South African Equity Market Reaction to the 2010 World Cup Announcement

Prof. Pat Obi
Purdue University
USA

Prof. J. Surujlal
Vaal University of Technology
Republic of South Africa

O. Okubena
Vaal University of Technology
Republic of South Africa

Abstract

On Saturday, May 15, 2004, the world football governing body FIFA announced that the 2010 World Cup[TM] would be held in South Africa. This would be the first time the football tournament had gone to an African nation. This study examines the South African equity market impact of the announcement of the 2010 FIFA World Cup[TM]. Abnormal returns of the JSE all share index are calculated around the period of the announcement. Using standard event study methodologies, results show that pre-event abnormal returns are negative and statistically significant. Abnormal return in the event month, while positive, is not significant. However, there was a positive wealth effect created in the aftermath of the announcement evidenced by persistent positive post-event abnormal returns. While investors may have doubted the cost effectiveness of hosting the games before the announcement, the positive post-event abnormal returns seem to suggest a steady but incremental market reaction to a positive view of the event.

Keywords: football, equity market, returns, investors, announcement

Introduction

On Saturday, May 15, 2004, the world football governing body FIFA announced that the 2010 World Cup^{TM} would be held in South Africa. South Africans of all ages and races were overjoyed by the announcement. This would be the first time the football tournament had gone to an African nation. In 1995, South Africa hosted the Rugby World Cup and in 2003, the ICC Cricket World Cup. The country has also hosted many African tournaments including the 1996 Africa Cup of Nations and the 1999 All Africa Games. At the previous World Cup bid, South Africa narrowly lost to Germany to host the 2006 games. Much of the glee that followed the announcement was on account of South Africa's longsuffering through the harsh experiences of apartheid. This ordeal ended in a peaceful transition to modern democracy in 1994, with Nelson Mandela as the first democratically elected president of South Africa.

In addition to opening the country to the discovery of a curious world, many expect that revenues from the event together with a boost in tourism would more than pay the exorbitant cost of hosting the tournament. If the consensus opinion is that the event would be profitable for South Africa, then it is arguable that financial market reaction to the announcement would be positive. To this end, this study examines the impact of the announcement on the South African equity market. Event study methodologies are used to examine the degree of abnormal market performance following the announcement.

FIFA World Cup is the most widely watched single sporting event in the world (Greef, 2008). The FIFA organization itself is known to have made huge profits from recent games. For example, in 2008, FIFA president, Sepp Blatter, announced an income of $957 million of which 95 percent was generated by television, marketing and sponsorship money raised from the World Cup (Boston Globe, 2009) . At the conclusion of the 2006 World Cup, Germany announced a net gain of €155 million (German Football Association, 2007).

A Mix of Euphoria and Trepidation

For many, the choice of South Africa as host to the 2010 World Cup^{TM} signified an end to pessimism surrounding Africa and the beginning of new things to come. The triumph of grace over hate, and the magnanimity of the Truth and Reconciliation process that defined the

country's ascent to a modern and prosperous democracy made South Africa the sentimental favorite ahead of FIFA's announcement. This sentiment was underscored by the appearance of former President Nelson Mandela, accompanied by Archbishop Desmond Tutu, and the last apartheid president, FW De Klerk at the formal bidding session. In a statement to the press, Mandela described how football played a great role in breaking down racial barriers in the former apartheid state and added that sport had provided his only release during his 27-year imprisonment for opposing the regime (Zwane, 2008).

Yet, the announcement of the 2010 games meant that South Africa would begin a prolonged capital spending program to further improve and modernize its infrastructure ahead of the games. All of this, in addition to the ongoing massive public spending designed to improve public education, provide employment, and upgrade the quality of life in the townships and informal settlements, all legacies of the apartheid era.

