



TESTING THE SIGNALING THEORY IN QUOTED FIRMS IN NIGERIA

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Abstract

This study tests the signaling theory in quoted firms in Nigeria and to determine the extent to which the theory holds in the country. A sample of 25 non-financial firms listed on the Nigerian Stock Market for a period of 15 years (2006-2020). The Vector Error Correction Model (VECM) was employed for the analysis of the three models stated in the study. The empirical results showed that the signaling theory does not hold under the cash flow (CFL) model. It was not effective enough in providing the needed positive signals to convince investors about its future prospect given the negative sign of previous LEV results. Under the leverage model, signaling theory does not also hold in Nigeria because the lagged values of cash flow (CFL) were negative and significant while those of dividend payment (DIVP) were positive but failed the 5 percent level of significance. With respect to the investment (INV) model, signaling theory does not hold in quoted firms in Nigeria because the lagged value of cash flow (CFL_{t-1}) and those of dividend payments ($DIVP_{t-1}$) failed the 5 percent level of significance. The study recommends that, since dividend payment in this study is not an effective tool for signaling, contrary to existing theories, management should therefore understand that in the Nigerian context, more attention should be focus on other factors such as cash flows and leverage which have proven to be better perfect substitutes for signaling theory than dividend payment.

Keywords: Signaling Theories, Non-Financial Firms, Dividend Payment Econometric, Statistical Methods

JEL Classification: G3, N6, C4.

1. Introduction

Financing decision which is a major function of managers is very key to sustaining the value of the firm at all times. Whatever decision that is taken by management speaks volume (signals) to outside investors and can be interpreted in any way. Signaling theory therefore is one of the capital structure theories that has direct relationship with asymmetric information and agency problems. The basis of the theory hinges on the fact that information are unevenly distributed between insiders and outsiders. Hence, Spence (1973) and Ross (1977) submitted that signaling theory helps managers to send credible signals to the capital market about the good performance of the firm, and also help to distinguish between high performing firms and poorly performing ones. However, Barclay and Smith (2005) opine that

financing decisions as it relates to signaling theory, “is mainly designed to convey managers’ confidence about the firm’s future prospects to investors as well as their financial independence”.

Signaling theory is often been used in relation to debt financing and dividend payments. Akorsu (2014) arguing along debt financing, believed that increases in the use of leverage by firm is an effective signaling device. This submission clearly aligned with the earlier view of Georges and Karima (2010) when they submitted that, “changes in dividend policy conveys relevant information about changes in future performance of the firm”. The reason being that, with higher level of information asymmetry, dividend changes convey better information which in turn significantly affect the overall market value

of the firm. Michaelyy, Rossiz and Weberx (2018) also argue along this line say that, “signaling theory clearly explains firms' payout policies on the condition that its signals is the second moment of expected cash flows and not the first”.

We also know that Nigerian investors do not invest or make financing decisions in isolation rather, they also look out for credible signals from potential firms that would attract them to invest in them in order to have better returns on their investment. Two of these signals they often seek for are debt and dividend signals. With respect to dividend signals, the very moment a firm announces increase in its dividend payout, while investors are more likely to see it as a positive omen for the firm in the future, because to them firms that pay higher dividends are more profitable; financial analysts may be very skeptical about it because, to them it is a clear sign that the firm has run out of projects or ideas that will provide above average returns (GraduateTutor.com, 2019). Hence, paying regular dividend is seen as “window dressing” and a way to cover up for management inefficiency.

Although several studies such as Munyua, et al (2012), Vieira (2009), Manakyan and Carroll (1990), Harada and Nguyen (2005), Naveed, Ishfaq and Zulfqar (2010) and, Isidro and Marques (2016) have been carried out in this area in other parts of the world, to the best of the researchers' knowledge, no study in this area has been done in Nigeria. This is one of the reasons for this current study. Also, most of the empirical studies reviewed were last conducted over a decade ago and this has created enormous gap in knowledge which needed to be filled. Therefore, this study intends to bridge this gap by employing more recent data of 25 non-financial firms listed on the Nigerian Stock Market as at December 31, 2018. This will in turn provides current empirical evidence of the prediction of signaling theory of firms in the Nigerian context.

Again, to the best of the researchers' knowledge, most of the previous studies were inconclusive. For instance, while those of Munyua, et al (2012), Ziad, Iaad and Hasan (2014), Isidro and Marques (2016), Manakyan and

Carroll (1990), Harada and Nguyen (2005) and, Naveed, Ishfaq&Zulfqar (2010) confirmed and supported the existence of a signaling theory; those of Bernhardt et al (2005), Vieira (2009) indicated the absence of signaling theory in France and U.S, but showed a weak support in Portugal and the UK. Therefore, given these conflicting findings, it is necessary to investigate this in Nigeria in order to know the extent to which quoted firms follow the predictions of signaling theory in the country.

