The Impact of National Football Results on Stock Prices

A Case Study for Brazil

Thesis MSc. Finance

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As they say in Brazil: "Os ingleses o inventaram, os brasileiros o aperfeiçoaram"
(The English invented it, the Brazilians perfected it.)

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Abstract

This thesis aims to find any relationship between results from the Brazilian national football team and the Brazilian stock market. By using daily data from the BM&F Bovespa over the period from 18 February 1993 to 29 July 2014 and all national football matches played over that period this relationship is investigated. The methods used for investigating this relationship are the binomial test, the Ordinary Least Square (OLS) model and the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model.

Using these models, no statistically significant effects on the Brazilian stock market following football matches are found. These results imply the Brazilian stock market is efficient. The results also differ from the conclusions that Ashton, Gerrard, and, Hudson (2003) and Edmans, Garcia, and Norli (2007) draw in earlier work concerning this subject.

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1. Introduction and Motivation

1.1 Introduction

Currently, investor sentiment garners much attention in financial literature. In this literature, the possible effects of psychological factors on asset prices are investigated. One of the first to observe an effect on the stock market in contrast with rationality was Wachtel (1942). He detected a phenomenon where the performance of the stock market enjoys higher gains in January than in any other month. His paper explains this effect as a "feel good factor" due to the Christmas holiday. Since then, numerous studies have been conducted on behavioral finance with a focus on irrational investor behavior.

Sports was introduced as a mood variable by Wann et al. (1994); they detected a significant positive reaction for their research group when the sports team they support performs well and a negative effect when their team performs poorly. Ashton, Gerrard, and Hudson (2003) similarly found a significant effect of national football results on the stock exchange of England. Edmans, Garcia, and Norli (2007) also tested that variable in a cross-section study of 39 countries in which they found a statistically significant loss effect for international soccer, cricket, rugby, and basketball games.

1.2 Motivation

Inspired by the research of Ashton et al. (2003) and Edmans et al. (2007), I will investigate whether those papers' results will be similar or different to my own research results. There are two primary reasons I chose Brazil for this research. Firstly, Brazil is a BRIC country, which means it is one of the largest growing economies in the world. Secondly, Brazil is proven to have the most passionate football enthusiasts worldwide, and this passion has a major effect on Brazilian culture (Bellos, 2014). These reasons are more extensively explained in other sections. These two reasons are the motivations for this research. Due to Brazilians' passionate background, I expect at least similar results as the Ashton et al. (2003) paper and possibly even greater effects.

1.3 Thesis structure

This thesis will be structured as follows. Chapter 2 will give an overview of Brazil in general. In Chapter 3, the theoretical framework concerning this subject will be explained, followed by a literature review in Chapter 4. Chapter 5 will explain the properties of the data and the methodology behind the selected models. In Chapter 6, the results of the models will be given, followed by an analysis of these results. Finally, in Chapter 7, the null and alternative hypotheses will be analyzed in the concluding remarks.

2. Brazil

2.1 Football

Football was brought to Brazil in 1892 by the Englishman Charles Miller and was only played by the societal elite in Brazil in the beginning. Later on, football became more and more the game for the lower classes, 'the people'. Now, in 2014, football is the biggest sport in Brazil, with an estimate of 13.198.000[2] players of which 2.142.000 are registered with the Brazilian Football Confederation which is the third highest in the world. Football in Brazil has transformed in over 120 years from sport to a beautiful art form and tool for social cohesion. Bellos (2014) stated: "football in Brazil is more than a game. It is culture. It is life" He reports that football impacts people on a personal level and shared personal experiences drive the role of football in national culture. A great example of the impact of football on daily life in Brazil is the crisis in 2000-2001 when the national team lost a sequence of games and Brazil almost, for the first time, failed to qualify for the World Cup. Congressmen were shedding light on the situation of Brazilian football and its corruptness. Another example of this were the parliamentary investigations following the World Cup of 1998 in France. Ronaldo, a Brazilian star-player, was being asked to explain to congress why Brazil were *only* second best in the 1998 World Cup (Bellos, 2014).

2.2 Economy

In 2001, Jim O'Neill from Goldman Sachs wrote a paper entitled "Building Better Global Economics BRICs". The acronym BRIC refers to the first letters of the countries Brazil, Russia, India, and China. These countries were all believed to be at the same stage of newly advanced economic development. BRIC has become the widespread symbol of the shift in global economic power away from the developed G7 economies. The projections of when the BRIC countries will overtake the G7 economies vary from 2027 to 2050.

At the moment, Brazil has the seventh largest economy of the world rated by nominal GDP. It is the largest economy of Latin America with a GDP in 2013 of $2.246 trillion and a growth of 2.3%[3]. The Brazilian economy, instead of being known for its instability now is being characterized by relative price stability, fiscal responsibility, and rapid growth. The main industries in Brazil are textiles, shoes, chemicals, cement, lumber, iron ore, tin, steel, aircraft, and motor vehicles.

[2] http://www.fifa.com/mm/document/fifafacts/bcoffsurv/emaga_9384_10704.pdf
[3] http://data.worldbank.org/country/brazil

2.3 Overview of Brazilian stock market

The stock market in Brazil is situated in São Paulo and is called the BM&F BOVESPA. In 2008, the São Paulo Stock Exchange (BOVESPA) and the Brazilian Mercantile and Futures Exchanges (BM&F) merged into the BM&F BOVESPA and as of June 30, 2014, it is the 17thstock exchange by market capitalization.[4] 655 companies are listed on the Brazilian securities exchange as of 30 June 2014. The BOVESPA consists of 8 broad indexes. The most important ones are the IBOVESPA, which is a total return index including the most representative companies in the market and is also the oldest index. Another important index is the IBRX50, also called Brasil 50, including the 50 most traded equities at BOVESPA. Also commonly used indices are The Midlarge Cap Index (MLCX) and The Small Cap Index (SMLL) which are respectively, representing 85% of the market value (MLCX), and representing companies who do not fill the 85% market value criteria (SMLL).

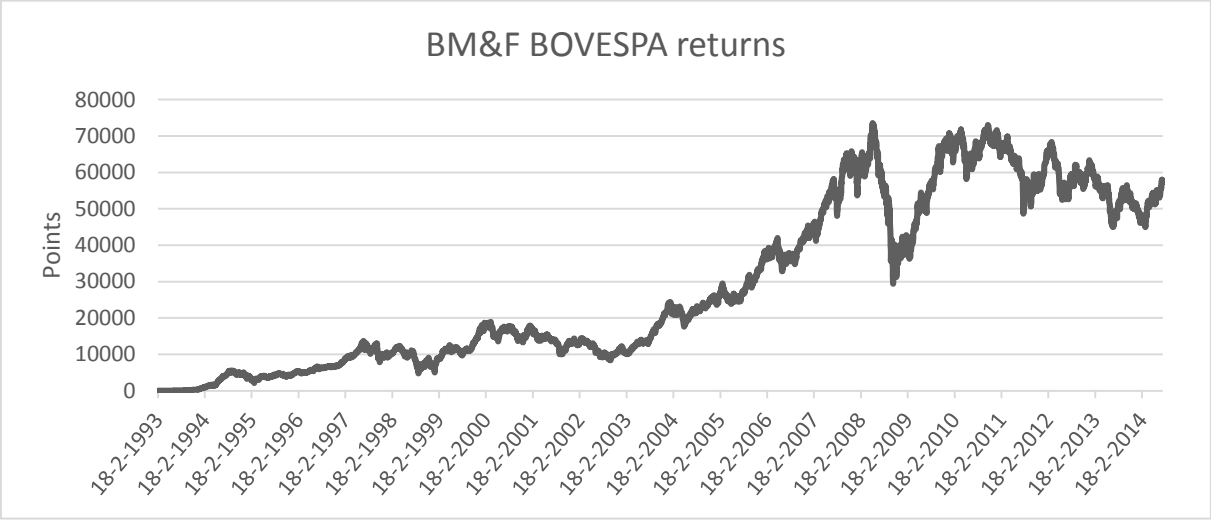


Figure 1. Chart which shows the development of the BM&F BOVESPA stock exchange in the period 18-2-1993 till 29-7-2014 in basis points. Note: data collected with DataStream.

