



Master Thesis Accounting and Auditing

The Process of the Development of IFRS 16 and its Effect on Market Returns

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Abstract

This research explains the market reaction to the process of the development of the new lease standard IFRS 16. Using an event study methodology, the t-tests conducted in the study show that the six events examined in the study have a significant effect on the market. T-tests are provided that show differences between industries and countries to investigate whether market reactions were caused by the announcement of IFRS 16 and not by other factors that happened on these six days. The research shows that the European market responds significantly to the announcements and implementation of the new lease standard compared to other international markets. The study also shows that, although there are differences between the industries, these are consistent with the expected difference in impact on more capital intensive companies versus less capital intensive industries. Therefore, the overall research of the different industries leads to the conclusion that there is a significant effect.

Key words: IFRS 16, Market Returns, Event Study

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1. Introduction

This study examines the effect of a new IFRS standard on the capital markets. The implementation of a new IFRS standard goes gradually. It is a process of designing the standard, adjusting the proposals, the publication of new versions, and last but not least, listening to the reactions of the stakeholders. The process goes hand in hand with releases of new information for the stakeholders, and they react to this in their own way.

One important group of stakeholders are the investors. Investors process new information released by different sources, such as firms and the government, and, as is the case in this study, the IASB, the independent constitution that establishes and accepts International Financial Reporting Standards (Deloitte Global Services Limited, 2013). The reaction of the investors to the new information becomes visible in the stock prices, because the stock prices rise when there is positive news for investors and fall if there is negative news for investors.

This study shows how investors reacted to the process of the development of the new lease standard IFRS 16. The new lease standard IFRS 16 replaces the prior lease standard IAS 17. The process of developing IFRS 16 took a number of years and this research shows how investors reacted to new information around the development of IFRS 16 and the adjustments and publication of the proposals and finally to the effectiveness of IFRS 16. The research question that will be answered in this study is therefore: ‘Does the introduction of a single lease standard lead to capital market reactions?’.

It is important to have an answer to this question, because regulators can learn how investors react to new regulatory reforms, proposed reforms, or changes in accounting rules. This is important for regulators, because investors are an important group of stakeholders for a company. Investors want as much information as they can get, because they want to know by which firms they can get the highest return for their investments. Companies provide information in their annual reports and through other information releases. Investors want companies to be transparent in publishing their information, because this is the only way how they know how the company really perform. Investors rely on the promise of the regulators that their purpose is ‘to develop standards that bring transparency, accountability and efficiency to financial markets around the world. That their work serves the public interest by fostering trust, growth and long-term financial stability in the global economy’. (The IFRS foundation, 2018).

Because the investors rely on this promise of the regulators, regulators want to know how investors react to changes in accounting rules and they want to know how they can make accounting rules better to get more transparency in the financial information of companies, and therefore there is a better information provision for investors. IFRS 16, in particular, dictates that all companies that lease capital goods and are reporting under IFRS have to place all lease and rental agreements on the balance sheet. This new standard affect companies more than other companies, dependent of the capital intensity of the company. Especially, the new standard will result in a change of finance ratios. Eventually, this may affect the valuation of the companies and therefore the stock prices.

To answer the research question, the study makes use of an event study methodology. There are six important events in the process around the development of IFRS 16. These events are for example the publication of a discussion paper, the publication of an exposure draft, the publication of the new lease standard and the effectiveness of the new lease standard. Each event has an expected reaction, that means will the market react positive to this event or will it react negative to this event. To see if the expectation is consistent with the actual market reaction, t-tests are performed for the six events. Using ORBIS, EIKON and Datastream to obtain the daily price data between 2009 and 2020 and the Dow Jones STOXX Global 1800 Index excluding the 600 European, for every event the Three-day Cumulative Abnormal Return for around 4,100 European firms is calculated. This is the difference between the Three-day Cumulative Return of a company and the Three-day Cumulative Dow Jones STOXX Global 1800 Index excluding the 600 European firms. Then, with a t-test, there can be examined if the mean of the Three-day Cumulative Abnormal Return is significantly different from zero. If this is the case, the event has a significant influence on the market reaction. Also, the overall effect of the six events is examined. All the observations for every event and every firm are taken together and, with a t-test, there is examined if the six events have an overall significant effect on the market return. To check if the research is robust, the event window is adjusted to a one day and five day event window. The same t-tests are performed as with the three day event window.

The t-tests conducted in the study show that the six events have a significant effect on the market reaction. The market reaction to most of the events is negative, because the new standard leads to a lower valuation of the firms. The company's key financial ratios, balance sheet, leverage and solvency ratios, will change as a result of the new standard (Morales-Díaz and

Zamora-Ramírez, 2018), and the market will react negative to this, because there may be a decrease in the debt ratio the current liquidity and the total assets turnover, despite the fact that EBITDA and EBIT, show an increase. Apparently, the financial market values balance sheet ratios higher than profitability indicators. These market reactions are not consistent with the expectations made before conducting the t-tests. When literature explain a positive reaction to an event, the market reacts actually negative to an event. This is the case when the IASB publishes drafts of the standard. Apparently, the market reaction is more affected by the expected change in financial ratios than by the intended improvement of transparency of reporting. Although the expectations are not consistent with the actual market reaction, we can learn from the results that the introduction of a single lease standard leads to capital market reactions. When using the three day event window, there is an overall significant effect on the market response. Looking at the separate events, all the events have a significant effect on the market reaction. To test the robustness, the results of the t-tests using the three day event window are compared with the results of the t-tests using the one day and five day event window. The robustness test shows only two events that do not have a significant effect: the publication of the Exposure Draft II and the publication of the final standard. A possible reason why the effect for the publication of the Exposure Draft II is not significant based on the one day event window is that the investors need more than one day to process the information that is revealed by this event. A possible reason why the effect for the publication of the final standard is not significant based on the five day event window is that the investors react directly to the event, but not long before or after the event. The overall effect of the six events on the reaction of investors is significant for both using an one day event window and a five day event window.

The research and its findings aims to contribute to the existing literature, because most existing studies about the new lease standard present results for the effect of the introduction of IFRS 16 on performance indicators. The study of Morales-Díaz and Zamora-Ramírez (2018) investigates the consequences of IFRS 16 on the company's key financial ratios. Their main findings are that IFRS 16 has a significant impact on the balance sheet, leverage and solvency ratios of European listed companies. The objective of Săcărin's (2017) research is to show what the impacts of IFRS 16 will be, with respect to the financial statements and the financial indicators. According to the study, the main effects of the application of IFRS 16 are that the statement of cash flows will show a higher operating cash flow, while the net cash flow generated by financing activities will decrease by the same amount. Also, a difference in the

amounts disclosed in the financial statement will result in a difference in the financial indicators determined based on these. So, there is a decrease in the debt ratio the current liquidity and the total assets turnover, while the EBITDA and EBIT, which are indicators for the profitability, show an increase. Magli, Nobolo and Ogliari (2018) assess what the impacts of the application of IFRS 16 are on the listed issuers of financial statements. They find that there are important changes for the lessee. With regard to the balance sheet, there is an increase in lease assets, an increase in financial liabilities and a decrease in equity. In the income statement, the EBITDA and the finance costs will increase. According to the researchers, there is an increase in the EBITDA/revenues ratio, which will increase from 15% to 16%. Also, there will be an increase in debt by 23% and the debt/equity ratio will increase from 52% to 58%. These studies only look to the effect of the new lease standard inside the company. There is not much literature about the effect of a new single lease standard on the capital market reactions. This study will focus on the market reaction when the new lease standard was announced and implemented.

The new insight that this study will provide is how the market will react to information provided by standard setters with as part of the process of developing a new standard. The study examines the effect of the process of the development of a new standard including the release of the final standard and how the process of an upcoming standard impacts market decisions. These insights are important for literature progress, because there is not much literature about standards that have such a significant effect on the balance sheet as IFRS 16.

The rest of the study contains of the following chapters. First, the research provide some theoretical background in which the new lease standard IFRS 16 is explained. Also in this chapter is explained what the positive and negative market reactions to the IFRS 16 adoption events by investors are and the six events that are used in the event study methodology are explained. The next chapter is the methodology. This part of the study explains how the research will be executed. There is an explanation of the research design and the data and sample selection used. The following chapter provides the results of the research and an interpretation of the findings. Also in this chapter, t-tests are provided that show differences between industries and countries to investigate whether market reactions were caused by the announcement of IFRS 16 and not by other factors that happened on these six days. This give more evidence that this study actually measures the effect of the IFRS communication and not just a general trend in the EU market. After that, robustness tests will provide evidence that the

study is robust. The last chapter contains the conclusion, and gives a short summary of the research with the results and findings and provide some suggestions for further research.

2. Theoretical background

2.1. The regulation of IFRS 16

On January 13, 2016 the International Accounting Standards Board (IASB) released International Financial Reporting Standard (IFRS) 16 Leases and since January 1, 2019 it is effective for companies that report under IFRS. IFRS 16 substitutes the prior leasing standard IAS 17 Leases. Subsequently, from January 1, 2019 onwards, all companies that lease capital goods and are reporting under IFRS have to place all lease and rental agreements on the balance sheet. The purpose of IFRS 16 is to draft information that (a) accurately report lease transactions and (b) generate a base for financial statement users to approximate the amount, timing and uncertainty of cash flows arising from lease contracts (The IFRS Foundation, 2017).

IFRS 16 is the result of the project of the IASB to enhance the financial reporting of leases. The project started in 2005, when the US Securities and Exchange Commission (SEC) is worried about the absence of enough transparency in the information of lease contracts. Investors and other stakeholders had the similar apprehensions. The IASB and the Financial Accounting Standards Board (FASB), the US national standard-setter, began a plan to refine lease accounting. The IASB and the FASB had the same view that the lessee will get an asset and an obligation at the commencement of the lease period. Though, when IAS 17 was implemented, most assets and liabilities were not identified, and thus not reported on the balance sheet. This resulted in a shortage of information for investors, who could not have a clear regard of the company's financial position and could not make a comparison between companies that lease assets versus companies that buy assets without an alteration of the figures (The IFRS Foundation, 2016).

