Behavioral Finance: FIFA World Cup Expectations and Stock Market Success

By
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Abstract

Behavioral finance, defined as the combination of behavioral and cognitive psychology theory with economics and finance to explain financial decisions, has grown in popularity over the last several years. Behavioral finance has also expanded into sports as researchers seek to find and explain anomalies that exist in the stock market. Existing research about sports is mixed, but prior studies have found that FIFA World Cup soccer matches have a statistically significant correlation with stock prices. This study further examines underlying factors that could influence this correlation. Specifically, it introduces an expectations framework and differentiates game outcomes based on whether the team exceeds, meets, or fails to meet expectations. Using regression analysis, the study finds some evidence for this relationship and that failing to meet expectations is correlated with a stock market decline during the World Cup.

Key Words: Behavioral Finance, Stock Market, World Cup, Sports, Expectations, Soccer

1.   Introduction

According to Facebook, 88 million global users made a record 280 million interactions (posts,

likes, and comments) during the 2014 FIFA World Cup Final, easily beating the record of 245

million interactions set by the 2013 Super Bowl. Beyond Facebook, many people argue that

soccer is the most popular sport in the world. In fact, 70% of males and 62% of females in

England said that the 2006 FIFA World Cup impacted their working lives (Kenny & Bradley

2006). With all of this excitement around the world, behavioral economists hypothesize that

outcomes of soccer matches (wins/losses) could impact a variety of economic phenomenon,

including financial markets.

Behavioral finance is sometimes defined as the study of psychological factors on the

economic decisions of individuals corresponding financial decisions. As behavioral economics

has expanded, some research indicates that sporting events can impact the stock market. This

thesis attempts to further explore the cause of this phenomenon by exploring the relationship

between FIFA World Cup ("World Cup") expectations and stock market returns. Failure to meet

pay raise expectations has been shown to have a larger, longer lasting impact on an employee's

happiness level than exceeding expectations (Mitra, Sachaubroeck, Shaw, & Duffy 2008). For

this reason, outcomes combined with expectations could be better linked to stock market changes

than just outcomes. By examining the World Cup and stock market returns, with relation to

expectations, one can examine the relationship between the World Cup and stock market.

An important aspect of this thesis is accurately capturing a country's expectations about

its national soccer team. To do this, the thesis will use betting odds because they capture the

qualitative aspect of a country better than FIFA rankings. Betting odds also capture the idea that

gamblers and oddsmakers are not always rational. While national team rankings could be used as

a proxy for expectations, they do not capture the sentiment of the country and are often criticized for over - or under-ranking certain teams due to the calculations made. For example, the Brazilian national team, despite being considered one of the favorites in the tournament, was ranked only 6th in the world when the tournament started. The FIFA/Coca-Cola World Rankings are also said to weight certain tournaments too heavily when the points are calculated. The ESPN Soccer Power Index (SPI) is another ranking system often cited by soccer fans, but faces similar problems. For these reasons, I assert that betting odds are a better proxy for expectations than world rankings.

This thesis builds off of previous literature by integrating expectations in that some game results may have been expected, while others might be unexpected. It is possible that unexpected results and expected results elicit different responses from fans and investors, leading to different stock market impacts. Previous literature has ignored this effect and examined results without respect to expectations. This thesis empirically examines the effect of expected and unexpected results on stock markets.

Multivariate regression models are used to examine the impact of unexpected wins, expected wins, unexpected losses, and expected losses on the stock market. These models allow the examination of these different results and their relationship with stock markets around the world. This research on expectations is unique to this study and is the primary contribution to literature.

Investors, behavioral economists, and general soccer fans could all be interested in this topic. This research could help investors increase returns, while helping behavioral economists examine the importance of expectations and potentially providing additional evidence against the

efficient market hypothesis. The next section will discuss previous literature, while additional

sections include the methodology, results, discussion, and conclusion.

2.   Literature Review

Prior research shows that losses in the World Cup have lowered the stock market in a statistically

significant manner while wins increase the stock market. Little research has been done to explain

the underlying cause behind these findings. This paper further analyzes the reasons for the stock

market changes.

This section of the paper summarizes literature relevant to this thesis and gives a brief

background on the topic. First, I will look at the past research that has examined athletics as a

possible indicator of stock market changes. Then, I will narrow that idea to soccer and the FIFA

World Cup. Finally, I will discuss previous literature about the role of expectations in life.

2.1   Athletic Events as a Mover of the Stock Market

The Efficient Market Hypothesis states that people behave rationally and make rational

decisions. For the stock market, this means that stocks always incorporate new information and

that it is impossible for stocks to be overvalued or undervalued. Investors can only obtain higher

returns than the market by purchasing riskier assets. Over the past few decades, however,

research has shown that certain events and feelings appear to have an impact on financial

decisions at the micro and macro level. This has led to the expansion of behavioral economics,

which is a branch of economics that uses psychological ideas to understand consumers,

borrowers, and investors, as well as explain their effects on market prices, returns, and other

economic phenomenon.

A subset of this literature has looked specifically at the response of markets to sporting

events. A study by Edmans, García, and Norli (2007) investigated the effect of investor

sentiment on asset prices as it relates to sporting events. Among the sports studied, international soccer matches had a strong correlation with asset prices decreasing after a loss. The researchers captured the effect of a new variable that they called the "mood variable." This research was done across 39 countries and included next-day results after wins, losses, and ties. Expectations were discussed because losses impacted the stock market much more than wins, but were not a variable in the analysis. In this situation, expectations refer to the outcome anticipated by the fans and investors of the sporting event. A result that surprises investors may impact investment decisions, leading to purchasing or selling stocks and fluctuating stock prices.