[4] http://www.world-exchanges.org/statistics/monthly-reports

3. Theoretical framework

Stock market anomalies have been uncovered in many studies in the past decades. Empirical researchers have found results that often contradict the traditional efficient market hypothesis, which could result in the mistrust of traditional asset-pricing models. The efficient market hypothesis states that financial markets are "informationally efficient". This means all information is available for individual investors at the time of investment, which means they cannot consistently achieve returns in excess of average market returns.

3.1 Efficient market hypothesis

The efficient market hypothesis (EMH) was mostly developed by Fama (1970). In Fama's (1970) paper, the theoretical and empirical literature on the efficient market model was reviewed. This theory addresses the assumption that, at any given time, all available information is reflected in stock prices. EMH requires that investors have rational expectations; that, on average, the population is right about their expectations; and that investors change their expectations when new information becomes available. Investors can overreact or underreact to new information; they do not have to be rational. A normal distribution pattern requires only random reactions. This theory states that one person, or every person, can be wrong about the market, but the market as a whole is always right.

The efficient market theory is commonly divided into three categories: weak-form efficiency, semi-strong efficiency, and strong-form efficiency.

3.1.1 Weak-form efficiency

Weak-form efficiency, the first form, only examines historical prices or other historical data. Future prices cannot be predicted by analyzing historical information. In the long run, no excess returns can be earned.

3.1.2 Semi-strong form efficiency

The semi-strong form suggests share prices are adjusted to publicly available new information. Investors who search for news will not earn abnormal returns because all information is immediately reflected in prices. To determine semi-strong form efficiency, tests of the price adjustment speed to new information must be completed. The main tool for these tests are event studies. An event study is a statistical method to assess the impact of an event on the value of stock prices. First, the performance from stocks in an estimation period is measured. Then, the stocks' performance is measured after the event occurs to determine if there are abnormal returns following the event.

3.1.3 Strong-form efficiency

Strong-form efficiency means that all public and private information is publicly available, accessible, and reflected in share prices. Thus, no one can earn excess returns.

3.2 Investor psychology

Investor sentiment is the belief that future cash flows and investment risks are not justified by the available facts, and it rejects the efficient market hypothesis. The assumption that investors are subject to sentiment was first properly examined by Delong, Shleifer, Summers, and Waldmann (1990). They analyzed the assumption that rational speculation reduces fluctuations caused by noise traders and found that is not necessarily the case if noise traders follow positive-feedback strategies, i.e., buying when prices rise and selling when prices fall.

Shleifer and Vishny (1997) believed that betting against sentimental investors is costly and risky. In particular, low capitalization, younger, unprofitable, high-volatility, or non-dividend paying stocks, as well as stocks of growth companies or of firms in financial distress, are likely to be excessively sensitive to extensive waves of investor sentiment. Theoretically, this follows because these stock categories tend to be more difficult to achieve profit from arbitrage and are more difficult to value, making biases more insidious and valuation errors more likely (Baker & Wurgler, 2007).

The asset pricing impact of behavioral biases in psychology research was extensively reviewed by Shiller (2000) and Hirshleifer (2001). They reported that the purely rational approach must be studied because the psychology of investors must be considered.

Return predictability is troubled by data mining. Hirshleifer (2001) stated that the described patterns of predictability have dual explanations based on either risk premia or mispricing. Empirical papers on predictability often naively interpret psychological explanations. Hirshleifer (2001) then stated that the psychological approach recognizes the fact that investors care about risk as a factor. The psychological approach predicts that factors, not just residuals, will be mispriced. This predictability can be based upon different measures, such as factor risk measures (CAPM), price and benchmark value measures, past returns (momentum and reversal), public versus private news events, and most relevant to this paper, mood proxies. It is proven that environmental factors that influence mood are correlated with stock price movements.

One example of an environmental factor that influences mood is the daylight savings time change. This variable was investigated by Kramer, Kamstra, and Levy (2000). The effect implies that sleep desynchronosis[5] caused by the daylight savings time effect has a negative impact on financial markets. They found a statistically and economically significant daylight savings time effect, which was 200% to 500% greater than the regular weekend effect (Lakonishok & Levi, 1982) in several financial markets,

[5] Sleep desynchronosis is an effect similar to jet lag: response time and problem-solving ability are adversely affected whether the travel involves a "lag" by traveling west to east, or a "lead" when traveling east to west. Both traveling directions cause a desynchronosis or disruption in sleeping patterns (Kamstra, Kramer, & Levi, Losing sleep at the market: the daylight saving anomaly, 2000).

and a one-day loss of $31 billion on the NYSE, AMEX, and NASDAQ exchanges in the United States alone.

In addition to the single event, the continuous environmental variable has been frequently investigated. Saunders (1993) and Hirshleifer and Shumway (2003) found that sunshine has a significantly positive effect on stock prices. Cao and Wei (2005) showed that changes in mood caused by lower temperatures significantly increased stock returns, as a result of aggression leading to more risk-taking. Additionally, mood changes caused by higher temperatures resulted in higher or lower stock returns, depending on the trade-off between the two competing effects. Another environmental behavioral factor in explaining returns is the effect of seasonal affective disorder (SAD) on stock market returns around the world (Kamstra, Kramer, & Levi, 2003). Lastly, Yuan, Zheng, and Zhu (2006) investigated the relationship between lunar phases and stock market returns. Their findings imply that, independent of other calendar-related anomalies, stock returns are statistically and economically significantly lower on the days around a full moon than on the days around a new moon. Their findings are not consistent with the predictions of traditional asset pricing theories that assume fully rational investors because lunar cycles are more likely to be related to investor mood instead of economic activities.

Edmans, Garcia, and Norli (2007) pointed out that the event approach clearly identifies a sudden change in the mood of investors, which gives a large signal-to-noise ratio in returns, making it more appealing than using a continuous variable. However, the event approach's disadvantage is the number of observed signals tends to be low, which reduces the statistical power of the research.

4. Literature review

Football, or soccer, has been used as a mood variable in multiple papers in the past. The first researchers to conduct an event-study analysis of share price movements following football results on a domestic level were Ashton, Gerrard, and Hudson (2003). They investigated the influence of results of the England national football team and subsequent daily changes in the FTSE 100 index, representing the price of shares in the 100 largest companies traded on the London stock exchange. Using the mean return after a game, the binomial test, and a regression model estimated by a Generalized Methods of Moments (GMM) estimator, they found that good (bad) results are followed by a statistically significant good (bad) effect for the period between 1984 and 2002.

