FINANCIAL MARKET FRICTIONS AND MARKET EFFICIENCY IN NIGERIA: EVIDENCE FROM AN EVENT STUDY

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Abstract
On the premise that transaction cost is an integral aspect of financial market frictions, this study empirically investigate whether stocks reacted negatively to the news of the announcement of upward review of stamp duty charges in Nigeria; an announcement made on 5th of December 2020, with the succeeding first trading day being Monday 7th of December, 2020. Employing the standard event study methodology with 60 companies stock price daily series, the empirical results show evidence of negative drift in stock returns trading ten (10) days after the announcement was made public. In particular, the result of the post announcement trading effect reveal a statistically significant Abnormal Return (AR) and Cumulative Abnormal Return (CAR) of -1.51% and -1.072 % respectively on the first trading day after the announcement and a significant CAR of -1.16 % ten days after the announcement, implying a negative stock returns response. In other words, stamp duty increment was perceived by investors as extra costs or frictions. At the same time, the evidence of negative CAR ten trading days after the announcement implies that the NGX is not highly semi-strong efficient. There is evidence of sustained delays in the length of time during which the negative news get incorporated into market prices, which provide ample window of opportunity for portfolio investors and speculators to outperform the market., especially if short selling strategy can be implemented seamlessly ceteris paribus. This is in sharp contrast to the prediction of Efficient Market Hypothesis (EMH). The study recommends that efforts should be made to reduce transaction costs in the Nigerian Exchange Limited (NGX) going forward. This will help stabilize the market and make it competitive in the global space. However, from the perspective of portfolio investors, hedge funds (hot money) and other speculators, lack of evidence of semi-strong market efficiency in the NGX provides a veritable opportunity for making supernormal returns within a relatively short period of time.

Keywords: Market Frictions, Stamp Duty Charges, Securities Transaction, Market Efficiency, Event Study Methodology.

Jel Classification: C32, D80, G14 and G38

1. Introduction
On Saturday 5th of December 2020, stock market investors operating through Investment One Financial Services Limited, a dealing member of the Nigerian Exchange Limited (NGX) where greeted with the caption; "Upward Review of Stamp Duty Charges on

Securities Transactions" in their email. See appendix 1.

The above information applies to all investors and fund managers buying and selling stocks on the floor of the NGX. Stamp duty, which is a form of tax in this context, is part of the total transaction costs of buying and selling stocks on the floor of the NGX (secondary market) and is typically reflected on the contract note. Other transaction cost items include the brokerage fee, capital gains tax, Securities and Exchange Commission (SEC) fee, Central Securities Clearing System (CSCS) fee and the NGX fee. Also, interest charges in margin account can be added for investors involved in margin trading. In the primary market, the flotation cost are usually incurred by the security issuers although it is assumed that the cost is built into the per unit price of stocks offered sale or subscription. The extent to which this information of upward review of stamp duties and other stock market transaction costs interfere with the trading behavior and portfolio optimization behavior of investors, defines the level of frictions in the Nigerian capital market as well as the level of efficiency of the market. We note that market efficiency can be stratified into two; operational or transaction efficiency, which implies that the cost of transaction is low and the speed of transaction is high, and information efficiency, which relates to the speed at which price sensitive information is reflected in market prices as enshrined in the Efficient Market Hypothesis (EMH) by Fama (1970; 1991). A market in which prices always fully reflect all available information, such that one cannot consistently generate superior returns except by chance, is said to be "informationally" efficient. Market efficiency is further classified or christened as weak-form, semi-strong, and strong form efficiency, based on the response to historical, publicly available and insider information respectively. Our interest in this study is on semi-strong market efficiency. *De facto,* it is hard to imagine that operational efficiency can be separated from information efficiency. Thus, we propose that the lesser the level of market frictions (such as transaction cost), the higher the level of operational efficiency and as a corollary, the higher will be the level of information efficiency.

