

The effects of sports results on financial performance of the sponsor company

Abstract

According to behavioural finance and marketing theories, an image transfer should occur when a sports team achieves a match result. The investment behaviour regarding the shirt sponsoring company should therefore be influenced by the negative or positive publicity that is generated by the match result. In this research, the abnormal returns of the sponsoring companies is tested after different match results. No evidence was found that match results influence the stock prices of the sponsoring companies.

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“If we knew what it was we were doing, it would not be called research, would it?”

- Albert Einstein

Management Summary

In the world of advertising, large amounts of money are involved in the shirt sponsorships of football clubs. This gives an opportunity for companies to expose their name and increase their brand image, but there can be positive and negative sides on publicity. When a club achieves publicity, several theories endorse the effect that their sponsors are also affected by the negative or positive image transfer.

This research has answered the question if sportive results of football clubs have an effect on the stock price of their shirt sponsor. This main research question is approached from different angles. The effect is tested for a difference in results, meaning big wins, normal wins, draws, normal losses and big losses. Besides, it is tested for different match types such as national league matches, national cup matches and international cup matches. Also a distinction is made between crisis years and non-crisis years and homeland listed sponsor companies and foreign listed sponsor companies. The dependent variable is the abnormal return of the shirt sponsor company's stock for the first trading day after a match.

All the English Premier League clubs from the season 2007-2008 until season 2013-2014 with a stock listed shirt sponsor are considered. The match results are linked to the abnormal returns and their means are tested with Independent T-Tests, One Sample T-Tests and One-way ANOVA. No difference was findable between the means of the big wins and the normal wins and this was also true for the comparison of the big losses and normal losses. The draws don't have an effect on the stock price as well, likewise the different match types showed no difference in abnormal returns. The years of crisis were compared with the non-crisis years and did not differ either, just as the homeland listed sponsors compared with the foreign listed sponsors. The conclusion of the research is therefore that sport results do not have an effect on the stock price of the sponsoring company.

Managers can use this conclusion to have a better overview of the consequences of a sport sponsorship. In sponsorship negotiations, both parties now have a clearer idea of what their connectedness is besides the link of their brand. Control for the financial crisis and the measurement of company performance are limitations and can be improved in a future research, even as the sample size. There should be a better way to display the negative or positive publicity of a match result, since not every club is the same in terms of status and expectations.

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Chapter 1: Introduction

1.1 The topic

Advertising has become an integral part of contemporary society. Companies communicate with their audience through posters, billboards, brochures, advertisements, radio and television. The possibilities seem endless to advertise, for example there is also advertising possible as a result of sponsorship, which entails the provision of financial resources to organizations on the condition of media exposure. So, sponsorship can be seen as a type of advertising¹. Advertising is important for companies' performance, including stock prices. For the majority of companies applies that sponsorship is fully integrated within their marketing strategy. The purpose of sponsoring, as any promotion, is to provide a change or reinforce the image that customers or investors have of a brand. In almost all cases, sponsorship is intended to increase the customer demand or to enhance the brand image (Wilson, 1997).

There is also a lot of sponsoring in the world of sports. This goes back to the ancient times, when the wealthiest men supported athletes and gladiators to gain popularity. Sport evolved in the years to a way of communication that makes it easy to generate publicity to a large audience (Stoltenborg, 2014). Today, the amounts of money paid in sponsorship deals are huge. The IOC collected approximately 1 billion euro in sponsorship for the London Olympics in 2012 (Berkhout, 2012). For the 2013-2014 season, the top five European leagues, England, Germany, France, Spain and Italy, were sponsored for a whopping 2.1 billion euros in total (Marketingtribune, 2014). For sport organisations, it is a relatively easy way to get money, with the downside that they may also be very dependent on that source of income (Mulder, Poort, Marlet, & van Woerkens, 2006). A study from Gwinner and Eaton shows that sponsorship results in image transfer from the sponsoring company to the event. When a sponsor is associated with a sports event, people will somehow directly or indirectly relate the sponsor to the image of the organisation (Gwinner & Eaton, 1999).

In the end of 2011, Spanish football club Atletico Madrid fired the manager because of bad results and appointed Diego Simeone as a the new manager, who had lead Atletico to the

¹ (Encyclo.nl, 2014)

Europa League, Copa del Rey and Super Cup since then. In this season, Atletico Madrid has won their first Primera Division championship since 1996 and reached the Champions League final where they narrowly lost to city rivals Real Madrid. This success story also has implications for the main sponsor of Atletico Madrid: Azerbaijan, an oil-rich East-European country who paid only €12 million for the initial sponsor deal in 2013 which ran for one and a half year, now experiences extraordinary exposure. With the increased publicity through this sponsorship Azerbaijan tries to improve its image. In addition, Azerbaijan prepared an Olympic bid and will be host to the inaugural European Games in 2015 (Gibson, 2014).

Under certain circumstances, sponsorship can damage rather than enhance the image of a company. For example, since the day that Lance Armstrong was tied to performance-drug use, he was dropped by his largest corporate sponsor Nike and several others. Besides, he was forced to step down as chairman of the cancer charity he founded 15 years ago. It seems obvious that sponsors do not want to be associated with a deceiver, so they broke as fast as possible with Lance Armstrong to prevent further damage to their brand reputation. This does clearly indicate what risks are associated with entering into a sponsorship (Hart, 2012).

Negative or positive publicity not only has an effect on brand image, but also on investor behaviour. A Turkish study regarding the relation of sports results on investor behaviour shows that investors have a lower risk aversion after a victory of a football club and have a higher risk aversion after a loss of the club (Berument, Ceylan, & Onar, 2013). Another research paper considering sports results and investors behaviour proves that a loss of a national team has a negative effect on the stock prices in that particular country (Edmans, Garcia, & Norli, 2007). It has been known for a while that the mood of investors influences investment behaviour, which is contrary to rational thought. For example, the most important finding of a 2001 study was that the sunny weather had strong correlation with the market returns for that day. And if sunny weather can have a big influence, why not sports results? (Hirshleifer & Shumway, 2003) Combining this evidence about the investors with the evidence that sponsor image is transferred to a sports event, a link can be made between the investors and the company sponsoring the event.

1.2 Research question

From a rational economic perspective, sponsors will only enter into a sponsorship when the benefits for them outweigh the costs. There is a clear view of the cost, expressed in terms of money, but the benefits are often difficult to calculate. Based on which information must a sponsor make decisions? And based on what data will sponsorships be evaluated? Once a sponsorship is closed, the name of the sponsor is linked to the name of the sports organization. But is the sports organization also just as closely linked to the sponsor? This research will seek to create a better understanding regarding the benefits of sponsorship in the sports world. It will examine whether the sportive results of a sport organization affect the stock price of the sponsor. Therefore, the main question considering this research is formulated as follows:

What are the consequences of the performance of sponsored teams on the stock performance of the sponsoring company?

Sports publicity exists in very different shapes and sizes. When a club experiences a big, overwhelming victory or a big loss, it could be more striking and notable for the newspapers and other media. Therefore, the first sub question is:

Does the size of the sportive result influence the effect of the performance of the team on the stock of the sponsor company?

During a season, sports clubs will play an certain amount of matches, but not every match is for the same competition or tournament. Teams can participate in different competitions, varying from national competitions to international competitions. Since each competition takes place on a different level of a national or international stage, each competition has its own broadness of audience and thus broadness of publicity, which may influence the effect on stock performance of the sponsoring company. This results in the following sub question:

Does the match type influence the effect of the performance of the team on the stock performance of the sponsor company?

1.3 Scientific relevance

There has been much research into the marketing side of sponsorship and there are also some studies done in the field of investor behaviour. This research is precisely at the intersection of these two disciplines. Below the most important findings are discussed that are found reviewing the current literature.

As mentioned earlier, a study of Berument, Ceylan and Onar investigated the relationship between sports performance of Turkish football clubs and the risk perception of people. They hypothesize that people make riskier investments on the overall index of the national stock exchange following a victory of the club, and take less risk after a loss of the club. Indeed, empirical research on the performance of the three major Turkish football clubs Galatasaray, Fenerbahce and Besiktas shows lower risk aversion after a victory of the club and higher risk aversion after the loss of the club. This explicit means a connection between sport results and investment behaviour (Berument, Ceylan, & Onar, 2013).

Also Garcia, Edland and Norli investigated the relationship between football results and the mood of investors. It turns out that a loss of a national team has a negative impact on the overall performance of the national stock exchange. This effect not only appears after negative football results but is also linked to results in cricket, rugby and basketball. However, the effect is only significant after a loss, because wins and draws do not affect the mood of investors. Nevertheless, this research is a contribution to the relation between sport results and the mood of investors, and thereby stock prices. (Edmans, Garcia, & Norli, 2007)

Gwinner and Eaton researched the degree to which a sports event's image was transferred to a brand through event sponsorship activity to get a clearer sight on sponsorship opportunities to aid brand positioning. Two groups were studied: the first group was privy to the sponsoring of the event, and the second group was not. Respondents in the first group were more likely to report similarities on brand-event personality components than the second group, which implicates that sponsorships leads to image transfer from sponsor to sponsees. (Gwinner & Eaton, 1999)

In addition of investor behaviour, the whole field of behavioural finance offers a lot of interesting reasons why this new study is worth the dedication. In addition to the studies of

Berument, Ceylan and Onar and Admans, Garcia and Norli, a book of James Montier provides a guide for behavioural finance in practice. It describes a lot of previous literature and summarizes biases influencing investment behaviour (Montier, 2007). One can conclude that a tremendous amount of aspects affect the decision making of a human being and often lead to irrational behaviour. If even small seemingly insignificant aspects, such as the weather, affect investment behaviour, would sport results not do so as well?