Klein, Zwergel, and Fock (2009) rebuilt Ashton et al.'s (2003) study and detected some mistakes in the empirical set-up. By demonstrating that even small mistakes could have a strong influence on the results of an empirical study, they showed the importance of replication studies. The first mistake they found was the holiday return effect, resulting from the use of DataStream as the source for their data. DataStream reports the last price when no trading on a holiday occurred, which results in a zero return for every holiday. This can seriously change an empirical study if this is not corrected. Another mistake Klein, Zwergel, and Fock (2009) found was the "copy and paste" effect. In this effect, matches that ended in a draw but still had a winner due to penalty shoot-outs were overlooked in the dataset. The last mistake Klein, Zwergel, and Fock (2009) found was the globalization effect. This effect occurs because the stock exchange does not trade around the clock but football matches can be played everywhere in the world, so time difference plays a role. Some results may be known on the day of the football game and were already digested in the day's closing price. It is difficult to correct for this without using microstructure data, so Klein et al. (2009) did not assess this affect in their corrected outcomes. After replicating the study, they could not find any evidence of a link between the achievement of the English national football team and the British FTSE 100 index based on data between 1990 and 2006.

Edmans, Garcia, and Norli (2007) investigated the stock market reaction to sudden changes in investor mood caused by football results. They found a significant market decline after losses for their dataset of 39 different countries. They did not find any impact for wins on stock returns. The methodology they used is the Ordinary Least Square (OLS) method, followed by a Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model.

Klein, Zwergel, and Heiden (2009) tested for a relationship between football results and the national stock index returns in Europe during the period of 1990 to 2006. They used two different methodologies to cross-check their results. The models they used are the constant mean model and a two-state Markov-switching market model; they did not find any significant results, even when they modify their set-up by adding a "surprise" variable.

Edmans et al. (2007) also examined the loss effect in other sports. They found a significant loss effect in cricket, rugby, and basketball events. Boyle and Walter (2003) investigated the impact of results of the national rugby team of New Zealand on stock prices because it is a small country with a single dominant sport whose primary matches are international. They did not find irrational investor behavior in their study using Ordinary Least Squares (OLS) and Generalized Least Squares (GLS) methods.

On a club level, the effects of results on stock prices also have been extensively investigated. For example, Renneboog and Vanbrabant (2000) examined the effect of football teams' weekly performances on the share prices of clubs listed on the London Stock Exchange. They found positive abnormal returns following a victory and negative abnormal returns following a draw or loss. Berument, Ceylan, and Gözpinar (2006) investigated the effect of the European game results on club stock returns of the three largest clubs in Turkey on the Istanbul Stock Exchange for the period of 1987 to 2003. They only found a significant relationship for Besiktas, while there was no relationship between the other two clubs and the index. Duque and Ferreira (2005) also examined the relationship between sport performance and stock prices of clubs using the data of Porto and Sporting Lisbon for 1998 to 2003. Using the Autoregressive Conditional Heteroskedasticity (ARCH) and GARCH methodologies, they found a positive relationship between the clubs' stock price returns and sporting performance. They also found that this effect increases approaching the end of the season.

Edmans et al. (2007) stated football has attractive properties for use as a mood variable when testing the link between mood and stock returns. Three key characteristics were given with which a mood variable must comply. First, a mood variable must drive mood in a clear-cut and significant way, which means the effect must be strong enough to appear in asset prices. Several papers with psychological evidence have shown that sports results, in general, have a significant effect on mood. Wann et al. (1994) found that fans experience a strong positive reaction when the team they support performs well and a similar negative effect occurs when their team performs poorly. The most important outcome from these reactions was the fans' increased or decreased self-esteem and the changed positive or negative feelings about life in general that arose after sports results. Schwartz et al. (1987) also found that the results of two matches played by the German national team in the 1982 World Cup significantly changed the moods of the people they studied. The second key feature of a mood variable, according to Edmans et al. (2007), is that it must have impact on such a large proportion of the population that investors are affected. Lastly, a mood variable must be correlated across the greater number of the individuals' within a country. With 47.4[6] million viewers in Brazil, the group match Brazil against Croatia was the most watched TV sports broadcast in 2014 until the group stage of the FIFA World Cup, and a good indicator that the last two criteria are easily fulfilled. Another example of fulfilling those criteria is the

[6] http://www.fifa.com/worldcup/news/y=2014/m=6/news=fifa-world-cuptm-group-stages-break-new-ground-in-tv-viewing-2388418.html

Confederations Cup of 2013, held in Brazil, in which the final between Brazil and Spain was the most viewed sports broadcast of the year[7].

4.1 Hypothesis

Following the theoretical framework and literature review in the previous sections, the null hypothesis can be formulated as follows: outcomes of matches of the Brazilian national football team do not affect the Brazilian stock market. This null hypothesis is in line with the efficient market theory, where markets are efficient and investors rational. The alternative hypothesis is as follows: wins lead to a positive effect on the stock market and losses lead to a negative effect on the stock market in Brazil. The alternative hypothesis is supported by psychology literature and other previous similar research on this subject, such as the papers from Ashton et al. (2003) and Edmans et al. (2007). If the null hypothesis is disproven and the alternative hypothesis is true, it must be determined whether the possible effect is caused by irrational investment behavior or if it is because investors rationally react to the positive or negative effects a win or loss may have on the economy. Some examples of these economic effects are higher/lower sales of merchandise and advertising, the negative impact on productivity, and a potential reduction in consumer expenditure (Edmans, Garcia, & Norli, 2007). From this, the effect of more important matches, like World Cup matches, should be greater than for friendly matches. At friendly matches, the feel-good factor is likely to be weakened and provides only limited new information on future prospects of the team in competitive tournament matches.

[7] http://www.fifa.com/marketinghighlights/brazil2013/the-fcc-in-numbers/index.html

5. Data and methodology

5.1 Data

The data for the international football results of the Brazilian national team are retrieved from http://www.soccerbase.com for the period from 17 February 1993 through 29 July 2014. The dataset includes all games from the Copa América, Gold Cup, Confederations Cup, World Cup, qualifying games for the World Cup as well as all friendly matches played in that period. The total sample consists of 332 matches (216 wins, 68 draws and 47 losses) that are defined as relevant mood events.

The World Cup is the most well-known football tournament and is held every four years to decide which team can name itself world champion for the coming four years. Teams have to qualify themselves for this tournament by playing qualification games with teams from their own continent, in this case South America. The Copa América is the South American championship organized by the CONMEBOL[8]. This championship is held at irregular intervals between two and four years. Since 1993, every edition there have been two guest countries outside South America to participate in the championship. The Gold Cup is held every two years and is a championship between all CONCACAF countries, which encloses all countries of North America, Central America and the Caribbean, and also has a guest country every edition which has been Brazil on three occasions. The FIFA Confederations Cup is a competition between the champions of the six continental confederations, the world champion and a host country and is held every four years. Brazil has the most participations of all countries with seven times and has won four of their participations. All championships in the sample but the qualifying games for the World Cup have similar formats being: all teams are divided in equal groups in which they play each other to qualify for the top two positions to advance to the elimination stage. The team that wins all their elimination matches wins the tournament.

