages of the archive will be analyzed.

2. At FD, VK and RTL Nieuws only key words 1, 2 and 3 will be searched for.
    a. At FD, VK and RTL Nieuws all pages of the archive will be analyzed.

3. At the company website, key words 1,2, 4 and 5 will be searched for.

Extra sources*

Extra sources found during search process	Nieuwsbank	www.nieuwsbank.nl
	BBC	news.bbc.co.uk
	Digibron	www.digibron.nl
	IEX	www.iex.nl
	Nyse Euronext	https://globalderivatives.nyx.com/nl
	Beleggersvereniging VEB	www.veb.net
	Highbeam	www.highbeam.com

*For those extra sources, the searching process is the same as described by 1.b. in Searching above.

Appendix V. Cumulative abnormal return of all companies during right issue

	Company name	Pre-period	2-day	3-day	After period
1	KPN	-27,67%	-29,71%	-33,26%	-31,27%
2	Nieuwe Steen Investments	-1,34%	-1,30%	-1,23%	-4,41%
3	Vopak	6,21%	-5,36%	1,81%	1,83%
4	ING	-8,13%	-3,33%	4,16%	6,39%
5	Ahold	15,95%	-5,87%	-8,75%	6,77%
6	Arcelor	4,36%	-1,60%	-0,83%	5,92%
7	Kendrion	1,00%	-29,03%	-30,62%	-5,55%
8	Getronics	-5,59%	-7,83%	-8,64%	-16,20%
9	Fortis	-1,20%	-0,94%	-1,00%	-6,18%
10	Binck	20,08%	-3,49%	-1,54%	-10,61%
11	Porceleyne Fles Koninklijke	7,77%	-4,54%	2,09%	-6,67%
12	Gamma Holding	-9,32%	-36,45%	-37,66%	-0,62%
13	Arcellor Mital	-10,23%	-6,18%	-13,28%	27,87%
14	Wavin	2,24%	-4,71%	-2,60%	20,53%
15	TomTom	45,25%	1,46%	24,49%	5,96%
16	Heijmans	-10,14%	-0,39%	-1,43%	-18,92%
17	Aegon	2,47%	-9,03%	-9,47%	-16,56%
18	ING	-9,70%	-17,37%	-14,89%	-4,39%
19	Innoconcepts	2,41%	-4,59%	-0,58%	2,50%
20	BAM	-17,18%	-8,11%	-9,08%	3,90%
21	USG People	-11,25%	-1,96%	0,80%	0,21%
22	Wessanen Kon	-17,40%	-5,63%	-5,49%	4,57%
23	Pharming Group	-6,46%	-14,59%	-15,30%	-3,56%
24	Nieuwe Steen Investments	6,10%	-8,19%	-8,92%	0,95%
25	LBI International	10,35%	-2,56%	-0,45%	-4,87%
26	Dockwise	0,50%	1,53%	2,60%	-5,53%
27	DPA Group	14,72%	-5,89%	2,08%	-4,90%
28	Aegon	0,79%	0,90%	1,73%	-1,10%
29	Ordina	-19,72%	-18,39%	-13,90%	-3,94%
30	Grontmij	-4,54%	9,02%	9,25%	10,80%
31	Dockwise	12,85%	-7,00%	-2,33%	-5,42%
32	KPN	12,42%	-20,40%	-19,45%	-13,32%
33	Imtech	-43,01%	-13,49%	-13,46%	6,02%
34	SBM Offshore	21,18%	0,77%	-0,31%	0,03%
	Mean	-0,48%	-7,77%	-6,04%	-1,76%
	Median	0,65%	-5,50%	-1,94%	-2,33%
	STDEV	15,80%	9,74%	12,04%	10,87%

Appendix VI. Cumulative abnormal returns of AEX during right issue

	Company name	Pre-period	2-day	3-day	After period
1	KPN	0,07%	0,77%	1,19%	0,33%
2	Nieuwe Steen Investments	-4,12%	-1,65%	-1,08%	-4,15%
3	Vopak	3,16%	-0,95%	-0,79%	-4,08%
4	ING	-28,74%	8,72%	8,39%	10,63%
5	Ahold	4,64%	2,13%	1,62%	-7,45%
6	Arcelor	2,81%	-0,14%	-0,37%	-4,18%
7	Kendrion	-2,08%	-0,99%	-0,77%	5,99%
8	Getronics	0,42%	-0,89%	-0,67%	-4,43%
9	Fortis	6,74%	-0,76%	-0,65%	-0,66%
10	Binck	-12,17%	-0,80%	1,56%	1,38%
11	Porceleyne Fles Koninklijke	-1,84%	-0,18%	-0,42%	-18,31%
12	Gamma Holding	-2,00%	-6,76%	-4,55%	3,64%
13	Arcellor Mital	-12,80%	-3,01%	-1,09%	11,47%
14	Wavin	11,07%	-0,70%	0,30%	-2,52%
15	TomTom	5,06%	-3,20%	-4,18%	-3,04%
16	Heijmans	11,27%	-1,95%	-1,72%	-1,67%
17	Aegon	10,37%	-0,32%	1,36%	5,50%
18	ING	4,81%	-2,83%	-3,00%	1,61%
19	Innoconcepts	1,91%	-2,84%	-2,88%	-1,15%
20	BAM	0,35%	1,15%	1,58%	7,15%
21	USG People	6,19%	-0,15%	0,96%	6,70%
22	Wessanen Kon	3,34%	0,83%	1,10%	5,60%
23	Pharming Group	7,46%	-0,07%	0,62%	6,14%
24	Nieuwe Steen Investments	-2,45%	0,57%	1,13%	-6,56%
25	LBI International	-0,98%	-0,22%	-0,03%	-0,42%
26	Dockwise	2,32%	0,25%	0,23%	-0,30%
27	DPA Group	4,58%	-0,51%	0,11%	-0,54%
28	Aegon	0,92%	0,42%	-0,55%	0,01%
29	Ordina	-3,73%	2,15%	4,31%	3,99%
30	Grontmij	-1,34%	1,66%	2,80%	1,34%
31	Dockwise	-4,55%	0,38%	-0,96%	-3,27%
32	KPN	-0,41%	-1,10%	-2,75%	-0,47%
33	Imtech	-6,49%	1,56%	0,10%	2,63%
34	SBM Offshore	1,75%	-1,70%	-0,44%	0,62%
	Mean	0,16%	-0,33%	0,01%	0,34%
	Median	0,67%	-0,27%	-0,20%	-0,15%
	STDEV	7,55%	2,38%	2,36%	5,64%