At a more national level, Ashton, Gerrard, and Hudson (2003) examined the relationship between England's national soccer team matches and the FTSE 100, a share index of the 100 largest companies, by market capitalization, listed on the London Stock Exchange. These matches included "friendly" matches when the team was not participating in a tournament, "qualifying" matches when the team was attempting to qualify for a tournament, and "finals" matches when the team was participating in a tournament. The researchers found that the "finals" matches have a stronger correlation with stock market fluctuations than either "friendly" or "qualifying" matches. This suggests that not all wins and losses are created equal. A loss in an important match appears to have a larger psychological effect on investors than a relatively unimportant match. The main limitation to this study was that only a single country was examined. England, a country with a strong interest in soccer, was discussed with games from 1984 – 2002 included in the analysis.

Kaplanski and Levy (2010) expanded the scope of Ashton, Gerrard, and Hudson's (2003) study by looking at FIFA World Cup matches from 1950 – 2010. Similar to past researchers, Kaplanski & Levy found that losses lowered the stock market at a greater magnitude than wins

increased the stock market. The researchers focused on the United States S&P500 index to capture the effect that the World Cup may have on stocks. This captured losses for multiple countries because of the high amount of foreign invested capital in the United States. The effect of 32 countries and 64 matches appears to be statistically significant and large. This allows investors to exploit predictable irrationality. The two missing pieces of this study were the lack of research done into the underlying cause of the stock market changes and the limited scope. By looking only at the United States, the researchers may have missed stronger relationships in other countries due to differences in interest in soccer, amount of foreign investment, etc. as well as the scale of the effect on a global basis.

2.2   Expectation Theory and the Stock Market

As a possible underlying reason behind the stock market dropping, it is important to examine expectation theory. Mitra et al. (2008) researched the effect of failing to meet, meeting, and exceeding pay raise expectations on an employee's happiness. This research was restricted to a university hospital, but may be representative of a person's general psychology. The researchers found that failing to meet expectations had an effect larger in magnitude than either meeting expectations or exceeding expectations on worker happiness. The change in turnover intentions was larger in magnitude for failing to meet expectations than meeting or exceeding expectations. The researchers also discovered that higher expectations correlated with a larger increase in turnover intentions. These findings are important in the context of this paper because it may help explain why losses impact the stock market more than wins or draws.

Another important factor to take into account is the idea that people are generally overly optimistic. Scheier, Carver, and Bridges (1994) found that people are generally over optimistic and that it is a pervasive human trait. While they note that not everyone is generally optimistic,

optimism remains prevalent in a significant percentage of people. Armor and Taylor (2002) found that people are more likely to maintain optimism despite evidence to the contrary. This is important as it relates to this thesis because teams that are not favored to win still may have fans that expect them to win the match. Thus, losing the match is more likely to fail to meet expectations, while winning a game is more likely to only meet expectations. Fans are not likely to adjust expectations because of biases towards their team and tendency to ignore evidence against the bias.

This research explicitly examines the difference between losses that fail to meet expectations (unexpected losses) and losses that met expectations (expected losses). Using betting odds, expectations can be accounted for while also taking into account the result of the match. An underlying assumption to this research is that not all losses (or wins) are equal because of the expectations of fans and investors going into the game.

2.3   *Gaps to be Filled*

Overall, the main limitations of these research papers are the lack of further exploration of potential underlying causes of the stock market changes and the focus on single countries. By exploring an "expectations" variable, this paper further explores the relationship that previous literature has established between wins/losses and the stock market. While simply failing to meet expectations could cause some people to sell shares of stock, investors could believe that economic factors may be negatively impacted due to the match result. For example, investors could believe that people will spend less at retail stores, fewer tourists will visit the country, etc. because the team didn't do as well as expected. Failing to meet expectations could lead to a selloff in the stock market, while exceeding expectations may lead investors to purchasing additional stocks. In my thesis, expectations refer to a fanbase's presumption regarding the

soccer match. The fans can expect to win, tie, or lose and the team's performance relative to the expectation determines whether the team fails to meet, meets, or exceeds expectations. For example, a team that loses a game that it is expected to tie has failed to meet expectations. Furthermore, the limited number of countries examined in current literature also represents a limitation because it is possible that not all countries would react the same way. This paper replaces wins and losses with unexpected wins, expected wins, unexpected losses, and expected losses in an effort to further hone in on factors that may impact investor sentiment.

3.   Methodology

This section examines my hypotheses, variables, data, and methods of analysis.

3.1   Hypotheses

Previous literature has correlated national soccer team losses in the FIFA World Cup with a stock market loss. For example, Edmans, García, and Norli (2007) found that losses in elimination games are associated with a next-day abnormal stock return of -49 basis points. This new study predicts that these losses are not the sole cause of the stock market drop, but that investors and fans were influenced by their expectations going into the match. In other words, a surprise win or loss will have a larger affect than an expected win or loss. A win or loss is "expected" based on the sentiment of oddsmakers, based on betting odds. If the actual result matched the most likely result, then the team met expectations. Further, Ashton, Gerrard, and Hudson (2003) found that the mean return after a drawn match was negative. On the other side of the spectrum, literature has shown a weak correlation between wins and stock market gains that were not always statistically significant. Edmans, et al. (2007) found that World Cup elimination game victories only saw only a 9 basis point gain and it was not statistically significant.

Literature on the role of expectations on one's happiness has shown that failing to meet expectations has a larger, longer lasting impact on happiness than exceeding expectations. Mitra, et al. (2008) examined the impact on pay raises and the propensity to meet expectations on employee happiness and found that failure to meet employee expectations had a larger impact on employee morale and led to increased turnover relative to exceeding expectations. This research predicts that we will see a similar effect in the stock market due to failure to meet expectations.

