The Weekend Effect: An Exploitable Anomaly on the Average returns of Nairobi Securities Exchange

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Abstract: The presence of seasonality in stock returns violates the weak form of market efficiency because equity prices are no longer random and can be predicted based on past pattern. This facilitates market participants to devise trading strategy which could fetch abnormal returns on the basis of past pattern. Fluctuations in the stock returns of firms listed at Nairobi Securities exchange motivated this study. In the Kenyan context, studies conducted on market anomalies in different markets have continued to yield different results in the majority of the investigated markets including the Nairobi Securities Exchange. This paper examines whether there is a significant variation in the average daily stock returns at the NSE and compares the findings to the previous empirical works on the topic. The paper tested for the presence of the Monday effect, differences in mean return across the five trading days, January effect, differences in the mean return across the five trading months and also provided the day-to-day and year-to-year behavior of stock return at the NSE. The study employed daily data from the year 2001 to 2015 to do analysis. The method of analysis was t tests and ANOVA. Policy recommendations are afterwards presented to aide the investors in making key investment decisions.

Key Words: *Weekend Effect, Monday Effects, Stock Returns, Nairobi Securities Exchange*

Introduction

Seasonal variations in production and sales are a well known fact in business. However, the existence of seasonality in stock returns violates an important hypothesis in finance that is efficient market hypothesis. The efficient market hypothesis is a central paradigm in finance. The EMH relates to how quickly and accurately the market reacts to new information (William, 2002). New data are constantly entering the market place via economic reports, company announcements, political statements, or public surveys.

According to this hypothesis, security prices reflect fully all the information that is available in the market. Since all the information is already incorporated in prices, a trader is not able to make any excess returns. Thus, EMH proposes that it is not possible to outperform the market through market timing or stock selection (Mokua, 2003). However, in the context of financial markets and particularly in the case of equity market seasonal component have been recorded. They are called calendar anomalies (effects) in literature (Board, 1988). The presence of seasonality in stock returns violates the weak form of market efficiency because equity prices are no longer random and can be predicted based on past pattern. This facilitates market participants to devise trading strategy which could fetch abnormal returns on the basis of past pattern. For instance, if there are evidences of 'day of the week effect', investors may devise a trading strategy of selling securities on Fridays and buying on Mondays in order to make excess profits. Pandey (2002) argues that mean stock returns were unusually high on Fridays and low on Mondays. One of the explanations put forward for the existence of seasonality in stock returns is the 'tax-loss-selling hypothesis. In the USA, for instance, December is the tax month. Thus, the financial houses sell shares whose values have fallen to book losses to reduce their taxes. As of result of this selling, stock prices decline. However, as soon as December ends, people start acquiring shares and as a result stock prices bounce back. This leads to higher returns in the beginning of the year known as the 'January effect' (Pandey, 2002).

Other studies have indicated that stock markets in other developed countries apart from United States for instance Japan, Australia, United Kingdom and Canada exhibit a strong tendency of seasonal. effects: Cross (1973), French(1980), Gibbon and Hess (1981), Keirn and Stambaugh (1984), Harris (1986), Smirlock and Starks (1986), Wong and Ho (1986), Condoyanni et aL (1987) and Penman (1987) provide interesting empirical evidence that the average return on Friday is abnormally high while the average return on Monday is abnormally low. Notably the average return for Monday (close Friday to close Monday) is significantly negative. This so-called day of the week effect or weekend effect is an empirical regularity for which no theoretical explanation has been found. In the Kenyan context, studies conducted on market anomalies in different markets have continued to yield different results in the majority of the investigated markets including the Nairobi Securities Exchange. This paper examines whether there is a significant variation in the average daily stock returns at the NSE and compares the findings to the previous empirical works on the topic. The paper tested for the presence of the Monday effect, differences in mean return across the five trading days, January effect, differences in the mean return across the five trading months and also provided the day-to-day and year-to-year behavior of stock return at the NSE.