Appendix VII. Regression results of model 1, 2, 3 and 4

MODEL 1

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,36295693
R-kwadraat	0,131737733
Aangepaste kleinste kwadraat	0,100728366
Standaardfout	0,078870711
Waarnemingen	30

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,026427057	0,026427057	4,24832066	0,048685549
Storing	28	0,174176494	0,006220589		
Totaal	29	0,200603552			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,040747983	0,022272153	-1,829548466	0,077985269	-0,086370418	0,004874453	-0,086370418	0,004874453
Variabele X 1	-0,079059148	0,038356899	-2,061145473	0,048685549	-0,157629692	-0,000488604	-0,157629692	-0,000488604

MODEL 2

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,360224524
R-kwadraat	0,129761708
Aangepaste kleinste kwadraat	0,099753491
Standaardfout	0,082543234
Waarnemingen	31

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,029462481	0,029462481	4,32420586	0,046522424
Storing	29	0,197588178	0,006813385		
Totaal	30	0,227050659			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,024664635	0,026635301	-0,926012995	0,362081802	-0,079139942	0,029810672	-0,079139942	0,029810672
Variabele X 1	-0,117057057	0,056291707	-2,079472496	0,046522424	-0,232186523	-0,00192759	-0,232186523	-0,00192759

MODEL 3

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,288005462
R-kwadraat	0,082947146
Aangepaste kleinste kwadraat	0,046265032
Standaardfout	0,073807651
Waarnemingen	27

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,012318274	0,012318274	2,261242244	0,145176674
Storing	25	0,136189234	0,005447569		
Totaal	26	0,148507508			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,038583054	0,022008051	-1,753133588	0,091834878	-0,083909483	0,006743376	-0,083909483	0,006743376
Variabele X 1	-0,020919885	0,013911877	-1,503742745	0,145176674	-0,049571933	0,007732163	-0,049571933	0,007732163

MODEL 3 (Without outliers)

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,210851866
R-kwadraat	0,044458509
Aangepaste kleinste kwadraat	0,00464428
Standaardfout	0,075063187
Waarnemingen	26

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,006291737	0,006291737	1,11664876	0,301162515
Storing	24	0,135227569	0,005634482		
Totaal	25	0,141519306			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,027737941	0,034497804	-0,804049461	0,429261172	-0,098937909	0,043462027	-0,098937909	0,043462027
Variabele X 1	-0,031965924	0,03025025	-1,056716026	0,301162515	-0,094399371	0,030467523	-0,094399371	0,030467523

MODEL 4

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,563631782
R-kwadraat	0,317680785
Aangepaste kleinste kwadraat	0,220206612
Standaardfout	0,063368092
Waarnemingen	25

Variantie-analyse

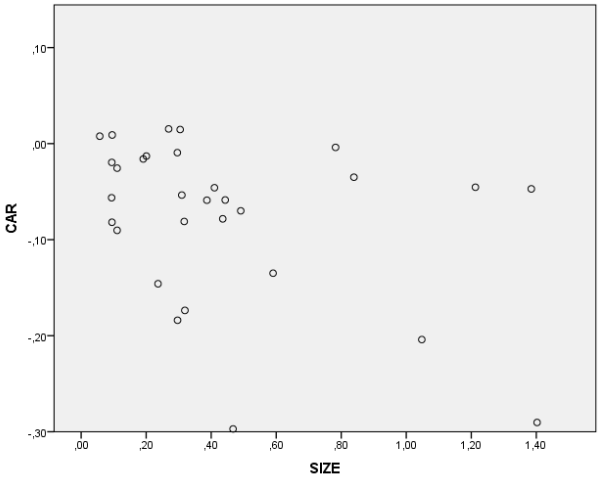
	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	3	0,03926123	0,013087077	3,259127764	0,041888493
Storing	21	0,084325816	0,004015515		
Totaal	24	0,123587046			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,00098383	0,025852012	-0,038056218	0,970002321	-0,054746032	0,052778372	-0,054746032	0,052778372
Variabele X 1	-0,061185086	0,038218618	-1,600923569	0,124330881	-0,140665053	0,01829488	-0,140665053	0,01829488
Variabele X 2	-0,050438694	0,056093499	-0,899189662	0,378747001	-0,16709151	0,066214122	-0,16709151	0,066214122
Variabele X 3	-0,017406127	0,012993232	-1,339630241	0,194683777	-0,044427032	0,009614779	-0,044427032	0,009614779