All of these things lead to three predictions. First, the correlation between stock market performance and failure to meet expectations will be stronger than the stock market performance's correlation with losses. Second, the study predicts that there will be a larger and statistically significant stock market gain if a national team exceeds expectations with a surprise win. Third, the stock market losses from failure to meet expectations (surprise losses) will be larger than the stock market gains from ability to exceed expectations (surprise wins). These ideas have led me to three hypotheses:

> *Hypothesis 1: A surprise loss will lead to a larger stock market decline than an expected loss.*

> *Hypothesis 2: A surprise win will lead to a larger stock market increase than an expected win*

> *Hypothesis 3: The absolute value of the stock market decline after a surprise loss will be larger than the absolute value of the stock market increase after a surprise win.*

Previous research has found that losses have a larger impact than wins on the stock market. Even when separating surprise results from expected results, this thesis predicts that a similar effect will occur. Thus, the effect of an expected loss will be larger than the effect of an expected win.

> *Hypothesis 4: The absolute value of the stock market decline after an expected loss will be larger than the absolute value of the stock market increase after an expected win.*

To analyze the hypotheses, four measures were examined. My first measure was stock index data from 27 of the 32 countries that participated in the 2014 World Cup. The percent change in stock market index from close the day before the game to close the next trading day is the dependent variable. Examining each country's stock market allows for this study to capture the stock price effect of the market that is likely to respond most strongly to the result of the game. Using the change also establishes what the stock price "should" be and helps me evaluate any possible abnormal returns. Two possible issues with this variable are that not all stock markets are as liquid as the NYSE and that not all games are done on a trading day, which is further discussed in the methodology section. Positive and negative feelings resulting from the World Cup matches will likely dissipate over time, which could impact the resulting stock market effect. Stock market information for each of these countries is available on Global Financial Data (https://www-globalfinancialdata-com.ezp1.lib.umn.edu/gfdplatform/Welcome.aspx)

Second, betting odds were used as a proxy for expectations. This explicit incorporation of expectations drives the main point of my hypotheses and is my contribution to existing literature. Unfortunately, betting odds from each individual country were difficult to obtain, so the author used odds from the United Kingdom for all games. If these betting odds represent the United Kingdom's views of the games and not the home country, this analysis could prove to be inaccurate due to the inability to properly capture expectations[1]. Betting odds were found on a United Kingdom betting website, bet365.com, which aggregates many websites. The specific odds selected were the mode of 24 individual odds sites. See Tables 1 and 2 for examples of

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[1] One could check by comparing betting odds in the United Kingdom to odds in other countries to determine if material differences exist between countries.

failing to meet, meeting, and exceeding expectations. Each match is entered twice, once for each participating team. Additionally, Figure 1 shows a decision tree to show how expectations are coded.

Table 1: Example of Failing to Meet and Exceeding Expectations

Score of Match: 1-3, Team B wins	Odds	Coding
Team A	2:5	Failed to Meet Expectations
Tie	3:1	N/A
Team B	7:1	Exceeded Expectations

Table 2: Example of Meeting Expectations

Score of Match: 2-0, Team A wins	Odds	Coding
Team A	9:5	Met Expectations
Tie	4:1	N/A
Team B	5:1	Met Expectations

Figure 1: Expectation Label Flowchart
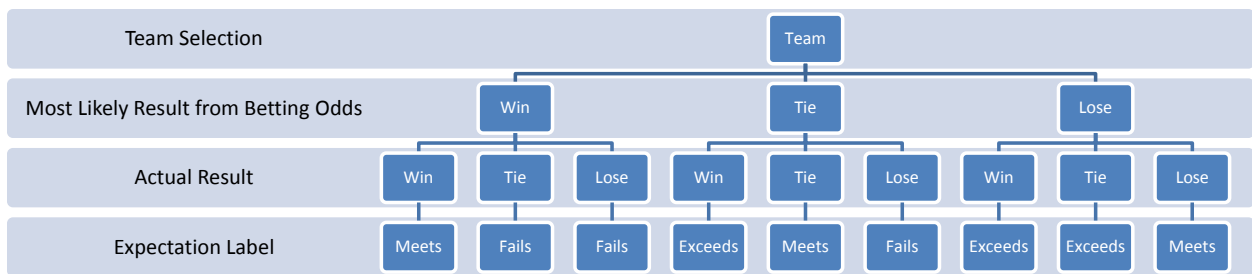
An example of Figure 1 would be the United States – Germany game. For the United States., the most likely result was for the United States to Lose. When they actually lost the game, the expectation label was meets expectations. Thus, this game was an expected loss. Germany was expected to win and won the game. Therefore, Germany met expectations and the game was an expected win.

Third, the scores of the games themselves were used to help determine the goal differential and match results. This information was gathered via the Fédération Internationale de Football Association (FIFA) website.

3.3   Analysis

To evaluate my hypotheses, the primary tool used was multivariate regression. The independent variables of surprise win, expected win, surprise loss, and expected loss are created by combining betting odds and the scores of matches. Control variables used include goal differential, the number of days between the end of the match and next trading day, and each team's soccer federation. The dependent variable is the change in stock index price. The regression model used to evaluate my hypotheses is as follows:

$$\Delta Stock\ Market = \beta_0 + \beta_1(Surprise\ Win) + \beta_2(Expected\ Win) + \beta_3(Surprise\ Loss) + \beta_4(Expected\ Loss) + \beta_5(control\ variables) + \varepsilon$$

3.4   Appropriateness of Methodology

The use of secondary data from reliable sources is appropriate to analyze the four hypotheses. The best available measures were selected to proxy for the variables required. With that being said, there are some limitations and assumptions that should be discussed.