Besides the literature discussed above, some other studies were contributing to literature review of this research as well. These are briefly described in the table below.

Table 1: Contributions to literature

Study	Context	Findings	Methods	Contribution
Copeland, Frisby and McCarville, 1996	Survey to companies that were involved in a sport sponsorship.	Return on investment is important due things as exclusivity, public awareness and positive image.	Survey	The importance of sport sponsorship decisions for companies.
Gwinner and Eaton, 1999	De degree to which a sporting event's image was transferred to a brand through event sponsorship activity.	Respondents were more likely to report similarities on brand-event personality components than subjects who were not exposed to the event-brand sponsorship link.	Experiment X=Notice of sponsorship Y=Image transfer	Supporting the notion that sponsorship results in image transfer.
Pope and Voges, 2000	The relationship between sport sponsorship, brand exposure and attitudes towards the brand itself.	Effects on purchase intention from the brand, from the belief that the company sponsored sport and from the corporate image of the company.	Survey	Clarified the influences of sports sponsorship
Hirshleifer and Shumway, 2003	The relationship between morning sunshine and the daily market returns.	Morning sunshine is strongly correlated with stock returns, but rain and snow are unrelated.	Secondary data X1=Sunny weather X2=Rainy weather X3=Snowy weather Y=Stock returns	Investment behavior is influenced by the mood of investors, which is difficult to reconcile with fully rational price setting.
Grohs, Wagner, Vsetecka, 2004	Evaluation the effectiveness of sport sponsorships.	Event-sponsor fit, event involvement and exposure are dominant factors predicting sponsor recall.	Survey	Offering a basis for successful sponsorship planning and execution through the selection of appropriate sponsorship.
Garcia, Edmans and Norli, 2007	Stock prices reaction after a match of the national football team.	A loss of the national team has a negative effect on stock prices.	Secondary data X1=Loss of national football team Y=Stock prices	The effect of results of national football team on the national stock prices.
Montier, 2007	Summary of behavioural finance	None	Literature research	Summarizing the previous literature leads to a better overview
Akhtari, 2011	The relationship between clouded weather and stock	Clouded weather has a negative effect on the stock market.	Secondary data X=Clouded weather Y=Stock market	Investment behavior is influenced by the mood of investors,

	prices.			which in difficult to reconcile with fully rational price setting.
Berument, Ceylan and Onar, 2013	Investments behavior after football matches in Turkey.	More risk after a victory and less risk after a loss of their club.	Secondary data X1=Victory X2=Loss Y=Investment behavior	The effect of football games on investment behavior.
van Stam, 2014	The effect of sportive performance of a football team on the stock price of the shirt sponsoring company	No effect of sport results on stock prices of the sponsor company	Secondary data X1=Victory X2=Big victory X3=Draw X4=Loss X5=Big loss X6=Match type X7=Crisis years X8=Homeland stock listed Y=Abnormal return of stock sponsoring company	The prove that there is no image transfer from sport results of the club to the stock of the sponsor company

1.4 Managerial relevance

This research paper attempts to clarify the relationship between sponsorship and stock price performance to enable future sponsors in making better considerations before entering into sponsorship deals. The sponsoring companies know more about the influences of the sportive results of their sponsored organisation. It also will be clearer to the sports organisations what kind of potential benefits they can offer a sponsor. If there is a link between sports performance and the stock price of the sponsor, this will have a big impact on the negotiation of sponsorship deals in the future.

1.5 Delimitations

The context of this research is the football industry. This industry is selected because it is still by far the most popular sport in the world. About 3 to 3,5 billion fans all around the world watch football, so the value of publicity within this sport is huge (Dixon, 2013). Sponsoring a football team might increase brand attitude or customer-based brand equity of a sponsoring company. This research does not investigate effects in terms of financial performance. The data used in this research is publicly available data about football matches and stock prices of the sponsor.

1.6 Outline

This research considers a total of five chapters. In the second chapter the theoretical framework is outlined, hypotheses are stated and definitions are made clear so it is evident which concepts are used. In chapter three, the methods used for the actual research are explained. Thus, the data and its collection is described and the methodology to test the hypotheses is discussed. The results of the research are presented in chapter four, together with descriptive statistics and some reliability and validity checks. Using the results from this research, the hypotheses from chapter two are interpreted. Chapter five provides a conclusion which answers the main research question and sub questions stated in chapter one, explaining the managerial and scientific relevance of these findings. At last, limitations of this research are marked and suggestions for further research are discussed.

Chapter 2: Theoretical Framework

2.1 Overview of previous literature and definitions

When researching this topic, it is important that all concepts are clearly defined to assure there is no ambiguity about concepts used. Therefore, this chapter explains exactly which concepts are used.

The main research question given in the chapter one, can be divided into two parts, namely the performance of sponsored teams and the financial performance of the sponsoring company. This study tries to explain the relation between performance of a sponsored team and performance of the company who is connected to this team as a sponsor. Thus, the findings in finance and marketing literature are combined to explain the starting position of this study.

As discussed in chapter 1.3, several studies from finance literature examined the effects of sponsored team performance on sponsor company performance in terms of investment decisions (Berument, Ceylan, & Onar, 2013), overall stock price performance on the national stock exchange and the effect of weather on investment decisions (Hirshleifer & Shumway, 2003) (Akhtari, 2011). They are all behavioral finance orientated and some are also linked to sports and they all approached their problem on a very similar way as this research does, namely researching stock price performance.

Studies from marketing literature discussed effects of sponsored team performance on sponsor company performance in terms of consumer based brand equity, brand image (Gwinner & Eaton, 1999) (Copeland, Frisby, & McCarville, 1996) and firm based brand equity (Pope & Voges, 2000) (Grohs, Wagner, & Vsetecka, 2004).

The 'performance' of sponsored teams are measured by match results or, to be more specific, the scores at the end of a football match based on the amount of goals scored by each team. The match results are seen as separate performances by the team, meaning that each measurement only contains one match result, so the 'performance' of the team is based on solely that one match result.

The term ‘sponsored’ has been interpreted as main shirt sponsor. Sport teams always have one evident main shirt sponsor, so there should not be any ambiguity about the shirt sponsoring company. The ‘sponsored teams’ of which the performance are measured, are teams that comply to a number of requirements. First, the teams have to play in the English Premier League. Due to a lack of time and resources, it is not possible for me to study more clubs in other countries. An advantage of only this competition is that it is highly commercial so data is not difficult to retrieve from online sources. Another advantage is that this competition, maybe because they cause so much media attention, contain more stock listed sponsoring companies than their second divisions such as the Football League Championship. That brings us to the second requirement: a team must have a publicly stock listed sponsor, because the ‘performance of the sponsoring company’ is measured using their stock prices. The definition of ‘stock price’ as it is interpreted in this research is: “The cost of purchasing a security on an exchange. Stock prices can be affected by a number of things including volatility in the market, current economic conditions and popularity of the company”². Thus, the attractiveness of the company is incorporated in the stock price, and this part of the stock price is exactly where this study focuses on. The stock returns of the sponsoring companies are measured on the first trading day after the match. It often happens that the stock exchange is closed on the day after the match, therefore the first trading day is used. By comparing these daily stock returns to the total market returns of the Euronext 100 Index³, the abnormal returns of the company’s stock can be derived. This method allows for researching the relation between sport performance of the football clubs and stock performance of the sponsoring companies, which is the main goal of this research. Subsequently, several hypotheses test different aspects of this relation.

2.2 Hypotheses development

According to the literature reviewed, it seems possible that a positive news message of the club can positively affect the investors mood of the sponsoring company. A victory should be a positive news message for a club, because the club scores the maximum amount of points for that match. For instance, the news header about Juventus’ victory in the Italian Serie A on the day after a match reads: “Juventus win again” (Foley, 2014). No difficult psychology is

² (InvestorWords)

³ The index for largest and most liquid blue chip stocks traded on Euronext exchanges. Companies listed the Euronext 100 must trade at least 20% of their issues annually (calculated on a rolling basis). It is considered a major benchmark index for European stocks. (Farlex Financial Dictionary, 2012)

needed to conclude that the media aims to communicate positive news about Juventus. According to the research of Gwinner and Eaton about image transfer between sponsor and club, there should be an positive image transfer due to this message. (Gwinner & Eaton, 1999) So, assuming a victory of the club, it seems possible that sportive performance has a positive effect on the stock price performance of their sponsor. When a club achieves a big victory, the media brings more positive news forward. For instance, after the 3-0 victory of Arsenal, a newspaper reads the header “Arsene Wenger delighted with big win” (White, 2014). The fact that Arsenal won with 3 goals difference is mentioned as a “big win”, which is even more positive news than a normal win. When we think back to the image transfer from sponsor to event, more positive news of the club should transfer an even more positive image to the image of the sponsor. In addition, since nice weather has a positive influence on the mood of investors and thereby a positive influence on the stock market (Hirshleifer & Shumway, 2003), it could be assumed that positive news about a club could lead to a positive image transfer and positively influence the mood of investors of the sponsoring company, which should in turn raise the stock price.