IAS 17 does not support the needs of investors. Under IAS 17 there were two types of leases: finance leases and operating leases. The reason why IAS 17 allowed for two types of leases is that IAS 17 concentrated on identifying when a lease is economically identical to buying the assets being leased, the underlying asset. When a lease was defined to be economically identical to buying the underlying asset, the lease was recognized as a finance lease and reported on the balance sheet of the company (The IFRS Foundation, 2016). Also, a lease was categorized as a finance lease if the risks and compensations were transferred for the most part to the lessee (Deloitte Global Services Limited, 2013). All other leases were identified

as operating leases and were reported off balance sheet (The IFRS Foundation, 2016). Whether a lease was categorized as a finance lease or an operating lease depended on the nature of the transaction and not on the type of transaction (Deloitte Global Services Limited, 2013). Under finance lease, the lease is identified as a non-current asset and as a non-current liability and current liability for the lease payments on the balance sheet. Under operating lease off-balance-sheet reporting is applied. The expenses related with the lease contract are managed as an operating expense in the profit and loss account. As a consequence, more than 85 per cent meets the requirements of an operating lease and therefore the off-balance-sheet reporting is utilized. Investors have to modify the financial statements to identify assessed assets and liabilities of operating leases and also the EBIT or EBIDTA and interest. To meet the investors' demands the IASB changes the accounting for leases. Under IFRS 16, investors do not make many modifications, because investors acquire more information that will make the picture of a company's financial position better (The IFRS Foundation, 2016).

IFRS 16 describes a single lessee accounting model and thus does not make a differentiation between finance leases and operating leases. The single lessee accounting model obliges a lessee to identify assets and liabilities for all leases in the balance sheet. A lessee needs to identify a right-of-use asset, explaining his right to use the underlying leased asset, and a lease liability explaining his duty to make lease payments. The lessee assesses right-of-use assets alike other non-financial assets, such as property, plant and equipment, and lease liabilities as other financial liabilities. As a result, the right-of-use asset must be depreciated and interest must be paid over the lease liability and should be recognized in the profit and loss account. Also, the lessee should report within the financing activities in the cash flow statement the amount paid in cash for the principal, and within the operating or financing activities in the cash flow statement the interest paid. For lessees that made use of operating lease under IAS 17 but now have to switch to finance lease under IFRS 16, their income will increase because the lease expenses will disappear, but their income will decrease because of the depreciation expenses and interest expenses that arise under IFRS 16. The net effect of income is unclear (Gan, 2020). Lessees do not make use of IFRS 16 if the lease period is less than twelve months and the underlying asset is of low value (The IFRS Foundation, 2017)

2.2. Positive and negative market reactions to IFRS 16 adoption events

For investors it is important that there is enough and accurate information acquirable about companies (The IFRS Foundation, 2018). Investors have to make decisions based on this

available information. It is possible and even likely that the management of a company knows more about the company or has more information than its investors. This circumstance is named the principal-agent theory. Eisenhardt (1989) describes the principal-agent theory as the interaction between a principal and an agent in which the agent not only does something in the interest of the principal when doing the tasks of the principal. When this is the case the interests of the principal and agent are not aligned. Because of the fact that investors do not have the same information at the same time as the management of the company, the IFRS-board have set standards (The IFRS Foundation, 2018). The purpose of IFRS is: 'Our mission is to develop standards that bring transparency, accountability and efficiency to financial markets around the world. Our work serves the public interest by fostering trust, growth and long-term financial stability in the global economy'. With the IFRS standards, information asymmetry between the principal and agent can be reduced (The IFRS foundation, 2018).

There are both positive and negative market reactions to the adoption of IFRS standards set by the IFRS-board. Investors can have a positive reaction to the implementation of IFRS when they assume that the adoption of an IFRS standard will lead to higher financial reporting quality, set off against the domestic standards, and besides this, that it will enhance transparency, lower information asymmetry and risk, and, therefore, reducing cost of capital (Armstrong et al., 2010). This is in line with prior studies. The study of Barth et al. (2008) shows that the use of International Accounting Standards (IAS), which is part of the existing IFRS standards, results in higher quality financial reporting in comparison with the use of non-U.S. domestic standards. The researches Diamond and Verrecchia (1991), Baiman and Verrecchia (1996) and Leuz and Verrecchia (2000) and Barth et al. (2009) show that higher quality of financial reporting is related with lower cost of capital. These findings are in line with the studies of Aboody et al. (2004) and Easley and O'Hara (2004). The studies find that information risk has a price and, therefore, its identified decline can show a market reaction. This can be utilized to the new lease standard IFRS 16, because the regulation of IAS 17 results in a lack of information for investors and analysts, who cannot have a clear view of the company's financial position and cannot compare companies that lease assets versus companies that buy assets without an adjustment of the numbers (The IFRS Foundation, 2016). Under IFRS 16 investors acquire more information that will improve the situation of a company's financial position and therefore the information asymmetry between principal and agent will decrease (The IFRS Foundation, 2016). This will result in a market reaction.

Another reason why investors can have a positive reaction to the implementation of IFRS standards is that the adoption of IFRS will result in positive cash flow impacts. Positive cash flow impacts can be lower contracting costs (Beatty et al. 1996) or reduced scope for managerial extraction associated with more transparency in financial reporting (Hope, 2006). Further, a positive consequence can arise when investors think that the utilization of IFRS results in convergence advantages. The study of Barth et al. (1999) shows that investors react positive when there are convergence possibilities. In line with this, the research of Ashbaugh and Pincus (2001) shows that analyst forecasts errors can be decreased by convergence efforts related with IAS.

On the other hand, with the implementation of IFRS 16 there could arise negative reactions of investors. This can happen when the application of IFRS 16 will result in a lower quality of financial reporting according to the investors. The studies of Ball (1995, 2006) and Daske et al. (2007) show that convergence in financial reporting needs uniform utilization of the new standards. In Europe, there was no regulative adversaries that protect the uniform implementation of IFRS.

Further, with the implementation of IFRS 16 there will be several accounting and financial consequences that will result in a negative effect on the stock price, because investors are worried about the changing financial statements. For example, balances increases, leverage ratios decline and the capital ratios decrease. Also, the income statement changes, because the accountability of the costs is different (PricewaterhouseCoopers, 2016). Besides this, the new standard has an effect on almost all financial ratios and performance figures, such as solvency, current ratio, EBIT, operating profit, net profit, EPS, ROCE, ROE and operational cash flow. These changes may also affect bank covenants, credit ratings and financing costs. These consequences are for organizations a reason to re-evaluate 'lease versus buy'-decisions and maybe to revise existing lease contracts (Tănase, Calotă and Oncioiu, 2018).

The research of Săcărin (2017) shows what the effects of IFRS 16 will be with respect to the financial statements and the financial indicators. The main effects of the application of IFRS 16 are that the cash flow statement will show a higher operating cash flow, while the net cash flow resulted from financing activities will decline by the same amount. Also, a deviation in the amounts disclosed in the financial statement will produce a difference in the financial indicators determined based on these. So, there is a decrease in the debt ratio, the current

liquidity and the total assets turnover, while the EBITDA and EBIT, which are indicators for the profitability, show an increase. Morales-Díaz and Zamora-Ramírez (2018) examine the consequences of IFRS 16 on the company's key financial ratios. Their main findings are that IFRS 16 has an impact on balance sheet, leverage and solvency ratios of European listed companies. They also find that the impact is different across sectors and they do not find an effect of the new lease standard on the profitability ratios.

2.3. IFRS 16 adoption events

The six events are selected based on the publications of the IASB and FASB between 2009 and 2016 (Deloitte Global Services Limited, 2013).

The first event is March 19, 2009. On this day the IASB and FASB release the discussion paper 'Leases: Preliminary Views'. The IASB and FASB discuss a possibility for a new standard for lease accounting where all assets and liabilities must be activated. This new standard will oblige that all leases and rental agreements will be placed on the balance sheet. Even though the IASB debate about a new lease standard prior to 2009, March 19, 2009 is used as the first event because with the publication of the discussion paper the IASB and FASB give their first explicit point of view of how the new lease standard will look like. The expected reaction of investors is that there will be an increase in the market return. With the release of the discussion paper, investors are no longer worried about the absence of enough transparency in the information of lease contracts, because they have more confidence that there will be a new lease standard that provide them more information to enhance the possibility to have a evident judge of the company's financial position (Deloitte Global Services Limited, 2013). However, with the implementation of IFRS 16 there will be several accounting and financial consequences that will result in a negative effect on the stock price, because investors are worried about the changing financial statements. For example, balances increases, leverage ratios decline and the capital ratios decrease. Also, the income statement changes, because the accountability of the costs is different (PricewaterhouseCoopers, 2016).

On August 17, 2010 the IASB and FASB publish the Exposure Draft IFRS 16. The IASB and FASB release a proposition for an overall new lease standard where they explicitly state that the new standard will enhance the information acquirable to investors about the processing of lease contracts. The existing accounting lease standard distinguishes between financial leases and operating leases. When a company applies operating lease, there are no assets and liabilities recognized in the financial statements. Investors have to adapt the financial statements to assess the impact of operating leases when doing an investment analysis. The IASB and FASB propose

a new lease accounting standard with a new approach for lessees, which is named the right-of-use approach. A lessee needs to identify a right-of-use asset, describing his right to use the underlying leased asset, and a lease liability describing his obligation to make lease payments as a result of the lease contract. This improves the supply of more absolute and helpful information to investors. This will result in an expected increase in the market return, because investors can compare companies that lease assets versus companies that buy assets without an adjustment of the numbers (Deloitte Global Services Limited, 2013).

On July 21, 2011 the IASB and FASB communicate that the existing lease standard IAS 17 will finally be revised. On the basis of the first Exposure Draft and the reactions on this, there is an announcement that there will be a new Exposure Draft with an updated version of the proposal for a new lease standard. The IASB and FASB present a press release stating that the decisions are sufficiently different from those published in the Exposure Draft to guarantee re-exposure of the revised proposal. The re-exposure is made to give involved parties the possibility to give reflection on the boards revisions that are taken since August 2010. The expectation is that investors will not react on the announcement that there will be a new Exposure Draft, because no new information is provided that is relevant for investors (Deloitte Global Services Limited, 2013).