First, there are a number of outside factors that could influence a country's stock market on a given day. With a relatively small sample size, it is possible that a global event impacting multiple stock markets had an impact on the stock returns during the FIFA World Cup. If this is true, then that would impact the accuracy of the results. If further studies are done, then increasing the sample size over a longer duration of time would help limit this risk.

Second, an underlying assumption being made is that there are enough investors with an interest in the World Cup that their investment decisions could influence the stock market.

Countries with investors with a higher interest in soccer may see a bigger stock market impact than countries with investors that don't have an interest in soccer. While a reliable proxy for interest for several countries was unavailable, a long-term study with reliable data about TV ratings, or other data, may be able to overcome this limitation.

Third, as mentioned earlier, not all countries have a stock market and others may not be sufficiently liquid to capture this type of reaction. The countries without a stock market limits the sample size, while insufficiently liquid stock markets could fail to capture an effect captured by markets that are more liquid.

Fourth, ties with any expectations are included in the intercept, as opposed to individual variables, for two reasons. First, ties are unlikely to invoke a strong enough response from investors to influence the stock market. Second, there was not sufficient data to split ties into positive surprise ties (expecting to lose, but tying), negative surprise ties (expecting to win, but tying), and expected to ties.

4.   Results

This section of the paper describes the data and presents the results of the regression analysis.

4.1   Breakdown of Data

Due to some countries not having stock markets, data was used from 27 countries. A sample size of 110 was collected from these 27 countries, as shown in Table 3 below. Table 3 also shows the number of times each team failed to meet, met, and exceeded expectations throughout the World Cup. Of the 110 data points, teams failed to meet expectations 25 times, met expectations 69 times, and exceeded expectations 16 times. This is shown graphically in Figure 2.

Table 3: Counts by Team Detailing Ability to Meet Expectations

Ability to Meet Expectation Counts by Team			
Team	Number of Times Failing to Meet Expectations	Number of Times Meeting Expectations	Number of Times Exceeding Expectations	Total Number of Games Played
Argentina	0	7	0	7
Australia	0	3	0	3
Belgium	0	5	0	5
Bosnia-Herzegovina	1	2	0	3
Brazil	3	4	0	7
Chile	0	3	1	4
Colombia	0	5	0	5
Cote d'Ivoire	1	1	1	3
Croatia	1	2	0	3
England	3	0	0	3
France	2	3	0	5
Germany	1	6	0	7
Ghana	1	1	1	3
Greece	1	1	2	4
Iran	0	2	1	3
Italy	1	1	1	3
Japan	2	1	0	3
Korea Republic	1	1	1	3
Mexico	0	2	2	4
Netherlands	0	5	2	7
Nigeria	1	2	1	4
Portugal	1	2	0	3
Russia	2	1	0	3
Spain	2	1	0	3
Switzerland	0	4	0	4
Uruguay	1	2	1	4
USA	0	2	2	4
Total Counts	25	69	16	110

Figure 2: Sample Size by Expectations Coding

Figure: Sample Size by Expectation Coding
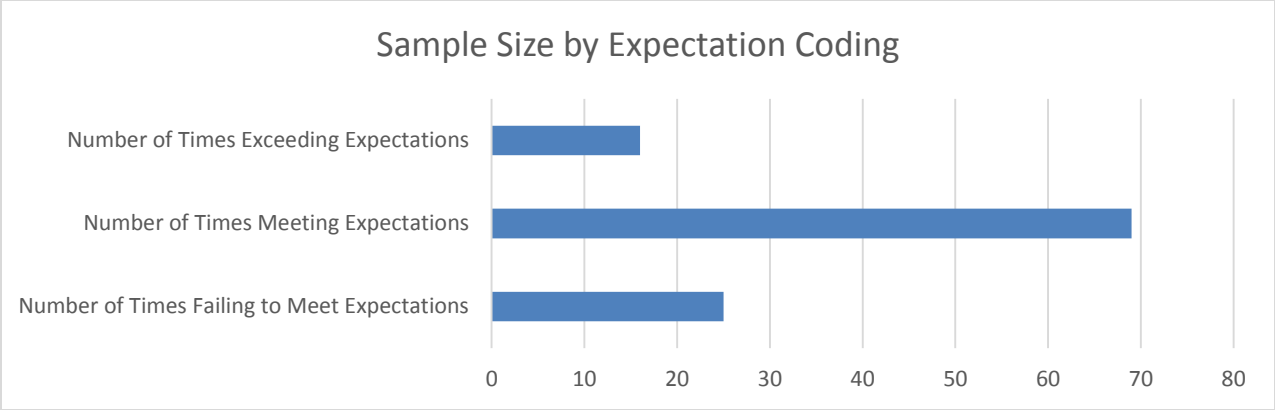
Expected losses, surprise losses, expected wins, and surprise wins are broken out in Figure 3 below. There were 29 expected losses, 16 surprise losses, 40 expected wins, and 10 surprise wins. The other 15 results were ties.