Within the framework of the Capital Asset Pricing Model (CAPM), DeGennaro and Robotti (2007) defines financial market friction as anything that inhibits trade. This interference is of two dimensions. First, financial market frictions cause an investor to deviate from holding the market portfolio. In other words, these frictions can cause a market participant to be exposed to more or less risk than she might be willing to take. This definition at first appears very limited but is, in fact, only as limited as the definition of the market portfolio. Put differently and somewhat less obscurely, financial market frictions generate costs that interfere with trades that rational individuals make or would make in the absence of such frictions.

In his essays on financial market frictions, Poyry (2014) addressed the primary objective of the financial markets, which is financial intermediation and risk management. In other words, the aim of the financial market is to harness and channel capital from those with low marginal returns to invest to those with high marginal returns (that is from surplus units to deficit units). This is typically done by the former saving and the latter borrowing, but this channel is limited when the wedge between interest rates of savings and credit is sizable (high spread) as well as when the cost of consummating financial markets transaction is relatively high or prohibitive.

To engender efficient intermediation, capital is supposed to be invested in those sectors that are expected to have high returns and be divested from sectors with poor prospects (Wurgler, 2000). Poyry (2014) assert that to do so efficiently, financial markets needs to

generate prices which reflect all available information accurately in consonance with the EMH. For investors to reasonably interpret the signals that asset prices provide, they need to comprehend the dynamics that determines the discount rates that bring about asset prices (Poyry, 2014). A number of literature such as Ajao and Osayuwu (2012) and Gimba (2012) have empirically investigated weak-form EMH in Nigeria based on historical information of stock prices. However, to the best of our knowledge, there is paucity of empirical evidence on the impact of announcement effect of upward review of transaction costs (stamp duty) on stock returns in Nigeria as well as the implication of such increase in charges on the level of market efficiency. This provides the motivation for this study. Such announcements once made become publicly available information which provides opportunity to reexamine the semi-strong EMH. *De facto,* as DeGennaro and Robotti (2007) assert, we need to care about market frictions (and by implication market inefficiency or the extent of efficiency) because they generate real cost for investors and redistribute wealth unfairly, given that the cost incurred by one economic agent is tantamount to income for another economic agent, *inter alia.* Based on the foregoing, the objectives of this study includes to investigate the extent to which the upward review of stamp duty announcement interfere with stock returns on the NGX and simultaneously; to determine the extent of semi-strong market efficiency of the NGX.

This study contributes to the extant literature by simultaneously investigating evidence of market friction and semi-strong EMH in Nigeria. Semi-strong because the announced upward review of stamp duty charges is tantamount to publicly available information. The study provides useful insight to investors and other market participants by shedding light on asset price dynamics, portfolio evaluation costs, among others within the context of market frictions and market efficiency in Nigeria. This is akin to a joint hypothesis testing of both market frictions and market efficiency. The rest of the study is organized as follows; section two is review of literature. Section three describes the methodology employed. Section four discusses the empirical results and analysis while section five concludes the study.

2. Literature Review

In this section, an array of conceptual, theoretical and empirical literature are presented and discussed. Also, the gaps in literature were highlighted.

Stoll (2000) defines financial market frictions or imperfections as those factors that measures the difficulty with which a financial asset is traded in the financial market. The author identifies these factors to include time and cost of transaction. Taxes and transaction costs are common examples of market frictions as they undeniably affect most transactions (Keyness, 1936, Summers & Summers, 1989; Wurgler, 2000). However, Lippman and McCall (1986) noted that a friction could be any element that affects the length of time it takes to consummate transaction on a given amount of asset at the optimum price. Recall that most assets can quickly be sold at fire-sale price. Poyry (2014) consider market imperfections as a similar concept to frictions and defines it as market features that contradict the basic assumptions of efficient market theories.