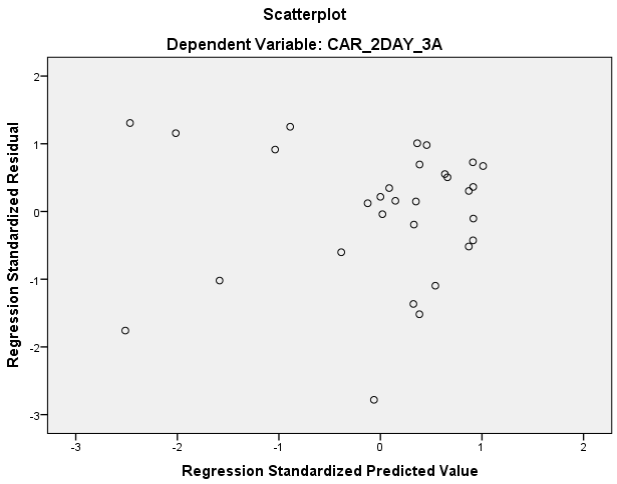
Appendix VIII. Assumptions and conditions models 1, 2 and 3

Hypothesis 3a. (MODEL 1.)

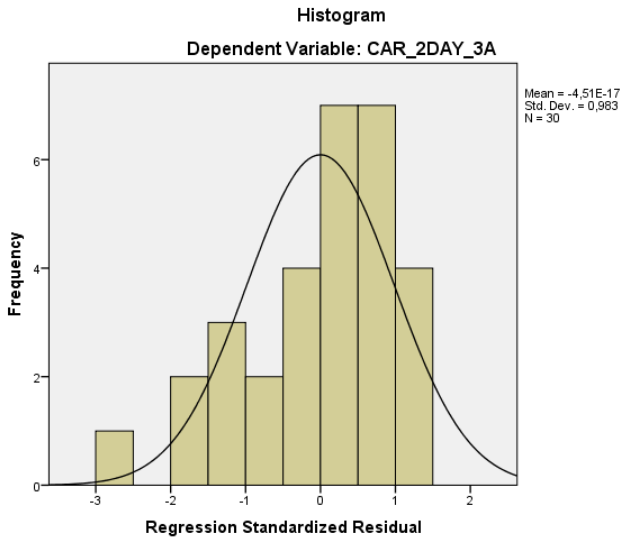
Scatterplot



Residuals

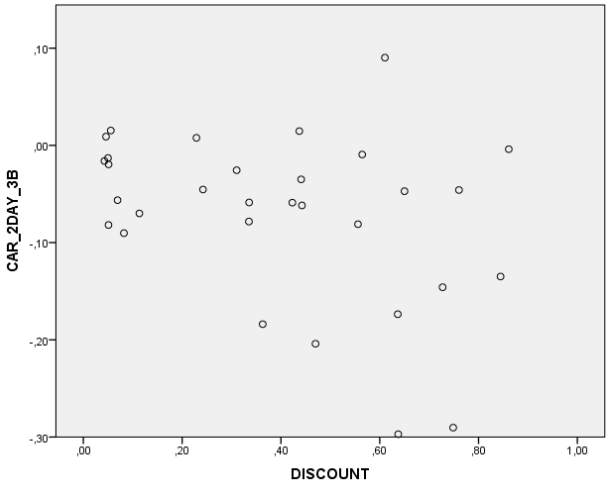


Histogram

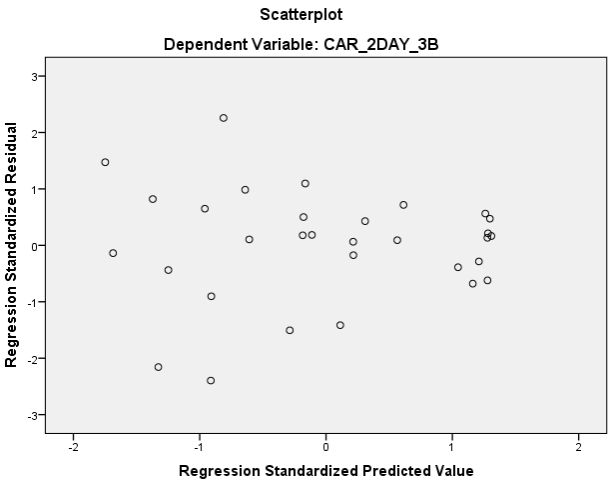


Hypothesis 3b. (MODEL 2.)