Figure 3: Cell Size of Expected Loss, Surprise Loss, Expected Win, and Surprise Win

Figure: Cell Size
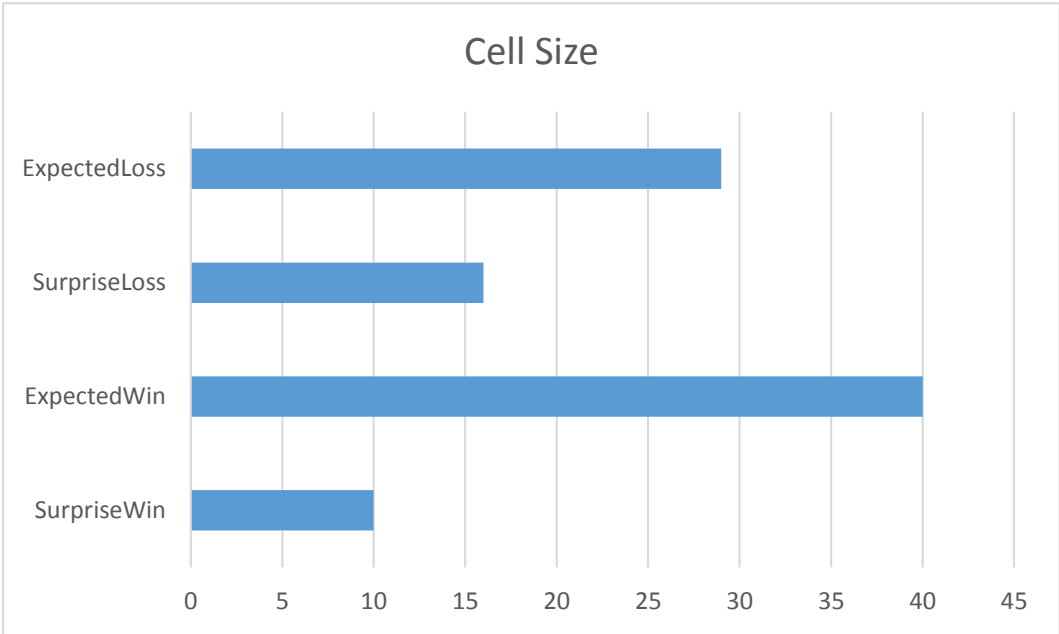
Summary Statistics for the data is shown in Table 4, while definitions are in the Appendix.

Table 4: Summary Statistics of Variables

Summary Statistics of the World Cup 2014 Stock Market Data		
	Means	Standard Deviations
Exceed Expectations	14.55%	N/A
Met Expectations	62.73%	N/A
Failed Expectations	22.73%	N/A
Surprise Wins	9.09%	N/A
Expected Wins	36.36%	N/A
Surprise Losses	14.55%	N/A
Expected Losses	26.36%	N/A
Change in Stock Price	0.03%	1.53%
Goal Differential (GD)	1.509	1.187
GD Exceeded	0.155	0.578
GD Failed	0.273	0.845
Next Day Trading (NDT)	0.682	N/A
NDT Exceeded	0.091	N/A
NDT Failed	0.136	N/A
Group Stage (GS)	0.736	N/A
GS Exceeded	0.136	N/A
GS Failed	0.191	N/A
Round of 16 (R16)	0.127	N/A
R16 Exceeded	0.000	N/A
R16 Failed	0.009	N/A
Quarterfinals (QF)	0.064	N/A
QF Exceeded	0.000	N/A
QF Failed	0.009	N/A
Semi-Finals/3rd Place/Final (Final 4)	0.073	N/A
Final 4 Failed	0.009	N/A
Final 4 Exceeded	0.018	N/A

4.2 Regression Model and Results

As discussed in the methodology section, this study uses multivariate regression to analyze the

data collected. Overall, 6 regressions were run layering in different independent (control)

variables and by limiting the sample to capture the effect of different control variables. Model 1

looks at wins and losses alone. Model 2 splits wins and losses into surprise wins, expected wins,

surprise losses, and expected losses. Model 3 layers in control variables for same/next day

trading, group stage matches, goal differential, and the region of the team. Model 4 is the same

as Model 3, but the sample is limited to events where the market closed the same day of the

game or the next day. This is done to attempt to capture the effect of market timing with respect

to the end of the match. In this model, the sample is restricted to same-day and next-day trading.

Model 5 is similar to Model 3; however, the model includes controls for group stage matches.

This is done to capture the effect of the importance of a game. Since group stage matches have

lower-stakes than elimination matches, one would expect the effect of surprise wins, expected

wins, surprise losses, and expected losses to be lower in this model. Again, Model 6 has the same

variables as Model 3, but the sample is restricted to when the goal difference is greater than 1.

One would expect that restricting the sample to a higher goal would lead to a larger effect when

examining surprise wins, expected wins, surprise losses, and expected losses. These models'

results are as follows in Tables 5-8. Note that the top number listed for each variable is the

coefficient, the middle number is the standard error, and the bottom number is the p-value. Also,

CONMEBOL (South America), CONCACAF (North America, Central America, and the

Caribbean), UEFA (Europe), and CAF (Africa) are the federation names of the different regions

within FIFA.

Table 5: Coefficients, standard errors, and p-values for Models 1, 2, and 3

Variable	Models		
	1	2	3
Win	0.00123 0.00454 (0.394)		
Loss	-0.00079 0.00459 (0.432)		
Surprise Win		0.00019 0.00635 (0.488)	0.00183 0.00713 (0.399)
Expected Win		0.00148 0.00471 (0.377)	0.00269 0.00592 (0.325)
Surprise Loss		-0.00024 0.00559 (0.483)	-0.00356 0.00648 (0.292)
Expected Loss		-0.00109 0.004945 (0.413)	-0.00526 0.00567 (0.178)
Same/Next Trading Day			0.00092 0.00356 (0.398)
Group Stage			-0.00405 0.00378 (0.144)
Goal Differential			-0.00144 0.00150 (0.170)
CONMEBOL			0.00249 0.00621 (0.344)
CONCACAF			0.00015 0.00753 (0.492)
UEFA			-0.00249 0.00548 (0.325)
CAF			0.00338 0.00686 (0.312)
Sample Size	110	110	110
Adjusted R-squared	-0.01482	-0.03330	-0.05248

