INVESTORS’ SENTIMENT AND STOCK TRADING IN THE NIGERIAN CAPITAL MARKET.

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Abstract  
This study examined the relationship between investors sentiment and stock trading for thirty listed firms in Nigeria, covering periods of 2015-2019. This study comes at a time when behavioral economics gains larger interest in investment decision. This school of thought dismisses the assertion of neoclassical economics that markets are efficient, hence they cannot be beaten by consistently earning abnormal profits. Two research objectives were formulated for the study, which borders on determining whether investors’ sentiment affects stock trading of corporate firms in Nigeria, and whether investors’ sentiment affect trading stocks for industries in Nigeria differently. Data for the study were sourced from banking, manufacturing, and insurance sectors of the Nigerian Stock Exchange. Fixed effect regression was used to analyse the effect of investors’ sentiment on stock trading. The Analysis of Covariance was used to examine whether investors’ sentiment differently affect trading stocks for different sector in Nigeria. The results obtained showed that investors’ sentiment exerts significant impact on stock trading of the firms investigated, and it is used to affect trading stocks for industries in Nigeria differently. The study recommends that investors should make use of fundamental analysis and technical analysis to trade stocks.

Keywords: Behavioural economics, efficient market hypothesis, Investors’ sentiment, neoclassical economics, and stock trading.

1.0 Introduction  
Investors’ sentiment is a popular term in the field of finance that draws from a popular debate in economics discipline. It is a perspective that was started in the 1990s and used to describe investors as being irrational (Wright, 2008). It contradicts the traditional views in economics that man is rational and bases his
decision on reasoning and logic. Behavioural economists such as Simon (2010), George (2017), Dan (2008), Robert (1978), Vernon (2010), Daniel (1994), and Richard (1995) championed the argument that man is not always rational but makes decisions under heuristics. Originally, Smith (1759) economics had in the eighteenth century, laid the foundation of economics while justifying the private sector as the only necessity for achieving growth and to achieve this, in his book “Theory of moral sentiments” showed that humans are driven by emotions and sentiments. These individual idiosyncrasies are curtailed by the impartial spectator, which in itself is an innate self-regulated mechanism to reason and act benevolently towards one another in the society. By extension, Smith (1776) “An inquiry into the nature and causes of the wealth of nations” justified the laissez faire as an opposition to mercantilism, based on argument in theory of moral sentiments that, rationality ensures that man is engaged in self-interest activities that benefit both himself and his society. Inherent in Smith (1776) argument is that man is driven by sentiments, but he is curtailed by an impartial spectator (otherwise known as his conscience) to act benevolently towards his society. Morgenstern and Neumann (1947) reformed economics by developing the neoclassical school of thought. This school of thought is based on maximizing utility based on rational choice theory. This formed the basis of many traditional theories of finance such as the Markowitz portfolio theory (otherwise known as the modern portfolio theory), the capital asset pricing model (CAPM) of Sharpe (1954), and Fama (1991) efficient market hypothesis (EMH). These traditional theories assume that the market is efficient and cannot be beaten.

Simon (2010) was one of the early critics of rationality, when he developed the theory of bounded rationality. Stating humans do not always act rational under risk, Simon (2010) argued that decision making is often borne out of alternatives and consequences when faced with uncertainties (Gigerenzer & Selten, 2002). This is because the process of rational thinking is complex, involving identification of all choices with their outcomes, and choosing which among these choices is optimal. Based on the constraints faced to acquire perfect information of each choice and outcome, market participants will end up making a choice that has acceptable and preferable return (Manktelow, 2000). In their work, the Prospect Theory, Daniel (1994) along with Kahneman and Tversky (1979) echoed tenets of bounded rationality theory that man is not rational. The theory proposes that decisions made under risky situations are based on heuristics. Likewise, George (2017) disputed the rationality concept, stating that individuals do not make choices through preferences across different goods and services; Akerlof and Kranton (2000) noted that they do so base on personal beliefs, likes, and interest. They further developed identity economics in their book “Economics and Identity”. They explain how individual make choices based on their social identity and monetary incentives. The neoclassical school of thought was based on the works of Morgenstern and von Neumann (1944) through the game theory that provided basis to explain preferences.
axiomatically (Moscati, 2004). Basing human behaviour with the games theory only achieved precision in its framework, but lacked accuracy to explain human behaviour (Broda, 2017). Obvious shortcomings in the “homo economicus” concept of neoclassical economics has seen a shift in paradigm that now recognizes the irrationality nature of man. Many of these advocates believe that investors are not always rational to make wealth maximization decisions. Rather, investment decisions are based on feelings (Chang, Faff & Hwang, 2009).