The significance of South Africa as host of the 2010 World Cup[TM] is additionally significant due to the country's growing emphasis on sports awareness and education. It is envisaged that the event will make a significant contribution to socioeconomic development through the creation of jobs, the resultant decrease in unemployment and increased revenue generated by the influx of tourists (Joseph, 2008). Other benefits include an increased influx of foreign currency into South Africa (Greef, 2008). The resultant increase in businesses, tourism and overall improvement in the economy would attract more foreign direct investment (FDI) subsequent to the event.

Literature study

In a study of stock market reaction to sporting results of European listed football clubs, Benkraiem, Louhichi, and Marques (2009) show that sporting results affect both the abnormal returns and the trading volume around the dates of matches. They studied 745 matches played by European listed football clubs. Their findings also show that market reactions differ according to the nature of the result (defeat, draw or win) and the match venue (home or away). From the findings, they conclude that the success of investments in listed football clubs requires a regular follow-up of their sporting performances.

Rhyne (1994) utilizes the America's Cup campaign as a case study to illustrate lessons for product design in early stages of technological development in international arenas.

Renneboog and Vanbrabant (2000), investigates stock market reactions to weekly sporty performances of soccer clubs listed on the London Stock Exchange and the Alternative Investment Market. They find positive abnormal returns of about 1% following a soccer victory and negative abnormal returns of 1.4% and 0.6% for draws and defeats. Their results show in particular that positive abnormal returns on a win are less than negative abnormal returns on a loss in absolute values. They also show that victories seem to be more rewarded by share price increases for those clubs listed on the LSE than in alternative bourses.

Stadtmann (2006) evaluated the market performance of a leading German football club, Borussia Dortmund GmbH & Co. (symbol: KGaA). The study shows that in addition to sports-related news events, aspects of corporate governance are important drivers of stock valuation of sporting firms.

In a case study of the 1992 America's Cup, Rhyne (1994) discusses lessons learned for products that are in the early stages of technological development. In particular, he notes that the design challenges for sailing boats used in the competition were analogous to product development with new industry standards. To achieve optimal value for products in their early stages of development, it is important to seek to fulfill basic specifications as well as the goals of the customers. In essence, one is converting written standards into yet-to-be-tested product that could beat world class competition.

Materials and measures

To examine the South African stock market reaction to the 2010 World Cup announcement, abnormal returns around the time of the announcement were calculated. In this study, abnormal stock returns and trading volume were examined around the date of the announcement, which was May 15, 2004. The data for this study are monthly index values of the Johannesburg Stock

Exchange composite index, the JSE all-share. The simple mean adjusted returns model in event study is used to calculate periodic excess returns.

Information content in trading volume has been noted in several studies. For example, Blume, Easley and O'Hara (1994) show a direct link between information flow and trading volume. Earlier, Kim and Verrecchia (1991) showed that investors often revise their portfolio size and number of shares following an event.

Event studies have a long history and a wide range of applications. Some studies in economics use the term, intervention analysis, as the purpose is to determine whether an intervening event may have resulted in a structural shift in economic activity. One of the first studies of this type was Dolley (1933), where he examines the price effects of stock splits. Seminal studies by Ball and Brown (1968), and Fama, Fisher, Jensen and Roll (1969) introduced the excess (or abnormal) returns model that is still widely applied today.

Event studies make it possible to examine the financial market impact of any event viewed as significant. Brown and Warner (1980, 1985) were pivotal in formalizing conventional event study methodologies in a simulation study. In spite of nonsynchronous trading often encountered with daily data, they conclude that both monthly and daily data offer sufficient ability to identify abnormal patterns. They also show that while not as powerful as market and risk adjusted methods, the simple mean adjusted returns model is sufficiently robust indentifying abnormal patterns. Examples of studies that have used various event study methodologies to examine abnormal financial market patterns include Kim and Verrecchia (1991), Bamber and Cheon (1995), and Graham, Nikkinen, and Sahlström (2003).