The rest of the paper is structured such that section two deals with the review of literature and empirical literature, section three focuses on methodology and model specification, section four addresses data analysis and results and while conclusion and policy recommendations are contained in section five.

2. Literature Review

2.1 Signaling Theory

The signaling theory clearly advocates that all things being equal, firms will always use equity financing first, thereafter opt for debt only if they are unable to raise more equity on favourable terms. This occurs because the use of debt financing signals to investors that managers think that the future does not look good (Study.com, 2017). According to Investopedia (2018), “debt signaling is a financial theory that relates future performance of stock with current announcements made regarding its debt”. “Announcements made about a firm taking debt are typically seen as positive news as it can signal the firm's creditworthiness by raising capital for growth opportunities”.

The idea of signaling theory of capital structure is a fall out from the problem of information asymmetry between corporate managers and shareholders; it was first advocated by Spence (1973) and Ross (1977). According to them, “since corporate managers have privileged inside information, their choice of capital structure will always signal information to the market”. This is so because, theoretical, increase in debt usage is a positive sign that managers are not only confident about future earnings but also a commitment on their part to make future interest payments in order to avoid bankruptcy.

Hence, this action indirectly signals confidence to the investors that the company will have enough cash flows to service debt.

The implication of the signaling theory is that corporate managers will attempt to time equity issues based on the market's assessment of their shares. Thus, the empirical study of Smith (1986) demonstrates that a 3% average reduction of firms' share price whose new equity issues were announced. On the other hand, reasonable decline was observed in share price immediately debt issue was announced. Also, increases in debt were again found to be related with 14 percent increase in share price returns for debt for equity substitutions. Baker and Wurgler (2002) found that firm financing decisions is strongly influenced by past market values of shares; hence, "firm's capital structure is the cumulative result of managers' previous attempts to time the market". However, "those of Brounenet *al.* (2006) do not find any evidence to suggest that European managers signal their private information to influence capital structure".

Basically, there are two ways firms can raise funds to finance new investment opportunities: by debt or by equity. However, debt financing is usually preferred by management over raising new equities, because the cost of issuing new equities entails diluting ownership of the firm to new investors who get voting rights and a residual claim to profits and growth on one hand. On the other hand, it is always higher than debt (Hayes, 2020). The bottom-line issue is that, once a decision is reached by corporate managers to utilize debt, investors are made to believe that the firm is financially active and solid by trying to finance its investment opportunities at a lower cost compared to issuing new equities (Hayes, 2020). Therefore, "signaling theory suggests that debt/equity decisions of firms can serve as a reliable signal (positive or negative) for outside creditors/investors".

2.2 Signaling theory, Dividend Payout, Cash Flow, Investment Opportunities and Debt

The nexus between dividend payment and signaling theory of capital structure is strictly a fall out of two main market imperfections: information asymmetry and

agency conflicts between managers and shareholders. Payment of dividend is believed to have positive effect on overall market value of firm. According to Georges and Karima (2010), "signaling theory suggests that, in the presence of information asymmetry, changes in dividend policy signals vital information about changes in future performance of the firm". This is so because, with higher level of information asymmetry, dividend changes convey better information which in turn significantly affect the overall market value of the firm (Georges and Karima, 2010).

Michaelyy, Rossiz and Weberx (2018) argued that, "signaling theory clearly explains firms' payout policies on the condition that its signals are the second moment of expected cash flows, not the first". Some empirical studies such as Miller and Rock (1985), Venkatesh (1989), "Allen and Michaely (2003), and DeAngelo et al. (2009) have shown that dividend changes do carry signals but such signals only affect future cash flow volatility and not the level of future cash flows". For instance, where a firm announces its dividend policy when its cash flows are not yet realized, if the expected future cash flow variations are low, management would not be able to pay out higher dividend to shareholders. Thus, signaling is said to be very costly in a situation where a firm having difficulties in accessing funds from the capital market choses to pay dividend instead of committing such funds for investment opportunities. In these scenarios, investment opportunities become the alternative foregone (Miller & Rock, 1985; Michaelyy, Rossiz & Weberx, 2018).