In their seminal work, De Gennard and Robotti (2007) classify financial market frictions broadly to include transaction costs, taxes and regulation, asset indivisibility, non-traded assets, agency and information problems. The study further divides transaction costs into cost of trade and the opportunity cost of time. The costs of trade include telephone charges, postage, computer power, data analysis, internet subscription, and similar out of pocket expenditures. With advancement in communication technology and proliferation of hand – held devices, these costs have been declining in recent times. For the

opportunity cost of time, it is observed that trading takes time, which includes the cost of searching or the time required to gather information, (including seeking a counter party for a given trade) and the time to make and monitor the trade. Efforts to minimize these costs represent profit opportunities. Since the dawn of the twenty first century exchanges and markets have been making more efforts to leverage on automation. And we believe that in the near future, exchanges will take advantage of Blockchain Technology, Artificial Intelligence (AI), Robotic Engineering, Big Data Science, Internet of Things (IoT) among others to enhance their operational efficiency and reduce costs of transaction.

Taxes and regulations are another major class of market frictions which might be explicit as in the case of company income tax, capital gains tax or even implicit, such as when a given regulation like the prohibition of short selling. Inability to implement short selling strategy can cause investors to incur portfolio loses in a bearish market. This is usually very pronounced in Nigeria, where there are strict rules against short selling as at present.

We are of the opinion that the crux of the matter as far as financial frictions are concerned, irrespective of the type is that they prevent investors from holding the market portfolio or optimal portfolio. They also generate costs and unfairly redistribute wealth and hence compromise the ability of the market to function effectively and efficiently with respect to financial intermediation and risk management. Also, relatively inefficient markets tend to distorts the financial intermediation process and leads to misallocation of scarce resources.

Suffice it to say that perfect market assumptions include frictionless markets with fully rational investors, having equal access to market information. For example, the Modigliani and Miller (1958) capital structure theory and the Capital Asset Pricing Model (CAPM) developed by Sharpe (1964) and Lintner (1965) were formulated based on a number of perfect market assumptions. These assumptions *inter alia* describe a world devoid of transaction costs or taxes, as well as rational investors having homogenous risk – returns expectations, well diversified portfolios and equal investment holding periods. According to Stoll (2000), the early finance paradigm was anchored on abstractions of frictionless and efficient markets; useful abstractions but abstractions all the same. Friedman (1953) observed that theories employ assumptions that are widely inaccurate representation of reality. Thus when empirically testing the validity of a theory, it is important to address the irrelevancy of its assumptions. The author further states that a theory should not be rejected purely based on plausibility of its assumptions without sufficiently addressing their relevance (such as predictive ability) and broader implications.

Bougheas and Falvey (2010) study the impact of financial market frictions on trade flows, capital flows and economic development. The study finds that underdeveloped financial markets are replete with agency costs and week institutions which prohibit economic specialization in sectors where finance is important. Conversely, capital tends to flow easily to countries with more robust financial institutions which in turn allow their economies to develop sectors that are financially dependent. In Nigeria for example, it has been recognised that the private sector should play a pivotal role in economic development and we are incline to think that the financial markets should be the prime motor of the economy. However, it appears that high cost of transaction, high interest, and interest rate spread, weak institutions and regulatory obstacles tend to obstruct the wheel of business and economic progress. Businesses in the agricultural, industrial goods, transportation and healthcare sectors among others are constantly struggling to cope with

the high cost of capital.

Based on the stylized fact that financial friction drive wedges between savings and investment, Hall (2011) empirically investigates the relationship between high sensitivity of economic activity to financial frictions, using data from 2002 to 2009, and a dynamic model. The study finds that increased financial friction played an important role in the dramatic drop in global economic activities experienced between 2008 and 2009. In other words, the above study lend credence to the argument that financial frictions essentially leads to market inefficiencies and mal-adaptions, causing prices to deviate significantly and persistently from their intrinsic value.

Gonatha and Juliana (2021) empirically investigate the effect of financial market frictions on the level of firm diversification in Indonesia from 2008 to 2017. The finding from the study reveals that well – diversified firm can mitigate the stocks arising from external market frictions.