Research Methodology

Following the work of Mohamad, Hamid & Ali (1988) as well as Borges (2009), stock returns was calculated as
$Rt = \ln(Vt/Vt-1)$
Where: Rt is the stock return and Vt indicate stock price at the end of day t.
For the data, the daily stock prices for all the listed firms since 2001 to 2015 was used to calculate the daily stock returns for each firm and hence the average daily stock returns for the entire period of study. Any return for a period which included a holiday was omitted. For example, if Wednesday was a holiday, the return for the succeeding Thursday is omitted.

The choice of a large data set is justified on the observation by Basher and Sodorsky (2006) claim that calendar effects are more easily detected in market indexes or large stock portfolios than in individual stock prices. Student's t-tests are carried out for the null hypothesis that returns on all days of the week belong to the same population; a rejection of the null implies a statistical anomaly in the price behavior on a specific day of the week. Given the size of our dataset, it is legitimate to argue that normality holds on the basis of the Central Limit Theorems (Mendenhall, Beaver and Beaver, 2003), and therefore these are valid statistical tests. Furthermore, Borges (2009) and Caporale, Gil-Alana & Plastun (2015) argue that t-test is one of the best methods of testing for weekend effects. As a further check for normality, graphical testest presented in Figure 1 indicates that the data was normally distributed and therefore Student's t-tests are valid.

Figure 1: Normality Test
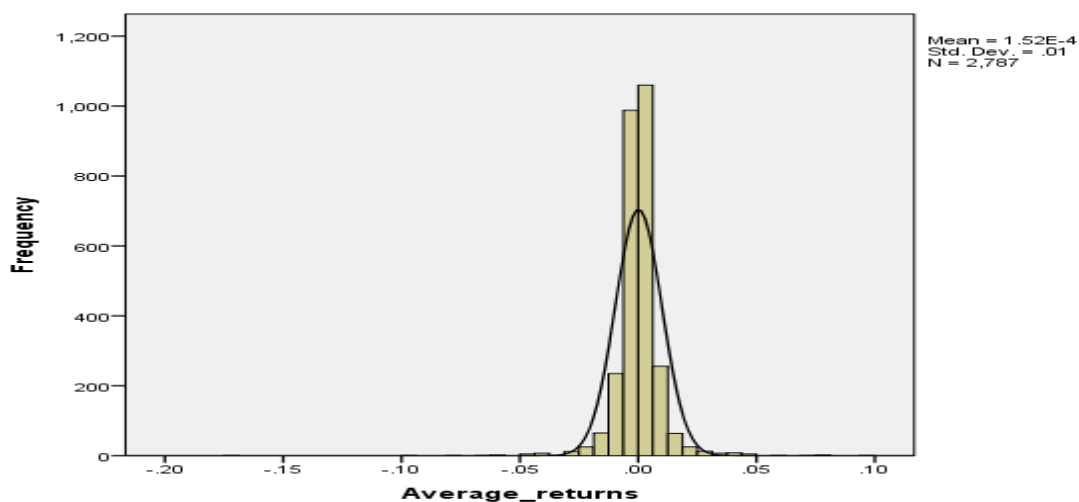
Results

Day of the week effects

The Monday effects was established by conducting a t-test of the Monday daily returns against the average of the remaining four days as suggested by Borges (2009). The results are presented in Table 1.

Table 1: Monday Effects

| Average daily returns	N	Mean	Std. Deviation	t	Sig	Mean Difference
Other Days	2247	0.00012	0.00984	(0.39709)	0.69133	(0.00019)
Monday	540	0.00030	0.00996			

Results in Table 1 reveals that the daily average Monday returns are positive. The daily average returns for the other days of the week at NSE are also positive. Furthermore, the results reveal that the difference in mean stock returns between Mondays and the pool of the other days was not significant implying the absence of a Monday effect for the stock returns at the NSE. The tests for the differences in mean daily stock return across the five trading days were also established. ANOVA test was used and the results are presented in Table 2. The results indicate that there is no significant difference between the daily stock returns for each of the week days at the NSE. This implies the absence of weekend effects at the NSE. Furthermore, the results indicated the absence of Tuesday, Wednesday, Thursday and Friday effects at the NSE

