

## **Comparative Analysis of the Impact of International Soccer Wins on the Stock Market: Evidence from Nigeria.**

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**Abstract:** Evidently, soccer tournaments arouse interest on the trading floors, but do their results really have significant impact on the stock market performance? This study examines empirically the impact of international soccer wins on an emerging stock market using the case of Nigeria. It relies on daily official list of the Nigeria stock exchange and the all-share index for the relevant data for the study. Three international soccer wins by three different national teams, namely: the Super Eagles (February 10, 2013), the Golden Eaglets (November 8, 2013), and the Super Falcons (October 26, 2014), were considered. The results are in line with *a priori* expectation with respect to the two male teams that showed significant positive abnormal returns over the event window. However, with respect to the female team's success, cultural and religious prejudice seems to have blurred the enthusiasm of the stock market participants. In terms of intensity of reaction of the market to the wins, the Golden Eaglet's success seems to attract more reaction than the other two teams.

**Keywords:** Soccer, abnormal returns, wins, stock market.

### **1. Introduction**

One of the basic assumptions of the efficient market hypothesis of traditional finance as proposed by Fama (1991) is that the capital market is perfect and as such is able to efficiently incorporate market information and news into stock prices. This assumption of perfect capital market is premised on the rationality of capital market participants or investors.

However, more recent developments in the field of behavioural finance have created a severe contrast to this hypothesis. Behavioural finance suggests, in contrast to Fama's efficient market hypothesis, that the stock market is not entirely efficient. Besides, a host of researchers have unravelled an amazingly large quantum of evidence of irrationality and repeated errors in judgement amongst capital market participants thus substantiating the tenet of behavioural finance which maintains that psychological factors influence investors' investment decisions. Writing in support of the behavioural finance paradigm or theory, Chaudhary (2013) states, "people are not always rational and markets are not always efficient, and recent research shows that the average investor makes decision based on emotion, not logic".

Gallagher and Sullivan (2008) observe that growing literature has documented a link between mood and stock market returns, where in turn mood is hypothesized to be affected by, and is

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proxied by, factors such as sports results, sunshine, daylight hours, non-secular holidays, temperature, lunar cycles, etc.

Focusing in particular to the mood effect associated with sports results, Gallagher, *et al* suggest that there is much psychological evidence showing that the latter has a significant impact on the former, while Vieira (2012) notes that “there is abundant evidence of football, among sports events, being an important part of people’s lives, influencing the mood of an entire country in a similar way, or projecting feelings about life and economic behaviour”. Smith and Krige (2010) opine that in the recent years several international studies have examined the impact of sporting events on stock prices, and results have shown that the loss impact after soccer matches was rather substantial and more severe than after other sporting events. They note further that international soccer matches are rather unique in that there are few regular events that can cause such substantial change of mood in a large proportion of a country’s population.

This observation seems to square with Edmans, Garlia and Norli as in Gallagher and Sullivan (2008) who argue that in investigating the link between investors’ mood and stock market returns, the mood variable must satisfy three basic criteria, namely:

- (1) It must influence mood in a very significant and unambiguous way.
- (2) It must impact a large proportion of the national population.
- (3) It must be positively correlated across the majority of the (investor) population.

By all standards, no sporting event influences mood in the manner described above than football (soccer), especially at the international level.

Ashton, Gerrard and Hudson (2003), Edmans, *et al* (2007), Kaplanski and Levy (2010) and Smith and Krige (2010) are united in the belief that the impact of soccer results are rather much more substantial and severe than for other sporting events. There are however some conflicting opinions or rather findings regarding the impact of football wins on stock returns. One of such studies is that credited to Astika (2010) who argues that the soccer results do not affect the Dutch stock returns suggesting that the Dutch market is efficient.

In this context, the present study investigates the impact of international soccer wins on the Nigerian emerging stock market using *event study methodology*.

Three international soccer wins by three different national teams, namely: the *Super Eagles* (played on February 10, 2013), the *Golden Eaglets* (November 8, 2013) and the *Super Falcons* (October 26, 2014) were considered to establish the existence of abnormal returns consequent upon the wins.

This study is unique in the sense that in spite of the plethora of studies on the impact of sports on stock returns, no study to the knowledge of the authors has investigated comparatively abnormal returns resulting from international soccer wins by the junior male team (the Golden eaglets), the senior male team (the Super Eagles) and the female team (the Super Falcons) in Nigeria.

## **2. Review of Related Empirical Literature**

The relationship between sports events and stock returns has been a topical issue in the finance literature in the past few decades. Using daily observation on the Turkish stock exchange over the period, January 4, 1988 to May 25, 2011, and employing the GARCH modelling methodology, Demirhan (2013) finds that soccer wins of the national team does not affect the Borsa Istanbul (BIST-100) index return whereas the failures (losses and draws) have a negative effect on the index. Gerlach (2011) observes that changes in investors’ sentiment following national team matches have no significant effect on stock market returns.