The birth of behavioural finance (otherwise behavioural economics) in the 1990s has been on the rise in empirical literature that has sought to determine whether stock trading is driven by investors’ sentiments. There is a consensus in the literature that sentiment influences market performance among emerging markets (Dalika & Yudhvir, 2015; Naik & Padhi, 2016; Aggarwal, 2017; Pandey & Sehgal, 2019; Cheng, 2019). These studies corroborate findings from Alajekwu, Obialor, Okoro and Ibenta (2017) which found that sentiment significantly influences market performance in Nigeria. On the other hand, some empirical studies found no evidence among developing and emerging economies (Zainudin, Zaki, Hadi, Hussain & Kantakji, 2019). Thus, the study on investors’ sentiment and stock performance among emerging and developing economies remains inconclusive. However, many of these studies relied on the aggregate market index in each country situation thus their results may not be used to explain the impact of sentiment on stock performance of individual corporate firms. For instance, empirical studies in Nigeria all engaged the all shares index (ASI) as a measure of market performance, whose results cannot be used to understand stock trading among individual firms. In this study, some listed firms are used for empirical analysis, so as to provide a microanalysis of the relationship between investors’ sentiment and stock trading in Nigeria. This study finds it important to determine whether investors’ sentiment affects stocks of industries in Nigeria differently. This would help to provide deep insights to whether sentiment affects stock trading in Nigeria. Based on the foregoing, this study is guided by the following research questions:

(i) Does investors’ sentiment affect stock trading in the Nigerian capital market?
(ii) Does investors’ sentiment differently affect trading stocks in the Nigerian capital market?

This study offers insights to understanding whether investors can beat the market, by applying sentiments to stock trading.

2.0 Theoretical Review
Baker and Wurgler (2006) defined investor sentiment as the pessimism or optimism held by an investor on the future performance of a stock market or financial asset. Concentto and Ravazzolo (2019) noted that it indicates trend in financial markets, based on psychological perceptions of trades. It is also known
as market sentiment, because it shows trend in financial markets which is dictated by heuristics. Investor sentiments are beliefs about future performance of the market, which is be consistent with statistical facts. Its importance in determining market performance led to creation of several methods of measuring it. Qui and Welch (2004) identified two methods of measuring investor sentiment: the survey-based method (sentiments obtained using this method are obtained polls, where market agents express their views), and the market-based method (sentiments obtained using this method are from observed market information like prices and volume of trade). A third method used to measure investor sentiment is using text and media-based method which is commonly used to measure investor sentiment based on extracted opinions from texts, publications, and various internet activities on social media (Zhou, 2018; Zhang, Li, Shen & Teglio, 2016).

The role of investor sentiment on market performance has been discussed among scholars. Concentto and Ravazzolo (2019) identified that investor sentiment as a factor that can bring about mispricing of financial assets which in turn would lower expected returns. This is because emotions distort asset price from its intrinsic value, bringing about wider margin in its risk. Optimistic sentiment can drive investors to exaggerated optimism about the future which could facilitate overreaction and noise trading in terms of higher demand for the assets and increase in its prices. Gunathilaka (2017) agreed that investor sentiment is associated with market anomalies, such as market bubbles. Finter, Niessen and Ruenzi (2011) also agreed that investor sentiment is responsible for market bubble as a result of large devaluation of assets. It correlates positively with stock performance. Hence, a high sentiment is associated with upward trend in stock performance in the following period, and vice versa. Sentiment from social media platform like Twitter can be used to determine stock returns by analyzing its cumulative sentiment (Sul, Dennis & Yuan, 2017). It is responsible for excessive volatile prices in the market (Gunathilaka, 2017). Small firms are more susceptible to the effects of sentiment (Lee, Shleifer & Thaler, 1991). However, its impact on asset valuation is only in short and medium terms; as there will be correction of the market in the long-run when intrinsic value of stocks become realized (Chung, Hung & Yeh, 2012).

Daniel Kahneman and Amos Tversky’s work on prospect theory provides a theoretical framework to understanding the relevance of investor sentiment on stock trading. The theory is behavioural based theory of finance, which challenges the traditional theories of finance on homo economics. Traditional theories of finance as with the efficient market hypothesis by Fama (1991), assumes that investors always make rational decisions in maximizing returns on investments. Traditional theories believe that there is complete and perfect information available to market investors to aid rational decision making. In other words, investors are perfectly knowledgeable of each investment alternative, along with each return; so as to choose which investment that yields optimal returns (Manktelow, 2000). Prospect theory refutes this assertion, nothing that there is
information asymmetry (no perfect information of each investment alternative and payoff). Rather, investors are always faced with uncertainties in their investment decision. Hence, the theory further argues that investors will always seek to minimize risk (that is become risk averse), rather than seek to maximize returns. Unlike traditional theories of finance that present investors to be perfectly rational and without investment mistakes, prospect theory recognizes that investors are fallible and make irrational investment decisions. The theory goes further to recognize that investors perceive gains and losses differently unlike traditional theories of finance that assume homogenous expectations among investors (Arnold, 2005). By perceiving gains and losses differently, this is based on the psychological understanding that risk aversion among investors is made about individual specific situation. Hence, prospect theory recognizes the individuality makeup of each investor that differs from others.