Table 2: Difference in Daily mean returns

(I) Day		Mean Difference (I-J)	Sig.	Comment
Monday	Tuesday	0.0008	0.1754	There was no significant difference between Monday stock returns and the stock returns of each of the other days
	Wednesday	(0.0000)	0.9348	
	Thursday	0.0003	0.6684	
	Friday	(0.0003)	0.6525	
Tuesday	Monday	(0.0008)	0.1754	There was no significant difference between Tuesday stock returns and the stock returns of each of the other days
	Wednesday	(0.0009)	0.1459	
	Thursday	(0.0005)	0.3498	
	Friday	(0.0011)	0.0689	
Wednesday	Monday	0.0000	0.9348	There was no significant difference between Wednesday stock returns and the stock returns of each of the other days
	Tuesday	0.0009	0.1459	
	Thursday	0.0003	0.6058	
	Friday	(0.0002)	0.7090	
Thursday	Monday	(0.0003)	0.6684	There was no significant difference between Thursday

(I) Day		Mean Difference (I-J)	Sig.	Comment
	Tuesday	0.0005	0.3498	stock returns and the stock returns of each of the other days
	Wednesday	(0.0003)	0.6058	
	Friday	(0.0005)	0.3758	
	Monday	0.0003	0.6525	
	Tuesday	0.0011	0.0689	
	Wednesday	0.0002	0.7090	There was no significant difference between Friday stock returns and the stock returns of each of the other days
Friday	Thursday	0.0005	0.3758	

Furthermore, the trends for the mean daily stock returns for all the days were also plotted. The results are presented in Figure 2. The results indicate that the Friday stock returns at NSE are always higher than stock returns recorded in the other days of the week. The lowest stock returns are recorded on Tuesdays and Thursdays. The findings also indicate that Mondays, Wednesdays, Thursdays and Fridays are associated with positive returns while Tuesday is associated with negative returns. These findings confirm the argument by Pandey (2002) who argued that mean stock returns were unusually high on Fridays. Furthermore, the results indicates that the NSE is operating similarly to the markets in Singapore, Malaysia, Hong Kong and Thailand as Wong, Hui and Chan (1992), investigating the period of 1975 to 1988 found that the returns on the markets are negative on Mondays or Tuesdays but highly positive on Fridays. The same can be compared to the findings of a study by Brooks and Persand (2001) who observed significant negative returns on Tuesdays in Thailand and Malaysia. This is a similar case to the Kenyan NSE market. As studies have continued to indicate disappearance of day of the week effect, recent studies still indicate negative Tuesday returns even in developed economies. Chukwuogor-Ndu (2006) analyze the day of the week effect in stock market returns in fifteen European countries and finds significant negative returns on Tuesdays, in some of these countries indicating that the Tuesday negative returns happens in both developed and developing economies.