The sample is divided in three subcategories as some matches are considered more important than other matches. The first subcategory consists of all football matches in the dataset. The second subcategory consists of all cup matches, which means the friendly matches are left out. The third subcategory consists of all matches played in the World Cup and Copa América and should have the largest effect on the stock exchange since these matches are considered to be the most important. Some matches in the dataset had to be adjusted since the outcome of the game was a draw after 90 or 120 minutes but there had to be a winner since it was a knock-out game. In that case, penalty kicks decide which team goes to the next round so the draw in the dataset had to be changed to a win or loss since the hypothetical effect on the stock exchange comes from winning or losing a match.

[8] CONMEBOL is the South American Football Confederation and is one of six continental federations that is a member of FIFA, the International Federation of Association Football.

The stock returns used in this study are gathered from DataStream. The used market index is the São Paulo Stock Exchange (BM&F Bovespa) from 17 February 1993 till 29 July 2014. The data used are daily with five days per week (Monday, Tuesday, Wednesday, Thursday, and Friday) since there is no trading in the weekends. The "holiday function" of DataStream is used to account for the problem of non-trading days which are not in the weekend (Klein, Zwergel, & Henning Fock, 2009). To measure the effect of the results of matches on stock prices, the returns on the first trading day after a match have been used. The first trading day after a match is used because the most games are played in the evening after the stock exchange is closed. In this way is ensured the return for a full day after the match outcome is known is captured. When a match is played on Friday, Saturday or Sunday, the daily returns of Monday are used.

Stock returns are measured as the daily percentage change of the returns. The calculation of these returns is shown below:

$$R_t = ln(I_t) - ln(I_{t-1})$$

Equation 1

Here, R_t is the return of period t, *I* is the daily return for index period t and *ln* is the natural logarithm.

5.2 Methodology

To assess a possible relationship between the results of football games and stock market returns, initially, the mean return and standard deviation of that return on the BM&F Bovespa index after a win, loss, or draw in a national football game is recorded.

The second part of the research involves testing whether the return on the next trading day given a particular result statistically significantly differs from the unconditional mean return on all trading days in the sample (Ashton, Gerrard, & Hudson, 2003). The binomial statistics tests if the return on the next trading day is greater than (less than) the unconditional mean return after a winning (losing) game by considering the proportion of returns after a particular game outcome that exceeds the unconditional mean. The results of the binomial test can be found in chapter 6.

The next stage of the research will be estimating the impact of wins and losses on stock returns by using an Ordinary Least Squared (OLS) regression:

$$R_t = \gamma_0 + \gamma_1 R_{it-1} + \sum_{i=1}^{4} \gamma_2 Q_{it} + \sum_{i=1}^{5} \gamma_{3i} H_t + \varepsilon t$$

Equation 2

Where R_t is the return of period t, γ_0 is the regression intercept coefficient, R_{t-1} is the previous day return and is included to account for first order serial correlation, Q_{it}, i = 1,…,4, are dummy variables

for the days of week, Monday through Thursday, and H_{it}, i = 1,…,5, are dummy variables for days for the days after a non-weekend holiday. These dummy variables are used for controlling for the Monday effect and other confounding effects.

The model is a modified version of the original model used by Edmans, Garcia, and Norli (2007). They include in their model also a market index, but since this research focuses only on one country it is not necessary to include it in this model.

After estimating the regression model above the effect of the result of a football match can be approximated by using the residuals ($\hat{\varepsilon}_t$) of the regression:

$$\hat{\varepsilon}_t = \beta_0 + \beta_w W_t + \beta_l L_t$$

Equation 3

Where W_t a dummy variable that takes the value one if Brazil wins, which makes *t* the first trading day after the match and zero otherwise. L_t is a dummy variable for losses which is defined analogously.

Edmans, Garcia, and Norli (2007) state that a possible concern regarding this statistical approach is the constant-volatility assumption. This means there has to be checked if any periods of high volatility occurred during our sample. When this is the case, our standard errors would be biased downwards. This problem can be solved by using a GARCH model as developed by Engle (1982) and generalized by Bollerslev (1986). Equation 4 is used to model the volatility of the error term.

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_1 \varepsilon_{t-1}^2 + \sum_{i=1}^{p} \alpha_2 \sigma_{t-1}^2$$

Equation 4

Where σ_t^2 represents the volatility of the index returns on day t and will be used to obtain the new time series of normalized stock returns (R_t^0). The normalized residuals we get from this model are denoted by $\check{\varepsilon}_t$. Similar to Edmans et al. (2007), $\hat{\varepsilon}_t$ are going to be referred to as 'abnormal raw returns', while $\check{\varepsilon}_t$ will be called 'abnormal normalized returns'.

6. Results and Analysis

This section will show the results and an analysis of the descriptive statistics, binomial statistics test and the results of the econometric approach.

6.1 Descriptive statistics

The total sample consists of 330 matches over the period 18 February 1993 till 29 July 2014, including six World Cups with associated qualification tournaments, eight Copa América's, three Gold Cups, and seven Confederations Cups as well as 145 friendly matches. This period consists of 5593 trading days with an average return and standard deviation of 0.1494% and 2.32% respectively.

Table 1. Descriptive statistics. This table presents the number of wins, draws, and losses in the three subcategories: all international matches, all international matches without friendly matches, and all World Cup and Copa América matches. The matches are played over the period 18 February 1993 to 29 July 2014. The mean returns reported in the table are computed from the log daily return on the Brazilian stock exchange (BM&F Bovespa) gathered from DataStream on the first trading day after a particular match. Appendix A gives a detailed overview of all individual matches in the dataset. Note: shaded areas mark counterintuitive (as defined in chapter 6.1) moments.

DESCRIPTIVE STATISTICS

	WINS			**DRAWS**			**LOSSES**		
The BM&F Bovespa stock exchange: Period of Investigation 18 February 1993 - 29 July 2014 Unconditional Daily Return on the index for all trading days is 0.1494%									
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*
All internationals	330	0.163%	1.87%	216	0.276%	2.39%	67	0.109%	1.54%	47
Without friendly games	185	0.187%	2.07%	119	0.433%	1.73%	34	-0.160%	1.38%	32
World Cup and Copa América games	80	0.353%	2.40%	58	0.433%	1.31%	9	-0.118%	1.07%	13

During the sample period the Brazilian national squad wins 216 matches, which results in an average return for days after the match of 0.163%. In line with the findings of Ashton et al. (2003) the effect gets bigger when matches get more important, with an average return of 0.187% for all matches but friendlies and an average return of 0.353% for all 58 World Cup and Copa América wins. The descriptive statistics regarding a draw of the national football team are shaded because they are counterintuitive. First, the average returns are higher than the unconditional mean of the index which is not in line with the results from Ashton et al. (2003) and secondly the average returns after draws are higher than the average returns after a win, which would imply that draws affect the stock market more in a positive way than wins do, which is counterintuitive. The average return for all international games after a loss is 0.109%

which is positive but lower than the unconditional mean of the index which doesn't make it counterintuitive. When looking at all international games except the friendly matches the average return is -0.160% which is in line with the results from Ashton et al. (2003) and Edmans et al. (2007) since the effect is getting bigger as the matches get more important. For the World Cup and Copa América matches however, we see a discrepancy as the average return is still negative (-0.118%) but higher than the return when looking at all matches except the friendly matches.

6.2 Binomial statistics

In table 2, the binomial statistics are presented. They show that only the effect after a loss in the second subcategory, which consists of all matches except friendly matches, is statistically significant. In the first trading day after these matches, the return is statistically significantly less than the unconditional mean for all types of matches. For all other match outcomes, the results are not statistically significant for at least the 10% level.