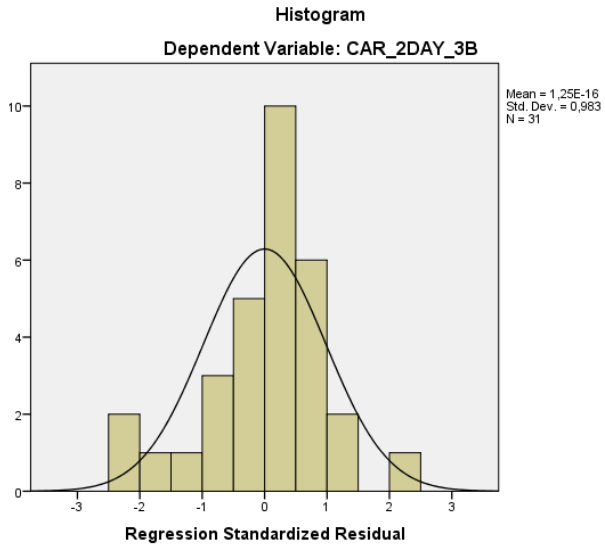
Scatterplot



Residuals

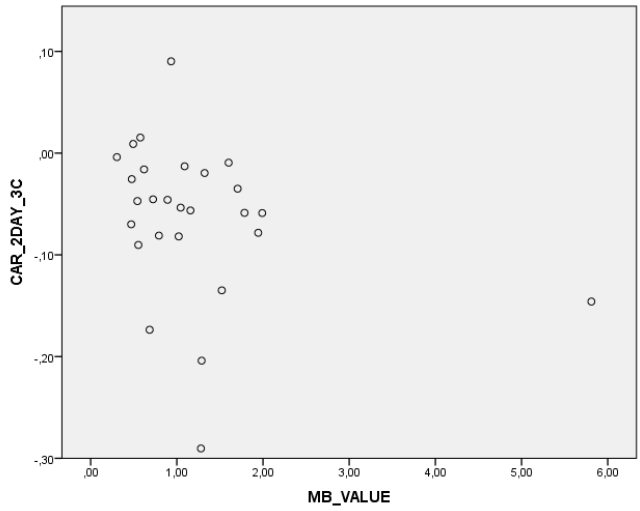


Histogram

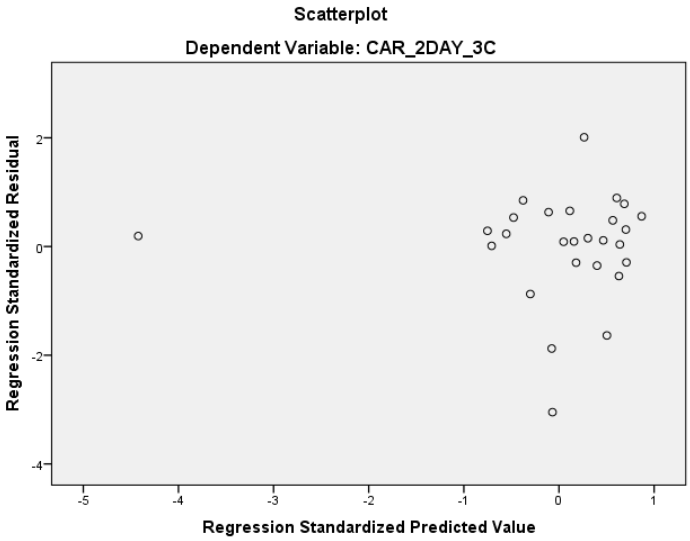


Hypothesis 3c. (MODEL 3.)

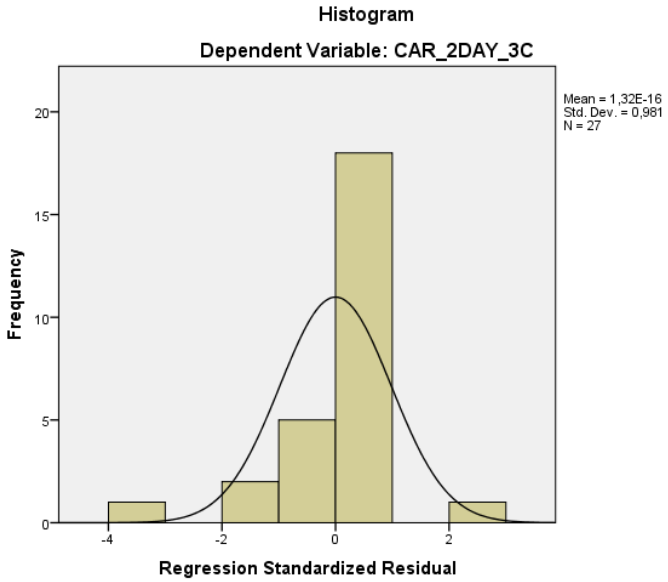
Scatterplot



Residuals



Histogram



Appendix IX. Regression results of models 5 and 6

MODEL 5

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,426363172
R-kwadraat	0,181785554
Aangepaste kleinste kwadraat	0,153571263
Standaardfout	0,080074981
Waarnemingen	31

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,041312732	0,041312732	6,443031041	0,016767642
Storing	29	0,185948074	0,006412003		
Totaal	30	0,227260806			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,054500727	0,015689209	-3,473771439	0,001633125	-0,086588762	-0,022412692	-0,086588762	-0,022412692
Variabele X 1	0,005634686	0,002219855	2,538312636	0,016767642	0,001094573	0,010174799	0,001094573	0,010174799

MODEL 5. Without outliers

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,178118827
R-kwadraat	0,031726316
Aangepaste kleinste kwadraat	-0,004135672
Standaardfout	0,076837258
Waarnemingen	29

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,005223108	0,005223108	0,884678121	0,355263135
Storing	27	0,159407032	0,005903964		
Totaal	28	0,16463014			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,066245671	0,016079818	-4,119802321	0,00032213	-0,099238732	-0,03325261	-0,099238732	-0,03325261
Variabele X 1	-0,005212798	0,005542149	-0,940573294	0,355263135	-0,016584349	0,006158754	-0,016584349	0,006158754

MODEL 6.