On May 16, 2013 the IASB and FASB publish the Exposure Draft II. This proposal is an modification/addition of the first proposition in which the reactions of stakeholders are handled. Investors will react positive to this event, because in this proposal deals with the reaction of stakeholders. Investors have the feeling that they are being heard and that the IASB and FASB agreed with them (Deloitte Global Services Limited, 2013).

On January 13, 2016 the IASB releases a new lease standard, IFRS 16 Leases and since January 1, 2019 it is effective for companies that report under IFRS. IFRS 16 stands for a single lessee accounting model and thus does not make a distinction between finance leases and operating leases. As a result, all lessees that report under IFRS have to place all lease and rental obligations on the balance sheet. IFRS 16 substitutes the earlier leasing standard IAS 17 Leases. This will result in an expected increase in the market return, because IFRS 16 better serves the needs of investors and enhance the financial reporting of leases. Investors are no longer worried about the absence of enough transparency in the information of lease contracts (Deloitte Global Services Limited, 2013).

IFRS 16 is effective from January 1, 2019 onwards. The expectation is that investors will not react on this event, because they already knew on January 13, 2016 that IFRS 16 will be effective on January 1, 2019.

Table 1
Events and predicted effects on market return

<u>Event Date</u>	<u>Description</u>	<u>Predicted market reaction</u>
March 19, 2009	Publication of Discussion Paper ‘Leases: Preliminary Views’. The IASB and FASB discuss a possibility for a new standard for lease accounting where all assets and liabilities must be activated.	Decrease
August 17, 2010	Publication of Exposure Draft IFRS 16. The IASB and FASB publish a proposal for an overall new standard where they explicitly state that the new standard will benefit from the information provision of the investors about the processing of lease contracts.	Increase
July 21, 2011	The IASB and FASB communicate that the existing lease standard IAS 17 will finally be revised. On the basis of the first Exposure Draft and the reactions on this, there is an announcement that there will be a new Exposure Draft with an updated version of the proposal for a new lease standard.	No reaction
May 16, 2013	The IASB and FASB publish the Exposure Draft II. This proposal is an adjustment/complement of the first proposal in which the reactions of stakeholders are processed.	Increase
January 13, 2016	The IASB publishes a new standard, IFRS 16 Leases. IFRS 16 replaces the standard IAS 17 and is effective on January 1, 2019.	Increase
January 1, 2019	IFRS 16 is effective.	No reaction

To answer the research question, the six events and announcements of the IASB and FASB around the adoption of IFRS 16 will be examined. Investors process these events and announcements thoroughly. The information provision that comes with these events and announcements are an important part of the valuation of a stock (Fama et al., 1969). The expectation is that these events and announcements have an effect on the stock prices. Research shows that investors react on announcements before the actual regulation is effective. A research of Onali et al. (2014) shows that investors react on events around IFRS 9 before the standard became effective. The market value of 5,400 investigated companies were affected by the thirteen announcement around IFRS 9. The results of the study show that IFRS would provide more transparency for investors. This increasing transparency was visible around the thirteen announcements in the stock price of the shares.

If investors notice that more information is available as a result of the events and announcements around IFRS 16, the stock prices will change. The stock price is a reflection of all the information available that is known by investors (Fama et al, 1969). Other studies that examined the reaction of investors around similar announcements of other IFRS-standards (Onali et al., 2014; Armstrong, 2010) show that there were significant changes in the stock prices of different companies around these announcements.

The events are classified into three groups. These three groups differ from each other. The difference between the events that belong to one of the three groups, is that some events tend to evoke a positive reaction to investors, some events a negative reaction, and some events no reaction. The first group consists of the events that expect a positive reaction, so an increase in the market return. The second group consists of the events that expect a negative reaction, so a decrease in the market return. The third group consists of the events that expect no reaction. Consequently, there are three hypotheses that contradict each other. The first hypothesis would say that there is a positive reaction, while the second hypothesis would say that there is a negative reaction. The first hypothesis tests only the events that expect a positive reaction of the investors, and the second hypothesis tests only the events that expects a negative reaction of the investors. Than, the third hypothesis tests the events that expect no reaction of the investors.

The first group consists of events on August 17, 2010, May 16, 2013, and January 13, 2016. For these events, the expected reaction of investors is that there will be an increase in the

market return. The first reason why there could be an increase in the market return is that with the implementation of the new lease standard investors are no longer worried about the absence of sufficient transparency in the information of lease contracts. A second reason is that the new lease standard improves the supply of more absolute and helpful information to investors which helps investors compare companies that lease assets versus companies that buy assets without an adjustment of the numbers (Deloitte Global Services Limited, 2013). A third reason, is that the new lease standard better serve the needs of investors and enhances the financial reporting of leases. For this group, this will lead to the following hypothesis:

H_a: The events and announcements around the development of IFRS 16 have a positive effect on the market reaction of European listed companies.

The second group consists of the event on March 19, 2009. For this event, the expected reaction of investors is that there will be an increase or decrease in the market return. This is because investors are worried about the changing financial statements. For example, balances increases, leverage ratios decline and the capital ratios decrease. Also, the income statement changes, because the accountability of the costs is different (PricewaterhouseCoopers, 2016). For this group, this will lead to the following hypothesis:

H_a: The events and announcements around the development of IFRS 16 have a negative effect on the market reaction of European listed companies.

The third group consists of the event on July 21, 2011 and January 1, 2019. For these events, the expectation is that there will be no reaction of investors. The expectation is that investors will not react on the events, because no new information is provided that is relevant for investors. For this group, this will lead to the following hypothesis:

H₀: The events and announcements around the development of IFRS 16 have no effect on the market reaction of European listed companies.

3. Methodology

3.1. Research design

This research makes use of an event study methodology. The method is in line with the studies of Armstrong et al. (2010) and Onali et al. (2014). In this event study, the independent variables are the events around the announcements and adoption of IFRS 16. This study will examine six events. The first five events are distinguished by the IASB and FASB (Deloitte Global Services Limited, 2013). The sixth event is added to examine if the market will respond to the event that IFRS 16 is effective. Table 1 gives an overview of the six events and the predicted effects on the market return.

The dependent variables are the equity return reactions of the companies examined in this research. Comparable with the studies of Armstrong et al. (2010) and Onali et al. (2014), the Cumulative Adjusted Return (CAR) is used to measure the reaction of the stock prices to an event. To calculate the CAR, the abnormal return (AR) or market-adjusted return (MAR) is needed. The AR isolate the effect of the event of the other fluctuations on the market (Khotari & Warner, 2007). To measure the effect of the individual events on the stock prices the event window must be specified.

The market reaction is measured by three different event windows. According to the research of Armstrong et al. (2010) and Onali et al. (2014), the first window is the three-day cumulative market-adjusted return centered on the event date, used to assess the market reaction. Thus, the event window is [-3, +3]. A second and third event window are used for the robustness test. These event windows are [-1, +1] and [-5, +5]. When the abnormal returns concur with the first event window, the outcome is robust, because the robustness test checks the reliability of this study.

The daily ARs or MARs are calculated as the daily return on a stock of a company minus the market return. Thus the ARs or MAR for stock *i* on day *t* is defined as:

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return of stock i on day t and $R_{m,t}$ is the return of the market for day t (Callaghan, Kleiman, & Sahu, 1999).

In line with Armstrong et al. (2010) and Onali et al. (2014), the returns are market-adjusted to reduce possibly confounding effects, which are alternative explanations that could drive the reaction in the stock market that occur at the same time as the event dates in this study. This study makes use of a large part of the global equity market, therefore a suitable market return is not clear. The returns are subtracted by the corresponding three-day return to the Dow Jones STOXX Global 1800 Index (DJ STOXX 1800 ex Europe), excluding the 600 European firms. This proxy include the 1800 world largest international firms excluding the European firms in the index (Onali et al., 2014). Because of the possibility to eliminate the effects that this study tries to report when including the European firms, this study uses the DJ STOXX 1800 ex Europe (Armstrong et al., 2010).

After the ARs are determined the CAR can be calculated. The CAR is defined as:

$$CAR_{it} = \sum_{t-k}^{t+l} AR_{it}$$

where k and l are the number of days before and after the event day (Ritter, 1991). To test the significance of the event returns, this study makes use of a t-test. The t-test provide evidence if or if not the mean of the six event CAR_{it} s differs from zero. In line with Armstrong et al. (2010), the AR is multiplied by minus one if events have a negative effect on the adoption of IFRS 16. When the cumulative abnormal returns differ significantly from zero it is possible to reject the null hypothesis.

This t-test only shows that there is a significant change in the European market compared to other international markets. To know whether that change was caused by the announcement of IFRS 16 and not by other factors that happened on these six days, other t-tests are provided that show differences between industries and countries, taking into account that there may be differences in the strength of existing national regulation and in the impact of the new standard of the distinct industries. This give more evidence that this study actually measures the effect of the IFRS communication and not just a general trend in the EU market.

3.2. Data and sample selection

To gain insight into investors' expectations regarding the implementation of IFRS 16, the three-day market-adjusted returns for firms with equity traded in the European stock market centered on the six events is examined. The study uses ORBIS, EIKON and Datastream to obtain the daily price data between 2009 and 2020 and the Dow Jones STOXX Global 1800 Index excluding the 600 European. The original sample includes all publicly listed firms in Western Europe. Because not all these firms have the Euro as their currency in which their shares are traded, this study uses the firms which their shares are traded in Euros. This yields a sample of 4,189 firms. Table 2 gives an overview of the sample by country. The tests are based on the three-day value-weighted market-adjust returns for these firms centered on each of the six events dates, CAR_{it} , where i denotes the firm and t the day of the event.