Table 2. Binomial statistics results. This table presents the results of the binomial statistics test if the expected return on the next trading day is greater than (less than) the unconditional mean return after a winning (losing) game by considering the proportion of returns after a particular game outcome that exceeds the unconditional mean return. The number without brackets denotes the number of games that exceeds the unconditional mean, the number within the brackets denotes the total number of games in that subcategory. Note: ** significant at 5% level one sided test.

BINOMIAL STATISTICS

		No. of returns after a win/loss which are > / ≤ the unconditional mean. (Total N)	
	N	*Win*	*Loss*
All internationals	330	99 (216)	26 (47)
Without friendly games	185	56 (119)	20 (32)**
World Cup and Copa América games	80	27 (58)	8 (13)

6.3 Econometric approach

Before applying the time series test, an Augmented Dickey-Fuller test is performed to test if the data follows a unit-root process. In the null hypothesis the variable contains a unit root, and the alternative is that the variable was generated by a stationary process. Stata gives a value for the Dickey-Fuller test of -70.978 which is smaller than the 1% critical value of -3.43 from which can be concluded the data is stationary.

Following this, the Ordinary Least Squares regression model, as discussed in chapter 5, is going to be used to check for a week of the day effect or a non-weekend holiday effect in the Brazilian stock market. By including these dummies in the regression those effects are controlled for and left out the residual, which then captures only other effects. The results from the regression are shown in table 3.

Table 3. OLS regression results. Regression of daily return on previous day return, day-of-the-week dummy variables, and non-weekend holiday dummy variables. Daily return is calculated following equation 1. This table reports if there is a day-of-the-week effect or a holiday effect on the Brazilian stock market during the period of observation (18 February 1993 – 29 July 2014). The inclusion of these dummies in the regression is for controlling these effects and let other effects that are not captured in the model stay in the residual. The raw residuals of this regression are used for estimating abnormal daily stock market performance after international football matches. Note: * significant at 10% level ** significant at 5% level *** significant at 1% level.

OLS REGRESSION		N: 5591
	Coefficient	t-Values
Constant	0.0001	0.16
R_{t-1}***	0.054	4.03
Monday*	-0.002	-1.94
Tuesday**	0.002	2.04
Wednesday	-0.0005	-0.52
Thursday***	0.003	2.87
HolidayMon	0.003	0.81
HolidayTue	0.001	0.33
HolidayWed	0.001	0.30
HolidayThu	0.004	1.03
HolidayFri	0.004	0.98
R^2	0.0053	

Table 3 shows statistically significantly effects for the previous day return (1% level), Monday (10% level), Tuesday (5% level), and Thursday (1% level). All other coefficients are not statistically significantly different from zero. The effect of the win and loss variable-dummy based on the residuals from the OLS regression are stated in table 5 with their corresponding t-values.

However, after the OLS-regression there has to be checked if the GARCH model has to be applied on this data. The Durbin-Watson statistic gives a value of 1.998 which indicates there is no serial correlation in the residual. However, by using the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity the variance of the error term is being checked to be constant or not. The test gives a large (333.45) chi-square value, indicating heteroskedasticity is a problem, which means there are sub-populations within

the dataset that have different variability's from others. Heteroskedasticity does not lead to biased coefficient estimates but cause biased standard errors. This leads to bias in test statistics and has a biased inference of the coefficients as a result. A GARCH (1,1) correction is needed in order to normalize the volatility over the years.

Table 4 shows the results of the coefficients after the GARCH corrections. In the last column the t-values of the coefficient are given. The table shows that several coefficients are statistically significant. The coefficient for the previous day return is significant at 10%, the coefficients for the Tuesday and Thursday effect are both significant at the 5% level. The coefficients for the day after non-weekend holidays Tuesday and Friday are as well statistically significant at respectively the 10% and 1% level. All other coefficients are not statistically significant from zero.

Table 4. GARCH regression model results. Regression of daily return on previous day return, day-of-the-week dummy variables, and non-weekend holiday dummy variables. Daily return is calculated following equation 1. The GARCH (1,1) model (equation 4) is used to model the volatility of the error terms. This table reports if there is a day-of-the-week effect or a holiday effect on the Brazilian stock market during the period of observation (18 February 1993 – 29 July 2014). The inclusion of these dummies in the regression is for controlling these effects and let other effects that are not captured in the model stay in the residual. These abnormal normalized returns are used to determine abnormal daily stock market performance after international football matches. Note: * significant at 10% level ** significant at 5% level *** significant at 1% level.

GARCH (1,1) MODEL	N: 5591
	Coefficient	t-Values
Constant	0.0005	0.52
R_{t-1}*	0.0232	1.70
Monday	0.0007	0.71
Tuesday**	0.0017	2.45
Wednesday	0.0007	1.03
Thursday**	0.0018	2.41
HolidayMon	0.0026	0.72
HolidayTue*	0.0028	1.71
HolidayWed	-0.0033	-1.42
HolidayThu	-0.0002	-0.07
HolidayFri***	0.0056	2.73
ARCH	0.0955	
GARCH	0.8932	

Before the residuals of this GARCH model are obtained, there has to be checked if the results from the model satisfy the requirements of the GARCH model. The first estimator of a good GARCH model is that both ARCH and GARCH are positive coefficients. This requirement is met because ARCH is 0.0955 and GARCH is 0.8932 which are both positive. The second requirement is that the sum of ARCH and GARCH has to be smaller than one ($\alpha + \beta < 1$). The sum of the coefficients is 0.9887 which means the model is stationary. The last requirement is testing if there is an ARCH-effect. By using the ARCH-LM test in STATA there can be that there is no ARCH-effect. Since the three requirements are fulfilled, the residuals of the GARCH model have to be predicted. From these residuals, the effects of outcomes of football matches in Brazil can be obtained. These effects are shown in panel B of table 5.

Table 5 shows the values for the dummy-variables for wins and losses using the residuals from the OLS-regression (abnormal raw returns) and using the residuals from the GARCH model (abnormal normalized returns). The dummy variable for wins has counterintuitive values in both panels. The dummy variable is negative for all matches, as well as the subgroup all matches without the friendlies. The values get higher when the matches get more important with a positive value for World Cup and Copa América matches but all values for the win-dummy are not statistically significant. The dummy variable for losses has counterintuitive values as well. For both panels, the dummy variable is positive for the subgroups all international matches and World Cup and Copa América matches. The value for the subgroup all matches without friendly matches has in both panels a negative value, but all values lack any statistical significance for at least the 10% level. These results are in line with the null hypothesis which states that the Brazilian stock market is unaffected by football results from the Brazilian national team, and supports the view that investors are rational and efficient.

Table 5. Abnormal daily stock market performance after international football matches for the period 18 February 1993 to 29 July 2014 divided in the subcategories described in chapter 5.1. The table reports the ordinary least squares (OLS) estimates of β_w and β_L from

$$\hat{\varepsilon}_t = \beta_0 + \beta_w W_t + \beta_l L_t$$

&

$$\check{\varepsilon}_t = \beta_0 + \beta_w W_t + \beta_l L_t$$

where $\hat{\varepsilon}_t$ are the "abnormal raw returns", and $\check{\varepsilon}_t$ are the "abnormal normalized returns" as defined in chapter 5.2. For example, the dummy variable for losses in Panel A for all matches but friendlies indicates a lost match affects stock returns with -1,3%.