The first hypothesis implicates a positive relation between a win and stock price in case of a victory, but also differentiation to derive more accurate results. This differentiation is based on the amount of goals as a result of a match. This hypothesis describes a positive relation between the difference in the amounts of goals as a result of the match and the stock price of the sponsoring companies, assuming a victory of the team. This is shown in hypothesis H1:

H1: A big victory has a more positive effect on the stock price of the sponsor than a small victory.

So hypothesis H1 assumes a victory of the sponsored team and a positive relation to the stock price of the sponsor. But what if a team loses? It seems that a loss of the team is not very good publicity for the club, given the example of Real Madrid’s loss against Sevilla: “Real drop crucial points in Sevilla loss” (Bell, 2014). According to the image transfer theory, the negative image caused by the loss could affect the image of the sponsoring company. So, the second hypothesis implicates a negative relation between the sportive performance of a club in case of a loss and the stock price of their sponsor. And when a club has to deal with an even bigger loss, the negative publicity can be worse. For example, the headers in the news after Manchester United lost 3 – 0 against Liverpool last season read: “Liverpool humiliate Manchester United” (The Week, 2014) Once again, based on the study by Hirshleifer and

Shumway (2003) regarding the effects of weather on investor mood, we can assume that the negative publicity and negative image transfer to the sponsoring company, should also lead to a negative mood of the investors and therefore decrease the stock price.

And, just as in hypothesis H1, there is a degree of gradation within the hypothesis. The amount of difference in goals as a result of a match is also the implicated in hypothesis H2, but now assuming a loss of the team. This hypothesis contains a negative relation between the difference in the amounts of goals as a result of a match and the stock price of the sponsoring companies, assuming a loss of the team. This is shown in hypothesis H2:

H2: A big loss has a larger negative effect on the stock price of the sponsor than a small loss.

Since hypothesis H1 assumed a victory of the team and hypothesis H2 assumed a loss of the team, the only score left is the draw. Since a victory is the best achievable result for a team, it could be that the draw is not satisfying. After a draw of Chelsea last season for example, this header appeared in the media: “Chelsea’s title hopes take a huge hit after draw with Norwich” (Harris, 2014). As we know from the research regarding the image transfer from sponsor to event, the negative image of the club can transfer to the sponsor. Therefore the next hypothesis H3 implicates a negative relation between a draw as a result of a match and the stock price of the sponsor. This is shown in hypothesis H3:

H3: A draw has a negative effect on the stock price of the sponsor.

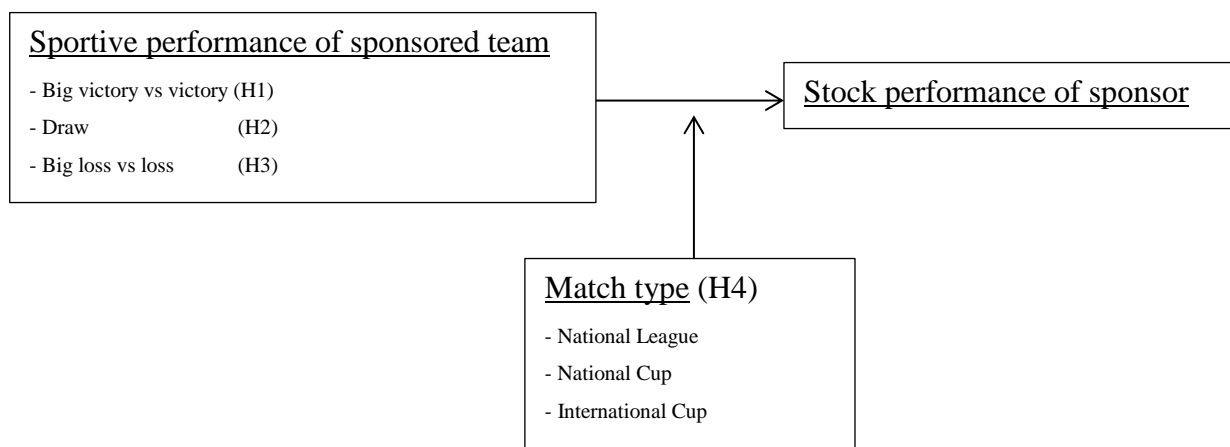
The effects of the score itself are stated in hypotheses, yet several additional effects remain which could have an impact on stock price. As mentioned earlier, an important factor of sport sponsorship seems to be publicity. Clubs play a lot of matches in a season but not all the matches are for the same league or competition. Friendly matches, league games, national cup games and international league games can be distinguished, and consequently also different types of publicity. In a Champions League match, there could be other audiences and other publicity effects than in a friendly match. According to the big sports broadcasting company Fox Sports, the match with the most viewers in the Dutch Eredivisie season 2010-2011 was Ajax Amsterdam versus PSV Eindhoven, which was broadcasted in 8 different countries (Fox Sports, 2011). The UEFA Champions League final in 2013 however, was broadcasted in more than 200 countries, viewed by a total of 360 million people (Nash, 2013). Since the audience differs per match type, the reach of publicity also differs. So,

assuming the effects of match results on the stock price of the sponsor stated in the previous hypotheses, this study differentiates regarding audience sizes, since this leads to wide publicity. Through the wider publicity, the effects of hypotheses H1, H2 and H3 can be strengthened or weakened, because of the classical theory of supply and demand: when more investors want to buy a stock of the club's sponsoring company, the price of the stock will increase. The next hypothesis represents the moderating effect of a so-called higher the match type, based on audience and publicity. This is shown in hypothesis H4:

H4: The higher the stage of the match, the greater the effect of team performance on the stock price of the sponsor.

2.3 Conceptual model

The conceptual model depicted below, clearly summarizes all effects mentioned in hypotheses above.



Chapter 3: Methodology

3.1 Research type

This study about the influence of sports results on the stock price of the shirt sponsor is a causal study, which tries to prove causal relations through a quantitative study. To answer the main question, the research uses several delineations. First, only the teams and shirt sponsors in the English Premier League of the 2007/2008 season until the 2013/2014 season are considered. This choice is made based on a lack of time and because the Premier League is widely seen as the biggest and commercial football league, and therefore fits well with the research question. Within that scope, only the teams with a stock listed shirt sponsor are considered, because non-stock listed shirt sponsors have no publicly available stock price. Next, all the match results and match types of the concerning teams are gathered, as well as the stock prices of the relevant sponsor companies for the first trading day after each match. Since the needed data only deals with numerical data, which can be measured very well, the data is clearly quantitative.

This type of research is rather similar to causal research, because the focus of the main research question and hypothesis lies on causality. This research obviously wants to prove that factor X, sportive performance, leads to Y, stock performance.

3.2 Collection method

The data used in this research is secondary data considering football match results and the stock prices of sponsoring companies. In view of the fact that the football industry is a very commercial industry with a high publicity as a result, the relevant shirt sponsors and match results are easy to find on the internet and also very reliable. About each football match, lots of newspapers and internet sites produce articles so it is very accessible finding the match results on internet, for instance on the official club site, fan sites or general news sites. The stock price data of the sponsoring companies is often easy to find on online stock databases such as Yahoo Finance, Bloomberg.com or Google Finance, but are sometimes harder to find, for example when a company is already merged or bankrupt. An overview of included team and sponsors is stated in the references.

3.3 Identifying variables

3.3.1 Dependent Variable

The variable this study examines is the stock price of the company which is main sponsor of the shirt of the football club. The daily returns of their stocks are calculated for the first trading day 't' after the match in the same way as the research of Berument, Ceylan and Onar used. They picked the stock return as a difference between the logarithmic value with base 10 of the opening and closing price. The logarithmic scale is used to be able to compare different stock prices. (Berument, Ceylan, & Onar, 2013).

$$\text{Stock return}_t = \text{Log10}(\text{Opening Price})_t - \text{Log10}(\text{Closing Price})_t$$

The stock return of day 't' that is extracted using this formula is compared to the total market return for the same day 't'. The total market return is calculated using the open and close rates from the Euronext 100. In this way, a correction is made for the overall market influence, so only the return that cannot be explained by the overall market return is included. This calculation is based on the same formula as the formula for stock return, but now applied to the return of the Euronext 100 (Brooks, 2008):

$$\text{Market Return Eurnonext 100}_t = \text{Log10}(\text{Opening Index})_t - \text{Log10}(\text{Closing Index})_t$$

For the final outcome of the dependent variable 'Y', the difference between the stock return and the market return, represented by the Euronext 100, is calculated by the following formula (Hudson, 2010):

$$Y = \text{Abnormal Return}_t = \text{Market Return Euronext 100}_t - \text{Stock Return}_t$$

3.3.2 Independent Variables

Victory

To answer the first hypothesis about the influence of a victory, it is necessary to make a distinction between a small victory and an big victory on the condition that a victory is present. Assuming a victory means that the team scores at least 1 goal more than the opponent. The variable 'V1' represents the small victory, which is coded as a small victory until the difference in goals is so big that we can mark it as a big victory. That means that the team wins with more than 2 goals difference, from which follows that a big victory is coded as 'V2'.