Table 6: Coefficients, standard errors, and p-values for Model 4 – Trading Day Subsample

Variable	4 Possibilities	Trading Day Subsample
Surprise Win	-0.00234	-0.00010
	0.00784	0.00865
	(0.383)	(0.495)
Expected Win	-0.00053	-0.00002
	0.00497	0.00645
	(0.458)	(0.498)
Surprise Loss	0.00324	-0.00038
	0.00698	0.00778
	(0.322)	(0.481)
Expected Loss	-0.00002	-0.00537
	0.00526	0.00632
	(0.498)	(0.200)
Group Stage		-0.00971**
		0.00461
		(0.021)
Goal Differential		-0.00158
		0.00196
		(0.212)
CONMEBOL		-0.00074
		0.00718
		(0.459)
CONCACAF		-0.00069
		0.00768
		(0.464)
UEFA		-0.00143
		0.00610
		(0.408)
CAF		-0.00012
		0.00767
		(0.494)
Sample Size	75	75
Adjusted R-square	-0.04978	-0.06793

Table 7: Coefficients, standard errors, and p-values for Model 5 – Group Stage Subsample

Variable	4 Possibilities	Group Stage Subsample
Surprise Win	-0.00062	-0.00140
	0.00700	0.00831
	(0.465)	(0.433)
Expected Win	-0.00082	0.00085
	0.00538	0.00757
	(0.440)	(0.456)
Surprise Loss	-0.00232	-0.00505
	0.00643	0.00777
	(0.360)	(0.259)
Expected Loss	-0.00067	-0.00265
	0.00573	0.00734
	(0.454)	(0.359)
Same/Next Trading Day		-0.00391
		0.00464
		(0.201)
Goal Differential		-0.00092
		0.00223
		(0.346)
CONMEBOL		0.00231
		0.00769
		(0.382)
CONCACAF		0.00192
		0.00919
		(0.417)
UEFA		-0.00074
		0.00619
		(0.452)
CAF		0.00421
		0.00779
		(0.295)
Sample Size	81	81
Adjusted R-square	-0.05073	-0.12604

Table 8: Coefficients, standard errors, and p-values for Model 6 – Goal Difference Subsample

Variable	4 Possibilities	Goal Differential Subsample
Surprise Win	0.00197	0.00277
	0.00752	0.00946
	(0.397)	(0.385)
Expected Win	-0.00539	-0.00415
	0.00474	0.00759
	(0.129)	(0.293)
Surprise Loss	-0.00024	-0.00129
	0.00480	0.00618
	(0.480)	(0.418)
Expected Loss	-0.00109	-0.00314
	0.00425	0.00549
	(0.399)	(0.284)
Same/Next Trading Day		0.00135
		0.00369
		(0.358)
Group Stage		-0.00525
		0.00424
		(0.110)
Goal Differential		-0.00032
		0.00175
		(0.427)
CONMEBOL		-0.00217
		0.00608
		(0.361)
CONCACAF		-0.00055
		0.00731
		(0.470)
UEFA		-0.00096
		0.00495
		(0.423)
CAF		0.00168
		0.00643
		(0.397)
Sample Size	81	81
Adjusted R-square	-0.03330	-0.10031

Overall, there is limited support for the four hypotheses. Due to limited sample size and relatively high standard errors, only magnitude is compared.

Hypothesis 1 states that a surprise loss will have a larger negative impact on the stock market than an expected loss. Looking at the coefficients, only Model 5 in Table 7, the group stage subsample, shows this to be true. In this model, the difference is .00240 and the effect of surprise loss is approximately 90% larger than the effect of expected loss. In Models 2, 3, 4, and 6, the coefficient of expected loss is greater than the coefficient of surprise loss. In these models, the difference in effect ranges from .00085 to .00186.

Hypothesis 2 states that a surprise win will have a larger positive impact on the stock market than an expected win. This is only true when looking at the coefficients of Model 6 in Table 8, the goal differential subsample. In Model 4 (Table 6), both surprise win and expected win are negative, while Model 5 (Table 7) shows surprise win with a negative coefficient and expected win with a positive coefficient. The difference in Model 6 is .00659, approximately two-thirds of a percent.

Hypothesis 3 states that the coefficient of surprise loss will be more negative than the coefficient of surprise win is positive. Examining the coefficients, this hypothesis is accurate in Models 2, 3, 4, and 5, which are all located in Tables 5, 6, and 7. In these models, the difference ranges from .00005 to .00364 with an average of .00143. In Model 6, found in Table 8, the coefficient of surprise win is more positive than the coefficient of surprise loss is negative by .00148.

Hypothesis 4 states that an expected loss will have a larger impact on stock market prices than an expected win. The coefficients in Models 3, 4, and 5, found in Tables 5, 6, and 7, support this hypothesis, while Model 2, located in Table 5, does not. Model 2 has a difference of .0004,

while the difference in Models 3, 4, and 5 ranges from .00181 to .00534.

5.   Discussion

This study addresses the gap left by previous literature about the role of fans' expectations, rather than wins and losses, and a stock market change. Running multiple regression models and finding some evidence in a few of the models leaves the mixed support; however, there are several points that can be expanded. First, it is possible that there were issues with the models due to outliers within the data set. With a sample size of 110, a significant outlier may have impacted the data. The overall implications can be split into three categories: the role of expectations, the impact of timing, and the effect of goal differential.