There are three parts to an event study. In the first part, the estimation period over which to obtain the benchmark parameters: mean and standard deviation of *normal* returns is identified. Secondly, the observation period during which we believe that the event is most likely to have an impact is identified. This period includes the event date or *day 0*. Typically, the observation period begins shortly before the event date and ends shortly thereafter. Finally, the statistical

significance of the abnormal returns is tested. The null hypothesis is the absence of abnormal patterns during the observation period.

For this study, the estimation period is from February 2002 to February 2004, a total 25 monthly returns observations. The observation period is from March 2004 to April 2005, a 14-month period. The estimation and observation periods are illustrated as follows in figure 1.

Figure 1 Estimation and observation periods

Using the mean adjusted returns model, the abnormal return for a given month (AR_t) is calculated as
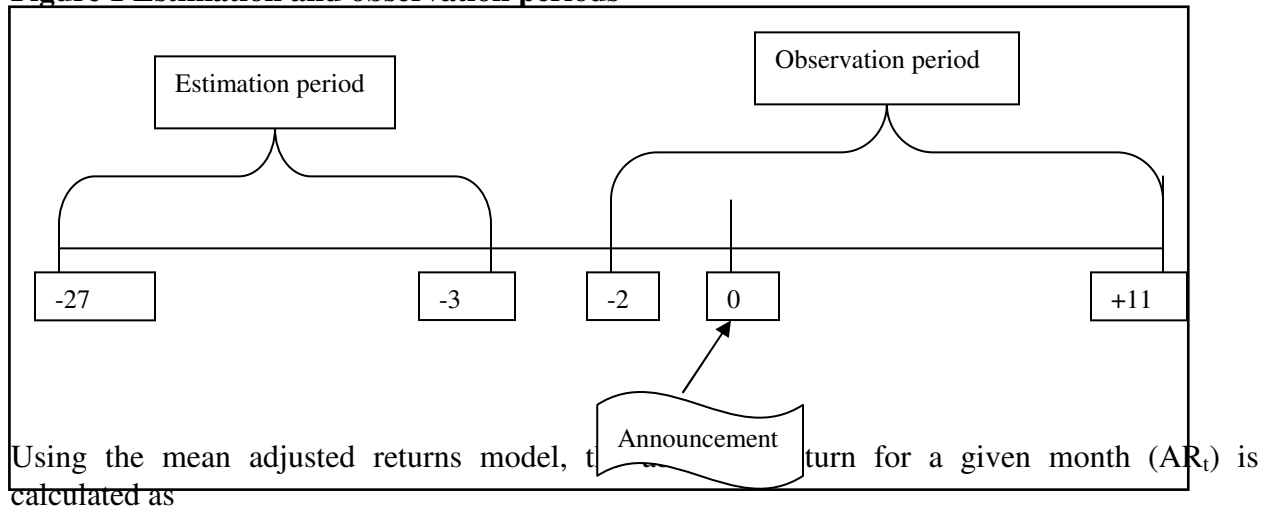
$$AR_t \quad = \quad R_t - \bar{R},\tag{1}$$

where

R_t is the return for a given month within the observation period and $\bar{R}$ is the average monthly return obtained from the estimation period. Monthly returns are calculated as the natural logarithm of successive prices, $\ln(P_t/P_{t-1})$. The test statistic for a particular event day, defined as the standardized abnormal return (SAR_t), is calculated as

$$SAR_t \quad = \quad \frac{AR_{j,t}}{\sqrt{\sigma^2(AR)}}\tag{2}$$

where σ^2 is the returns variance from the observation period. This test statistic is Student t-distributed with $n-1$ degrees of freedom. In order to test the persistence of the event over any

period, say t = -2 to t = +11 (14 pre-event months), the monthly abnormal returns are added up to form the cumulative abnormal returns (CAR) for that period:

$$\text{CAR} \quad = \quad \sum_{t=-2}^{t=14} AR_t \tag{3}$$

To test the null hypothesis of zero cumulative abnormal return, the standardized cumulative abnormal returned (SCAR) is calculated as follows:

$$\text{SCAR} \quad = \quad \frac{CAR}{\sqrt{\sigma^2 (AR)}\sqrt{N}} \tag{4}$$

where N is the number of days over which abnormal returns are summed.