2.1 Empirical Literature
In the empirical literature, studies have provided insights on whether markets are efficient or not, using different statistical methods. Previous studies do not have a consensus on whether markets are efficient (Grossman & Stiglitz, 1976; Dickinson & Muragu, 1994; Dockery & Vergari, 1997) or not (Chowdhury, Howe, & Lin, 1993; Dreman & Berry, 1995; Dharan & Ikenberry, 1995). Recent empirical literature from emerging markets disapproved the efficient market hypothesis (Pandey, 2003; Anjala & Jappanjyot, 2018); while others confirmed evidence of efficient market hypothesis (Phan & Zhou, 2014; Gupta & Gedam, 2014). Results from Gupdat and Gedom (2014) was based on parametric testing, stating that there is error in empirical literature that may have committed type 1 error. Hence, there is need for parametric test, before engaging statistical test of efficient market hypothesis.

Empirical literature also shows that investor sentiment plays an important role in market performance determination. Studies across Africa (Bennet, Amoako, Charles, Edward & Darkwah, 2012; Dalika & Yudhvir, 2015; Alajekwu, Obialor, Okoro & Ibenta, 2017), and in Asia (Naik & Padhi, 2016; Aggarwal, 2017; Pandey & Sehgal, 2019; Cheng, 2019) confirmed that investor sentiment significantly influences market performance. However, few studies in China (Huang, Yang, Yang & Sheng, 2014). In Malaysia (Zainudin, Zaki, Hadi, Hussain & Kantakji, 2019), and in the US (Tamrakar, Pyo & Gruco, 2018; Concelto & Ravazzolo, 2019) found no effect of sentiment on market performance. These results in empirical literature show that effect of sentiment largely holds in emerging markets. This implies that many investors in this region are irrational. Reconciling differences in empirical literature, Bhattaraia and Margariti (2018) found that the subject matter on efficiency of market rationality of investors is time-varying, and thus implies there is need for statistical tests of efficient market hypothesis both in the long-run and short-run period.
### 3.0 Methodology

In order to analyse the impact of sentiment on stock trading of corporate firms in Nigeria, a regression model is required. The model draws upon tenets of prospect theory, which is attributed to two behavioural economists, Kahneman and Tversky (1979). The theory opposed the rationality assumption of neoclassical economics, and established the behavioural framework that investors are not rational, but are irrational in their investment decision. Traditional theories believe market is efficient (has complete and perfect information), which helps investors to be rational in maximizing returns on their investment. The prospect theory criticizes this assertion and restated that investors are always constrained by uncertainties and therefore, seek to minimize risk rather than seek to maximize returns. The theory established that investors perceive gains and losses differently. By this, the theory recognizes the incorporation of sentiments (personal beliefs about future performance of the market) in investment decision (Arnold, 2005). Based on these, the influence of sentiment on stock trading in Nigeria can be stated as:

\[ \text{RET} = f(\text{SENT}) \]

Where RET is market returns (proxy for stock trading), SENT is investor sentiment (proxied using consumer confidence index). However, this study will incorporate inflation, economic policy uncertainty index and exchange rate as control variables. Thus, equation (1) is restated as:

\[ \text{RET} = f(\text{SENT}, \text{INF}, \text{EPU}, \text{EXR}_i) \]

Equation (2) is restated in econometric form as:

\[ \text{RET} = \beta_0 + \beta_1 \text{SENT} + \beta_2 \text{INF} + \beta_3 \text{EPU} + \beta_4 \text{EXR} + \mu_i \]

Where RET = market returns (measure of stock trading)

- SENT = investor sentiment (proxied using consumer confidence index)
- INF = inflation
- EPU = economic policy uncertainty index
- EXR = exchange rate