WIN/LOSS ESTIMATES

	Wins			Losses		
	N	β_W	t-Values	N	β_L	t-Values
Panel A: Abnormal Raw Returns						
All internationals	216	-0.00068	-0.28	47	0.00573	0.95
Without friendly games	119	-0.00086	-0.22	32	-0.01319	-1.63
World Cup and Copa América games	58	0.00371	0.87	13	0.00412	0.49
Panel B: Abnormal Normalized Returns						
All internationals	216	-0.0007	-0.28	47	0.0055	0.92
Without friendly games	119	-0.0003	-0.08	32	-0.0127	-1.57
World Cup and Copa América games	58	0.0034	0.79	13	0.0043	0.51

7. Conclusions

Inspired by previous work by Ashton, Gerrard, and Hudson (2003) and Edmans, Garcia, and Norli (2007), this thesis investigates if the results from these papers were similar or different for Brazilian data. Based on the literature, the null hypothesis proposed that stock market returns are unaffected by football results. The alternative hypothesis stated that football results have such an effect on investor mood that stock market returns are affected. The results from previous chapters, however, do not support the alternative behavioral hypothesis that football results affect stock returns through their impact on investor mood. This means the null hypothesis, the results of the Brazilian national football team do not affect the Brazilian stock market, holds. Thus, this data supports the view stated in earlier chapters that investors are rational, which supports the efficient market hypothesis. From this, it also can be concluded that there are no significant economic effects following a win or loss by the Brazilian national football team to influence the Brazilian stock market.

A possible explanation for the fact that the loss effect Edmans et al. (2007) found in their paper not being found using this dataset is a high proportion of foreign investors in Brazil. The Bureau of Economic and Business Affairs stated in the 2013 Investment Climate Statement that Brazil is the fifth most attractive country for foreign investments[9]. In the survey, they calculated that foreign investors account for 40.3% of the total turnover of the BOVESPA. Since foreign investors account for nearly half of the turnover, the lack of a win or loss effect on the stock market can be explained. The mood of foreign investors is not affected by the outcomes of the Brazilian national football matches, which could explain the lack of a significant effect.

[9] http://www.state.gov/e/eb/rls/othr/ics/2013/204608.htm

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Appendices

Appendix A

	Date	Opponent	Result	Venue	Score	Type
1993	18-2-1993	Argentina	3	a	1-1	F
	6-6-1993	USA	1	a	0-2	F
	10-6-1993	Germany	3	n	3-3	F
	13-6-1993	England	3	n	1-1	F
	18-6-1993	Peru	3	n	0-0	CA
	21-6-1993	Chile	2	n	3-2	CA
	24-6-1993	Paraguay	1	n	3-0	CA
	27-6-1993	Argentina	1	n	1-1	CA
	14-7-1993	Paraguay	1	h	2-0	F
	25-7-1993	Bolivia	2	a	2-0	WCQ
	1-8-1993	Venezuela	1	a	1-5	WCQ
	8-8-1993	Mexico	3	h	1-1	F
	15-8-1993	Uruguay	3	a	1-1	WCQ
	29-8-1993	Bolivia	1	h	6-0	WCQ
	5-9-1993	Venezuela	1	h	4-0	WCQ
	19-9-1993	Uruguay	1	h	2-0	WCQ
	17-11-1993	Germany	2	a	2-1	F
	16-12-1993	Mexico	1	a	0-1	F
1994	23-3-1994	Argentina	1	h	2-0	F
	6-6-1994	Canada	3	a	1-1	F
	8-6-1994	Honduras	1	n	8-2	F
	20-6-1994	Russia	1	n	2-0	WC
	24-6-1994	Cameroon	1	n	3-0	WC
	28-6-1994	Sweden	3	n	1-1	WC
	4-7-1994	USA	1	a	0-1	WC
	9-7-1994	Holland	1	n	2-3	WC
	13-7-1994	Sweden	1	n	0-1	WC
	17-7-1994	Italy	1	n	0-0	WC
	23-12-1994	Yugoslavia	1	h	2-0	F
1995	29-3-1995	Honduras	3	h	1-1	F
	6-6-1995	Japan	1	n	3-0	F
	11-6-1995	England	1	a	1-3	F
	7-9-1995	Ecuador	1	n	1-0	CA
	10-7-1995	Peru	1	n	2-0	CA
	13-7-1995	Colombia	1	n	3-0	CA
	16-7-1995	Argentina	1	n	2-2	CA
	19-7-1995	USA	1	n	1-0	CA
	24-7-1995	Uruguay	2	a	1-1	CA
	9-8-1995	Japan	1	a	1-5	F
	12-8-1995	South Korea	1	a	0-1	F
	11-10-1995	Uruguay	1	h	2-0	F
	8-11-1995	Argentina	1	a	0-1	F
1996	12-1-1996	Canada	1	n	4-1	GC
	14-1-1996	Honduras	1	n	5-0	GC
	18-1-1996	USA	1	a	0-1	GC
	21-1-1996	Mexico	2	n	2-0	GC
	28-6-1996	Russia	3	a	2-2	F
	31-8-1996	Holland	3	a	2-2	F
	13-11-1996	Cameroon	1	h	2-0	F
	18-12-1996	Bosnia-Hz.	1	h	1-0	F
1997	2-4-1997	Chile	1	h	4-0	F
	30-4-1997	Mexico	1	n	4-0	F
	3-6-1997	France	3	a	1-1	F
	8-6-1997	Italy	3	n	3-3	F
	10-6-1997	England	1	n	0-1	F
	13-6-1997	Costa Rica	1	n	5-0	CA
	16-6-1997	Mexico	1	n	3-2	CA
	19-6-1997	Colombia	1	h	2-0	CA
	22-6-1997	Paraguay	1	n	2-0	CA
	26-6-1997	Peru	1	n	7-0	CA
	29-6-1997	Bolivia	1	a	1-3	CA
	10-8-1997	South Korea	1	a	1-2	F
	13-8-1997	Japan	1	a	0-3	F
	12-12-1997	Saudi Arabia	1	n	0-3	CC
	14-12-1997	Australia	3	n	0-0	CC
	16-12-1997	Mexico	1	n	3-2	CC
	19-12-1997	Czech Rep	1	n	2-0	CC
	21-12-1997	Australia	1	n	6-0	CC
1998	3-2-1998	Jamaica	3	n	0-0	GC
	5-2-1998	Guatemala	3	n	1-1	GC
	8-2-1998	El Salvador	1	n	0-4	GC
	10-2-1998	USA	2	h	1-0	GC
	15-2-1998	Jamaica	1	n	1-0	GC
	25-3-1998	Germany	1	a	1-2	F
	29-4-1998	Argentina	1	h	1-0	F
	10-6-1998	Scotland	1	n	2-1	WC
	16-6-1998	Morocco	1	n	3-0	WC
	23-6-1998	Norway	2	n	1-2	WC
	27-6-1998	Chile	1	n	4-1	WC
	3-7-1998	Denmark	1	n	3-2	WC
	7-7-1998	Holland	1	n	1-1	WC
	12-7-1998	France	2	a	3-0	WC
	23-9-1998	Yugoslavia	3	h	1-1	F
	18-11-1998	Russia	1	h	5-1	F
1999	28-3-1999	South Korea	2	a	1-0	F
	31-3-1999	Japan	1	a	0-2	F
	5-6-1999	Holland	3	h	2-2	F
	8-6-1999	Holland	1	h	3-1	F
	26-6-1999	Latvia	1	h	3-0	F
	30-6-1999	Venezuela	1	n	7-0	CA
	3-7-1999	Mexico	1	n	2-1	CA
	6-7-1999	Chile	1	n	1-0	CA
	11-7-1999	Argentina	1	n	2-1	CA
	14-7-1999	Mexico	1	a	0-2	CA
	18-7-1999	Uruguay	1	n	0-3	CA
	24-7-1999	Germany	1	n	4-0	CC
	28-7-1999	USA	1	n	1-0	CC
	30-7-1999	New Zealand	1	n	2-0	CC
	1-8-1999	Saudi Arabia	1	n	8-2	CC
	4-8-1999	Mexico	2	n	4-3	CC
	4-9-1999	Argentina	2	a	2-0	F
	7-9-1999	Argentina	1	h	4-2	F
	9-10-1999	Holland	3	a	2-2	F
	13-11-1999	Spain	3	a	0-0	F
2000	23-2-2000	Thailand	1	a	0-7	F
	28-3-2000	Colombia	3	a	0-0	WCQ
	26-4-2000	Ecuador	1	h	3-2	WCQ
	23-5-2000	Wales	1	a	0-3	F
	27-5-2000	England	3	a	1-1	F
	4-6-2000	Peru	1	a	0-1	WCQ
	28-6-2000	Uruguay	3	h	1-1	WCQ
	18-7-2000	Paraguay	2	a	2-1	WCQ
	26-7-2000	Argentina	1	h	3-1	WCQ
	15-8-2000	Chile	2	a	3-0	WCQ
	3-9-2000	Bolivia	1	h	5-0	WCQ
	8-10-2000	Venezuela	1	a	0-6	WCQ
	15-11-2000	Colombia	1	h	1-0	WCQ
2001	3-3-2001	USA	1	a	1-2	F
	7-3-2001	Mexico	3	a	3-3	F
	28-3-2001	Ecuador	2	a	1-0	WCQ
	25-4-2001	Peru	3	h	1-1	WCQ
	31-5-2001	Cameroon	1	n	2-0	CC
	2-6-2001	Canada	3	n	0-0	CC
	4-6-2001	Japan	3	a	0-0	CC