The free cash flow theory is a consequence of the agency conflicts. According to this theory, since managers have access to much cash flows, they usually have the tendency of miss-using such cash for selfish interest or on projects with negative net present value (NPV) instead of paying such to shareholders as dividend. In this wise, Lang and Litzenberger (1989) argue that "changes in dividend payment is a consequence (signal) of misuse of cash flows by managers whose firms have low or no investment opportunities". Thus, theoretically, while negative relationship should exist between dividend

payments and investment opportunities, investment opportunities and dividends should be positively related with cash flows as well as the level of information asymmetry.

Also, firm's cash flows and debt affect each other simultaneously in that, debt is majorly used only when cash (retained earnings) is depleted. Testing relationship between cash flow and debt will help to validate the signaling theory (Barry et al., 2004). This invariably

means that any depletion in cash flows is a sign that firms will go for more debt, vice versa. Thus, management decision to employ debt to finance its investment opportunities directly or indirectly convey information (signals) to investors/creditors about their confidence on the future earning prospect of the firm.

2.4 Empirical Literature

The empirical literature for this study is presented on a table format below;

Table 1: Summarized Empirical Literature Table of Signaling Theory

S/N	Author/Year	Country	Methodology	Period of Study	Findings
1	Munyua, Pokhariyal, Muroki and Mwaura (2012).	Kenya	Panel Corrected Standard Error estimation	1998 to 2010	"Dividends are used as signals about future earnings prospects of the firm
2	Vieira (2009)	France, Portugal and U.K	Panel Data Analysis	1995 to 2007	Absence of signaling theory in France, but showed a weak support in Portugal and the UK
3	Tarek, Chong and Philip (2005)	Egypt	Extreme Bound Analysis	1998 to 2003	Macro factor and financial flexibility (firm-specific) factor have robust and significant signaling effects
4	Ziad, Iaad and Hasan (2014)	Jordanian	Pooled and Panel Data	1998 to 2009	Debt is used more than dividend for signals
5	Isidro and Marques (2016)	Portugal	Alternative performance measures (APMs)	2008 to 2012	The strength of APM signal increases with capital markets pressure; also the strength of the signal is positively related with the level of industry competition as well as for firms with good performance
6	Manakyan and Carroll (1990)	U.S	Granger Causality and nonparametric Test	1981 to 1988	Supports the existence of a signaling value function that dividend signals are associated with unanticipated changes in short-term earnings
7	Harada and Nguyen (2005)	Japan	logic model		Unexpected dividend increases appear to derive from overly optimistic managers whose signaling behavior adds more noise than information
8	Asquith and Mullins (1986)	U.S	Multiple Regression	1978 to 1984	Consistent with the view that financial decisions that affect equity cash flows are interpreted by outside investors as signals reflecting the inside management's appraisal of the firm's future cash flow
9	Brickley, (1983)	U.S	Regression	1975 to 1981	The results support the notion that

			Analysis		management uses the labeling of dividend increases to convey information to the market about the future potential of the firm
10	Mohamed (2010)	Kenya	simple linear regression	2000 to 2009	Dividend payout ratios positively correlate with future earnings of companies; hence, signaling theory holds
11	Bernhardt, Douglas and Robertson (2005)	U.S	Non-Parametric Tests	1962 to 1996	The empirical evidence does not support the signaling theory; because, information content in dividend is not positively related to the marginal cost of dividends in the manner implied by the dividend signaling theory
12	Iqbal and Habibur (1992)	U.S	Panel Data Analysis	1982 to 1990	Firms that pay lower dividend and do not use cost-reducing measures will likely experience a drop in future earnings; this is consistent with signaling theory
13	Rajiv and Arnold (1994)	U.S	E-GARCH	1962 to 1987	Confirmed signaling theory because dividend payments provide information that assist analysts and investors to appropriately value the firm
14	Mulwa (2006)	Kenya	Regression Analysis	1998 to 2002	Confirmed signaling efficiency of dividend changes on the future profitability of listed firms
15	Kiptoo (2006)	Kenya	Regression Analysis	1998 to 2004	Signaling theory hold because, cash dividend payment do affect the share prices and earnings of quoted firms
16	Naveed, Ishfaq and Zulfqar (2010)	Pakistan	Panel Data Analysis		Signaling theory holds since insurance firms profitability signals to creditors that they are able to redeem their debt obligations when due".

Source: Author's Computations 2020.

3. Methodology

The Vector Error Correction Model (VECM) technique is employed for the empirical analysis of the specified relationships in the models (the VAR and VECM models). "The foremost advantage of VECM is that it has nice interpretation with long term and short term equations. In practice one needs to determine the number of cointegrating relationships; and when that number is determined, certain coefficients of VAR model are restricted". Three processes are involved in this technique; unit root testing, cointegration analysis, the Vector Error Correction Modelling (VECM). This became necessary in order to avoid the incidence of spurious regression estimates.