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,35605533
R-kwadraat	0,126775398
Aangepaste kleinste kwadraat	0,096664205
Standaardfout	0,082722996
Waarnemingen	31

Variantie-analyse

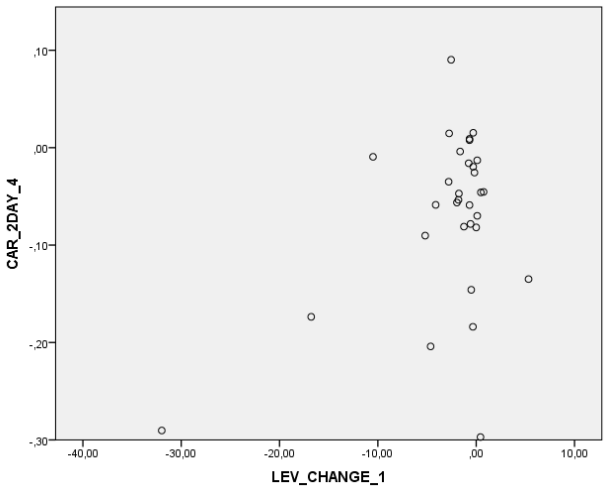
	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,028811079	0,028811079	4,210241593	0,049306428
Storing	29	0,198449727	0,006843094		
Totaal	30	0,227260806			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,023433942	0,027294952	-0,858544919	0,397632514	-0,079258386	0,032390502	-0,079258386	0,032390502
Variabele X 1	0,604141012	0,294431865	2,051887325	0,049306428	0,001960243	1,20632178	0,001960243	1,20632178

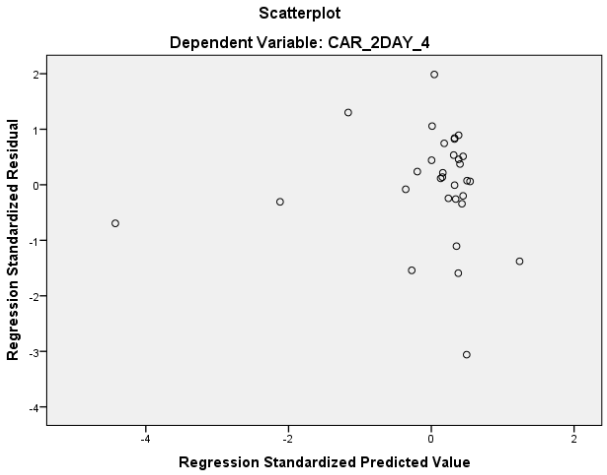
Appendix X. Assumptions and conditions models 5 and 6

Hypothesis 4. (MODEL 5.)

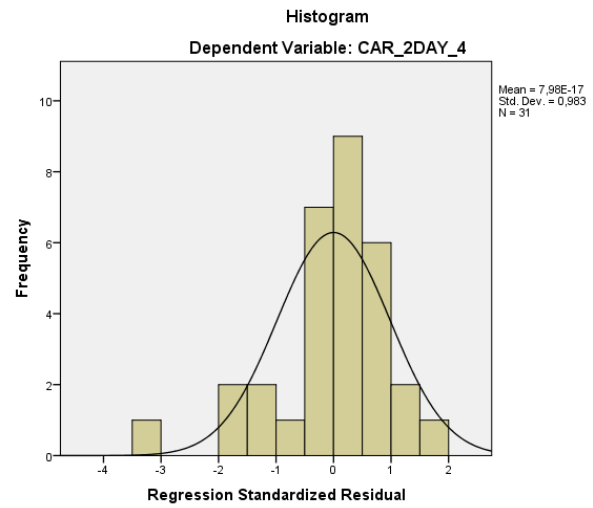
Scatterplot



Residuals

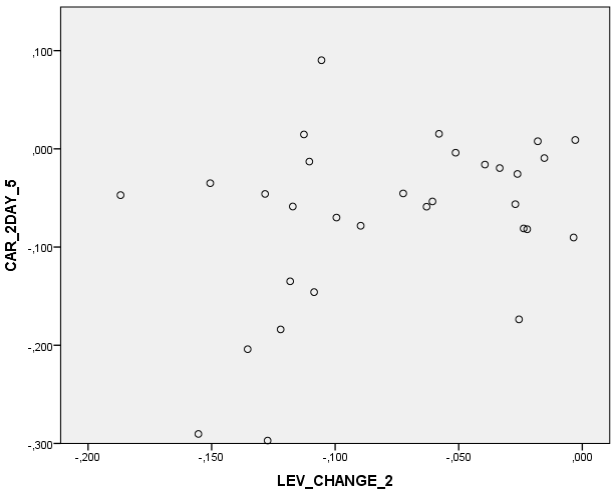


Histogram

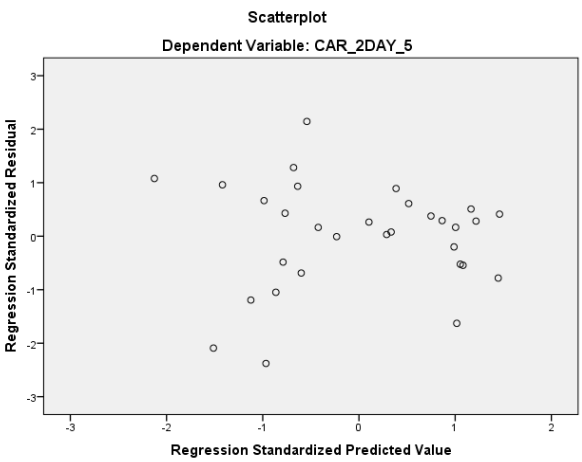


Hypothesis 4. (MODEL 6.)