A number of literatures have empirically investigated announcement effect and weak – form EMH in Nigeria (Ajao & Osayuwu, 2012; Eriki & Eboigbe, 2012; Gimba, 2012). However, to the best of our knowledge, there is paucity of empirical study on the impact of announcement effect of upward review of transaction costs (stamp duty, a market friction inducing event) on stock returns on Nigeria and the consequent implication on the level of market efficiency. This study simultaneously investigates evidence of market friction and market efficiency.

3. Methodology

3.1 Research Design and Data

In carrying out the analysis, the study employs the standard event study methodology which is based on the causal research design within the time series econometric framework. The study uses a convenient sample of 60 of the most active stocks traded on the floor of the Nigerian Exchange Limited (NGX) on that first trading day following the stamp duty upward review announcement, as well as for the estimation window. The study establish the significance of abnormal returns and cumulative abnormal returns on the event announcement day (assumed to be Monday 7th of December, been the first trading day after the news broke out on Saturday 5th of December, 2020), and ten trading days after the announcement of the upward review of stamp duty from 0.075 % to 0.08% was made available to the public. ADF unit root test and diagnostic test were performed on the data. Data for this study were obtained from the web site of the Nigerian Exchange Limited (NGX) and Cashcraft Asset Management Ltd.

3.2 Model Specification

Following Eriki and Eboigbe (2012) and Ikponmwosa and Erimife (2018) the abnormal returns are obtained by subtracting the expected returns estimated using the model, from the actual returns in the event period. Abnormal Return (AR) for *jth* stock for time t ($AR_{j,t}$) is

……..……(3.1)

Where; ……..….(3.2)

Here are the actual returns calculated by taking the logarithm of price of the stocks for time ‘t’ divided by price of the stock at time ‘t-1’. The expected returns have been calculated using the market model as follows;

Expected Returns ……..(3.3)

The abnormal returns have been calculated by subtracting these expected returns from the actual returns. Also, the Average Abnormal Returns (AAR) for each day t in the event window was estimated using the model:

……..……(3.4)

Where N = Number of stocks or firms. Cumulative Abnormal Return (CAR) were generated over a part of the event period with the model;

Where t = T_1 to T_2 days where T_1 and T_2 vary for different event windows. To check the significance of CAR values over different event windows, t-test was employed.

Suffice it to say that AR, AAR and CAR were all generated using the daily stock prices of the firms selected for this study and by applying equations 3.1 to 3.5. This was done by following the standard event study methodology, which enables financial economists to determine the impact of news or events on asset prices and returns.

4.1 Results and Data Analysis

Analysis of the results begins with establishing the stationarity of the variables utilized for the study. This is necessary because non-stationary series may generate spurious and inconsistent estimates. The, the Augmented Dickey-Fuller (ADF) test is employed to establish the stationarity of the stock return series and the corresponding market return series within the event window. Also, results from the various normality tests revealed that the average abnormal return series is normally distributed.

The non-parametric *t*-test was employed to test for the significance of abnormal return on the announcement day, significance of cumulative abnormal return on the announcement day, and the significance of cumulative abnormal return fifteen trading days after the announcement. Table 4.1 shows abnormal return and cumulative abnormal return (in percentages) over the thirty-one days' event window. The hypotheses of the study were tested using the *t*-test for the significance of abnormal return over three periods. In each of the cases, the *t*-statistic sought to establish whether the abnormal return or cumulative abnormal return over the period of interest is significantly different from zero. Thus, the three points at which abnormal and cumulative abnormal return were tested include announcement day abnormal return, announcement day cumulative abnormal return and post-announcement day cumulative abnormal return.