Table 2

Sample composition by country

<u>Country</u>	<u>Firms</u>	<u>Total observations</u>
Austria	57	175,886
Belgium	119	370,219
Channel Islands	30	109,311
Cyprus	76	244,166
Denmark	1	3,366
Finland	92	322,880
France	546	1,889,624
Germany	570	1,825,950
Greece	173	509,535
Ireland	30	96,061
Italy	169	656,786
Jersey	1	2,870
Luxembourg	12	45,872
Malta	16	58,041
The Netherlands	80	263,168
Portugal	46	142,941
Spain	1,122	3,758,864
Switzerland	6	21,778

<u>United Kingdom</u>	<u>1,043</u>	<u>3,705,670</u>
Total	4,189	14,212,195

4. Results

Table 3 shows the statistics of the overall European market reaction to the six events. The raw returns of the 4,189 European firms ('Raw Return Europe'), the DJ STOXX 1800 ex Europe index (DJ STOXX 1800 ex Europe Index Return'), and the difference between these two, which is the market-adjusted European return ('Cumulative Adjusted Return Europe') are presented for each of the six events. The table shows the predicted and actual signs that belongs to the individual event returns. The overall effect of the six events is significant, as shown in table 6. The p-value is equal to 0.0000, which means that the six events together have an effect on the European market. Table 3 also shows the p-values per event. Each event has a p-value lower than 0.05, which means that each separate event has a significant effect on the reaction of the investors.

For each of the six events examined, the three-day CAR for each company is used. Using the CAR of all firms around the events, the mean of CAR is tested separately, for each event, whether it is different from 0 or not. The first event is on March 19, 2009. On this day the IASB publishes the Discussion Paper 'Leases: Preliminary Views'. The IASB and FASB discuss a possibility for a new standard for lease accounting where all assets and liabilities must be activated. The expectation is that there will be a decrease in the market reaction. As shown in table 3, there is a positive Three day Cumulative Adjusted Return Europe. The t-test in table 9 shows that the p-value is 0.0000 which means that the null hypothesis can be rejected. This results in the fact that the first event has an effect on the market return. When looking at the mean of the CAR of the first event, the table shows that there is a positive effect on the market return. This is inconsistent with the expectation. The reason for this could be that investors are no longer worried about the absence of enough transparency in the information of lease contracts with this publication of a possible new lease standard.

The second event is the publication of Exposure Draft IFRS 16. The IASB and FASB publish a proposal for an overall new standard where they explicitly state that the new standard will benefit from the information provision of the investors about the processing of lease contracts. The expectation is that there will be an increase in the Three day Cumulative Adjusted Return Europe. As shown in table 3 there is a negative Three day Cumulative Adjusted Return Europe. The t-test in table 10 shows that the p-value = 0.0000. This means that the null

hypothesis can be rejected and that and this means that this event has an effect on the market return. Table 3 shows that the mean of CAR is negative, which indicates that the event results in a negative market reaction. The results are inconsistent with the expectation. With the publication of the proposal for an overall new standard where they explicitly state that the new standard will benefit from the information provision of the investors about the processing of lease contracts, there can also arise some concerns about the changing financial statements by investors. The change leads to concerns for investors, because the changing financial statements show increasing balances, declining leverage ratios, and decreasing capital ratios, which could be negatively received by investors.

The communication by the IASB and FASB that the existing lease standard IAS 17 will finally be revised is the third event. On the basis of the first Exposure Draft and the reactions on this, there is an announcement that there will be a new Exposure Draft with an updated version of the proposal for a new lease standard. The expectation is that there will be no reaction to this event by the investors. Table 3 shows that there is a negative Three day Cumulative Adjusted Return Europe. The t-test in table 11 shows a p-value of 0.0000, which means that the null hypothesis that this event will not have an effect on the market return can be rejected. The results are inconsistent with the expectation, because the table shows that the mean of CAR is positive. This indicates that investors will react positively to this event. The expectation is that investors will not react on the event, because there is no much new information provided that is relevant for investors. The fact that the first Exposure Draft will be revised and that there will be a new Exposure Draft with an updated version of the proposal for a new lease standard can cause concerns by investors and therefor they have a negative reaction to this event.

On May 16, 2013, The IASB and FASB publish the Exposure Draft II. This proposal is an adjustment/complement of the first proposal in which the reactions of stakeholders are processed. This is recognized as the fourth event. The expectation is that there will be an increase in the Three day Cumulative Adjusted Return Europe. A shown in table 3, there is a negative reaction of the investors. The t-test in table 12 shows that the p-value = 0.0000. This indicates that there will be an effect by investors to this event. The table shows the mean of CAR is negative, which indicates that there will be negative reaction by investors to this event. The results are inconsistent with the expectation. The expectation could be that the new lease standard improves the supply of more absolute and helpful information to investors which helps investors compare companies that lease assets versus companies that buy assets without an

adjustment of the numbers (Deloitte Global Services Limited, 2013). A possible explanation that the results and the expectation are not consistent is that the adjustment and complement of the first proposal is not what the investors are thought it would be. In the proposal, the reactions of the stakeholders are processed, but it can be the case that not all investors agree with this adjustment and therefore their reaction is negative.

The fifth event is the publication of a new standard by the IASB, IFRS 16 Leases, on January 13, 2016. IFRS 16 replaces the standard IAS 17 and is effective on January 1, 2019. The expectation is that there will be an increase in the Three day Cumulative Adjusted Return Europe. As shown in table 3, there is a negative reaction of the investors. The t-test in table 13 shows a p-value of 0.0000, which means that the null hypothesis can be rejected and that there is a reaction of the investors to this event. The results are consistent with the expectation. The expectation could be that the new lease standard better serve the needs of investors and enhance the financial reporting of leases. A reason why the results and the expectation are consistent is that the investors are satisfied with the new lease standard. The previous event shows that the investors react negative to the new Exposure Draft. Apparently, the investors are satisfied with the Exposure Draft, but now, with the adjustments to the Exposure Draft, they are satisfied with the publication of the new lease standard, and therefore there is a positive reaction.

The last event is on January 1, 2019. At this date, IFRS 16 is effective. The expectation is that there will be no reaction to this event by the investors. Table 3 shows that there is a positive Three day Cumulative Adjusted Return Europe. The t-test in table 14 shows that there is a p-value of 0.0000 which indicates that the null hypothesis of not having a reaction can be rejected. The table also shows that the mean of CAR is negative, which means that there will be a negative effect on the market reaction. The results are inconsistent with the expectation. The expectation is that investors will not react on the event, because there is no much new information provided that is relevant for investors. On January 13, 2016, the investors already knew that IFRS 16 will be effective on January 1, 2019. It seems that some investors are still not satisfied with the new lease standard, as the market reacts still negative to the new lease standard.

Table 3
Overall European Market Reaction to Events of the Adoption of IFRS 16

<u>Event Date</u>	<u>Description</u>	<u>Predicted Market Reaction</u>	<u>Raw Return Europe</u>	<u>DJ STOXX 1800 ex Europe Index Return</u>	<u>Three day Cumulative Adjusted Return Europe</u>	<u>p-value</u>
March 19, 2009	Publication of Discussion Paper ‘Leases: Preliminary Views’. The IASB and FASB discuss a possibility for a new standard for lease accounting where all assets and liabilities must be activated.	Decrease (-)	0.04492	0.01093	0.03399	0.0000
August 17, 2010	Publication of Exposure Draft IFRS 16. The IASB and FASB publish a proposal for an overall new standard where they explicitly state that the new standard will benefit from the information provision of the investors about the processing of lease contracts.	Increase (+)	-0.01172	0.00441	-0.01613	0.0000
July 21, 2011	The IASB and FASB communicate that the existing lease standard IAS 17 will finally be revised. On the basis of the first Exposure Draft and the reactions on this, there is an announcement that there will be a new Exposure Draft with an updated version of the proposal for a new lease standard.	No reaction	-0.06540	-0.01201	-0.05339	0.0000
May 16, 2013	The IASB and FASB publish the Exposure Draft II. This proposal is an adjustment/complement of the first proposal in which the reactions of stakeholders are processed.	Increase (+)	0.01376	0.02947	-0.01571	0.0000
January 13, 2016	The IASB publishes a new standard, IFRS 16 Leases. IFRS 16 replaces the standard IAS 17 and is effective on January 1, 2019.	Increase (+)	-0.04535	-0.03951	-0.00583	0.0004
January 1, 2019	IFRS 16 is effective.	No reaction	0.03698	0.03204	0.00493	0.0013
	Mean Return across Events		-0.00447	0.00422	-0.00869	0.0000

These t-tests only show that there is a significant change in the European market compared to other international markets. To know whether that change was caused by the announcement of IFRS 16 and not by other factors that happened on these six days, other t-tests are provided that show differences between industries and countries. This give more evidence that this study actually measures the effect of the IFRS communication and not just a general trend in the EU market.

The table below shows the different countries in the sample and whether the market in these countries responses significantly to the six event. For each of the six events examined, the three-day CAR for each company is used. Using the CAR of all firms around the events, the mean of CAR is tested separately, for each event, whether it is different from 0 or not.