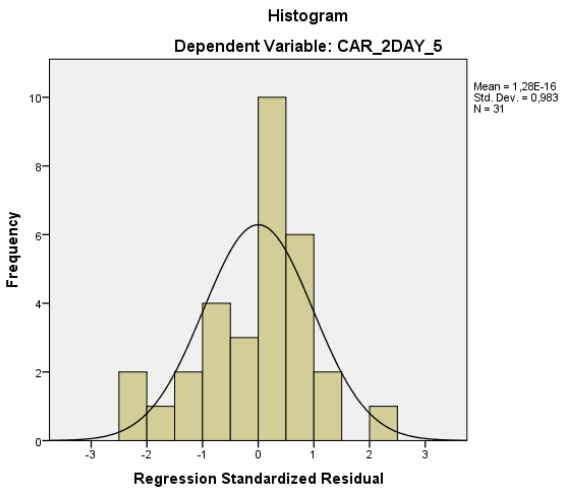
Scatterplot



Residuals



Histogram



Appendix XI. Regression results of models 7, 8, 9, 10 and 11

MODEL 7.

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,070955193
R-kwadraat	0,005034639
Aangepaste kleinste kwadraat	-0,026058028
Standaardfout	0,098709101
Waarnemingen	34

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,001577701	0,001577701	0,161923687	0,69006705
Storing	32	0,311791571	0,009743487		
Totaal	33	0,313369272			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,077592062	0,016931447	-4,582718803	6,65369E-05	-0,112080292	-0,043103833	-0,112080292	-0,043103833
Variabele X 1	0,289548449	0,719558407	0,402397424	0,69006705	-1,176144056	1,755240954	-1,176144056	1,755240954

MODEL 8.

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,024127569
R-kwadraat	0,00058214
Aangepaste kleinste kwadraat	-0,030649669
Standaardfout	0,098929717
Waarnemingen	34

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,000182425	0,000182425	0,018639317	0,89226089
Storing	32	0,313186847	0,009787089		
Totaal	33	0,313369272			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,067042277	0,080027961	-0,837735659	0,408392837	-0,230053898	0,095969345	-0,230053898	0,095969345
Variabele X 1	-0,198163724	1,451473668	-0,136525883	0,89226089	-3,154718821	2,758391374	-3,154718821	2,758391374

MODEL 9.

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,160021391
R-kwadraat	0,025606846
Aangepaste kleinste kwadraat	-0,00484294
Standaardfout	0,097683301
Waarnemingen	34

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	0,008024399	0,008024399	0,84095322	0,365984333
Storing	32	0,305344873	0,009542027		
Totaal	33	0,313369272			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,053992904	0,030823458	-1,751682205	0,089408742	-0,116778234	0,008792426	-0,116778234	0,008792426
Variabele X 1	0,001204052	0,001312983	0,917035016	0,365984333	-0,001470408	0,003878511	-0,001470408	0,003878511

MODEL 10.

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,012537982
R-kwadraat	0,000157201
Aangepaste kleinste kwadraat	-0,031087886
Standaardfout	0,098950747
Waarnemingen	34

Variantie-analyse

	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	1	4,9262E-05	4,9262E-05	0,005031223	0,943894033
Storing	32	0,31332001	0,00979125		
Totaal	33	0,313369272			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,07739802	0,017565831	-4,406169001	0,00011052	-0,113178447	-0,041617593	-0,113178447	-0,041617593
Variabele X 1	-0,009688777	0,13659418	-0,070931112	0,943894033	-0,287922015	0,268544461	-0,287922015	0,268544461

MODEL 11.

Gegevens voor de regressie	
Meervoudige correlatiecoëfficiënt R	0,190984564
R-kwadraat	0,036475104
Aangepaste kleinste kwadraat	-0,096424882
Standaardfout	0,102037704
Waarnemingen	34

Variantie-analyse

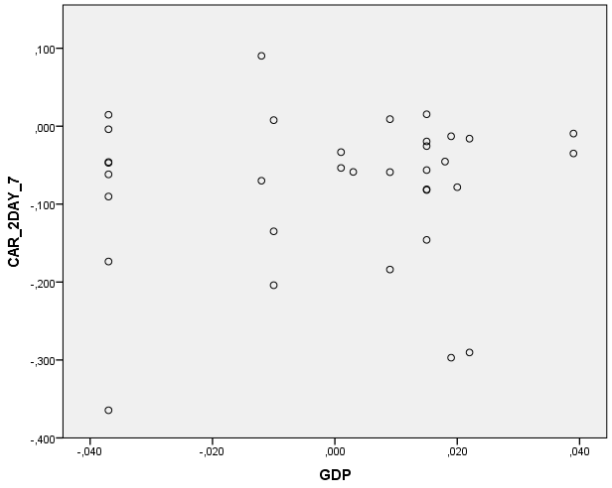
	Vrijheidsgraden	*Kwadratensom*	*Gemiddelde kwadraten*	*F*	*Significantie F*
Regressie	4	0,011430177	0,002857544	0,274455287	0,892048769
Storing	29	0,301939095	0,010411693		
Totaal	33	0,313369272			

	Coëfficiënten	*Standaardfout*	*T- statistische gegevens*	*P-waarde*	*Laagste 95%*	*Hoogste 95%*	*Laagste 95,0%*	*Hoogste 95,0%*
Snijpunt	-0,099903058	0,089248775	-1,119377362	0,272165189	-0,282437295	0,082631179	-0,282437295	0,082631179
Variabele X 1	-0,341660064	1,233344353	-0,277019199	0,78373042	-2,864132457	2,180812328	-2,864132457	2,180812328
Variabele X 2	1,208926039	2,120400456	0,570140435	0,5729735	-3,12777976	5,545631838	-3,12777976	5,545631838
Variabele X 3	0,002139812	0,002276284	0,940046333	0,354958514	-0,002515711	0,006795335	-0,002515711	0,006795335
Variabele X 4	-0,028314171	0,191656891	-0,147733647	0,883575364	-0,420296519	0,363668177	-0,420296519	0,363668177