Table 4.1: Event Window Abnormal Return and Cumulative Abnormal Return

Day	AR	CAR	DAY	AR	CAR
-10	-0.0192	-0.0221	1	-0.11193	-0.1052
-9	-0.0160	-0.0285	2	-0.0217	-0.1201
-8	0.1173	-0.0721	3	0.1055	-0.0288
-7	-0.0287	-0.1490	4	-0.0115	-0.0291
-6	-0.01163	-0.1502	5	-0.00170	-0.01634
-5	-0.0025	-0.1064	6	0.00156	-0.01892
-4	0.0019	-0.1077	7	0.00160	-0.03880
-3	-0.01045	-0.1202	8	0.00417	-0.03065
-2	-0.0170	0.1053	9	-0.01058	-0.0131
-1	0.1061	0.03021	10	-0.01032	-0.0116***
0	-0.0151** t-stat = –2.212	-0.01072 t -stat = –2.135***		t= -2.109	t-stat = –2.207

Notes AR – event window abnormal return, CAR – event window cumulative abnormal return
*, ** and *** imply significance at the 5%, 10% and 1% levels respectively.
Source: *Author's Computation using Eviews 9, (2021)*

For the first hypothesis, the null hypothesis of no significant abnormal return (AR) on the announcement day was tested using the abnormal return observed on day zero. The abnormal return of –0.0151or –1.51 percent observed on day zero, as shown in table 4.1,was tested for statistical significance using the standard deviation. The result revealed a test statistic of -2.2 that was statistically significant at the 5 percent level. The result therefore suggest the rejection of the null hypothesis which state that the abnormal returns exhibited by stock prices on the announcement day of the upward review is not significantly different from zero. The second hypothesis of no significant cumulative abnormal return (CAR) on the announcement day was tested using the observed cumulative abnormal return of –0.01072 or –1.072percent over the event window running from day –10 today zero. The parameter estimation window reveals a statistically significant value at the one percent level, and this implies the rejection of the second null hypothesis. The result therefore, suggests that the cumulative abnormal return of –1.072 percent is significantly different from zero at the one percent level. The third hypothesis tested sought to establish the statistical significance of cumulative abnormal return (CAR) ten trading days after the announcement.

The CAR on the tenth day is approximately –0.0116 or –1.16 percent. Thus, the null hypothesis, which states that stock prices in Nigeria did not exhibit significant cumulative abnormal return ten trading days after the announcement is rejected, with a t-statistic of = –2.207. This therefore implies that the cumulative abnormal return of approximately –0.0116or –1.16 percent for the period is significantly different from zero at the one percent level. Invariably, stock prices of the firms reacted negatively to the announcement of the upward review in stamp duty charges. This implies that the stamp duties are perceived adversely by investors as extra burden, costs or frictions. At the same time, the evidence of negative cumulative abnormal returns (CAR) ten trading days after the announcement implies that the NGX is not highly semi-strong efficient. There is evidence of sustained delays in the length of time during which the negative news get incorporated into market prices. Such delays should provide ample window of opportunity for portfolio investors and speculators to outperform the market (generate superior returns),

contrary to the prediction of EMH, especially if short selling strategy can be implemented seamlessly *ceteris paribus.* In other words, lack of evidence of water-tight semi-strong efficiency will guide investors to take a short position when a negative news item filters into the market but take a long position when the news item is positive, just like the news of Femi Otedola's acquisition of the shares of First Bank of Nigeria Holdings (FBNH) plc., which filtered into the public space in third week of October 2021 and considerably generated "market imbroglio".

5. Conclusion and Recommendations

The paper sought to examine if stock returns exhibited significant decline following the announcement of the upward review in stamp duty charges. In doing this, the stock prices of 60 firms that traded on the first day of trading following the announcement (that is December 7, 2020) were examined, and ten days after the announcement date, using the standard event study methodology. The empirical evidence shows significant negative decline in stock performance following the announcement, with negative and statistically significant cumulative abnormal returns (CAR), an indication of some level of market distortion and inefficiency.

Against the backdrop of the empirical findings, there is greater need for the regulatory authorities to instill strong stabilizing institutional framework in minimizing distortions and frictions in the market to guarantee market efficiency. For example, deliberate effort should be made to reduce the costs of transaction on the floor of the Nigerian Exchange Limited (NGX). Measures and strategies that will ensure proper dissemination of market information should also be put in place in order to help the market quickly adjust or bounce back from any sudden or abrupt news. However, from the point of view of portfolio investor, hedge funds (hot money) and other speculators, the NGX provides a veritable opportunity for supernormal profit within a relatively short period of time.