Table 4
Market Reaction to the Six Events of the Adoption of IFRS 16 per Country

<u>Country</u>	<u>Observations</u>	<u>p-value</u> <u>first</u> <u>event</u>	<u>p-value</u> <u>second</u> <u>event</u>	<u>p-value</u> <u>third</u> <u>event</u>	<u>p-value</u> <u>fourth</u> <u>event</u>	<u>p-value</u> <u>fifth</u> <u>event</u>	<u>p-value</u> <u>sixth</u> <u>event</u>
Austria	57	0.9143	0.0120	0.0000	0.6778	0.5643	0.0755
Belgium	119	0.0895	0.0788	0.0000	0.0005	0.4712	0.0036
Channel Islands	30	0.5268	0.0235	0.0194	0.8590	0.5596	0.0223
Cyprus	76	0.1060	0.0347	0.0000	0.0158	0.0332	0.0703
Denmark	1	-	-	-	-	-	-
Finland	92	0.0000	0.7313	0.0000	0.4334	0.0203	0.0683
France	546	0.0140	0.0150	0.0000	0.4259	0.0009	0.8486
Germany	570	0.0018	0.0001	0.0000	0.5954	0.0000	0.0275
Greece	173	0.0711	0.0747	0.0000	0.0184	0.8353	0.0000
Ireland	30	0.1821	0.5323	0.0000	0.0361	0.5817	0.9655
Italy	169	0.0000	0.3144	0.0000	0.3167	0.0000	0.2126
Jersey	1	-	-	-	-	-	-
Luxembourg	12	0.3777	0.1511	0.0194	0.6552	0.5219	0.2900
Malta	16	0.0000	0.4210	0.0018	0.4022	0.0000	0.0000
The Netherlands	80	0.9282	0.5757	0.0000	0.7571	0.0475	0.2256
Portugal	46	0.3400	0.7080	0.0000	0.3911	0.4749	0.6588
Spain	1,122	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Switzerland	6	0.1047	0.4247	0.6330	0.1744	0.1981	0.3947
United Kingdom	1,043	0.0400	0.0000	0.0000	0.4625	0.0278	0.0000

The table shows that the different countries have different numbers of observations. To obtain the best result from the table and because a higher amount of observations gives a clearer result, a filter is used to show only the countries which have more than 100 observations.

This gives the table below.

Table 4*
Market Reaction to the Six Events of the Adoption of IFRS 16 per Country

<u>Country</u>	<u>Observations</u>	<u>p-value first event</u>	<u>p-value second event</u>	<u>p-value third event</u>	<u>p-value fourth event</u>	<u>p-value fifth event</u>	<u>p-value sixth event</u>
Belgium	119	0.0895	0.0788	<u>0.0000</u>	<u>0.0005</u>	0.4712	<u>0.0036</u>
France	546	<u>0.0140</u>	<u>0.0150</u>	<u>0.0000</u>	0.4259	<u>0.0009</u>	0.8486
Germany	570	<u>0.0018</u>	<u>0.0001</u>	<u>0.0000</u>	0.5954	<u>0.0000</u>	<u>0.0275</u>
Greece	173	0.0711	0.0747	<u>0.0000</u>	<u>0.0184</u>	0.8353	<u>0.0000</u>
Italy	169	<u>0.0000</u>	0.3144	<u>0.0000</u>	0.3167	<u>0.0000</u>	0.2126
Spain	1122	<u>0.0000</u>	<u>0.0000</u>	<u>0.0000</u>	<u>0.0000</u>	<u>0.0000</u>	<u>0.0000</u>
United Kingdom	1043	<u>0.0400</u>	<u>0.0000</u>	<u>0.0000</u>	0.4625	<u>0.0278</u>	<u>0.0000</u>

The underlined cells in the table are the events that are significant. The first thing that pops out is that there is a significant market reaction to the third event in all selected countries. This is not the case at the other events. So, apparently, the third event is more important in these countries than the other events and therefore the market reacts stronger to this event. With the third event, the IASB and FASB communicate that the existing lease standard IAS 17 will finally be revised. On the basis of the first Exposure Draft and the reactions on this, there is an announcement that there will be a new Exposure Draft with an updated version of the proposal for a new lease standard. This event makes clear that the new lease standard will be there. The first two events are only exposure drafts and market parties could give their opinion, which is apparently less important for these parties. The fact that the new lease standard will be really effective is more important for (for example) investors, because this can have consequences for their investments.

Another thing that can be noticed from the table is that for most countries where the fourth event is significant, the fifth event is not significant, and for the other countries where the fourth event is not significant, the fifth event is significant. A possible reason for this is that in the countries where the fourth event is not significant and the fifth is significant, the market is slower with its reaction to the fourth event than the market in the countries where the fourth

event is significant and the fifth is not. A reason why the market reacts slower in the countries where the fourth event is not significant may be that the lease standard of their national GAAP is not materially different from the new standard. For the countries where the lease standard of their national GAAP is different from the new lease standard, the new lease standard could have more impact to the market and they have to adjust to the new lease standard.

Further, the table shows that Spain and the United Kingdom have the most significant events of these countries. A reason could be that these countries have the most observations and therefore the reaction of the investors is more precise than the countries that have less observations.

The table below shows the different sectors in the sample and whether there is a difference in the market reaction in the different sectors to the six events. Because there are a lot of different industries with different numbers of observations and because a higher amount of observations gives a clearer result, a filter is used to show only the industries which have more than 75 observations. For the complete table of industries, please refer to table 5 in Appendix B. For each of the six events examined, the three-day CAR for each company is used. Using the CAR of all firms around the events, the mean of CAR is tested separately, for each event, whether it is different from 0 or not.

Table 5*
Market Reaction to the Six Events of the Adoption of IFRS 16 per Sector

<u>Industries</u>	<u>Observations</u>	<u>p-value first event</u>	<u>p-value second event</u>	<u>p-value third event</u>	<u>p-value fourth event</u>	<u>p-value fifth event</u>	<u>p-value sixth event</u>
BANKS	212	<u>0.0002</u>	<u>0.0144</u>	<u>0.0000</u>	0.8089	<u>0.00000</u>	0.8331
CHEMS	87	0.8814	0.1087	<u>0.0000</u>	0.6944	0.1625	<u>0.0000</u>
CNVEL	107	0.3815	<u>0.0069</u>	<u>0.0000</u>	0.9559	<u>0.0475</u>	0.2683
FDPRD	100	<u>0.0044</u>	0.7729	<u>0.0000</u>	0.2014	<u>0.0023</u>	<u>0.0001</u>
MEDEQ	93	0.1457	0.9328	<u>0.0000</u>	<u>0.0488</u>	<u>0.0001</u>	<u>0.0002</u>
PHRMC	123	0.3029	<u>0.0037</u>	<u>0.0101</u>	0.2823	0.0665	<u>0.0113</u>
RLDEV	90	0.5920	0.2077	<u>0.0000</u>	0.7967	<u>0.0039</u>	0.5268
SOFTW	121	0.8763	0.4192	<u>0.0000</u>	0.0791	<u>0.0004</u>	<u>0.0000</u>
TELSV	84	<u>0.0002</u>	<u>0.0017</u>	<u>0.0000</u>	0.9243	0.2083	0.5176

The underlined cells in the table are the events that are significant. The first thing that draws our attention is that there is a significant market reaction to the third event in all selected industries. This is the same picture that can be seen in table 4*. So, apparently, the third event is more important for market parties in these industries than the other events and therefore the market reacts stronger to this event.

Also noteworthy is the fact that all industries show no significant effects to the fourth event, except the medical equipment industry (MEDEQ). The medical equipment industry supplies assets for the medical industry. Under the new lease standard, this industry has to capitalize leased medical equipment and account for a lease liability, which leads to different balance sheets ratios. The buyers of medical equipment may therefore postpone intended investments in equipment to analyze the effect of the ratios. On its turn, this may lead to a market revaluation of the medical equipment industry.

While there is a similarity between table 4* and table 5* for event three, another table is made to investigate if there are industries in which the third event is not significant.

Table 5*
Market Reaction to the Six Events of the Adoption of IFRS 16 per Sector

<u>Industries</u>	<u>Observations</u>	<u>p-value</u> <u>first</u> <u>event</u>	<u>p-value</u> <u>second</u> <u>event</u>	<u>p-value</u> <u>third</u> <u>event</u>	<u>p-value</u> <u>fourth</u> <u>event</u>	<u>p-value</u> <u>fifth</u> <u>event</u>	<u>p-value</u> <u>sixth</u> <u>event</u>
CHMSF	5	0,0388	0,3494	0,3047	0,6663	0,2135	0,1067
COALM	2	0,3795	0,2755	0,3119	0,1129	0,1174	0,1449
FGPRC	9	0,6328	0,6101	0,7392	0,0843	0,8786	0,268
FUNRL	2	0,5872	0,3975	0,6191	0,6344	0,5379	0,5087
ITINT	5	0,1626	0,1408	0,0977	0,2418	0,4513	0,5003
MCHAG	5	0,0004	0,3012	0,0868	0,3908	0,5833	0,7367
MCHEN	3	0,0041	0,5217	0,334	0,5888	0,7149	0,0925
PLTNM	2	0,0735	0,1402	0,1667	0,7171	0,6227	0,462
PRSNL	27	0,003	0,7215	0,3653	0,0811	0,816	0,0109
PUBLS	9	0,2189	0,1339	0,3782	0,9013	0,0457	0,7389
RENEE	4	0,8297	0,0205	0,2287	0,2691	0,001	0,0174
RITMD	2	0,0715	0,4001	0,2392	0,5041	0,975	0,6377
RTVBC	19	0,2517	0,954	0,0559	0,0726	0,9823	0,0144
VENDC	6	0,7913	0,873	0,5152	0,3516	0,7922	0,5659

The table shows the industries for which the third event is not a significant event. These industries are mostly driven by intellectual property and are not capital intensive. For example, the firms that belong to the personal products industry (PRSNL) is mostly driven by the brands that they produce. For the publishing industry (PUBLS) the publishing rights are the most important thing that drives the valuation of the companies. So, the stock prices of these firms are not significantly affected by the fact that leased assets have to be capitalized on the balance sheet under the new lease standard IFRS 16.

5. Robustness tests

To check whether the results of this study are robust, a robustness test is performed. The results are robust if the events measured with a three-day CAR give the same effect on the market return as the events measured with a one-day CAR and five-day CAR.

Table 6 shows the statistics of the overall European market reaction to the six events using a CAR of one day. The table shows that the overall effect of the six events has a significant effect on the market, as shown in table 7. When looking at the individual events, the t-tests of the one-day CARs of the six events, shown from table 15 to table 20, show that all the outcomes of the t-tests correspond to the outcomes of the t-tests performed with the three-day CAR, except for the fourth event. The fourth event gives the same outcome with a 90% confidence interval. A possible reason why the effect for the fourth event is not significant is that the investors need more than one day to process the information that is revealed by this event.