5.1   Potential Issues due to Outliers

When examining the data, one thing that stood out was Argentina's stock market. The Argentinean stock market had the three largest positive stock price changes as well as the largest negative stock price change. The largest positive change of Argentina's stock market was five times larger than the largest non-Argentina change. The largest negative change of Argentina's stock market was over six times larger than the next largest negative change. This volatility has many causes, but one cause unique to Argentina in June 2014 was the speculation about the Supreme Court's ruling regarding Argentina's sovereign debt. Due to the potential data issues, one could argue that Argentina should be removed from the analysis. By removing Argentina from the analysis, the study may be more representative of an average stock market. The results without Argentina are shown below in Tables 9, 10, and 11.

Table 9: Coefficients, standard errors, and p-values for Models 1, 2, and 3 – No Argentina

Variable	Models - No Argentina		
	1	2	3
Win	-0.00004		
	0.00214		
	(0.492)		
Loss	-0.00085		
	0.00214		
	(0.346)		
Surprise Win		0.00019	0.00120
		0.00295	0.00315
		(0.475)	(0.352)
Expected Win		-0.00011	0.00010
		0.00224	0.00267
		(0.480)	(0.485)
Surprise Loss		-0.00024	-0.00005
		0.00260	0.00287
		(0.463)	(0.494)
Expected Loss		-0.001200097	-0.00250
		0.002312654	0.00253
		(0.302)	(0.163)
Same/Next Trading Day			0.00412**
			0.00165
			(0.007)
Group Stage			-0.00291*
			0.00177
			(0.052)
Goal Differential			-0.00032
			0.00067
			(0.319)
CONMEBOL			0.00327
			0.00283
			(0.125)
CONCACAF			-0.00036
			0.00333
			(0.457)
UEFA			-0.00171
			0.00243
			(0.241)
CAF			0.00323
			0.00302
			(0.144)
Sample Size	103	103	103
Adjusted R-squared	-0.01665	-0.03537	0.05135

Table 10: Coefficients, standard errors, and p-values for Model 4 – No Argentina

| Variable | Trading Day Subsample - No Argentina | |
	4 Possibilities	Trading Day Subsample
Surprise Win	-0.00234	-0.00379
	0.00340	0.00383
	(0.247)	(0.163)
Expected Win	0.00039	-0.00042
	0.00221	0.00292
	(0.430)	(0.442)
Surprise Loss	0.00324	0.00319
	0.00303	0.00345
	(0.144)	(0.179)
Expected Loss	-0.00012	-0.00102
	0.00230	0.00285
	(0.479)	(0.361)
Group Stage		-0.00336
		0.00227
		(0.072)
Goal Differential		-0.00008
		0.00089
		(0.463)
CONMEBOL		0.00354
		0.00343
		(0.153)
CONCACAF		0.00103
		0.00339
		(0.381)
UEFA		-0.00057
		0.00271
		(0.417)
CAF		-0.00023
		0.00338
		(0.473)
Sample Size	70	70
Adjusted R-squared	-0.01665	-0.05211

Table 11: Coefficients, standard errors, and p-values for Model 5 – No Argentina

| Variable | Group Stage Subsample - No Argentina | |
	4 Possibilities	Group Stage Subsample
Surprise Win	-0.00062	-0.00189
	0.00277	0.00313
	(0.412)	(0.274)
Expected Win	-0.00069	-0.00230
	0.00218	0.00291
	(0.376)	(0.216)
Surprise Loss	-0.00232	-0.00018
	0.00255	0.00294
	(0.183)	(0.476)
Expected Loss	-0.00067	0.00089
	0.00227	0.00278
	(0.385)	(0.375)
Same/Next Trading Day		0.00274*
		0.00180
		(0.066)
Goal Differential		0.00078
		0.00085
		(0.181)
CONMEBOL		0.00311
		0.00296
		(0.149)
CONCACAF		0.00011
		0.00346
		(0.487)
UEFA		-0.00058
		0.00233
		(0.402)
CAF		0.00378
		0.00293
		(0.101)
Sample Size	78	78
Adjusted R-squared	-0.04219	-0.00333

Using these new results as evidence for the hypotheses, support is still mixed.

Hypothesis 1 predicts that surprise losses will have a larger impact on the stock market than expected losses. The coefficients support this hypothesis only in Model 4 in Table 10, while Models 2 and 3 in Table 9 do not support this hypothesis. The difference in Model 4 is .00421. Models 2 and 3 have differences of .00096 and .00245, respectively.

Hypothesis 2 proposes that surprise wins will have a larger impact on the stock market than expected wins. This is now supported in Models 2, 3, and 5, which are located in Tables 9 and 11; however Model 4 in Table 10 does not support the hypothesis. With the removal of Argentina, this hypothesis gained additional support.

Hypothesis 3 proposes that the negative impact of surprise losses will be larger than the positive impact of surprise wins. Without Argentina, this is supported in Models 2 and 5 in Tables 9 and 11, but not in Models 3 or 4, which are located in Tables 9 and 10. The results without Argentina appear less supportive than the results with Argentina.

Hypothesis 4 proposes that the negative impact of expected losses will be larger than the positive impact from expected wins. Once Argentina's data points are removed, this hypothesis is supported in Models 2, 3, and 4 in Tables 9 and 10.

Overall, the removal of Argentina improved support of hypothesis 2, while hypothesis 3 had less support, with relation to the coefficients. Hypotheses 1 and 4 did not see a substantial difference in the two data sets.

5.2   Role of Expectations

While each of the hypotheses had mixed results, looking at the coefficients paints an interesting picture. Surprise wins and losses, in some models, had a larger impact than expected wins and

losses. With a larger sample size across multiple World Cups, or expanding to other international soccer games, it is possible that the results will be more supported.