The longitudinal survey (ex-post facto) research design was employed in this study. "It entails the use of historical data to gain knowledge about some phenomenon over a period of time, as well as quantitative, statistical or regression techniques in evaluating the research issues or problems". The population of the study consists of the 113 firms, from which a sample size of 25 non-financial firms were randomly selected on the bases of those firms that must have fulfilled their obligation of publishing annual reports for the year ended 31st December 2020.

3.1 Theoretical Foundation and Model Specification

The theoretical framework for this study hinges on the signaling theory developed by Spence (1973) and Ross (1977) due to the problems of hidden information between managers and investors. According to the theory, good firms can distinguish themselves from bad firms by sending sound or credible signals about their quality to the capital markets. According to Barclay and Smith (2005), “signaling theory is premised on the idea that managers have better information than investors; hence, it assumes that corporate financing decisions are designed primarily to communicate managers’ confidence in the firm’s prospects and in cases where management thinks the firm is undervalued, to increase the value of the shares”. Signal can be sent by adopting a

$$\Delta CFL_t = \beta_0 + \beta_1 \Delta CFL_{t-1} + \beta_2 \Delta LEV_{t-1} + \beta_3 \Delta INV_{t-1} + \beta_4 \Delta DIVP_{t-1} + \delta ECM_{t-1} + u_{it} \dots \dots \dots 1$$

$$\Delta LEV_t = \beta_0 + \beta_1 \Delta CFL_{t-1} + \beta_2 \Delta LEV_{t-1} + \beta_3 \Delta INV_{t-1} + \beta_4 \Delta DIVP_{t-1} + \delta ECM_{t-1} + u_{it} \dots \dots \dots 2$$

$$\Delta INV_t = \beta_0 + \beta_1 \Delta CFL_{t-1} + \beta_2 \Delta LEV_{t-1} + \beta_3 \Delta INV_{t-1} + \beta_4 \Delta DIVP_{t-1} + \delta ECM_{t-1} + u_{it} \dots \dots \dots 3$$

$$\Delta DIVP_t = \beta_0 + \beta_1 \Delta CFL_{t-1} + \beta_2 \Delta LEV_{t-1} + \beta_3 \Delta INV_{t-1} + \beta_4 \Delta DIVP_{t-1} + \delta ECM_{t-1} + u_{it} \dots \dots \dots 4$$

Where:

CFL = Firms Cash Flow

LEV = Firms Leverage

INV = Investment Opportunities

DIVP = Dividend Payout

Uit = The Error term

Also, β_{i0} is the coefficient of autonomous variables, ECM is error correction mechanism, δ is the coefficient of ECM.

Theoretically, the expected signs of the vector coefficients from the VECM are expected to be:

For Signaling Theory: $\beta_2, \beta_3 > 0$; $\beta_1, \beta_4 > 0$; $\beta_1, \beta_4 > 0$

financial policy with respect to cash flow, leverage, investment and dividend policy.

Now, flowing from the above theoretical framework, the ordering of the VECM model is based on the rationalization that cash flow, leverage and investment variables are taken as exogenously determined in the model and that dividend payout (the pass through variable) responds to cash flow, leverage and investment with a lag.

The VECM is therefore specified in its general empirical form as:

4. Data Analysis and Interpretation of Results

In this section, specific methods of data analysis for the estimation of signaling theory in quoted firms in Nigeria employed. These include Panel Unit Root Test, Panel Pedroni Residual Cointegration Test and the Vector Error Correction Model (VCEM).

4.1 Unit Root Testing

According to Gordon (1995), “a time series is stated as non-stationary if mean and variance of the time series is dependent over time, and the series is also stated as stationary if the mean and variance is constant over time”. The Im, Pesaran and Shin W-stat, ADF - Fisher Chi-square, PP - Fisher Chi-square tests were employed in order to analyze the panel unit roots and hence, avoid spurious regression results. The results from table 4.1 indicate that “some of the three variables (Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square, PP-Fisher Chi-square tests) are non-stationary in levels while others do”.