A Nonparametric Equivalent

The t-test is based on the assumption of normality in the returns series. To mitigate the econometric problem when this assumption is not met, the the Wilcoxon Signed-Rank nonparametric test is also used. This test is a good alternative to the Student t-test when the assumption of normality is not met. The Wilcoxon test makes use of the magnitude of the differences between R_t and $\overline{R}$, in addition to the signs of the differences. The null hypothesis is the absence of an abnormal variation.

To carry out the test, we rank the absolute values of the differences between R_t and $\overline{R}$ from 1 to the highest, discarding differences of 0. The smallest difference is assigned the rank of 1. Next, we sum the ranks of the positive differences. As well, we sum the ranks of the negative differences. The Wilcoxon T statistic is the smaller of the two sums. Thus,

T = min [Σ(+), Σ(-)]

where

$\Sigma(+)$ = Sum of the ranks of the positive differences

$\Sigma(-)$ = Sum of the ranks of the negative differences

T   = Smaller of the positive or negative rank sums

The test of significance is conducted using the following asymptotic test statistic

$$\frac{T - \dfrac{n(n+1)}{4}}{\sqrt{\dfrac{n(n+1)(2n+1)}{24}}} \qquad (5)$$

which has a standard normal distribution. If the null hypothesis – the absence of abnormal patterns – is rejected, the Wilcoxon statistic follows a normal distribution.

Empirical Findings

Notwithstanding the likely violation of the normality assumption, the results of the parametric test of significance are presented in Table 1. Results show a positive abnormal return of 0.06 percent in the event month of May 2004. But this outcome is not statistically significant at any conventional level. The two months prior to the announcement yielded a cumulative negative abnormal return of 5.2 percent. At the 0.05 level, this result is statistically significant. Some of the pessimism or trepidation concerning the announcement appeared to have vanished in the months that followed. Altogether, there was a positive excess return of more than 16 percent from the month after the announcement up to the ninth month thereafter. This positive outcome is also statistically significant at the 0.05 level.

Table 1. Test of Significance of Abnormal Returns

Period	AR	T Statistic
t = -2 to t = -1	-0.0522 *	-3.1635
Event date	0.0006	0.0492
t = +1 to t = +11	0.1643 *	3.7652

* Statistically significant at the 5 percent level

Figure 2 presents the trend in cumulative abnormal returns from March 2004 (two months before announcement) up to April 2005 (11 months after the announcement). Prior to the announcement, cumulative abnormal returns fell consistently. Investigating the pre-event period in an event study provides the opportunity to determine whether there are rumors, leakages, or predictions about the impending event. Any such investor beliefs would typically result in significant abnormal returns ahead of the event date. From the results, one might conclude that either investors felt that South Africa might lose out again on the bid, or they expected South Africa to be awarded the bid but were afraid of the country's capacity to host the event.