Loss

To answer the second hypothesis about the influence of a loss, it is necessary to make a distinction between a small loss and a big loss under the condition that there is a loss. Assuming a loss means that the team scores at least 1 goal less than the opponent. The variable 'L1' represents a small loss, which is coded as a small loss until the difference in goals is so big that we can mark it as a big loss. That means that the team loses with more than 2 goals difference, from which follows that a big loss is coded as 'L2'.

Draw

To answer the third hypothesis about the influence of a draw, I assume that the two opponents score the same amount of goals. It does not matter how many goals are scored, as long as both teams have an equal number of goals, the results is coded as a draw 'D'.

Match type

To answer the fourth hypothesis about the moderating effect of the match type, it is necessary to categorize the different match played by the teams. The first match type, coded as 'M1', is the national league, which comprises home and away matches against all the other competitors in a league setting. The second match type, coded as 'M2', is the national cup, which comprises the knock-out tournament against other national clubs. At last, there is the European cup, coded as 'M3', where the clubs first play in a pool phase and after that in a knock-out setting against other European clubs.

Table 2: Summary of variables

Variable	Name	Definition
V1	Small victory	Victory with 2 or less goals difference
V2	Big Victory	Victory with more than 2 goals difference
L1	Small loss	Loss with 2 or less goals difference
L2	Big loss	Loss with more than 2 goals difference
D	Draw	Draw
M1	National league match	Match in national league
M2	National cup match	Match in national cup
M3	International cup match	Match in European cup
Y	Stock performance sponsor	Log of the abnormal return of the sponsoring company's stock price the first day after the match

3.4 Sampling size

The data for this research is the result of a judgement sample. The study area is defined on the basis of my knowledge and choices, whereby the research question can be answered in the best way. I made a choice to only investigate the clubs and sponsors in the English Premier League because of my limited amount of time.

The method of sampling the data is nonprobability, because all the teams that meet the requirements are included. As already mentioned in chapter 3.3, only the football clubs and associated sponsors who meet the requirements are considered. Then, there is no random factor, but each appropriate team is considered in the sample.

3.5 Testing the hypotheses

To check if the several hypotheses can be accepted or rejected, statistical tests are needed. Each hypothesis is discussed with regard to their statistical approach.

3.5.1 Victory hypothesis

For the first hypothesis about the victory, we want to know if the match result V2 has a bigger positive effect on Y than match result V1. So, we want to figure out if the means of

these groups are significantly different from each other, in order to conclude if V2 has a significantly bigger positive effect on Y than V1. The two categorical groups are unrelated and both explaining the same dependent, continuous variable so an Independent T-Test is appropriate. The formula of this test is as stated beneath, where ‘x’ is the mean and ‘S’ is the standard deviation of a group and ‘n’ is the number of observations. The out coming T-value is tested against the critical value of T based on the level of significance and the degrees of freedom. When the T value exceeds the critical value, the mean of group V1 is significantly different from V2.

$$T = \frac{x_{V1} - x_{V2}}{\sqrt{\frac{S_{V1}^2 - S_{V2}^2}{n}}}$$

3.5.2 Loss hypothesis

For the second hypothesis about the loss, we want to know if the match result L2 has a bigger negative effect on Y than match result L1. So, we want to figure out if the means of these groups are significantly different from each other, in order to conclude if L2 has a significantly bigger positive effect on Y than L1. The two categorical groups are unrelated and both explaining the same dependent, continuous variable so an Independent T-Test is appropriate. The formula of this test is as stated beneath, where ‘x’ is the mean and ‘S’ is the standard deviation of a group and ‘n’ is the number of observations. The out coming T-value is tested against the critical value of T based on the level of significance and the degrees of freedom. When the T value exceeds the critical value, the mean of group L1 is significantly different from L2.

$$T = \frac{x_{L1} - x_{L2}}{\sqrt{\frac{S_{L1}^2 - S_{L2}^2}{n}}}$$

3.5.3 Draw hypothesis

For the third hypothesis, we want to know if the match result D has a negative effect on Y. So we want to figure out if the mean of the group D is significantly different from 0. Since the mean of group D is compared with 0, the appropriate statistical test is the One Sample T-Test. The formula of this test is as stated beneath, where 'x' is the mean and 'S' is the standard deviation of a group and 'n' is the number of observations. The out coming T-value is tested against the critical value of T based on the level of significance and number of n. When the T value exceeds the critical value, the mean of group D is significantly different from 0.

$$T = \frac{x_D - 0}{\frac{S}{\sqrt{n}}}$$

3.5.4 Match type hypothesis

For the fourth hypothesis, we want to know if the match type has an different significant effect on dependent variable Y. To see if the three groups M1, M2 and M3 have their effect on the same factor Y, an One Way ANOVA statistical test is appropriate to do the test. The formula of this test is as stated beneath, where 'x' is the mean of the group, 'S' is the standard deviation of a group, 'n' is the number of observations for each group and 'N' is the total number of observations. The out coming F-value is tested against the critical value of F based on the level of significance and degrees of freedom.

$$F = \frac{\frac{n(x_{M1} - \bar{x}) + n(x_{M2} - \bar{x}) + n(x_{M3} - \bar{x})}{p - 1}}{\frac{(n_{M1} - 1)S_{M1}^2 + (n_{M2} - 1)S_{M2}^2 + (n_{M3} - 1)S_{M3}^2}{N - p}}$$

3.6 Regression

To judge the total set of independent variables that affect the dependent variable Y as a whole, an analysis by linear regression are computed. This is done through the Ordinary Least Squares method which is using the minimum of the sum of squared vertical distances between the linear approximation and the dataset. Besides the constant value, the regression contains all the dummies which are used for the previous tests, but since it concerns dummies, each variable has to omit a dummy to prevent collinearity. For this regression the omitted dummy variables are D, M1 and C1, so the reference is a draw in the national competition during the crisis-years 2007 to 2011.

The regression is as stated beneath.

$$Y = b_0 + b_1 * V1 + b_2 * V2 + b_3 * L1 + b_4 * L2 + b_5 * M2 + b_6 * M3 + b_7 * C2 + error$$

Table 3: Summary of variables and statistical tests used

	Independent variable and type		Dependent variable and type		Statistical Test
Hypothesis 1	V1, V2	Binary dummies	Y	Logarithmic, metric, percentages, continuous	Independent T-Test
Hypothesis 2	L1, L2	Binary dummies	Y	Logarithmic, metric, percentages, continuous	Independent T-Test
Hypothesis 3	D	Binary dummies	Y	Logarithmic, metric, percentages, continuous	One Sample T-Test
Hypothesis 4	M1, M2, M3	Binary dummies	Y	Logarithmic, metric, percentages, continuous	One Way ANOVA
Hypothesis 5	V1, V2, L1, L2, D, C1, C2	Binary dummies	Y	Logarithmic, metric, percentages, continuous	Independent T-Test
Regression	V1, V2, L1, L2, D, M1, M2, M3, C1, C2	Binary dummies	Y	Logarithmic, metric, percentages, continuous	Ordinary Least Squares Regression

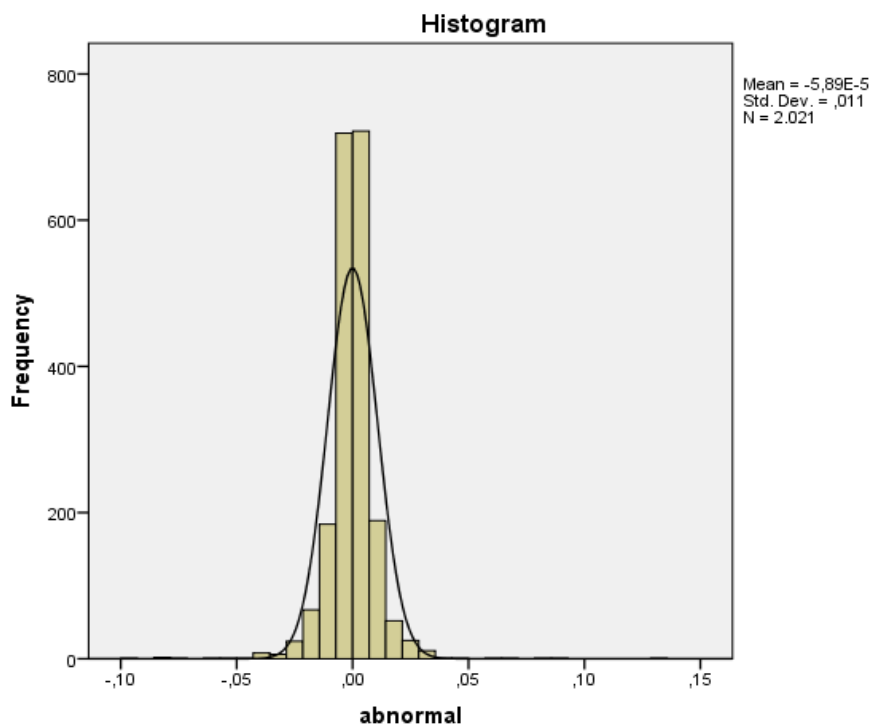
Chapter 4: Results

After the application of the methods described in the previous section, the results are presented in this chapter. After the data is originally created in Microsoft Excel and stacked in Eviews, the tests are run with in IBM SPSS.