On their part, Kaplanski and Levy (2010) examine the asymmetric characteristics of football sentiment effects of FIFA World Cup football results and conclude that World Cup football results have significant effect on stock market returns.

With reference to the sports events that have more psychological effect on stock market participants, Edmans, *et al* (2007) and Smith and Krige (2010) are united in the belief that the impact of soccer results are rather much more substantial and severe than for other sporting events.

Berument, *et al* (2006) assess the effect of soccer success on stock market returns for three major Turkish teams (Besiktas, Fenerbahce and Galatasaray) and find empirical evidence that suggests that Besiktas's win against foreign rivals increases stock market returns whereas the same effect is not associated with Fenerbahce and Galatasaray's wins. It is these conflicting results of earlier empirical studies that necessitated the present study.

### 3. Method

#### 3.1. Data (source and type)

The study relies on daily official list and all share index of the Nigerian Stock Exchange (NSE) for the relevant data. Information on the dates of the matches was extracted from the dailies. Three very important factors were considered in selecting the teams for the study. Firstly, the three teams are considered the three most important teams in Nigeria with respect to football; and a win by any of them is believed to influence mood in a most unambiguous manner.

Secondly, and as observed by Berument, Ceylan and Ogut-Eker (2009), international wins by the national teams are preferred because in domestic soccer games, one team's win means the other teams loss and hence their effects on the stock exchange offsets or cancels each other out. Thirdly, Nigeria is gamesome nation with particular flare for football, and hence whenever international football matches are played, "the Nation holds its breath".

Two representative firms were selected from each sector of the economy (except where the necessary data was unavailable), and thus giving a total of nineteen firms.

#### 3.2. Method

Several methods have been employed by different authors to investigate the relationship existing between stock market returns and investors mood. Popular among these methods is the transfer function analysis which follows an autoregressive path. This method was used by Uygur and Tas (2014), Demirhan (2013), Astilla (2010), Berument *et al* (2006) and Berument *et al* (2009). The present study however uses event study approach following Scholtens and Peenstra (2009).

An event study starts with hypothesis about how a particular event affects the value of a firm. Conceptually, event study analyses differentiate between the returns that would have been expected if the analysed event had not taken place (called normal returns) and the returns that were caused by the respective event (abnormal returns).

The various analytical techniques for estimating abnormal returns differ with respect to the model used for predicting the normal returns around the event date. The market model is one of the most common of the models used. It builds on the actual returns of a reference market and the correlation of the firm's stock with the reference market. It involves three steps:

- (1) Computation of the parameter in the estimation period (which is a normal period entirely free from the influence of the event).
- (2) Computation of the forecast errors (and then obtaining variance information) over an event window (period over which the effect of the event is observed), aggregation across firms and inferring about the average effect.
- (3) Regressing cross-sectionally abnormal returns on relevant features of the stock supposed to influence the impact of the event.

The market model is given as:

$$R_{it} = a_i + \beta_i Rm_t + e_{it} \quad \text{where } e \sim N(0, \sigma^2) \quad (1)$$

Where  $Rm_t$  = return on market portfolio (proxied by Nigeria all that market index) at time,  $t$ .

$R_{it}$  = return on stock  $i$  at time  $t$

$a_i$  and  $\beta_i$  are the intercept and slope parameters for the firms respectively

$e_{it}$  = a random variable expected to be normally distributed, with zero mean and constant variance.

The abnormal return on a distinct day within the event window represents the difference between the actual stock return ( $R_{it}$ ) on that day and the normal or expected return, which is predicted based on two inputs: the typical relationship between the firm's stock and its reference index (expressed by the  $a_i$  and  $\beta_i$  parameters) and the all share index denoted as  $Rm_t$ .

Hence,

$$AR_{it} = R_{it} - (\hat{a}_i + \hat{\beta}_i Rm_t) \quad (2)$$

where  $AR_{it}$  (i.e., abnormal return) is same as  $e_{it}$ , and  $\hat{a}_i$  and  $\hat{\beta}_i$  are Ordinary Least Squares (OLS) values from the estimation window (which is defined as a period free from the influence of the event being investigated; and in this study, it is taken as day  $t = -14$  to  $-4$ , and the event day is  $t = 0$ ).

The individual security's abnormal returns ( $AR_{it}$ ) is aggregated and averaged across all the observations at a distinct time using the formula:

$$\overline{AR}_t = \sum_{i=1}^N \frac{AR_{it}}{N} \quad (3)$$

Where  $N$  = number of firms in the sample and  $t$  refers to period  $t$  in event time.

The reason for averaging across firms is that stock returns are noisy but the noise tends to cancel out when averaged across a large number of firms.

By cumulating the periodic average abnormal returns over a particular time interval we obtain the cumulative average residuals or returns (CAR)

$$CAR_t = \sum_{i=1}^L \overline{AR}_L \quad (4)$$

Where  $L$  = length of the event window.