Table 7 shows the statistics of the overall European market reaction to the six events using a CAR of five day. The table shows that the overall effect of the six events has a significant effect on the market, as shown in table 8. When looking at the individual events, the t-tests of the five-day CARs of the six events, shown from table 21 to 26, show that all the outcomes of the t-tests correspond to the outcomes of the t-tests performed with the three-day CAR, except for the fifth one. The fifth event is significant with the one-day CAR and three-day CAR, but not with the five-day CAR. This means that the investors react directly to the event, but not long before or after the event.

It can be said that the overall European market reaction to the six event is robust, but when looking at the individual events, there can be said that events one to three and six are robust, but event four and five are not robust, because using a different event window, the p-value changes that much causing an significant effect.

Table 6
Overall European Market Reaction to Events of the Adoption of IFRS 16

<u>Event Date</u>	<u>Description</u>	<u>Predicted Market Reaction</u>	<u>Raw Return Europe</u>	<u>DJ STOXX 1800 ex Europe Index Return</u>	<u>One day Cumulative Adjusted Return Europe</u>	<u>p-value</u>
March 19, 2009	Publication of Discussion Paper 'Leases: Preliminary Views'. The IASB and FASB discuss a possibility for a new standard for lease accounting where all assets and liabilities must be activated.	Decrease (-)	-0,00127	-0.05065	0,04938	0.0000
August 17, 2010	Publication of Exposure Draft IFRS 16. The IASB and FASB publish a proposal for an overall new standard where they explicitly state that the new standard will benefit from the information provision of the investors about the processing of lease contracts.	Increase (+)	-0,00338	0.01099	-0,01437	0.0000
July 21, 2011	The IASB and FASB communicate that the existing lease standard IAS 17 will finally be revised. On the basis of the first Exposure Draft and the reactions on this, there is an announcement that there will be a new Exposure Draft with an updated version of the proposal for a new lease standard.	No reaction	0,01004	0.00601	0,00403	0.0000
May 16, 2013	The IASB and FASB publish the Exposure Draft II. This proposal is an adjustment/complement of the first proposal in which the reactions of stakeholders are processed.	Increase (+)	0,01786	0.01743	0,00044	0.6285
January 13, 2016	The IASB publishes a new standard, IFRS 16 Leases. IFRS 16 replaces the standard IAS 17 and is effective on January 1, 2019.	Increase (+)	-0,01647	-0.00681	-0,00965	0.0000
January 1, 2019	IFRS 16 is effective.	No reaction	0,01003	0.01534	-0,00531	0.0000
	Mean Return across Events		0,00280	-0.00128	0,00409	0.0000

Table 7
Overall European Market Reaction to Events of the Adoption of IFRS 16

<u>Event Date</u>	<u>Description</u>	<u>Predicted Market Reaction</u>	<u>Raw Return Europe</u>	<u>DJ STOXX 1800 ex Europe Index Return</u>	<u>Five day Cumulative Adjusted Return Europe</u>	<u>p-value</u>
March 19, 2009	Publication of Discussion Paper 'Leases: Preliminary Views'. The IASB and FASB discuss a possibility for a new standard for lease accounting where all assets and liabilities must be activated.	Decrease (-)	0,03887	0.12654	-0,08766	0.0000
August 17, 2010	Publication of Exposure Draft IFRS 16. The IASB and FASB publish a proposal for an overall new standard where they explicitly state that the new standard will benefit from the information provision of the investors about the processing of lease contracts.	Increase (+)	-0,03332	-0.02938	-0,00394	0.0013
July 21, 2011	The IASB and FASB communicate that the existing lease standard IAS 17 will finally be revised. On the basis of the first Exposure Draft and the reactions on this, there is an announcement that there will be a new Exposure Draft with an updated version of the proposal for a new lease standard.	No reaction	-0,07034	-0.02779	-0,04255	0.0000
May 16, 2013	The IASB and FASB publish the Exposure Draft II. This proposal is an adjustment/complement of the first proposal in which the reactions of stakeholders are processed.	Increase (+)	0,00637	0.02785	-0,02147	0.0000
January 13, 2016	The IASB publishes a new standard, IFRS 16 Leases. IFRS 16 replaces the standard IAS 17 and is effective on January 1, 2019.	Increase (+)	-0,09125	-0.09290	0,00164	0.4640
January 1, 2019	IFRS 16 is effective.	No reaction	0,04236	0.08988	-0,04753	0.0000
	Mean Return across Events		-0,01789	0.01570	-0,03358	0.0000

6. Conclusion

This study explains the market reaction to the process of the development of the new lease standard IFRS 16. This process took a couple of years and this research explains how the market processes new information around the development of IFRS 16 and the adjustments and publication of the proposals and finally to the effectiveness of IFRS 16. The research question that is answered in this study is: ‘Does the introduction of a single lease standard lead to capital market reactions?’.

To answer the research question, the study makes use of an event study methodology. The six most important events in the process around the development of IFRS 16 are examined. For each of this event, the expected market reaction is compared with the actual reaction. Using ORBIS, EIKON and Datastream to obtain the daily price data between 2009 and 2020 and the Dow Jones STOXX Global 1800 Index excluding the 600 European, for every event the Three-day Cumulative Abnormal Return for around 4,100 European firms is calculated. This is the difference between the Three-day Cumulative Return of a company and the Three-day Cumulative Dow Jones STOXX Global 1800 Index excluding the 600 European firms. With a t-tests, it can be examined whether the mean of the Three-day Cumulative Abnormal Return is significantly different from zero. The t-tests conducted in the study show that the six events have a significant effect on the market reaction. This means that the introduction of a single lease standard leads to capital market reactions.

The research and its findings aims to contribute to the existing literature, because most existing studies about the new lease standard (e.g., Morales-Díaz and Zamora-Ramírez, 2018, Săcărin’s, 2017, and Magli, Nobolo and Ogliari, 2018) show how IFRS 16 affects the performance indicators. These studies only look into the effect of the new lease standard inside the company. There is not much literature about the effect of a new single lease standard on the capital market reactions. This study focusses on the market reaction when the new lease standard was announced and published as a draft.

The research shows that the European market responses significantly to the announcements and implementation of the new lease standard compared to other international

markets. The entire process of the development of the new standard affects the market, because all the six events in table 3 show a significant effect.

To understand whether that response was indeed caused by the announcement of IFRS 16 and not by other factors that happened on these six days, it was investigated whether there are differences between industries and countries. The research shows that the markets of most countries show a significant response to the six events, therefore there is not one single country that causes the significant response of the European market to the announcement and implementation of IFRS 16. Although there are differences between the industries, these are consistent with the expected difference in impact on more capital intensive companies versus less capital intensive industries. Therefore, the overall research of the different industries leads to the conclusion that there is a significant effect. This gives more evidence that this study actually measures the effect of the IFRS communication and not just a general trend in the EU market.

There are some limitations of this research but also interesting questions that could lead to future research. First, not all the European firms could be taken in the sample selection. Because the Dow Jones STOXX Global 1800 Index excluding the 600 European was given in Euro's, the Three-day Cumulative Abnormal Return must also be in Euro's. In this research, only the rates of the London Stock Exchange in Pounds are converted to Euro's. Not all European countries use the Euro or Pounds as their currency, so there are firms removed from the original sample. What could be done for future research, is to use all the European firms and use the historical exchange rate to convert the non-Euro and non-Pound currencies into Euro's.

An interesting question may arise when regulators use market response studies to support the development of new standards. In the current development process, regulators invite market parties to comment on the draft of new standards. This is more content related. By using market response studies, regulators can also understand the market sensibility of proposed changes in existing standards.

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8. Appendix A

Table 6: One-sample t-test for the overall European market reaction to the six events using a three day CAR

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]
Overall_Effect_Threeday	28,615	-0.00869	0.0005826	0.098554	-0.0098319 -0.0075481

mean = mean(Overall_Effect_Threeday) t = -14.9157
 H_0 : mean = 0 degrees of freedom = 28614

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 7: One-sample t-test for the overall European market reaction to the six events using an one day CAR

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]
Overall_Effect_Oneday	28,615	0.00409	0.0003899	0.0659622	0.0033257 0.0048543

mean = mean(Overall_Effect_Oneday) t = 10.4888
 H_0 : mean = 0 degrees of freedom = 28614

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 1.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 0.0000

Table 8: One-sample t-test for the overall European market reaction to the six events using a five day CAR

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]
Overall_Effect_Fiveday	28,612	-0.03358	0.0008073	0.1365604	-0.0351624 -0.0319976

mean = mean(Overall_Effect_Fiveday) t = -41.5939
 H_0 : mean = 0 degrees of freedom = 28611

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 9: One-sample t-test for the first event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
ThreedayCAR_1	4,187	0.03399	0.0017353	0.1122856	0.0305879	0.0373921

mean = mean(ThreedayCAR_1) t = 19.5875
 H_0 : mean = 0 degrees of freedom = 4186

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 1.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 0.0000

Table 10: One-sample t-test for the second event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
ThreedayCAR_2	4,189	-0.01613	0.008849	0.0572725	-0.0178649	-0.0143951

mean = mean(ThreedayCAR_2) t = 9.6485
 H_0 : mean = -0.01613 degrees of freedom = 4188

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 11: One-sample t-test for the third event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
ThreedayCAR_3	4,189	-0.05339	0.0017231	0.1115233	-0.0567682	-0.0500118

mean = mean(ThreedayCAR_3) t = -30.9849
 H_0 : mean = 0 degrees of freedom = 4188

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 12: One-sample t-test for the fourth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
ThreedayCAR_4	4,183	-0.01571	0.0012342	0.0798237	-0.0181297	-0.0132903

mean = mean(ThreedayCAR_4) t = -12.7288
 H_0 : mean = 0 degrees of freedom = 4182

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 13: One-sample t-test for the fifth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
ThreedayCAR_5	4,183	-0.00583	0.0016435	0.1062963	-0.0090522	-0.0026078

mean = mean(ThreedayCAR_5) t = -3.5473
 H_0 : mean = 0 degrees of freedom = 4182

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.0002 Pr(|T| > |t|) = 0.0004 Pr(T > t) = 0.9998