Figure 2: Trend Analysis of Daily stock Returns
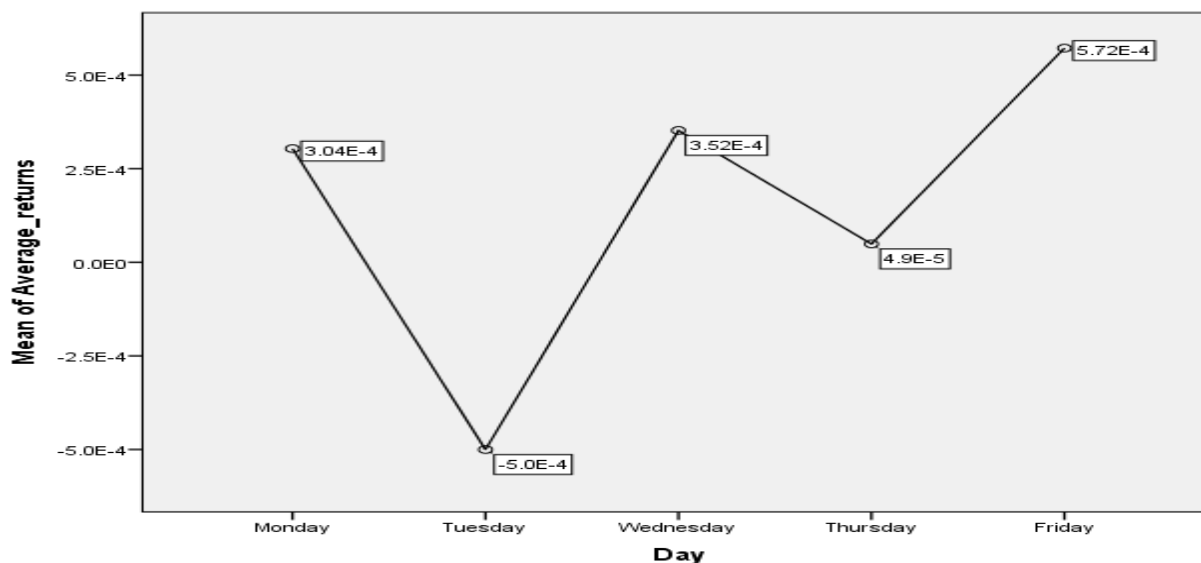
Month of the year effect

The January effects after the December holidays was also established by conducting a t-test of the January stock returns against the average of the remaining 11 months as suggested by Borges (2009). The results are presented in Table 3. Results in Table 3 indicate that the average January returns are positive. The average returns for the other combined 11 months are also positive. Furthermore, the results reveal that the difference in mean stock returns between January and the pool of the other 11 months was significant implying the presence of January effect for the stock returns at the NSE. The results further indicate a higher stock returns in January as compared to the other months of the year at NSE. These findings are not different from the findings in developed economies. The first studies, by Rozeff and Kinney (1976), Dyl (1977) and Brown et al. (1983) analyze the US stock market and observed significant higher returns in January than in the other months of the year.

Also, Gultekin and Gultekin (1983) studied seventeen countries using both non-parametric and parametric tests, and concluded that January returns are significantly higher when compared with the other months, in thirteen of those countries. Other studies conducted after wards also confirm the findings by the previous scholars. Ho (1990) examined twelve stock markets, including Australia, Japan, Korea, New Zealand, Singapore, Thailand, UK and US, and found evidence corroborative of the January effect as he observed that average returns on January are higher than other months at a 95% level of confidence. Furthermore, Haugen and Jorion (1996), Tonchev and Kim (2004) and Rosenberg (2004) reached empirical findings similar to prior studies. In balance, the evidence of a January effect is mostly confirmatory, although the reasons why it exists are still under discussion.

Table 3: January effects

Average returns	N	Mean	Std. Deviation	t	Sig
other Months	2555	0.00002	0.00971	(2.303)	0.021
January	232	0.00158	0.01134		

The test for the differences in mean monthly stock return across the 12 months was also established. ANOVA test was used and the results are presented in Table 4.

Table 4: Difference in Monthly mean returns

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.002	11	0.000	1.854	0.041
Within Groups	0.269	2775	0.000		
Total	0.271	2786			

The results indicate that there is a significant difference between the monthly stock returns at the NSE. This finding confirms the presence of January effects as had earlier been indicated. This implies the presence of January effects at the NSE. The presence of January effect in the Kenyan context at the NSE can be explained by the fact that December is associated with low activities as most people travel for Christmas celebrations out of Nairobi. However, as soon as December ends, people start acquiring shares and as a result stock prices bounce back. This leads to higher returns in the beginning of the year known as the 'January effect'. The results are not different from the developed economies like USA and UK which also experience January effects. However the reasons for the January effects between the economies are the explanation. Ariel (1987) explains that the reasons for the January effect in stock returns in most of the developed countries such as US, and UK is attributed to the tax loss selling hypothesis, settlement procedures, and insider trading information.