**Figure 2 Cumulative Abnormal Returns: South African Equity Index**
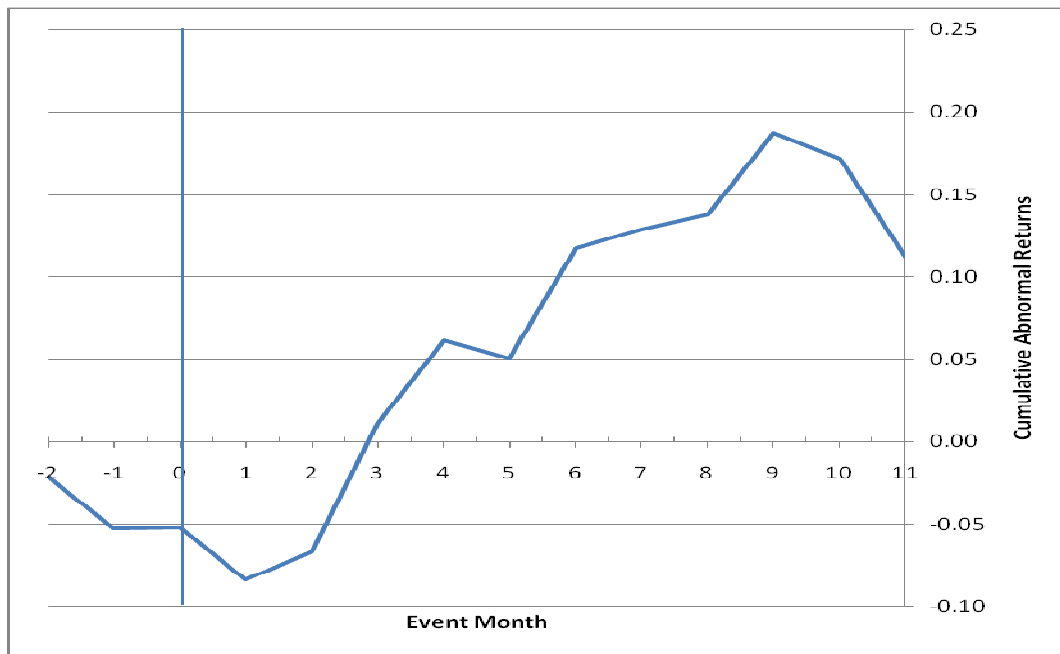
In the short months that followed the announcement, abnormal returns were mostly positive. The semi-strong form of the efficient market hypothesis (EMH) suggests that all publicly available information is quickly reflected in the market value of an asset. This implies that only non public information can prove beneficial to an investor seeking to earn abnormal returns, since all other relevant information has been impounded in the price of the asset. Given that such anomalies would provoke instant arbitrage in the market, excess returns could not persist in the long haul. Yet, the post event cumulative abnormal return shown in Figure 1 suggests a persistent increase.

One explanation is that earlier concerns about South Africa's ability to host the games were gradually allayed by the authorities. It is also quite possible that investors took some time to process the potential benefits of the games to the country, this being the first time an African country would host the World Cup. Such delayed response is not uncommon in equity valuation (see for example Ross, Westerfield & Jordan, 2007).

It is also arguable that the rising post event cumulative abnormal return for the South African equity index is the result of confounding events in the global economy. Indeed, since the end of the 2001/2002 US recession, the global economy has enjoyed steady growth leading up to the 2008 financial crisis. Notwithstanding, abnormal returns reflect investment outcomes that are over and above what investors can expect to earn given prevailing economic conditions. To determine whether South Africa's post event performance is unique, we compare it to the concurrent performance using the broad based S&P 500 equity index.

Figure 3 shows the comparative post event performance in the cumulative abnormal returns of the US and South African stock indices. The trend suggests that South Africa's post event abnormal performance may be unique in that it consistently plots above the concurrent abnormal returns for the S&P index. More specifically, the post event CAR for South Africa exceeds that of the S&P 500 by almost 13 percent (calculations not shown). This difference is statistically significant at any conventional level of significance.