Table 14: One-sample t-test for the sixth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
ThreedayCAR_6	4,181	0.00493	0.0015293	0.0988835	0.0019318	0.0079282

mean = mean(ThreedayCAR_6) t = 3.2238
 H_0 : mean = 0 degrees of freedom = 4180

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.9994 Pr(|T| > |t|) = 0.0013 Pr(T > t) = 0.0006

Table 15: One-sample t-test for the first event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
OnedayCAR_1	4,187	0.04938	0.0011853	0.0767002	0.0470561	0.0517039

mean = mean(OnedayCAR_1) t = 41.6587
H₀: mean = 0 degrees of freedom = 4186

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 1.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 0.0000

Table 16: One-sample t-test for the second event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
OnedayCAR_2	4,189	-0.01437	0.0006289	0.0407027	-0.0156029	-0.0131370

mean = mean(OnedayCAR_2) t = -22.8501
H₀: mean = 0 degrees of freedom = 4188

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 17: One-sample t-test for the third event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
OnedayCAR_3	4,189	0.00403	0.0008862	0.0573593	0.022925	0.0057675

mean = mean(OnedayCAR_3) t = 4.5473
H₀: mean = 0 degrees of freedom = 4188

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 1.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 0.0000

Table 18: One-sample t-test for the fourth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]
OnedayCAR_4	4,183	0.00044	0.009094	0.0588184	-0.001343 0.002223

mean = mean(OnedayCAR_4) t = 0.4838
H₀: mean = 0 degrees of freedom = 4182

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 0.6857 Pr(|T| > |t|) = 0.6285 Pr(T > t) = 0.3143

Table 19: One-sample t-test for the fifth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]
OnedayCAR_5	4,183	-0.00965	0.0012383	0.0800853	-0.0120776 -0.0072224

mean = mean(OnedayCAR_5) t = -7.7932
H₀: mean = 0 degrees of freedom = 4182

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 20: One-sample t-test for the sixth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]
OnedayCAR_6	4,182	-0.00531	0.0007693	0.0497476	-0.0068182 -0.0038018

mean = mean(OnedayCAR_6) t = -6.9026
H₀: mean = 0 degrees of freedom = 4181

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 21: One-sample t-test for the first event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
FivedayCAR_1	4,186	-0.08766	0.0028432	0.1839526	-0.0932342	-0.0820858

mean = mean(FivedayCAR_1) t = -30.8315
H₀: mean = 0 degrees of freedom = 4185

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 22: One-sample t-test for the second event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
FivedayCAR_2	4,189	0.00694	0.0012277	0.0794587	-0.0063469	-0.0157331

mean = mean(FivedayCAR_2) t = -3.2093
H₀: mean = 0 degrees of freedom = 4188

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 0.0007 Pr(|T| > |t|) = 0.0013 Pr(T > t) = 0.9993

Table 23: One-sample t-test for the third event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
FivedayCAR_3	4,189	-0.04255	0.0019041	0.1232378	-0.046283	-0.038817

mean = mean(FivedayCAR_3) t = -22.3466
H₀: mean = 0 degrees of freedom = 4188

H_a: mean < 0 H_a: mean != 0 H_a: mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 24: One-sample t-test for the fourth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
FivedayCAR_4	4,183	-0.02147	0.0014303	0.0925094	-0.0242742	-0.0186658

mean = mean(FivedayCAR_4) t = -15.0103
 H_0 : mean = 0 degrees of freedom = 4182

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Table 25: One-sample t-test for the fifth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
FivedayCAR_5	4,183	0.00164	0.0022396	0.144848	-0.0027508	0.0060308

mean = mean(FivedayCAR_5) t = 0.7323
 H_0 : mean = 0 degrees of freedom = 4182

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.7680 Pr(|T| > |t|) = 0.4640 Pr(T > t) = 0.2320

Table 26: One-sample t-test for the sixth event

Variable	Observations	Mean	Standard Error	Standard Deviation	[95% Confidence Interval]	
FivedayCAR_6	4,181	-0.04753	0.0019601	0.1267423	-0.0513729	-0.0436871

mean = mean(FivedayCAR_6) t = -24.2486
 H_0 : mean = 0 degrees of freedom = 4180

H_a : mean < 0 H_a : mean != 0 H_a : mean > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

9. Appendix B

Table 5
Market Reaction to the Six Events of the Adoption of IFRS 16 per Sector

<u>Industries</u>	<u>Observations</u>	<u>p-value</u> <u>first</u> <u>event</u>	<u>p-value</u> <u>second</u> <u>event</u>	<u>p-value</u> <u>third</u> <u>event</u>	<u>p-value</u> <u>fourth</u> <u>event</u>	<u>p-value</u> <u>fifth</u> <u>event</u>	<u>p-value</u> <u>sixth</u> <u>event</u>
AEROS	27	0.0607	0.3493	0.0000	0.9122	0.6445	0.5404
AIRLN	31	0.0464	0.4399	0.0016	0.2936	0.4855	0.0000
ALTEL	13	0.6612	0.5928	0.0004	0.6591	0.0669	0.0284
ALUMN	7	0.0109	0.1975	0.0080	0.4880	0.4432	0.7515
APRET	19	0.9881	0.0469	0.0019	0.2082	0.0155	0.7059
ASSET	57	0.0173	0.4810	0.0000	0.3937	0.4038	0.0331
AUPRT	35	0.2946	0.6337	0.0000	0.9565	0.1010	0.1585
AUTOS	45	0.9902	0.3269	0.0000	0.6584	0.1060	0.6292
BANKS	212	0.0002	0.0144	0.0000	0.8089	0.00000	0.8331
BIOTC	62	0.2494	0.1179	0.0000	0.9328	0.0677	0.0001
BLDCC	14	0.1946	0.9278	0.0000	0.4259	0.1787	0.0065
BLDRP	3	0.2912	0.1608	0.0105	0.0938	0.0363	0.1114
BMATS	33	0.8012	0.5435	0.0000	0.5403	0.0027	0.0809
BREWS	28	0.4439	0.3529	0.0002	0.7507	0.3609	0.0346
BUSTE	15	0.3563	0.2176	0.0000	0.0189	0.6826	0.0189
CABTV	22	0.0420	0.9949	0.0000	0.2253	0.4953	0.0005
CEMNT	4	0.0868	0.6143	0.0069	0.4206	0.0293	0.7182
CHEMS	87	0.8814	0.1087	0.0000	0.6944	0.1625	0.0000
CHMSF	5	0.0388	0.3494	0.3047	0.6663	0.2135	0.1067
CHMSP	49	0.8195	0.3745	0.0000	0.2100	0.3534	0.0290
CLTHG	28	0.0188	0.1880	0.0000	0.6843	0.2517	0.3519
CMPSV	71	0.3932	0.0058	0.0000	0.8376	0.0005	0.4387
CMTIC	11	0.8246	0.2067	0.0004	0.4811	0.5124	0.0016
CNELE	12	0.6308	0.5942	0.0157	0.0453	0.2160	0.1852
CNVEL	107	0.3815	0.0069	0.0000	0.9559	0.0475	0.2683
COALM	2	0.3795	0.2755	0.3119	0.1129	0.1174	0.1449
CODGT	54	0.2941	0.0880	0.0000	0.3456	0.0249	0.0308
COLND	11	0.6935	0.4338	0.0003	0.1424	0.7120	0.0028
COMMV	12	0.3094	0.5777	0.0000	0.4264	0.1022	0.0002
COMPH	26	0.0372	0.0027	0.0000	0.6314	0.4840	0.5189
COMVL	6	0.3264	0.5761	0.0025	0.1483	0.0412	0.0205
CONPK	31	0.0619	0.0142	0.0000	0.3035	0.2181	0.1722
CONST	27	0.0066	0.2621	0.0000	0.0860	0.3837	0.6837
COPER	6	0.5100	0.5033	0.0042	0.5221	0.6774	0.8752
COSVM	21	0.0002	0.8143	0.0000	0.8834	0.2167	0.0011
DEFEN	19	0.1132	0.8173	0.0003	0.0192	0.0476	0.0071
DELSV	16	0.6428	0.0195	0.0000	0.9989	0.0022	0.9094
DGRET	22	0.0436	0.6106	0.0000	0.5820	0.1384	0.6006
DISTV	22	0.5102	0.9851	0.0000	0.0179	0.1407	0.0077
DIVFS	53	0.1759	0.2045	0.0000	0.8576	0.0416	0.2025
DIVIN	61	0.0916	0.1087	0.0000	0.0043	0.0129	0.0578
DVMAT	10	0.6493	0.9169	0.0000	0.3719	0.9151	0.4341
DVRET	46	0.0000	0.0142	0.0000	0.4606	0.0001	0.0090
EDSVS	7	0.6822	0.2892	0.0109	0.3378	0.9392	0.3169