Another effect is window dressing which is related to institutional trading. To avoid reporting losses in their portfolios at the end of year, institutional investors tend to sell losers in December. They then buy these stocks after the reporting date in January to hold their desired portfolio structure again. The trend analysis of the average monthly returns was also established to compare all the months. The results are presented in Figure 3. The results presented in Figure 3 indicate that the highest returns at the NSE are recorded in the month of January every year. These returns are positive. The lowest returns are recorded in the month of February every year. Furthermore, the results indicates that the month of January, April, May, June, July, October and December are associated with positive returns while the remaining months are associated with negative returns. The difference between the December stock returns and the January stock returns is smallest as compared to other months.
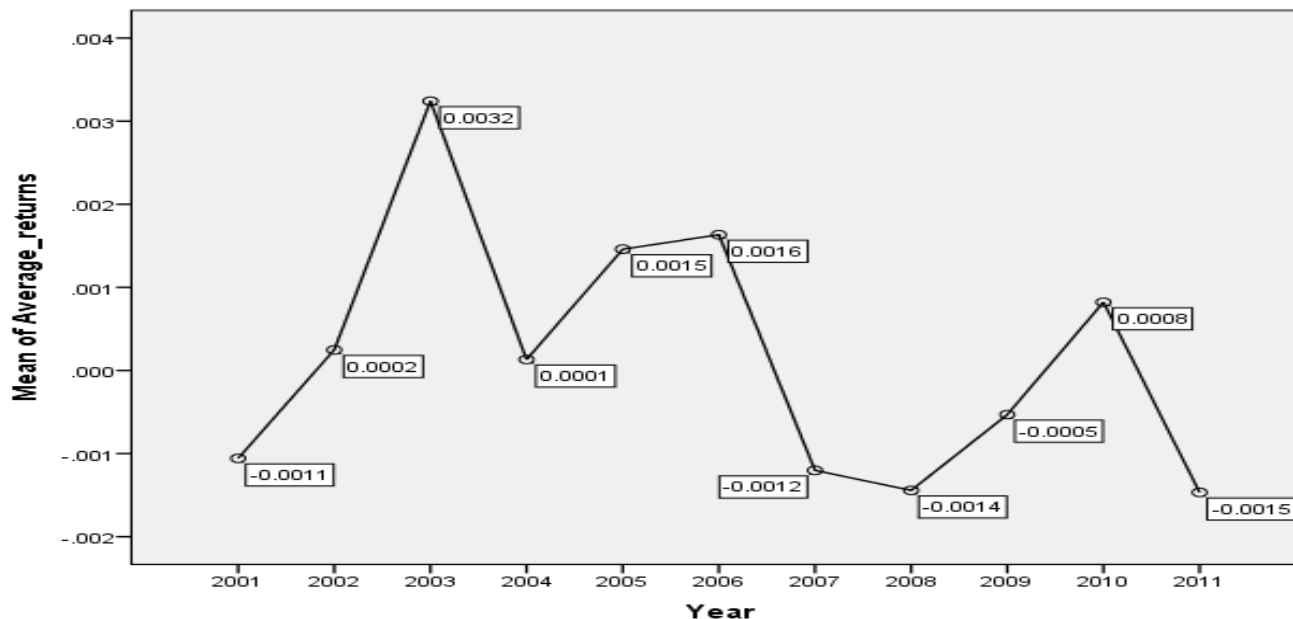
Figure 3: Trend Analysis of Daily stock Returns
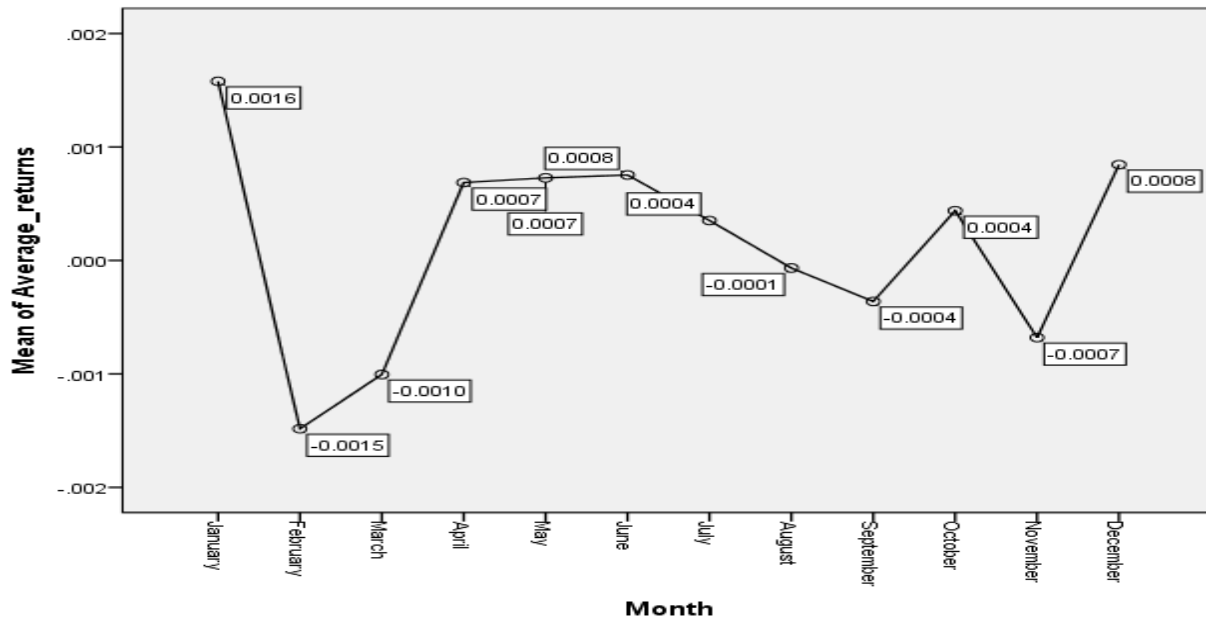
Year to year behavior of stock return at the NSE