5.3   Impact of Timing

One interesting thing caught by the models was the effect that time had on the results. One of the control variables used was same/next trading day. This captures the effect that the weekend may have on investors. If the stock market was open after the game ended or the next day, then this dummy variable was a 1. A "cooling down" period existed for games that were played on Fridays or Saturdays. The one or two days before market open may have given investors the chance to reevaluate the game and would stop them from making any quick decisions as they relate to investments. In the models without Argentina, Models 3 and 5 in Tables 9 and 11 show a statistically significant impact at the 1% and 10% levels, respectively. This furthers the idea that the psychology of matches impact investors and that a "cooling down" period exists. Given that most previous literature were scoped with a next-trading-day scope, it may be interesting to incorporate this finding.

5.4   Importance of Stage in World Cup

Another control variable incorporated into the study was whether the soccer match took place in the group stage or elimination stage. Without Argentina, Models 2 and 3 in Table 9 show that group stage games were associated with a slightly negative impact on the stock market at the 10% level. This is in line with previous literature and provides support for the idea that games with higher on-field stakes may have higher stock market stakes as well.

6.   Conclusion

The results of this study builds on previous literature due to the lack of expectations-based research as it relates to the World Cup and stock market. The examination of data collected

throughout the World Cup through the use of regression models is appropriate and allowed insight into the effect of multiple variables. The impact that days between the soccer match and trading day was not initially hypothesized, but could lead to further studies. The "expectations variable" also found some support across the 6 regression models, but further studies would be required to show increased significance. The relationship between wins/losses and failing to meet/exceeding expectations is close, but this study is a step in determining the extent to which World Cup expectations plays a role in stock market changes.

Due to the nature of the study, there are several limitations that can be discussed. The different proxy that have been chosen, the specific time period, and control variables used all present different limitations. The implications discussed could have been made inappropriately if any of these limitations are found to be significant.

First, the different proxy chosen were selected could have been limited due to the available information and constraints on the researcher. While the stock market information should be accurate, the other variables can all be misrepresentations of the variable they are approximating. Betting odds from the United Kingdom may not accurately represent expectations around the world. This may lead to miscoded expectation variables. Goal differential also may not accurately depict the extent of a result. For example, a team could have significantly outplayed the opponent, but only won by one goal.

Second, all of the games took place from June 2014 to July 2014 with multiple games played on single days, especially in the group stage. Any macroeconomic factors that could influence multiple stock markets around the world, or in a region, could have an effect on the conclusions of this study. For example, the European Union and other countries may have been impacted by news about the Greek debt, the conflict in Ukraine, and other events around the

world. By looking at the percentage change from trading day to previous trading day, these events were not captured in the regression model. Other models could show different results, which would impact the implications of the study.

Third, control variables had a significant effect on the regression models in this study. Including additional control variables, such as interest in soccer and different economic factors, also could have influenced the significance and coefficient of the expectation variables being tested. The amount of foreign investment in a stock market also could have impacted the significance and coefficient of the different variables. If people invest in a stock market that isn't in the country of their favorite national soccer team, then they may not change trading patterns as a result of the soccer games. With different p-values and coefficients, results and implications of this study could be different.

Finally, one limitation that had a role across the study is the relatively small sample size. While it is likely that betting odds more accurately capture expectations, using FIFA rankings, or another ranking system, would allow a substantial increase in sample size. Another way to increase the sample size is using "friendly" and "qualifying" matches, as well as other tournaments. As sample size increases, it is possible that the statistical significance could improve.

Despite these limitations, this study represents a good step in examining an expectations variable as it relates to the World Cup and stock market. It examines a gap in current literature due to the lack of research around the impact of World Cup fan expectations and stock market impact. The link between results of games (wins/losses/ties) has been examined and evidence exists that these results influence the stock market, but expectations could be an additional underlying factor.

This study explores the role that a team's ability to fail to meet, meet, or exceed fans' expectations play a role in stock market fluctuations during the World Cup. There is some evidence that expectations do influence the stock market, but further research should be done. Significant results exist when removing outliers and when examining the effect of timing and match stage. Despite various limitations, these results contribute to existing literature and further our understanding of the FIFA World Cup and its stock market impact.

Appendix

Variable Definitions

Variable	Definitions
Exceed Expectations	1 if team exceeded expectations
Met Expectations	0 if team met expectations
Failed Expectations	1 if team failed to meet expectations
Change in Stock Price	Change in stock index price
Goal Differential (GD)	Average difference in number of goals
GD Exceeded	Average difference in number of goals in games where the team exceeded expectations
GD Failed	Average difference in number of goals in games where the team failed to meet expectations
Next Day Trading (NDT)	1 if days between date of game and market close date is 0 or 1
NDT Exceeded	1 if days between date of game and market close date is 0 or 1 AND team exceeded expectations
NDT Failed	1 if days between date of game and market close date is 0 or 1 AND team failed to meet expectations
Group Stage (GS)	1 if game was played during the group stage
GS Exceed	1 if game was played during the group stage AND team exceeded expectations
GS Failed	1 if game was played during the group stage AND team failed to meet expectations
Round of 16 (R16)	1 if game was played during the Round of 16
R16 Exceeded	1 if game was played during the Round of 16 AND team exceeded expectations
R16 Failed	1 if game was played during the Round of 16 AND team failed to meet expectations
Quarterfinals (QF)	1 if game was played during the Quarterfinals
QF Exceeded	1 if game was played during the Quarterfinals AND team exceeded expectations
QF Failed	1 if game was played during the Quarterfinals AND team failed to meet expectations
Semi-Finals/3rd Place/Final (Final 4)	1 if game was played during Semi-Finals, 3rd place game, or Finals
Final 4 Failed	1 if game was played during Semi-Finals, 3rd place game, or Finals AND team failed to meet expectations
Final 4 Exceeded	1 if game was played during Semi-Finals, 3rd place game, or Finals AND team exceeded expectations

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