	Date	Opponent	Result	Venue	Score	Type
	7-6-2001	France	2	n	2-1	CC
	9-6-2001	Australia	2	n	1-0	CC
	1-7-2001	Uruguay	2	a	1-0	WCQ
	12-7-2001	Mexico	2	n	0-1	CA
	15-7-2001	Peru	1	n	2-0	CA
	18-7-2001	Paraguay	1	n	3-1	CA
	23-7-2001	Honduras	2	n	0-2	CA
	9-8-2001	Panama	1	h	5-0	F
	15-8-2001	Paraguay	1	h	2-0	WCQ
	5-9-2001	Argentina	2	a	2-1	WCQ
	7-10-2001	Chile	1	h	2-0	WCQ
	7-11-2001	Bolivia	2	a	3-1	WCQ
	14-11-2001	Venezuela	1	h	3-0	WCQ
2002	31-1-2002	Bolivia	1	h	6-0	F
	6-2-2002	Saudi Arabia	1	a	0-1	F
	7-3-2002	Iceland	1	h	6-1	F
	27-3-2002	Yugoslavia	1	h	1-0	F
	17-4-2002	Portugal	3	a	1-1	F
	25-5-2002	Malaysia	1	a	0-4	F
	3-6-2002	Turkey	1	n	2-1	WC
	8-6-2002	China	1	n	4-0	WC
	13-6-2002	Costa Rica	1	n	2-5	WC
	17-6-2002	Belgium	1	n	2-0	WC
	21-6-2002	England	1	n	1-2	WC
	26-6-2002	Turkey	1	n	1-0	WC
	30-6-2002	Germany	1	n	2-0	WC
	21-8-2002	Paraguay	2	h	0-1	F
	20-11-2002	South Korea	1	a	2-3	F
2003	12-2-2003	China	3	a	0-0	F
	29-3-2003	Portugal	2	a	2-1	F
	30-4-2003	Mexico	3	a	0-0	F
	11-6-2003	Nigeria	1	a	0-3	F
	19-6-2003	Cameroon	2	n	0-1	CC
	21-6-2003	USA	1	n	1-0	CC
	23-6-2003	Turkey	3	n	2-2	CC
	13-7-2003	Mexico	2	a	1-0	GC
	15-7-2003	Honduras	1	n	2-1	GC
	19-7-2003	Colombia	1	n	0-2	GC
	23-7-2003	USA	3	a	1-2	GC
	27-7-2003	Mexico	3	a	1-0	GC
	7-9-2003	Colombia	1	a	1-2	WCQ
	10-9-2003	Ecuador	1	h	1-0	WCQ
	12-10-2003	Jamaica	1	n	0-1	F
	16-11-2003	Peru	3	a	1-1	WCQ
	19-11-2003	Uruguay	3	h	3-3	WCQ
2004	18-2-2004	Ireland	3	a	0-0	F
	31-3-2004	Paraguay	3	a	0-0	WCQ
	28-4-2004	Hungary	1	a	1-4	F
	20-5-2004	France	3	a	0-0	F
	2-6-2004	Argentina	1	h	3-1	WCQ
	6-6-2004	Chile	3	a	1-1	WCQ
	8-7-2004	Chile	1	n	1-0	CA
	11-7-2004	Costa Rica	1	n	4-1	CA
	14-7-2004	Paraguay	2	n	1-2	CA
	18-7-2004	Mexico	1	n	0-4	CA
	21-7-2004	Uruguay	3	n	1-1	CA
	25-7-2004	Argentina	3	n	2-2	CA
	18-8-2004	Haiti	1	a	0-6	F
	5-9-2004	Bolivia	1	h	3-1	WCQ
	8-9-2004	Germany	3	a	1-1	F
	9-10-2004	Venezuela	1	a	2-5	WCQ
	13-10-2004	Colombia	3	h	0-0	WCQ
	17-11-2004	Ecuador	2	a	1-0	WCQ
2005	9-2-2005	Hong Kong	1	a	1-7	F
	1-3-2005	Russia	1	a	0-1	F
	27-3-2005	Peru	1	h	1-0	WCQ
	30-3-2005	Uruguay	3	a	1-1	WCQ
	27-4-2005	Guatemala	1	h	3-0	F
	5-6-2005	Paraguay	1	h	4-1	WCQ
	8-6-2005	Argentina	2	a	3-1	WCQ
	16-6-2005	Greece	1	n	3-0	CC
	19-6-2005	Mexico	2	n	1-0	CC
	22-6-2005	Japan	3	n	2-2	CC
	25-6-2005	Germany	1	a	2-3	CC
	29-6-2005	Argentina	1	n	4-1	CC
	17-8-2005	Croatia	3	a	1-1	F
	4-9-2005	Chile	1	h	5-0	WCQ
	9-10-2005	Bolivia	3	a	1-1	WCQ
	12-10-2005	Venezuela	1	h	3-0	WCQ
	12-11-2005	UAE	1	a	0-8	F
2006	1-3-2006	Russia	1	a	0-1	F
	4-6-2006	New Zealand	1	n	4-0	F
	13-6-2006	Croatia	1	n	1-0	WC
	18-6-2006	Australia	1	n	2-0	WC
	22-6-2006	Japan	1	n	1-4	WC
	27-6-2006	Ghana	1	n	3-0	WC
	1-7-2006	France	2	n	0-1	WC
	16-8-2006	Norway	3	a	1-1	F
	3-9-2006	Argentina	1	n	3-0	F
	5-9-2006	Wales	1	n	2-0	F
	10-10-2006	Ecuador	1	n	2-1	F
	15-11-2006	Switzerland	1	a	1-2	F
2007	6-2-2007	Portugal	2	n	0-2	F
	24-3-2007	Chile	1	n	4-0	F
	27-3-2007	Ghana	1	n	1-0	F
	1-6-2007	England	3	a	1-1	F
	5-6-2007	Turkey	3	n	0-0	F
	27-6-2007	Mexico	2	n	0-2	CA
	1-7-2007	Chile	1	n	3-0	CA
	4-7-2007	Ecuador	1	n	1-0	CA
	7-7-2007	Chile	1	n	1-6	CA
	10-7-2007	Uruguay	3	n	2-2	CA
	15-7-2007	Argentina	1	n	3-0	CA
	22-8-2007	Algeria	1	n	2-0	F
	9-9-2007	USA	1	a	2-4	F
	12-9-2007	Mexico	1	n	3-1	F
	14-10-2007	Colombia	3	a	0-0	WCQ
	17-10-2007	Ecuador	1	h	5-0	WCQ
	18-11-2007	Peru	3	a	1-1	WCQ
	21-11-2007	Uruguay	1	h	2-1	WCQ
2008	6-2-2008	Ireland	1	a	0-1	F
	26-3-2008	Sweden	1	n	0-1	F
	31-3-2008	Canada	1	n	2-3	F
	6-6-2008	Venezuela	2	n	0-2	F
	15-6-2008	Paraguay	2	a	2-0	WCQ
	18-6-2008	Argentina	3	h	0-0	WCQ
	7-9-2008	Chile	1	a	0-3	WCQ
	10-9-2008	Bolivia	3	h	0-0	WCQ
	12-10-2008	Venezuela	1	a	0-4	WCQ
	15-10-2008	Colombia	3	h	0-0	WCQ
	19-11-2008	Portugal	1	h	6-2	F
2009	10-2-2009	Italy	1	h	2-0	F
	29-3-2009	Ecuador	3	a	1-1	WCQ
	2-4-2009	Peru	1	h	3-0	WCQ