This study makes of the Hausman test to decide which of random effect or fixed effect regression technique to use to estimate the model for this study. The Hausman test states that at null hypothesis, the fixed effect regression should be estimates, otherwise the random effect model is preferable. Also, this study adopted the Analysis of ANCOVA to ascertain whether investors’ sentiment affects trading stocks for industries in Nigeria differently. This statistical technique is used to determine whether an independent variable (a categorical variable) influences a dependent variable (a continuous variable), while recognizing the effect of a covariate (a continuous variable). The dependent
continuous variable in this study is stock trading, while the continuous covariate is sentiment. In this study, thirty listed firms were drawn from three Sectors categorisations on the Nigerian Stock Exchange. They are, the banking sector; (First Bank Nigeria Plc, Guaranty Trust Bank PLC, Zenith Bank Plc, United Bank for Africa Plc, Wema Bank Plc, First City Monument Bank Ltd, Access Bank Plc, Fidelity Bank Plc, Stanbic IBTC Bank, and Union Bank Plc), manufacturing sector; (Cadbury Nigeria Plc, Dangote Flour mills Plc, Guinness Nigeria Plc, Honeywell Flou rmills Plc, NASCON Allied Plc, Nestle Nigeria Plc, Nigerian Breweries Plc, PZ Cussons Nigeria Plc, Unilever Plc, and Vitafoam Nigeria Plc) and the insurance sector (African Alliance insurance Plc, AIICO insurance Plc, Axa Mansard, Cornerstone, Continental Insurance Plc, Goldlink, Guinea Insurance, International Energy, LASACO assurance Plc, and Linkage assurance Plc) that are listed on the Nigerian Stock Exchange.

ANCOVA and the pairwise correlation are used to determine whether the influence of investors’ sentiment on stock trading is different among firms from these three industries. Data for the study are annual series data covering the period 2015-2019 and are sourced from the Central Bank of Nigeria Statistical Bulletin.

4.0 Data Presentation and Analysis

Data for this study are presented and analysed in this section.

Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>RET</td>
<td>150</td>
<td>-0.07</td>
<td>0.44</td>
<td>-1.44</td>
<td>1.28</td>
</tr>
<tr>
<td>SENT</td>
<td>150</td>
<td>-8.21</td>
<td>9.53</td>
<td>-23.13</td>
<td>3.28</td>
</tr>
<tr>
<td>INF</td>
<td>150</td>
<td>12.94</td>
<td>2.80</td>
<td>9.00</td>
<td>16.50</td>
</tr>
<tr>
<td>EPU</td>
<td>150</td>
<td>0.42</td>
<td>0.17</td>
<td>0.22</td>
<td>0.73</td>
</tr>
<tr>
<td>EXR</td>
<td>150</td>
<td>272.95</td>
<td>45.30</td>
<td>192.44</td>
<td>306.92</td>
</tr>
</tbody>
</table>

Source: Authors’ Compilation 2020

In Table 1, average market return averaged -0.07, which is an indication that trading stocks with the firms investigated would earn a loss on the average. Also, sentiment averaged -8.21, while its absolute standard deviation value is 9.53. This shows that investors were largely pessimistic about trade in Nigeria. Inflation averaged 12.94%, which is higher than its standard deviation value (2.8). This shows that inflation was high in Nigeria during the study period. This could adversely affect market prices of the firms. Economic policy uncertainty averaged 0.17. This is lower than its standard deviation value (0.22). This shows that fewer investors were pessimistic during the period. Exchange rate averaged 272.95 Naira for 1USD, which has a low standard deviation value
45.3). This implies that the Naira depreciated most of the times, between 2015 and 2019.

Figure 1: Trend in Investors’ Returns among Listed Firms in Nigeria

![Figure 1: Trend in Investors’ Returns among Listed Firms in Nigeria](image)

Source: Authors’ Compilation 2020

Figure 1 shows the trend in investors’ returns among listed firms in Nigeria. The diagram shows that returns were positive and negative for all the firms.

Table 2: Pairwise Correlations

<table>
<thead>
<tr>
<th></th>
<th>RET</th>
<th>SENT</th>
<th>INF</th>
<th>EPU</th>
<th>EXR</th>
</tr>
</thead>
<tbody>
<tr>
<td>RET</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SENT</td>
<td>-0.2552*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INF</td>
<td>0.3821*</td>
<td>-0.6903*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPU</td>
<td>-0.1</td>
<td>-0.2056*</td>
<td>-0.4695*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>EXR</td>
<td>0.1644*</td>
<td>0.2982*</td>
<td>0.4770*</td>
<td>-0.9260*</td>
<td>1</td>
</tr>
</tbody>
</table>