4.1 General

The sample that was used for this research is based on 17 stock listed shirt sponsoring companies and 18 football clubs playing in the English Premier League from season 2007-2008 to 2013-2014, whereby the first point of measurement took place on the 13th of August 2007 and the last on the 19th of May 2014. Finally, 41 club seasons were included, bringing the total of observations on 2021. The mean of the whole sample turned out to be -0,0001, the minimum value measured was -0,10 and the maximum 0,13 (Table 5 appendix). A histogram of the distribution is stated beneath. In total, 743 normal victories, 239 big victories, 468 draws, 501 small losses and 86 big losses are measured.⁴

Figure 1: Histogram of the sample distribution



⁴ In some cases an abnormal return is used for two matches, since it was the first trading day for both of them. Therefore the number of match results ($743 + 239 + 468 + 501 + 86 = 2037$) is higher than the total of 2021 observations of abnormal returns.

4.2 Reliability and validity

In order to achieve a conclusion that is reliable and valid, some test are done in this paragraph. For the total amount observations of Y, the Skewness value for symmetry and Kurtosis value for shape of the distribution are checked to test for normality.

It appears that the value for Skewness is 0,492 and comes along with a standard error of 0,054. Following a rule of thumb which says that this value must be between -1 and 1, we can conclude that this distribution is not substantial far from symmetry (Table 5 appendix). This symmetry is also clearly visible in the histogram above.

The Kurtosis value turns out to be 25,522 and comes along with a standard error of 0,109. Following the rule of thumb that the Kurtosis value divided by the standard error should be lower than the critical value, this leads to a value of 234,15 (Table 5 appendix). The critical value of 95% confidence interval that the distribution is normal is 1,96, so this distribution exceeds the interval amply and we can conclude that this distribution is substantially peaked. This is also clearly visible in the histogram above.

Also a Q-Q plot is made for the distribution of Y and included in the appendix. It shows that, except for several outliers, the distribution is not substantially far from normal (Figure 3 appendix).

4.3 Testing results

4.3.1 Victory hypothesis

As described in the previous chapter, the first hypothesis was tested by an Independent T-Test. The mean of dependent variable Y for group V1 is 0,0000 and the mean of Y for group V2 is 0,0001 (Table 6 appendix). First, the result of the Levene's test for equal variances was not significant with a p-value of 0,818, so equal variances can be assumed. With 978 degrees of freedom, the T-value of the T-Test assuming equal variances is -0,114 and has a p-value of 0,909 (Table 7 appendix). Therefore, based on a 95% confidence level, we cannot conclude with 95% certainty that there is a significant difference between the means of Y for the groups V1 and V2.

4.3.2 Loss hypothesis

Also for the second hypothesis an Independent T-Test was used. The mean of dependent variable Y for group L1 is -0,0001 and the mean of Y for group L2 is 0,0010 (Table 8 appendix). First, the result of the Levene's test for equal variances was not significant with a p-value of 0,322, so equal variances can be assumed. With 585 degrees of freedom, the T-value of the T-Test assuming equal variances is -0,951 and has a p-value of 0,342 (Table 9 appendix). Therefore, based on a 95% confidence level, we cannot conclude with 95% certainty that there is a significant difference between the means of Y for the groups L1 and L2.

4.3.3 Draw hypothesis

For the third hypothesis, a One Sample T-Test was used to compare the mean of group D with 0. In SPSS only the draw result cases were selected before computing the test. The mean of Y for group D was -0,0005 and the T-value of -1,076 gives a p-value of 0,283 with 466 degrees of freedom (Table 10 and 11 appendix). Therefore, based on a 95% confidence level, we cannot conclude with 95% certainty that there is a difference between the mean of Y for group D and 0.

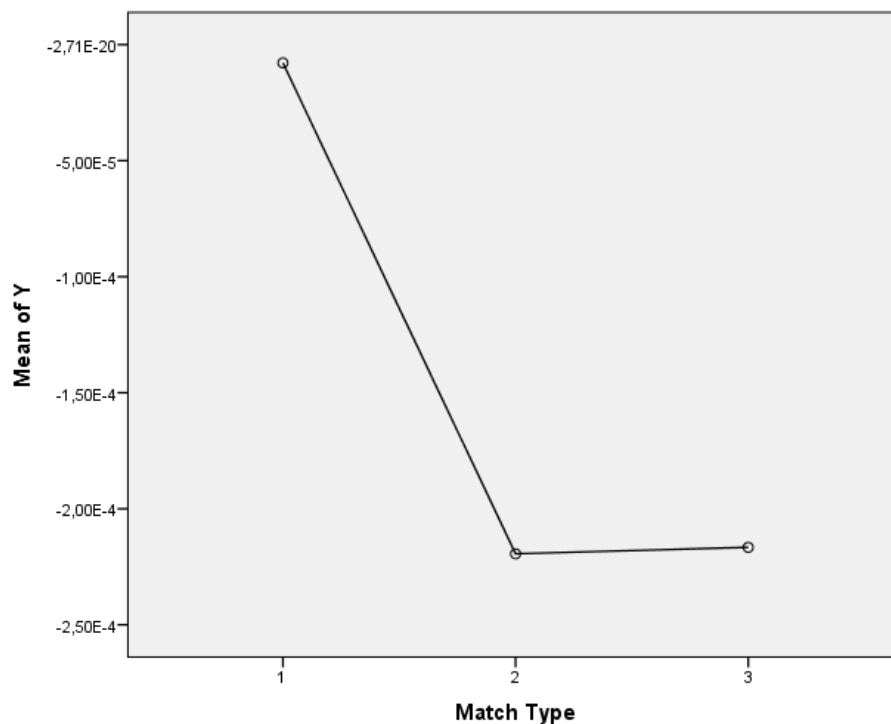
4.3.4 Match type hypothesis

To test the fourth hypothesis, a One-way ANOVA was used to test the differences of dependent variable Y between the groups M1, M2 and M3. The mean for Y of the groups M1, M2 and M3 is respectively 0,000 , -0,0002 and -0,0002 (Figure 2). When the normality for the different group means is tested, we can find a Skewness value of 1,129 and a Kurtosis value of 27,627 for M1 and for the other groups -2,905, 22,505 and 0,625 and 10,558 respectively (Table 12 appendix). This indicates a normality problem regarding the Skewness for group M1 and M2 and a problem regarding Kurtosis for each group. Levene's test gives a value of 0,825 so it tells that we can assume equal variances for the groups (Table 13 appendix).

Looking at the SPSS-output, the ANOVA tells that with 2 and 2018 degrees of freedom, an F-value of 0,071 has a p-value of 0,932 (Table 14 appendix). Therefore we can conclude that we cannot say with 95% certainty that at least one mean of Y for the groups M1, M2 and M3

is different. A figure of the means of the groups is stated beneath. The type of the match has no influence on the effect of match results on the abnormal return of the sponsoring company. Despite that there is not a significant difference between the three means of the groups, post hoc test are done (Table 15 appendix).

Figure 2: Means of Y for group M1, M2 and M3



4.4 Regression results

The linear regression gives a total view of all the variables and its influence on dependent variable Y. When looking at the SPSS output of the regression, we can see that the ANOVA which measures the overall significance of the regression model. It gives an F-value is 0,547 together with a p-value of 0,799 (Table 16 appendix). This indicates that we cannot say with 95% confidence that at least one of the variables is different from 0. Beside, also the Durbin-Watson test for autocorrelation is computed, which indicates the likelihood that the deviation values for the regression have a first-order auto regression component. The value for the Durbin-Watson test is 2,053, and since a value of 2 indicates no auto correlation, we can assume that there is no auto correlation. The R-squared value indicates how much of the total variation is explained by this model. The R-squared of this model shows a value of 0,002, which means that this model only explains a very little piece of the total variation (Table 17 appendix). When we take a look at the coefficients of the regression, all the variables have a

non-significant p-value (Table 18). This was already mentioned by the overall significance of the regression model of 0,799, which again means that we cannot conclude with 95% certainty that a least one of the variables has an influence on dependent variable Y.

4.5 Additional testing

Apparently none of the variables has a significant effect on dependent variable Y. Some additional testing is conducted yet to try if interesting results can be generated.

4.5.1 Crisis

It will not go unnoticed that in recent years there has been an economic crisis. This crisis could have its influence on the stock prices in that particular years. To answer the question about the intermediating effect of the economic crisis, it is needed to indicate in which year the match is played. Therefore a dummy variable is added for each year so the effects can be regarded per year and on the basis of the economic crisis. A very important assumption for this hypothesis is that we assume that there was a crisis in 2007 and there is not a crisis anymore now in 2014. Then a separation has to be made somewhere where the crisis seemed to stop. In the huge amount of written literature it is very hard to see one clear year of the ending of the crisis, but for the convenience we accord to the article of Joe Weisenthal where he shows that the economic crisis ended in the fall of 2011 (Weisenthal, 2013). Therefore, the years of crisis are coded with the binary dummy 'C1' and the years of non-crisis are coded with the dummy 'C2'. This hypothesis is formulated as stated beneath.