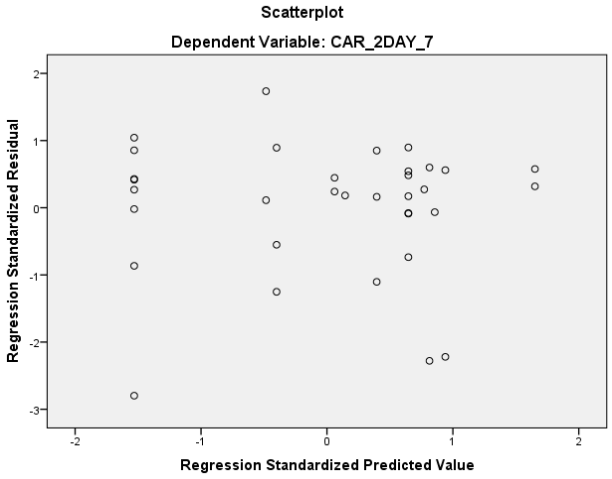
Appendix XII. Assumptions and conditions hypothesis 5

Hypothesis 5. (MODEL 7.)

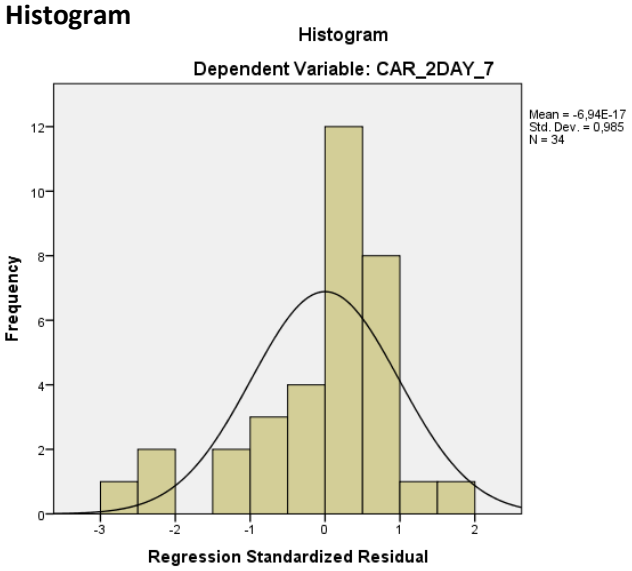
Scatterplot



Residuals

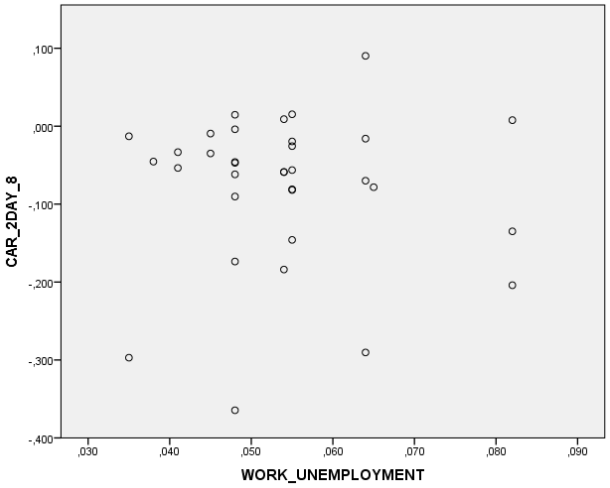


Histogram

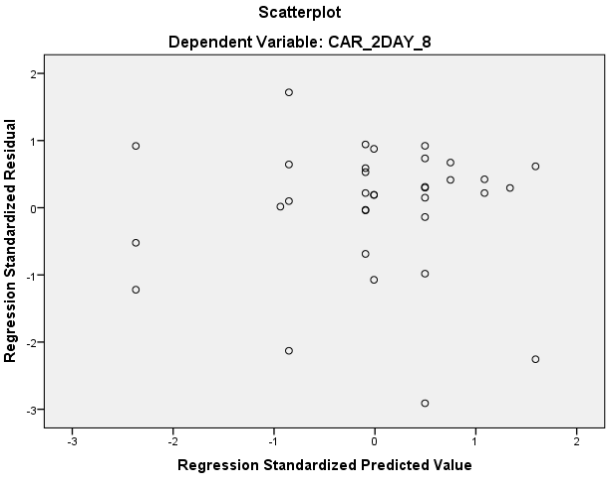


Hypothesis 5. (MODEL 8.)