References

Ajao, M.G., & Osayuwu, R. (2012). Testing the weak form of efficient market hypothesis in Nigerian capital market. *Accounting and Finance Research, 1*(1), 169-179.

Bougheas, S., & Falvey, R. (2010). The impact of financial market frictions on trade, flows, capital flows and economic development. 1st International Workshop on Contemporary Economic Theory: Topics on Development Economics, University of Guadalajara. Retrieved from www.nottinglawm.ac.uk, May 11, 2021.

Brooks, K. (2008). The t-test for abnormal and cumulative abnormal series. *Statistica, 3*(4), 78-102.

Brown, S.J., & Warner, J.B. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics*, *14*, 3-31.

DeGennara, R.P., & Robotti, C. (2007). Financial market frictions. Economic review, Third Quarter of Federal Reserve Bank of Atlanta.

Eriki, P.O., & Eboigbe, C. E.(2012). Presidential election and stock market prices in Nigeria: An event study. *Esut Journal of Management Sciences*, *7*(1), 79-95.

Fama, E.F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, *25*, 383-417.

Fama, E.F. (1991). Efficient capital markets II. *Journal of Finance*, *46*(5), 1575-1617.

Friedman, M. (1953). Essays in positive economics. University of Chicago Press.

Gimba, V.K. (2012). Testing the weak-form efficiency market hypothesis: Evidence from Nigerian stock market. *CBN Journal of Applied Statistics, 3*(1), 117-136.

Gonatha, M., & Juliana, R. (2021). The effect of financial market frictions to firm's diversification level in Indonesia. Proceeding of the International Conference on Sustainable Innovation 2020 – Accounting and Management.

Hall, R.E. (2011). The high sensitivity of economic activity to financial friction. *The Economic Journal, 121*(1), 351–378. Doi: 10.1111/j.1468-0297.2011.02421.x.

Ikponmwosa, N. & Erimife, J. (2018). Too many kisses but very few miracles: A test of hubris hypothesis in Nigeria. *Management Sciences Review,* 9(2), 1-17.

Keynes, J.M. (1936). *The general theory of employment, interest, and money*. London: Macmillan.

Lintner, J. (1965). The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *Review of Economics and Statistics, 47*(1), 13 – 37.

Lippman, S., & McCall, J. (1986). An operational measure of liquidity. *American Economic Review*, *76*, 43 – 55.

Modigliani, F., & Miller, M.H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, *48*(3), 261 – 297.

Modigliani, F., & Miller, M.H. (1963). Corporate income taxes and the cost of capital: a correction. *The American Economic Review*, *53*(3), 433 – 443.

Poyry, S. (2014). Essays on financial market frictions and imperfections. Economic and society. Publications of the Hanken School of Economics, Nr 276.

Sharpe, W. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance, 19*(3), 425-442.

Stoll, H. (1993). Equity trading costs in-the-large. *The Journal of Portfolio Management,* 41 - 50.

Summers, L., & Summers, V. P. (1989). When financial markets work too well: A cautious case for a securities transactions tax. *Journal of Financial Services Research*, *3*, 261 – 86.

Wurgler, J. (2000). Financial markets and the allocation of capital. *Journal of Financial Economics*, *58*, 187 – 214.

Appendix 1
Dear Valued Investor,

Please be informed that from Monday, December 7 2020, the Nigerian Stock Exchange (NSE) will begin implementation of the upward review (from 0.075% to 0.08%) in Stamp Duty charges on Capital Market Transactions.

Click to view the Circular from the Nigerian Stock Exchange and Public Notice from the Federal Inland Revenue Service.

For further clarification, kindly contact us via telephone on 01-448-8888 and 08129921188 or send an email to customercare@investment-one.com

Thank you.
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