	Date	Opponent	Result	Venue	Score	Type
	6-6-2009	Uruguay	1	a	0-4	WCQ
	11-6-2009	Paraguay	1	h	2-1	WCQ
	15-6-2009	Egypt	1	n	4-3	CC
	18-6-2009	USA	1	n	0-3	CC
	21-6-2009	Italy	1	n	3-0	CC
	25-6-2009	South Africa	1	a	0-1	CC
	28-6-2009	USA	1	n	2-3	CC
	12-8-2009	Estonia	1	a	0-1	F
	5-9-2009	Argentina	1	a	1-3	WCQ
	9-9-2009	Chile	1	h	4-2	WCQ
	11-10-2009	Bolivia	2	a	2-1	WCQ
	14-10-2009	Venezuela	3	h	0-0	WCQ
	14-11-2009	England	1	n	1-0	F
	17-11-2009	Oman	1	a	0-2	F
2010	2-3-2010	Ireland	1	n	0-2	F
	2-6-2010	Zimbabwe	1	a	0-3	F
	7-6-2010	Tanzania	1	a	1-5	F
	15-6-2010	North Korea	1	n	2-1	WC
	20-6-2010	Ivory Coast	1	n	3-1	WC
	25-6-2010	Portugal	3	n	0-0	WC
	28-6-2010	Chile	1	n	3-0	WC
	2-7-2010	Holland	2	n	2-1	WC
	10-8-2010	USA	1	a	0-2	F
	7-10-2010	Iran	1	h	3-0	F
	11-10-2010	Ukraine	1	n	2-0	F
	17-11-2010	Argentina	2	n	1-0	F
2011	9-2-2011	France	2	a	1-0	F
	27-3-2011	Scotland	1	n	0-2	F
	4-6-2011	Holland	3	h	0-0	F
	8-6-2011	Romania	1	h	1-0	F
	3-7-2011	Venezuela	3	n	0-0	CA
	9-7-2011	Paraguay	3	n	2-2	CA
	14-7-2011	Ecuador	1	n	4-2	CA
	17-7-2011	Paraguay	2	n	0-0	CA
	10-8-2011	Germany	2	a	3-2	F
	5-9-2011	Ghana	1	n	1-0	F
	15-9-2011	Argentina	3	a	0-0	F
	29-9-2011	Argentina	1	h	2-0	F
	8-10-2011	Costa Rica	1	a	0-1	F
	12-10-2001	Mexico	1	a	1-2	F
	10-11-2011	Gabon	1	a	0-2	F
	14-11-2011	Egypt	1	n	2-0	F
2012	28-2-2012	Bosnia-Hz.	1	a	1-2	F
	26-5-2012	Denmark	1	n	1-3	F
	31-5-2012	USA	1	a	1-4	F
	3-6-2012	Mexico	2	n	0-2	F
	9-6-2012	Argentina	2	a	4-3	F
	15-8-2012	Sweden	1	a	0-3	F
	7-9-2012	South Africa	1	h	1-0	F
	11-9-2012	China	1	h	8-0	F
	20-9-2012	Argentina	1	h	2-1	F
	11-10-2012	Iraq	1	h	6-0	F
	16-10-2012	Japan	1	a	0-4	F
	15-11-2012	Colombia	3	n	1-1	F
	21-11-2012	Argentina	2	a	2-1	F
2013	6-2-2013	England	2	a	2-1	F
	21-3-2013	Italy	3	n	2-2	F
	25-3-2013	Russia	3	n	1-1	F
	6-4-2013	Bolivia	1	a	0-4	F
	25-4-2013	Chile	3	h	2-2	F
	2-6-2013	England	3	h	2-2	F
	9-6-2013	France	1	h	3-0	F
	15-6-2013	Japan	1	h	3-0	CC
	19-6-2013	Mexico	1	h	2-0	CC
	22-6-2013	Italy	1	h	4-2	CC
	26-6-2013	Uruguay	1	h	2-1	CC
	30-6-2013	Spain	1	h	3-0	CC
	14-8-2013	Switzerland	2	a	1-0	F
	7-9-2013	Australia	1	h	6-0	F
	11-9-2013	Portugal	1	h	3-1	F
	12-10-2013	South Korea	1	a	0-2	F
	15-10-2013	Zambia	1	n	2-0	F
	17-11-2013	Honduras	1	n	5-0	F
	20-11-2013	Chile	1	n	2-1	F
2014	5-3-2014	South Africa	1	a	0-5	F
	3-6-2014	Panama	1	h	4-0	F
	6-6-2014	Serbia	1	h	1-0	F
	12-6-2014	Croatia	1	h	3-1	WC
	17-6-2014	Mexico	3	h	0-0	WC
	23-6-2014	Cameroon	1	h	4-1	WC
	28-6-2014	Chile	1	h	1-1	WC
	4-7-2014	Colombia	1	h	2-1	WC
	8-7-2014	Germany	2	h	1-7	WC
	12-7-2014	Holland	2	h	0-3	WC

Legend		
Result	1	win
	2	loss
	3	draw
Venue	h	home
	a	away
	n	neutral