The year to year analysis of the stock returns at the NSE was also established through trends as indicated in Figure 4.

Figure 4: Year to Year behavior of stock returns at the NSE

The results in Figure 4 indicate that the highest stock returns at NSE were recorded in the year 2013 while the lowest was recorded in the year 2008. The years 2001, 2007, 2008, 2009 and 2011 were associated with negative returns. The possible explanation for this finding is that the year 2007 and 2008 were associated with post election violence and hence less activities at the NSE. Notably, the years before elections for instance 2001 are associated with low stock returns apart from the year 2006. In fact the year 2001 had a negative average stock returns. A test of difference in mean yearly stock returns at the NSE was also established and the results are presented in Table 5. The results indicate that there is a significant difference in the yearly stock returns at the NSE since 2001 to 2011. This indicates unpredictable yearly characteristics of the stock behavior at the NSE.

Table 5: Difference in Yearly mean stock returns

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.006	10	0.001	5.967	0.014
Within Groups	0.265	2776	0.000		

Implications

The results implications to different capital market participants such as investors, managers and regulatory authorities. Investors can formulate their investment strategies and timing on the basis of this result and can earn some abnormal return by predicting future prices. As the results indicates, Friday returns are high at the NSE. Since the Tuesday returns are negative, investors can take advantage and buy shares on Tuesday and sell them on Friday in order to earn some abnormal return. The same can apply to January. Shares can be bought in December and sold in January to earn abnormal returns. Further implications is that, the presence of the January effects indicate inefficiency of the market and this is a warning to the regulators and policy makers that appropriate measures should be taken to bring informational and operational efficiency in the market.

Conclusion

The analyses indicate seasonal anomalies at the NSE mostly because of easy of predicting January stock returns. This confirms the argument by Kuria & Riro (2013) that despite the use of sophisticated information technology and introduction of many reforms at the NSE, the NSE is still not fully efficient. The presence of anomalies indicate, stock market inefficiency and therefore, NSE as a regulator of Kenya's Securities market need to take steps in order to increase the informational efficiency of the stock market operation. This will enable investors to reap fully benefits of investing at NSE.

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