* shows significance at the 0.05 level

Note: Values in bracket are p-values

Source: Authors’ Compilation, 2020

Table 2 shows the relationship among the variables. RET and SENT are negatively correlated and is significant at 5%. While RET and INF are positively related. The relationship is significant at 5% level of significance but it is weak because the correlation co-efficient of 0.3821 and is lower than 0.5%. Looking at RET-EPU, there is a negative but weak correlation between RET and EPU but the relationship is not significant at 5% level of significance. RET and EXR have a significant weak positive correlation while SENT and EPU results shows that there is a weak negative relationship but the relationship is not significant at 5% because their P-value of 0.0116 is above 0.05. The correlation co-efficient of -
0.69 shows a strong negative relationship between SENT and INF but the relationship is significant at 5% level of significance. Also, there is a significant positive but weak relationship between SEN and EXR. A significant weak negative relationship subsists between INF and EPU. The correlation co-efficient of -0.9260 shows that there is a strong negative relationship between EPU and EXR. This relationship is significant at 5%. Also, significant weak positive relationship exists between INF and EXR. This is shown by the correlation co-efficient of 0.4970 and the relationship is significant at 5% because the P-value is below 0.05.

Table 3: Hausman Specification Test

<table>
<thead>
<tr>
<th>Source: Authors’ Compilation 2020.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square test value</td>
</tr>
<tr>
<td>P-value</td>
</tr>
</tbody>
</table>

In Table 3, the p-value is not statistically significant. This implies that the null hypothesis cannot be rejected. As such, the random effect model will be estimated.

Table 4: Panel Regression Results

<table>
<thead>
<tr>
<th>Source: Authors’ Compilation 2020.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPS</td>
</tr>
<tr>
<td>SENT</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>INF</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>EPU</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>EXR</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><em>cons</em></td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>adj. R²</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* p< 0.05, ** p< 0.1
Table 4 shows that effects of investors’ sentiments, inflation, economic policy uncertainty and exchange rate on stock trading among the firms sampled for this study. Based on the coefficients, investors’ sentiment and inflation exerted positive impacts on stock trading, whereas economic policy uncertainty and exchange rate had negative impact on stock trading. The p-value is statistically significant for inflation at 5% level, whereas p-value for sentiment is statistically significant at 10% level. These show that both inflation and investors’ sentiment exert positive significant impact on market returns. On the other hand, economic policy uncertainty and exchange rate did not exert significant impact on stock trading among the listed firms investigated, between 2015 and 2019.

Table 5: Analysis of Covariance Results (Dependent Variable: Market Price Per Share)

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>2.441a</td>
<td>5</td>
<td>.488</td>
<td>2.702</td>
<td>.023</td>
<td>.086**</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.447</td>
<td>1</td>
<td>2.447</td>
<td>13.540</td>
<td>.000</td>
<td>.086**</td>
</tr>
<tr>
<td>Ind</td>
<td>.439</td>
<td>2</td>
<td>.219</td>
<td>1.214</td>
<td>.300</td>
<td>.017*</td>
</tr>
<tr>
<td>SEN</td>
<td>1.854</td>
<td>1</td>
<td>1.854</td>
<td>10.259</td>
<td>.002</td>
<td>.067**</td>
</tr>
<tr>
<td>Ind * SEN</td>
<td>.126</td>
<td>2</td>
<td>.063</td>
<td>.349</td>
<td>.706</td>
<td>.005*</td>
</tr>
<tr>
<td>Error</td>
<td>26.023</td>
<td>144</td>
<td>.181</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.259</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>28.465</td>
<td>149</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


In table 5, the p-values reveal that type of industry, sentiment, and joint interaction of sentiment and industry significantly influence market returns of the firms investigated. As such, investors’ sentiment significantly influences stock trading in Nigeria.

5.0 Conclusion and Recommendations

The results from the study show that investors’ sentiment has a positive impact on stock trading of listed firms in Nigeria. This impact is statistically significant. This is an indication that investors are not always rational in Nigeria, and their irrational investment decision significantly influences stock trading in the country. This result agrees with studies that found significant positive relationship between investors’ sentiment and stock performance among emerging and developing
countries (Dalika & Yudhvir, 2015; Asian Naik & Padhi, 2016; Alajekwu, Obialor, Okoro & Ibenta, 2017; Aggarwal, 2017; Pandey & Sehgal, 2019; Cheng, 2019). On the other hand, the finding from this study disagrees with studies that found no significant relationship between investors’ sentiment and stock trading (Zainudin, Zaki, Hadi, Hussain & Kantakji, 2019). Therefore, behavioural economics holds in the Nigerian context. Thus, stock performance in Nigeria is not randomly determined, i.e., markets in Nigeria are not always efficient. Based on these results, this study recommends that investors should use fundamental analysis and technical analysis to trade stocks.

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