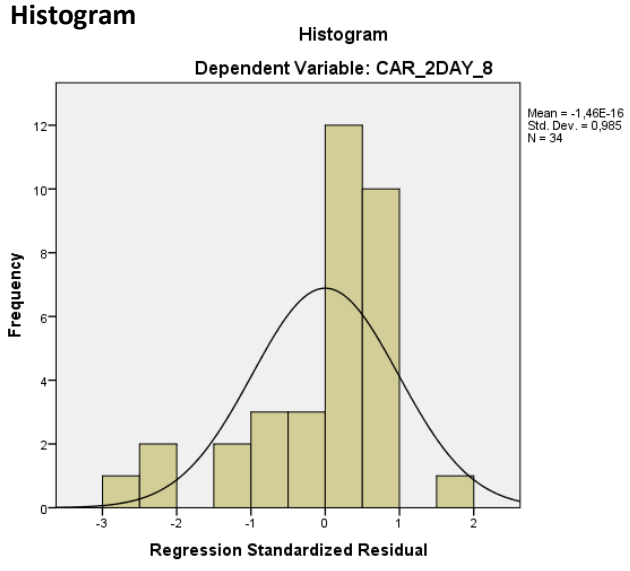
Scatterplot



Residuals

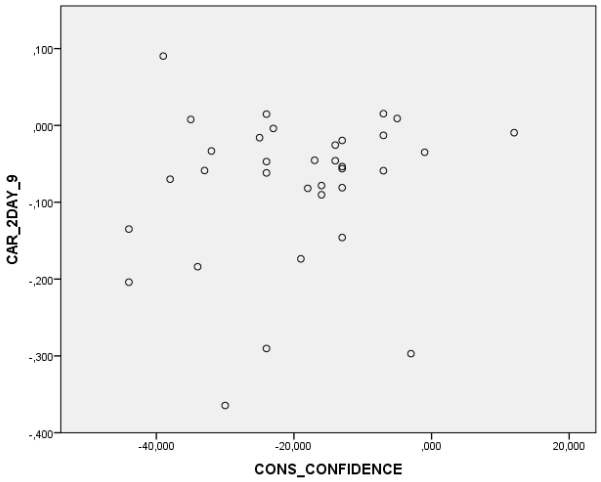


Histogram

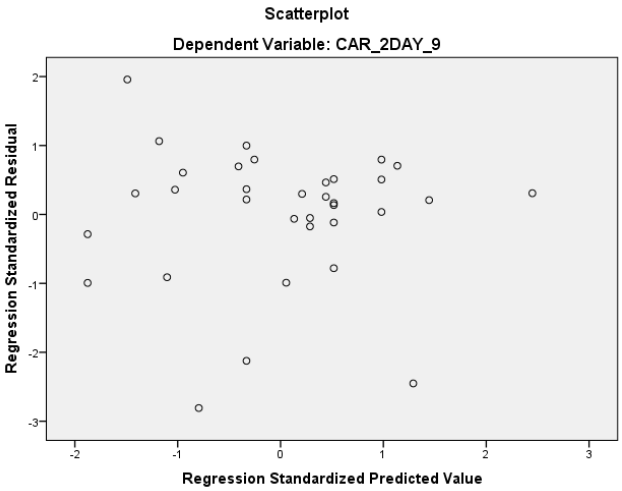


Hypothesis 5. (MODEL 9.)

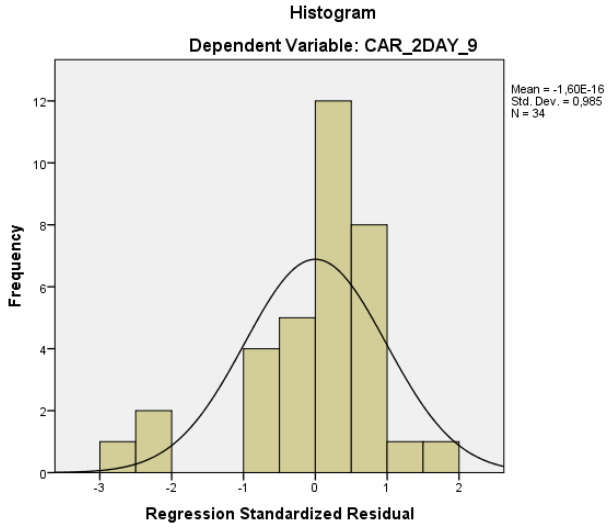
Scatterplot



Residuals

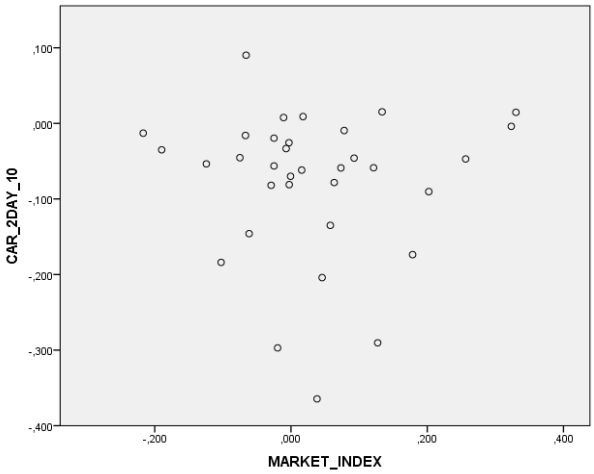


Histogram

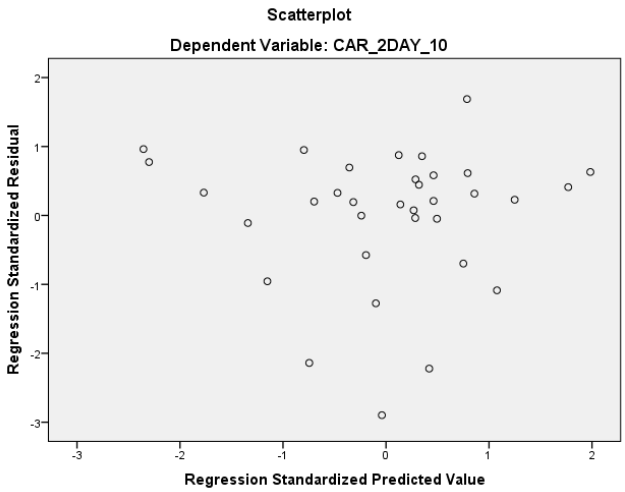


Hypothesis 5. (MODEL 10.)

Scatterplot



Residuals



Histogram