<u>Industries</u>	<u>Observations</u>	<u>p-value first event</u>	<u>p-value second event</u>	<u>p-value third event</u>	<u>p-value fourth event</u>	<u>p-value fifth event</u>	<u>p-value sixth event</u>
ELCLC	27	0.1931	0.3358	0.0001	0.0832	0.0610	0.0510
ELECF	25	0.6973	0.6139	0.0005	0.7008	0.9898	0.0034
ELEGM	35	0.4912	0.0123	0.0000	0.1320	0.0012	0.0000
ELENT	24	0.0017	0.3290	0.0000	0.1830	0.3419	0.0084
ELEOT	7	0.9271	0.7727	0.0001	0.2944	0.0876	0.2746
ELEPC	3	0.0551	0.6641	0.0018	0.3202	0.0665	0.0540
ELTCC	36	0.7592	0.0929	0.0169	0.6728	0.9879	0.9241
ENGCS	27	0.0075	0.2920	0.0000	0.0011	0.0051	0.0254
ENTMT	12	0.1762	0.7879	0.0000	0.1362	0.8710	0.4546
FDPRD	100	0.0044	0.7729	0.0000	0.2014	0.0023	0.0001
FDRET	59	0.5097	0.1235	0.0000	0.3263	0.0054	0.1000
FGPRC	9	0.6328	0.6101	0.7392	0.0843	0.8786	0.2680
FINDP	19	0.0677	0.0476	0.0000	0.5633	0.9081	0.5803
FLINS	43	0.4437	0.2116	0.0000	0.0705	0.0296	0.0002
FMFSH	13	0.8837	0.3574	0.0014	0.2729	0.6775	0.1160
FOOTW	9	0.7786	0.1615	0.0001	0.6945	0.0089	0.0115
FORMS	4	0.1656	0.2816	0.0039	0.1366	0.3271	0.8174
FORST	3	0.5183	0.9463	0.0118	0.7545	0.0373	0.9816
FRTLZ	10	0.2726	0.7563	0.0023	0.7361	0.1280	0.1831
FUNRL	2	0.5872	0.3975	0.6191	0.6344	0.5379	0.5087
FURNS	5	0.6152	0.7020	0.0068	0.4521	0.9281	0.1533
GAMNG	38	0.0351	0.8304	0.0000	0.7910	0.2848	0.2149
GASDS	31	0.0242	0.0742	0.0000	0.2268	0.8781	0.0555
GLASS	4	0.0313	0.2013	0.0054	0.3671	0.2948	0.0172
GOLDS	21	0.4574	0.3333	0.0130	0.0027	0.2619	0.1804
HCFAC	14	0.5558	0.1244	0.0000	0.4565	0.4446	0.2356
HHAPL	6	0.0152	0.9632	0.0007	0.1334	0.5640	0.5290
HHEQP	13	0.4128	0.0748	0.0000	0.2651	0.0690	0.2165
HIMPR	12	0.2788	0.8224	0.0000	0.9549	0.7741	0.0078
HLTMC	3	0.5783	0.7686	0.0342	0.3478	0.6576	0.6173
HLTMS	17	0.8958	0.0750	0.0001	0.2812	0.9182	0.1160
HLTSV	13	0.3804	0.7008	0.0002	0.4798	0.4081	0.1005
HOMES	35	0.6879	0.0208	0.0000	0.5624	0.0344	0.0000
HOTEL	11	0.0180	0.8580	0.0187	0.8907	0.4008	0.0047
IMACH	50	0.1293	0.5126	0.0000	0.3569	0.2548	0.0273
INSBR	9	0.5429	0.0317	0.0002	0.1986	0.5349	0.9779
INSUP	21	0.8967	0.0668	0.0000	0.4284	0.0152	0.3940
INVSV	50	0.0844	0.2319	0.0000	0.0958	0.1696	0.0000
ITINT	5	0.1626	0.1408	0.0977	0.2418	0.4513	0.5003
LFINS	65	0.0384	0.3534	0.0000	0.9489	0.2006	0.1852
LUXIT	12	0.0003	0.0009	0.0000	0.0158	0.0046	0.7634
MARIN	10	0.2046	0.8705	0.0005	0.4842	0.1076	0.0011
MCHAG	5	0.0004	0.3012	0.0868	0.3908	0.5833	0.7367
MCHCH	21	0.1712	0.3579	0.0002	0.6959	0.9973	0.4191
MCHEN	3	0.0041	0.5217	0.3340	0.5888	0.7149	0.0925
MCHSP	4	0.3545	0.2851	0.0290	0.9704	0.0226	0.1413
MCHTL	11	0.1453	0.4306	0.0315	0.0280	0.9183	0.2929
MEDAG	24	0.1713	0.8098	0.0000	0.5952	0.3380	0.2052
MEDEQ	93	0.1457	0.9328	0.0000	0.0488	0.0001	0.0002
MEDSP	42	0.0209	0.2250	0.0000	0.9566	0.0055	0.9203
MEDSV	11	0.5205	0.9683	0.0029	0.7782	0.2143	0.7556
METFB	14	0.0338	0.0001	0.0004	0.1208	0.8591	0.9885

<u>Industries</u>	<u>Observations</u>	<u>p-value first event</u>	<u>p-value second event</u>	<u>p-value third event</u>	<u>p-value fourth event</u>	<u>p-value fifth event</u>	<u>p-value sixth event</u>
MINES	27	0.8278	0.0002	0.0047	0.8078	0.5388	0.1811
MORTF	7	0.0399	0.8866	0.0000	0.2052	0.9879	0.0775
MSCSG	1	-	-	-	-	-	-
MTUTL	34	0.9112	0.0536	0.0000	0.2932	0.1572	0.0031
NDRHP	8	0.2873	0.7003	0.0001	0.5454	0.3696	0.9285
NOFMS	4	0.7345	0.1972	0.0085	0.4474	0.6910	0.6023
OFFDS	3	0.6019	0.6767	0.0144	0.9018	0.7216	0.0302
OFFEQ	12	0.5488	0.2619	0.0026	0.6188	0.7882	0.0249
OILCP	42	0.4013	0.8361	0.0000	0.7217	0.1006	0.5633
OILIN	30	0.5167	0.4197	0.0000	0.6405	0.1420	0.0980
OILRM	18	0.1592	0.5015	0.0003	0.9341	0.8586	0.1098
OILSV	21	0.2826	0.9659	0.0000	0.2654	0.9874	0.4152
PAINT	12	0.1641	0.0532	0.0014	0.0012	0.4589	0.0011
PAPER	15	0.3335	0.2359	0.0001	0.6382	0.2483	0.1968
PCINS	61	0.2215	0.6632	0.0000	0.8716	0.0378	0.0000
PHOTO	1	-	-	-	-	-	-
PHRMC	123	0.3029	0.0037	0.0101	0.2823	0.0665	0.0113
PIPEL	22	0.5752	0.6805	0.0070	0.5597	0.0986	0.4482
PLTNM	2	0.0735	0.1402	0.1667	0.7171	0.6227	0.4620
PRESS	39	0.0059	0.1829	0.0000	0.8852	0.0446	0.0022
PRDTE	28	0.5385	0.3540	0.0000	0.7666	0.2569	0.0133
PRSNL	27	0.0030	0.7215	0.3653	0.0811	0.8160	0.0109
PUBLS	9	0.2189	0.1339	0.3782	0.9013	0.0457	0.7389
RAILS	58	0.0097	0.0706	0.0000	0.2262	0.4218	0.0006
RECPR	4	0.9988	0.1570	0.0008	0.3799	0.7286	0.0300
RECSV	6	0.6632	0.1134	0.0005	0.5962	0.2717	0.8635
RECVB	3	0.6241	0.2018	0.0058	0.4583	0.9792	0.0002
REINS	17	0.0742	0.1038	0.0000	0.2952	0.1668	0.6225
RENEE	4	0.8297	0.0205	0.2287	0.2691	0.0010	0.0174
RETS	34	0.0041	0.3877	0.0000	0.0711	0.2221	0.3224
RITDV	24	0.8189	0.1991	0.0000	0.0906	0.0017	0.0132
RITHC	16	0.7760	0.4897	0.0000	0.4913	0.0868	0.0002
RITHL	5	0.4148	0.3416	0.0124	0.9666	0.9297	0.7041
RITIF	7	0.0511	0.0429	0.0010	0.1373	0.0006	0.0326
RITIN	15	0.1650	0.8945	0.0000	0.4588	0.0862	0.0353
RITMD	2	0.0715	0.4001	0.2392	0.5041	0.9750	0.6377
RITMR	3	0.0384	0.0080	0.0215	0.2596	0.1796	0.1942
RITOF	66	0.9985	0.0052	0.0000	0.2824	0.2034	0.0022
RITOS	15	0.0003	0.8683	0.0000	0.3058	0.0035	0.0413
RITRS	39	0.4294	0.6764	0.0000	0.0069	0.2246	0.0194
RITRT	37	0.0064	0.5334	0.0000	0.6048	0.2608	0.0009
RITST	2	-	0.3691	-	0.0932	0.2024	0.5759
RLDEV	90	0.5920	0.2077	0.0000	0.7967	0.0039	0.5268
RLSRV	8	0.0017	0.5947	0.0002	0.5112	0.4152	0.0830
RREQP	3	0.0529	0.6791	0.0265	0.7579	0.4859	0.4238
RTVBC	19	0.2517	0.9540	0.0559	0.0726	0.9823	0.0144
SECSV	18	0.1533	0.0286	0.0000	0.6069	0.0246	0.2984
SEMIC	48	0.0490	0.9030	0.0000	0.0072	0.0649	0.0001
SOFTD	31	0.0000	0.5559	0.0000	0.1821	0.1608	0.0113
SOFTW	121	0.8763	0.4192	0.0000	0.0791	0.0004	0.0000
SPRET	38	0.5872	0.8333	0.0004	0.9363	0.1936	0.0048
STEEL	22	0.3436	0.2791	0.0000	0.6667	0.0740	0.0256

<u>Industries</u>	<u>Observations</u>	<u>p-value first event</u>	<u>p-value second event</u>	<u>p-value third event</u>	<u>p-value fourth event</u>	<u>p-value fifth event</u>	<u>p-value sixth event</u>
TELEQ	21	0.0434	0.2804	0.0000	0.8578	0.1447	0.0005
TELSV	84	0.0002	0.0017	0.0000	0.9243	0.2083	0.5176
TOBAC	14	0.9178	0.1394	0.0002	0.0806	0.1145	0.6077
TOYSG	10	0.8812	0.0944	0.0297	0.9072	0.7044	0.0032
TRAVL	23	0.7668	0.7279	0.0000	0.2657	0.0436	0.4155
TRNSV	37	0.9739	0.9445	0.0004	0.0221	0.0341	0.1045
TRPRS	48	0.2415	0.1643	0.0001	0.5210	0.1548	0.0000
TRUCK	18	0.9495	0.0010	0.0301	0.4283	0.6020	0.6854
TYRES	13	0.6499	0.7657	0.0004	0.3557	0.3711	0.6836
VENDC	6	0.7913	0.8730	0.5152	0.3516	0.7922	0.5659
WASTE	5	0.0044	0.3978	0.0020	0.852	0.4212	0.4701
WATER	18	0.8457	0.2036	0.0012	0.6556	0.2492	0.2197

10.Libby boxes