**Figure 3 Comparison of Cumulative Abnormal Returns:
South Africa v. US Equity Indices**
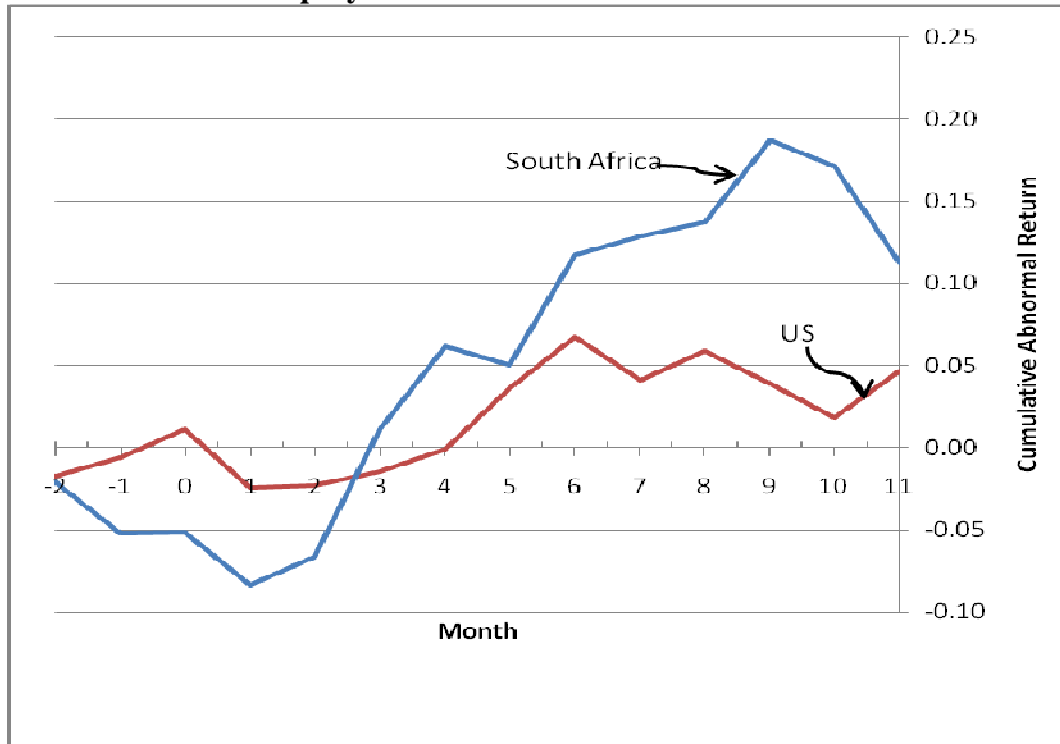
Results of the Wilcoxon nonparametric test are summarized in Table 2. Because the test of significance is two-tailed, a rejection of the null hypothesis – of no abnormal patterns – is upheld at either tail. At the 5 percent level of significance, the null hypothesis is rejected, which indicates that the Wilcoxon T statistic follows a normal distribution. Since there are more positive abnormal returns over the extended observation period, one might conclude that the observed post event CAR is suggestive of a trading pattern that was driven by the value of the 2010 World Cup announcement.

Table 2. Summary Results of Wilcoxon Rank Sum Test

Sample size: n	34
Event month	May 2004
Observation period	Mar 2004 - Dec 2006
Rank sum of positive abnormal returns	455
Rank sum of positive negative returns	140
Wilcoxon T statistic	140
Mean of T	297.5
Standard deviation of T	58.49
Test statistic: Z	-2.69*

* Statistically significant at the 5 percent level

Conclusions

In this inquiry, we present the results of an event study designed to show whether the South African stock market reacted in any abnormal manner following the 2010 World Cup announcement. Empirical results from both parametric and nonparametric tests show statistically significant negative pre-event abnormal returns. Although positive, the event time abnormal return is not statistically significant. The 11-month period following the announcement showed a discernible upward pattern in cumulative abnormal returns. These positive abnormal returns were statistically significant.

The analysis presented in this study has implications in the sphere of semi-strong form market efficiency. While in general, pre-event abnormal patterns suggest informational leakage, it is likely that in the case of the World Cup announcement, the expectation that South Africa would win the bid was overwhelming. The negative abnormal returns are probably reflective of a market where investors are disconcerted by the financial burden of hosting the games. However, such trepidation may have been disabused by a growing realization that the country might well be up to the task. In the circumstance, a trickling effect of positive abnormal patterns eventually subsumes the initial negative trading pattern.

The use of monthly data in this study may be limiting in capturing the daily patterns that followed FIFA's announcement on May 15, 2004. Notwithstanding, the findings in this study show wide ranging evidence that there was a significant redistribution of investor wealth in the South African stock market on account of this global event.