H5: The effects of sports results on stock price of the sponsor are more negative in the years of crisis.

For this fifth hypothesis, the crisis dummy variable is used to compare the period with an economic crisis and without a crisis. To test if the effects are actually significantly negative influenced by the crisis, the variables of the first three hypotheses are considered again, but now the comparison is made between the crisis period and the non-crisis period. So, three statistical test are done each selecting only the victories, only the losses or only the draws. First, only the V1 and V2 cases are selected and tested, next only the L1 and L2 cases are selected and tested, thereafter only the D cases are selected and tested. The two categorical

groups are unrelated and both explaining the same dependent, continuous variable so an Independent T-Test is appropriate. The formula used is stated beneath, where 'x' is the mean and 'S' is the standard deviation of a group and 'n' is the number of observations. The out coming T-value is tested against the critical value of T based on the level of significance and the degrees of freedom. When the T value exceeds the critical value, the mean of group C1 is significantly different from C2.

$$T = \frac{x_{C1} - x_{C2}}{\sqrt{\frac{S_{C1}^2 - S_{C2}^2}{n}}}$$

Results

The testing of hypothesis five is started with the testing of groups V1 and V2 and leads to a mean of 0,0004 for C1 and -0,005 for C2 (Table 19 appendix). Levene's test gives a value of 0,000, so equal variances are not assumed (Table 20 appendix). With 978 degrees of freedom, the T-value of the test is 1,425 and comes along with a p-value of 0,155, from which can be concluded that we cannot say with 95% certainty that the means of Y in periods of crisis and non-crisis are different.

Next, the group L1 and L2 are selected what leads to a mean of 0,0004 for group C1 and -0,0005 for group C2 (Table 21 appendix). Levene's test gives a value of 0,000 so equal variances are not assumed (Table 22 appendix). With 585 degrees of freedom, the T-value of the test is 1,316 and comes along with a p-value of 0,189, from which can be concluded that we cannot say with 95% certainty that the means of Y in periods of crisis an non-crisis are different.

At last, group D is selected what leads to a mean of -0,0006 for group C1 and -0,004 for group C2 (Table 23 appendix). Levene's test gives a value of 0,000 so equal variance are not assumed (Table 24 appendix). With 466 degrees of freedom, the T-value of the test is -0,231 and comes along with a p-value of 0,817, from which can be can be concluded that we cannot say with 95% certainty that the means of Y in periods of crisis an non-crisis are different.

4.5.2 Stock Exchange

Since we are only dealing with football clubs participating in the English Premier League, maybe it is not right to expect that their match results will effect each sponsor. In particular sponsors who are listed on a stock exchange in another country than the competition is played. Maybe the image transfer from event to sponsor does not work optimally when there is too much geographical distance between them. In this way we come to a sixth hypothesis which is stated beneath.

H6: There is only an effect of sports results on stock price when the sport club is from the same country as the stock exchange where the sponsoring company is listed.

For researching this sixth hypothesis, a dummy variable is used to compare the homeland and the foreign sponsors. When a sponsoring company is stock listed in England it is coded as 'S1' and when it is listed on a foreign stock exchange it is coded as 'S2'. Next, only the cases of the in homeland stock listed sponsoring company are selected. To test this difference, all the tests done in hypothesis 1 to 4 are repeated, but now only with the interior companies selected.

Results

The Independent T-Test for the first hypothesis gives a mean of -0,0007 for V1 and 0,0004 for V2 (Table 25 appendix). Levene's test has a p-value of 0,159 so equal variances can be assumed (Table 26 appendix). With 193 degrees of freedom, the T-value is -0,682 and comes along with a p-value of 0,496, from which can be concluded that we cannot say with 95% certainty that there is a difference in means of Y between the groups V1 and V2.

The Independent T-Test for the second hypothesis gives a mean of 0,0003 for L1 and 0,0007 for L2 (Table 27 appendix). Levene's test has a p-value of 0,357 so equal variances can be assumed (Table 28 appendix). With 216 degrees of freedom, the T-value is -0,282 and comes along with a p-value of 0,778, from which can be concluded that we cannot say with 95% certainty that there is a difference in means of Y between the groups L1 and L2.

The One Sample T-Test for the third hypothesis gives a mean of -0,0004 for D (Table 29 appendix). With 151 degrees of freedom, the T-value is -0,516 and comes along with a p-

value of 0,607, from which can be concluded that we cannot say with 95% certainty that the mean of Y for D differs from 0 (Table 30 appendix).

To test the fourth hypothesis, a One-way ANOVA was used to test the differences of dependent variable Y between the groups M1, M2 and M3. The mean for Y of the groups M1 and is respectively -0,0001 and -0,0004. In this sample, no M3 variables occurred. The Levene's test gives a value of 0,959 so it tells that equal variances are assumed. The ANOVA shows that with 1 and 560 degrees of freedom, an F-value of 0,122 has a p-value of 0,727 (Table 31 appendix). Therefore we can conclude that we cannot say with 95% certainty that at least one mean of Y for the groups M1 or M2 is different.

Table 4: Summary of hypotheses

H1: A big victory has a more positive effect on the stock price of the sponsor than a small victory	Do not reject H0. A big victory has not a more positive effect on the stock price of the sponsor than a small victory
H2: A big loss has a larger negative effect on the stock price of the sponsor than a small loss	Do not reject H0. A big loss has not a more negative effect on the stock price of the sponsor than a small loss
H3: A draw has a negative effect on the stock price of the sponsor	Do not reject H0. A draw has not a negative effect on the stock price of the sponsor
H4: The higher the stage of the match, the greater the effect of team performance on the stock price of the sponsor	Do not reject H0. There is no influence of the match type on the stock price of the sponsor
H5: The effects of sports results on stock price of the sponsor are more negative in the years of crisis	Do not reject H0. The effects of sports results on stock price of the sponsor are not more negative in years of crisis
H6: There is only an effect of sports results on stock price when the sport club is from the same country as the stock exchange where the sponsoring company is listed.	Do not reject H0. The effects of sports results on stock price of the sponsor are not discoverable when the sport club is from the same country as the stock exchange where the sponsoring company is listed

Chapter 5: Conclusion

5.1 Conclusions and discussions

Now the research is done, we can conclude on the findings with regard to the main research question and sub questions which this research started with. According to the first hypothesis, a big victory does not have a more positive effect on the stock price of the sponsor. Also a big loss does not have a more negative effect on the stock price of the sponsor which was proved by the second hypothesis. The third hypothesis showed that a draw has no negative influence on the stock price of the sponsor. The fifth hypothesis in the additional research proved that the economic crisis did not have a negative influence on the stock prices too, based on the years of crisis. Even when there was control for only homeland listed sponsor companies, no significant effects were measured. For these reasons, it is clearly to conclude regarding the first sub question that the size of the sport results has no influence on the stock price of the sponsoring company. The fourth hypothesis answered the second sub question and proved that the different match types had no influence on the effect of sports results on the stock price, which was not even existing itself.

To answer the main research question, after discovering no single significant effect, we can conclude that there are no consequences of the performance of sport teams for the stock price of their sponsoring company.

These findings are contradicting the results of previous literature. In the study of Berument, Ceylan and Onar about the Turkish football clubs and in the study of Garcia, Edmans and Norli about the national sports teams, the match results did influence the investor's mood, so the missing link could lay in the image transfer of the brand. Maybe the image transfer of publicity from the match result is not made for every match, but only on the moment when the sponsorship is announced. At the time the deal is closed, investors can already anticipate on the positive or negative impact of the sport club and the match results that follow will have no effect anymore. This effect of the impact of a sponsorship announcement is studied for the sponsorship of Juventus by Fiat and a stock price reaction was indeed proved (Spais & Filis, 2008).

Another explanation could be that it is wrong to lump all the teams, knowing that some teams have to win each match, based on their status and goals, but other team are already satisfied with a draw because they are the weakest links of the competition and it is normal for them to

lose often. In that case, an unexpected big victory for a relatively weak team should be visible even as a unexpected big loss for a relatively strong team. This means that match results should be measured more relatively to the status of the team.

This research could also have no significant results, because some teams are too small and therefore do not generate enough publicity to make a substantial influence on the stock market.

The reason why the crisis dummies were not significant seems actually very logical, since the abnormal returns already controls for the market return and thus already controls for crisis on the market.

5.2 Managerial implications

Based on the findings in this research, the implications for managers are mostly concerning the explanation of stock changes. With the results of this research, managers of sponsoring companies now know that solely a match result of the club they sponsor will not affect their stock price. This can have implications for the creation of sponsorship deals, where the sport clubs and sponsor companies now know their negotiation position better.

5.3 Scientific implications

First, the scientific contribution is the prove of the not significant relation between sports results and stock prices of sponsoring companies in the way it is studied for this research. Besides, the creation of a database with over 2000 data points is a very clear contribution to the scientific field.