Finally the  $\overline{AR}_s$  and  $CAR_s$  are then tested for their statistical significance.

However, before the statistical significance of the abnormal returns can be determined the standard deviation of the  $\overline{AR}$  in the pre-event window needs first be computed.

The parametric tests proposed in the literature rely on the important assumption that individual firm's abnormal returns are normally distributed. The standard statistics according to Serra (2002) is:

$$t = \frac{\overline{AR}_t^{EP}}{S(\overline{AR})} \quad (5)$$

where  $\overline{AR}_t^{EP}$  is average abnormal return at time,  $t$  in the event period as earlier defined while  $S(\overline{AR})$  equals estimate of the standard deviation of the average abnormal return estimated over the pre-event window.

$$S(\overline{AR}) = \sqrt{\frac{\sum_{t=1}^T (\overline{AR}_t^{PE} - \overline{AR})^2}{T-d}} \quad (6)$$

where  $T$  = length of the estimation period

$d$  = number of parameters (and for the one factor model,  $d = 2$ ).

$T-d$  = the degree of freedom

$\overline{AR}_t^{PE}$  = average abnormal return over all securities in period  $t$  during the pre-event period.

$\overline{AR}$  = average abnormal return over all firms in the pre-event period.

$$\text{Hence, } S(\overline{AR}) = \sqrt{\frac{\sum_{t=-4}^{-14} (\overline{AR}_t - \overline{\overline{AR}})^2}{11-2}}$$

The event dates, the estimation and event windows for the three soccer teams are shown in Table 1.

**Tables 1: Event Dates, Pre-Event and Event Windows for the Three Soccer Teams**

Team	Event date	Pre-event window	Event window
Super Eagles	10/2/13	22/1/13-7/2/13 <u>13days</u>	8/2/13-13/2/13 (4)days
Golden Eaglets	8/11/13	17/10/13-4/11/13 <u>13days</u>	7/11/13-9/11/13 (3)days
Super Falcons	26/10/14	2/10/14-22/10/14 <u>13days</u>	24/10/15-27/10/14 (3days)

*Source: Compiled by authors*

## 4. Results and Discussion

Table 2 below reports the average abnormal returns resulting from the three different international soccer match wins by the three Nigeria national teams.

**Table 2: Average Abnormal Returns from Wins by the Three National Teams**

Event Window	Super Eagles		Golden Eaglets		Super Falcons	
	AR <sub>t</sub>	t-statistic	AR <sub>t</sub>	t-statistic	AR <sub>t</sub>	t-statistic
-1	0.514237	1.231037	6.438751	15.403	-1.15054	-1.85911
0	1.470062	3.519192	6.457634	15.448	-1.95565	-3.16006
+1	1.861939	4.45731	5.755546	13.76879	-1.4867	-2.4023
+2	1.111635	2.661152	5.653932	13.5257		

*Source: Compiled by authors.*

The results above clearly show that there was significant positive abnormal returns following a win by the Super Eagles and the Golden Eaglets. The two results parallel the findings of Ashton (2003), Berument (2006) and Edmans, *et al* (2007). The result of the Super Falcons' win runs contrary to *a priori* expectation as negative abnormal returns was recorded consequent upon the win. This becomes even more obvious considering the fact that before and immediately after the event day, there was no statistically significant abnormal return recorded at the 5% level. Although this result seems to be in tandem with the findings of Astika (2010) for the Dutch stock market, the result appears quite unique as it relates to a win by a female national team. The negative significant average abnormal returns, we think could be as a result of the fact that in Nigeria, both culture and religion in many parts of the country seem not to encourage women's participation in soccer which is regarded as an exclusively male event. Hence a win by the female soccer team, instead of receiving applause is rather being scorned. Hence the negative abnormal return.

With respect to the statistically significant positive abnormal returns recorded for both the Super Eagles and the Golden Eaglets, it can be clearly observed that there was more significant positive abnormal return resulting from the win by the Eaglets than the Super Eagles. Several factors could be responsible. Firstly, the win by the Eaglet in year 2013 was quite characteristic in that that was the year they recorded the highest number of goals at the finals without any score by their opponents, scoring 3-0 against Mexico. Secondly, their win was like repeating a feat they first performed in 1985, then 1993, 2007 and 2009 before the 2013 win. This must have drawn so much excitement from the market participants and left them in a mood for serious and exited deals at the exchange.

## 5. Conclusion

In this paper, we examined the impact of international soccer wins by the three national teams on the Nigerian stock market. The results are in line with *a priori* expectation with respect to the two

male teams. However, with respect to the female team success, cultural and religious prejudice seems to have blurred the enthusiasm of the stock market participants. In terms of intensity of reaction of the market to the wins, the Golden Eaglet's success seems to attract more reaction than the other two teams.

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