References

Aktas, N., Debodt, E. & Roll, R. (2004). Market response to European regulation of Business combinations. *Journal of Financial and Quantitative Analysis*, 39(4), 731-758.

Allouche, J. & Solez S. (2005). The stock exchange quotation of English football clubs: a Differentiated analysis of the share prices' fluctuations [in French], working paper, University of Paris I. France.

Bamber, L.S. & Cheon, Y. (1995). Differential price and volume reactions to accounting Earnings announcements. *The Accounting Review*, 70(3), 417-441.

Ball, R. & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers.*Journal of Accounting Research*, 6(2), 159-178.

Beaver, W.H. (1968). The information content of annual earnings announcements. *Journal of Accounting Research*, 6, 67–92.

Benkraiem, R., Wael L. & Pierre M. (2009). Market reaction to sporting results: The case of European listed football clubs. *Management Decision*, 47(1), 100-109.

Boston Globe (2009). FIFA made $184M profit in '08. At http://article.wn.com/view/2009/03/20/FIFA_made_184M_profit_in_08_e/. Accessed on 2009/04/16.

Blume, L., Easley, D. & O'Hara, M. (1994). Market statistics and technical analysis: the role of volume. *Journal of Finance*, 49, 153-181.

Brown, S.J. & Warner, J.B. (1980). Measuring Security Price Performance. *Journal of Financial Economics*, 8(3), 205-258.

Brown, S.J. and Warner, J.B. (1985). Using Daily Stock Returns: the case of event studies, *Journal of Financial Economics*, 14(1), 3–31.

Dolley, J. (1933). Characteristics and procedure of common stock split-ups. *Harvard Business Review*, 9, 333–383.

Edmans, A., Garcia, D. & Norli O. (2007). Sports sentiment and stock returns. *Journal of Finance*, 62(4), 1967-1998.

Fama, E.F., Fisher, L., Jensen, M.C. & Roll, R. (1969). The Adjustment of Stock Prices to New Information. *International Economic Review*, 10, 1-21.

Graham, M., Nikkinen, J. & Sahlström, P. (2003). Relative importance of scheduled macroeconomic news for stock market investors. *Journal of Economics and Finance*,

27(2), 153-65.

German Football Association (2007). Soccer-World Cup profit higher than estimated. At http://uk.reuters.com/article/worldFootballNews/idUKL0169059720070301. Accessed on 2009/04/16.

Greef, A. (2008). Bending like Beckham- South Africa bends, FIFA scores. *World Journal of Managing Events*, 2(1), 10-17.

Joseph, B. (2008). The 2010 FIFA World Cup and immigration. *World Journal of Managing Events*, 2(1), 18-24.

Kim, O. & Verrecchia, R. (1991). Market reactions to anticipated announcements. *Journal of Financial Economics*, 30(2), 273-309.

Kirby, B. (1992). America's Cup: Full Disclosure. *Sailing World*, August, 32-35.

Louhichi, W. (2008). Market reaction to annual earnings announcements: Evidence from Euronext Paris. *Review of Accounting and Finance*, 8(1), 102–115.

Renneboog, L. & Peter V. (2000). Share price reactions to sporty performances of soccer clubs listed on the London Stock Exchange and the AIM. Center for Economic Research, Tilburg University

Rhyne, L. (1994). Product development with a new technology: Lessons from the America's Cup, *Journal of Product and Brand Management*, 3(3), 39-50.

Ross, S., Westerfield, R. & Jordan, B. (2007). *Essentials of corporate finance*. McGraw Hill: Europe.

Stadtmann, G. (2006). Frequent news and pure signals: The case of a publicly traded football club. *Scottish Journal of Political Economy*, 53(4), 485-504.

Zwane, S. (2008). Nelson Mandela - SA's 2010 envoy. At **http://www.sa2010.gov.za/node/1020**. Accessed on 2009/04/16.