5.4 Limitations

After doing this research, several things can be described as limitations. Of course the sample size could be larger so the research covers a larger area and achieves a more balanced sample, but samples sizes are never too big. Unfortunately, this research could only use stock prices to measure the value of the sponsoring company and therefore could only use stock listed sponsors. When companies are measured on the base of a different criterion, more clubs could be involved and a more balanced sample would be achieved.

This research used a lot of data from the years of a financial crisis. This may have resulted in a biased sample, because, despite the added dummy for crisis years, it is very hard to control for such a worldwide crisis.

5.5 Future research

After concluding on this research, discussing the results and indicating the limitations, a number of interesting areas became clear to investigate in the future.

As already mentioned, not the separate matches could influence the sponsoring company, but maybe the sponsorship as a whole can. Therefore it would be interesting to research the consequences of the total sponsorships on the stock price or the moment when the announcement of the sponsorship is made.

Another interesting improvement of this research could be the control for the status and expectations for each club, so that the match results are set into perspective. For bigger clubs, more victories will be demanded than for relative smaller clubs. Besides, it is bluntly to display the positive or negative publicity of a match only by the match result.

Another improvement is obviously a bigger sample size, so that not only the sponsors of the English Premier League are involved, which leads to a more balanced and verifying sample.

The influence in this research is measured by the stock price, but another measurement method could also make a big difference. A method which can also include non-stock listed companies would make the sample more all-embracing.

Although it has not been proven in this research, the crisis will undoubtedly have affected the results. A future research study could have a better control for the crisis, making the results more reliable.

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Teams and sponsors

Team	Sponsor	Seasons						
		2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Aston Villa FC	32Red	X						
Birmingham City FC	F&C Investments	X		X	X			
Chelsea FC	Samsung	X	X	X	X	X	X	X
Fulham FC	LG Electronics	X	X	X				
Hull City FC	Cash Converters							X
Liverpool FC	Carlsberg	X	X	X				
	Standard Chartered				X	X	X	X
Manchester City FC	Thomas Cook	X	X					
Manchester United FC	AIG	X	X	X				
	Aon				X	X	X	X
Middlesbrough FC	Garmin	X	X					
Norwich City FC	Aviva					X	X	X
Reading FC	Kyocera	X						
Swansea City AFC	32Red					X	X	
Tottenham Hotspur FC	Autonomy (league)				X			
	Investec (cup)				X	X	X	X
	Hewlett Packard (league)							X
West Bromwich Albion FC	Homeserve				X			

References of match results

Aston Villa FC	http://www.avfc.co.uk/page/FixturesAndResults
Birmingham City FC	http://www.bcf.com/fixtures-results/fixtures-list/
Chelsea FC	http://www.chelseafc.com/fixtures-results
Fulham FC	http://www.fulhamfc.com/first-team/fixtures
Hull City FC	http://www.hullcitytigers.com/fixtures-results/fixtures-list/
Liverpool FC	http://www.liverpoolfc.com/match/fixtures
Manchester City FC	http://www.mfc.co.uk/Fixtures
Manchester United FC	http://www.manutd.com/en/Fixtures-And-Results.aspx
Middlesbrough FC	http://www.mfc.co.uk/page/matches/first-team-fixtures
Norwich City FC	http://www.canaries.co.uk/fixtures-results/fixtures-list/
Reading FC	http://www.readingfc.co.uk/fixtures-results/
Swansea City AFC	http://www.swansea-city.net/fixtures-results/
Tottenham Hotspur FC	http://www.tottenhamhotspur.com/matches/
West Bromwich Albion FC	http://www.wba.co.uk/fixtures-results/

Reference of stock prices

32Red	http://finance.yahoo.com/q/hp?s=TTR.L&a=05&b=1&c=2007&d=04&e=30&f=2008&g=d&z=66&y=0
F&C Investments	http://www.bloomberg.com/quote/FCAM:LN/chart
Samsung	http://www.hl.co.uk/shares/shares-search-results/s/samsung-electronics-co-gdr-each-rep-0.5/share-charts
LG Electronics	https://www.google.com/finance/historical?cid=999636161869156&startdate=May%2031%2C%202007&enddate=May%2030%2C%202008&num=30&ei=P9JwU8CZNuPFwAPF0YCIAg&start=0
Cash Converters	http://www.bloomberg.com/quote/CCV:AU/chart
Carlsberg	https://finance.yahoo.com/q/hp?s=CARL-B.CO&a=05&b=3&c=2007&d=05&e=12&f=2008&g=d
Standard Chartered	http://www.hl.co.uk/shares/shares-search-results/s/standard-chartered-plc-ordinary-us\$0.50
Thomas Cook	http://www.hl.co.uk/shares/shares-search-results/t/thomas-cook-group-plc-ordinary-eur0.01
AIG	http://finance.yahoo.com/q/hp?s=AIG+Historical+Prices
Aon	http://finance.yahoo.com/q/hp?s=AON+Historical+Prices
Garmin	http://www.hl.co.uk/shares/shares-search-results/g/garmin-ltd-common-stock-chf10.00
Aviva	http://www.hl.co.uk/shares/shares-search-results/a/aviva-plc-ordinary-25p
Kyocera	http://www.hl.co.uk/shares/shares-search-results/k/kyocera-corp-adr-each-cnv-into-1-ord-npv
Autonomy	http://www.euroinvestor.com/exchanges/london-stock-exchange-stocks/autonomy-corporation-plc-ord-s/237172/chart
Investec	http://www.hl.co.uk/shares/shares-search-results/i/investec-plc-ordinary-0.02p
Hewlett Packard	http://www.hl.co.uk/shares/shares-search-results/h/hewlett-packard-co-com-stk-usd0.01-cdi
Homeserve	http://www.hl.co.uk/shares/shares-search-results/h/homeserve-plc-ord-2.5p/share-charts

Appendix

Table 5: Descriptives of the total sample Y.

		Statistic	Std. Error	
Y	Mean	-,0001	,00024	
	95% Confidence Interval for Mean	Lower Bound	-,0005	
		Upper Bound	,0004	
	5% Trimmed Mean	,0000		
	Median	,0000		
	Variance	,000		
	Std. Deviation	,01077		
	Minimum	-,10		
	Maximum	,13		
	Range	,23		
	Interquartile Range	,01		
	Skewness	,492	,054	
	Kurtosis	25,522	,109	

Figure 3: Normal Q-Q Plot of total sample Y.

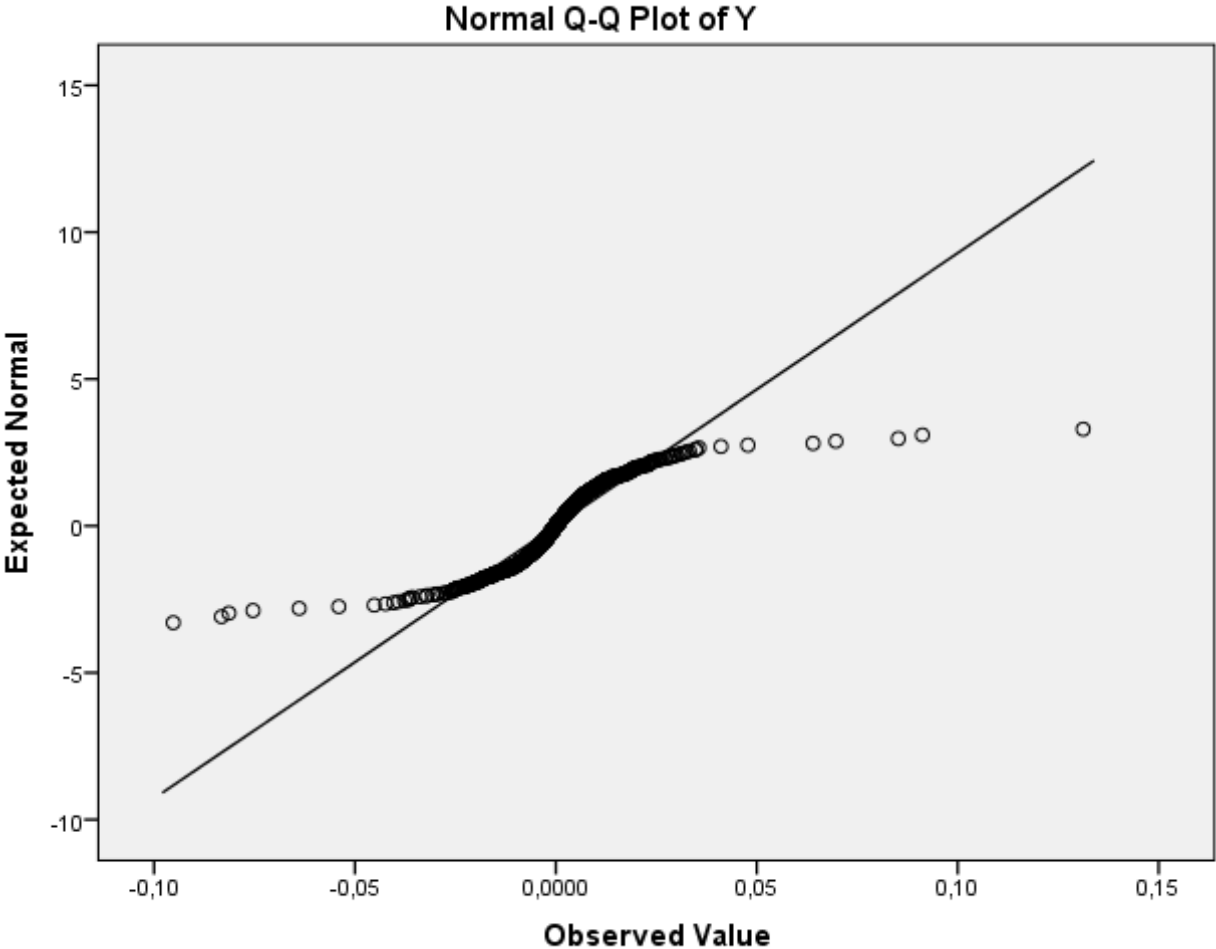


Table 6: Group statistics of independent variables V1 and V2 with dependent variable Y.

	Victory	N	Mean	Std. Deviation	Std. Error Mean
Y	1	742	,0000	,01051	,00039
	2	238	,0001	,01310	,00085

Table 7: Independent Samples T-Test of independent variables V1 and V2 and dependent variable Y.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Y	Equal variances assumed	,053	,818	-,114	978	,909	-,00010	,00083	-,00173	,00154
	Equal variances not assumed			-,102	340,386	,919	-,00010	,00093	-,00193	,00174

Table 8: Group statistics of independent variables L1 and L2 with dependent variable Y.

	Loss	N	Mean	Std. Deviation	Std. Error Mean
Y	1	501	-,0001	,01032	,00046
	2	86	,0010	,00751	,00081

Table 9: Independent Samples T-Test of independent variables L1 and L2 with dependent variable Y.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Y	Equal variances assumed	,983	,322	-,951	585	,342	-,00111	,00116	-,00339	,00118
	Equal variances not assumed			-1,187	146,460	,237	-,00111	,00093	-,00295	,00073

Table 10: One sample statistics of independent variable D with dependent variable Y.

	N	Mean	Std. Deviation	Std. Error Mean
Y	467	-,0005	,01083	,00050

Table 11: One Sample T-Test compared to 0 of independent variable D with dependent variable Y.

Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Y	-1,076	466	,283	-,00054	-,0015	,0004

Table 12: Descriptives for independent variables M1, M2 and M3 with dependent variable Y.

	Match Type		Statistic	Std. Error	
Y	1	Mean	,0000	,00028	
		95% Confidence Interval for Mean	Lower Bound	-,0005	
			Upper Bound	,0005	
		5% Trimmed Mean	,0000		
		Median	-,0001		
		Variance	,000		
		Std. Deviation	,01081		
		Minimum	-,08		
		Maximum	,13		
		Range	,21		
		Interquartile Range	,01		
		Skewness	1,129	,063	
		Kurtosis	27,627	,125	
		2	2	Mean	-,0002
95% Confidence Interval for Mean	Lower Bound			-,0016	
	Upper Bound			,0012	
5% Trimmed Mean	,0003				
Median	,0001				
Variance	,000				

	Std. Deviation		,01137	
	Minimum		-,10	
	Maximum		,03	
	Range		,13	
	Interquartile Range		,01	
	Skewness		-2,905	,153
	Kurtosis		22,505	,304
3	Mean		-,0002	,00064
	95% Confidence Interval for Mean	Lower Bound	-,0015	
		Upper Bound	,0011	
	5% Trimmed Mean		-,0002	
	Median		,0000	
	Variance		,000	
	Std. Deviation		,00987	
	Minimum		-,05	
	Maximum		,06	
	Range		,11	
	Interquartile Range		,01	
	Skewness		,625	,159
	Kurtosis		10,558	,316

Table 13: Levene's test of homogeneity of variances for independent variables M1, M2 and M3 with dependent variable Y.

Levene Statistic	df1	df2	Sig.
,192	2	2018	,825

Table 14: One-Way ANOVA of independent variables M1, M2, and M3 with dependent variable Y.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,000	2	,000	,071	,932
Within Groups	,234	2018	,000		
Total	,234	2020			

Table 15: Multiple comparisons One-Way ANOVA for independent variables M1, M2 and M3 with dependent variable Y.

(I) Match Type	(J) Match Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	,00021	,00073	,772	-,0012	,0016
	3	,00021	,00075	,782	-,0013	,0017
2	1	-,00021	,00073	,772	-,0016	,0012
	3	,00000	,00097	,998	-,0019	,0019
3	1	-,00021	,00075	,782	-,0017	,0013
	2	,00000	,00097	,998	-,0019	,0019

Table 16: ANOVA of regression.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,000	7	,000	,547	,799 ^b
	Residual	,234	2013	,000		
	Total	,234	2020			

a. Dependent Variable: Y

b. Predictors: (Constant), Non-Crisis Years, Small loss, European Cup, Big Loss, National Cup, Big Victory, Small victory

Table 17: Regression model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,044 ^a	,002	-,002	,01078	2,053

a. Predictors: (Constant), Non-Crisis Years, Small loss, European Cup, Big Loss, National Cup, Big Victory, Small victory

b. Dependent Variable: Y

Table 18: Coefficients of regression and their significance.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	,000	,001		-,418	,676	-,001	,001
	Small victory	,001	,001	,026	,908	,364	-,001	,002

Big Victory	,001	,001	,020	,790	,430	-,001	,002
Small loss	,000	,001	,017	,611	,541	-,001	,002
Big Loss	,002	,001	,029	1,231	,219	-,001	,004
National Cup	,000	,001	-,006	-,280	,780	-,002	,001
European Cup	,000	,001	-,012	-,511	,610	-,002	,001
Non-Crisis Years	-,001	,001	-,030	-1,358	,174	-,002	,000

Table 19: Group statistics for independent variables C1 and C2 with dependent variable Y with only V1 and V2 selected.

	Crisis	N	Mean	Std. Deviation	Std. Error Mean
Y	1	641	,0004	,01338	,00053
	2	339	-,0005	,00485	,00026

Table 20: Independent Samples T-Test for independent variables C1 and C2 with dependent variable Y with only V1 and V2 selected.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Y	Equal variances assumed	55,516	,000	1,119	978	,263	,00084	,00075	-,00063	,00232

Equal variances not assumed			1,425	892,907	,155	,00084	,00059	-,00032	,00200
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Table 21: Group statistics for independent variables C1 and C2 with dependent variable Y with only L1 and L2 selected.

	Crisis	N	Mean	Std. Deviation	Std. Error Mean
Y	1	384	,0004	,01165	,00059
	2	203	-,0005	,00545	,00038

Table 22: Independent Samples T-Test for independent variables C1 and C2 with dependent variable Y with only L1 and L2 selected.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Y	Equal variances assumed	31,972	,000	1,077	585	,282	,00093	,00086	-,00077	,00263
	Equal variances not assumed			1,316	577,924	,189	,00093	,00071	-,00046	,00232

Table 23: Group statistics for independent variables C1 and C2 with dependent variable Y with only D selected.

	Crisis	N	Mean	Std. Deviation	Std. Error Mean
Y	1	330	-,0006	,01185	,00065
	2	138	-,0004	,00790	,00067

Table 24: Independent Samples T-Test for independent variables C1 and C2 with dependent variable Y with only D selected.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Y	Equal variances assumed	15,985	,000	-,197	466	,844	-,00022	,00110	-,00238	,00194
	Equal variances not assumed			-,231	377,246	,817	-,00022	,00094	-,00206	,00163

Table 25: Group statistics for independent variables V1 and V2 with dependent variables Y with only S1 selected.

	Victory	N	Mean	Std. Deviation	Std. Error Mean
Y	1	163	-,0007	,00827	,00065
	2	32	,0004	,00735	,00130

Table 26: Independent Samples T-Test for independent variables V1 and V2 with dependent variable Y with only S1 selected.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Y	Equal variances assumed	1,998	,159	-,682	193	,496	-,00107	,00157	-,00417	,00203
	Equal variances not assumed			-,738	47,768	,464	-,00107	,00145	-,00399	,00185

Table 27: Group statistics for independent variables L1 and L2 with dependent variables Y with only S1 selected.

	Loss	N	Mean	Std. Deviation	Std. Error Mean
Y	1	177	,0003	,00780	,00059
	2	41	,0007	,00650	,00102

Table 28: Independent Samples T-Test for independent variables L1 and L2 with dependent variable Y with only S1 selected

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Y	Equal variances assumed	,851	,357	-,282	216	,778	-,00037	,00131	-,00296	,00222
	Equal variances not assumed			-,316	69,408	,753	-,00037	,00117	-,00271	,00197

Table 29: Group statistics for independent variable D with dependent variables Y with only S1 selected

	N	Mean	Std. Deviation	Std. Error Mean
Y	152	-,0004	,00841	,00068

Table 30: One Sample T-Test for independent variable D with dependent variable Y with only S1 selected

Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Y	-,516	151	,607	-,00035	-,0017	,0010

Table 31: One-Way ANOVA for independent variables M1, M2 and M3 with dependent variable Y with only S1 selected

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,000	1	,000	,122	,727
Within Groups	,036	560	,000		
Total	,036	561			