Table 2: Panel Unit Root Test for Variables in Levels

Variable	Variable	T-Statistic	Prob.	Remark
CFL	“Im, Pesaran and Shin W-stat	-4.08092	0.0000	Stationary
	ADF - Fisher Chi-square	103.582	0.0000	Stationary

	PP - Fisher Chi-square	186.712	0.0000	Stationary
LEV	Im, Pesaran and Shin W-stat	-0.39782	0.3454	Non-stationary
	ADF - Fisher Chi-square	53.1896	0.3524	Non-stationary
	PP - Fisher Chi-square	96.9280	0.0001	Stationary
INV	Im, Pesaran and Shin W-stat	-1.56034	0.0593	Stationary
	ADF - Fisher Chi-square	65.9670	0.0645	Non-Stationary
	PP - Fisher Chi-square	134.591	0.0000	Stationary
DIVP	Im, Pesaran and Shin W-stat	1.24008	0.8925	Non-stationary
	ADF - Fisher Chi-square	49.2742	0.3436	Non-stationary
	PP - Fisher Chi-square	77.6029	0.0025	Stationary”

Source: Author's Computation 2020.

The result of the variables at first differences is reported in Table 2. The result indicates that the test statistic of all the variables (CFL, LEV, INV, DIVP) are significant at the 1 percent level (in absolute values). Thus, “the

variables are said to be stationary, which also implies that the variables are actually difference-stationary, attaining stationarity after the first differences of the variables are integrated of order one (i.e. $I[1]$ ”.

Table 3: Panel Unit Root Test for Variables at First Difference

Variable	Variable	T-Statistic	Prob.	Remark
CFL	“Im, Pesaran and Shin W-stat	-9.27891	0.0000	Stationary
	ADF - Fisher Chi-square	178.317	0.0000	Stationary
	PP - Fisher Chi-square	404.443	0.0000	Stationary
LEV	Im, Pesaran and Shin W-stat	-3.91224	0.0000	Stationary
	ADF - Fisher Chi-square	98.9090	0.0000	Stationary
	PP - Fisher Chi-square	232.951	0.0000	Stationary
INV	Im, Pesaran and Shin W-stat	-3.66507	0.0001	Stationary
	ADF - Fisher Chi-square	102.376	0.0000	Stationary
	PP - Fisher Chi-square	338.977	0.0000	Stationary
DIVP	Im, Pesaran and Shin W-stat	-5.12195	0.0000	Stationary
	ADF - Fisher Chi-square	118.183	0.0000	Stationary
	PP - Fisher Chi-square	240.032	0.0000	Stationary”

Source: Author's Computation 2020.

4.2 Cointegration Test

Accordingly, “the Pedroni Residual Cointegration Test method is used for this analysis because the study involves the use of panel data, and the results obtained also incorporate Phillips-Peron results and the Augmented Decay Fuller Results are presented in Table 3 below”.

From the table, the data series shows that the Test statistic results for Common AR Coefs. (Panel PP-Statistic and Panel ADF-Statistic) Within-Dimension are

significant at the 1 percent level; this indicates a cointegrating vector among the variables. Again, “the Individual AR Coefs. (Panel PP-Statistic and Panel ADF-Statistic) Between-Dimension are also significant at the 1 percent level”. This also suggests at least two cointegrating vector. Therefore, the hypothesis of no cointegration among the variables is rejected. The results show that a long run relationship actually exists among the variables used in the study. Based on this, the use of an error correction analysis method is appropriate in the analysis. It is on this basis that the Vector Error Correction Mechanism (VECM) approach is employed.

Table 4: Pedroni Residual Cointegration Test Results.

“Alternative hypothesis: common AR coeffs. (within-dimension)			Alternative hypothesis: individual AR coeffs. (between-dimension)		
Variable	Test Statistic	Prob.	Variable	Test Statistic	Prob.
Panel v-Statistic	0.597260	0.2752	--	--	--
Panel rho-Statistic	-1.152505	0.1246	Group rho-Statistic	2.268378	0.9883
Panel PP-Statistic	-13.82299	0.0000**	Group PP-Statistic	-14.54127	0.0000**
Panel ADF-Statistic	-3.629758	0.0001**	Group ADF-Statistic	-5.298651	0.0000***

** denotes rejection of the hypothesis at 1%, and also denotes 1% significance level.

Source: Author's computations 2020

4.3 The Vector Error Correction Model (VECM) Estimates for Signaling Theory

The result of the VECM estimates is shown in Table 5 the goodness of fit with respect to cash flow model is good (with R squared value of 0.60) while those of leverage and investment models are weak (R squared values of 0.22 and 0.23 respectively). Even the adjusted R-squared values also followed the same pattern like those of the R squared values above (with high R squared

value and low adjusted R squared; implying that the LEV and INV models have weak predictive abilities. However, given that the data set used is a panel, the outcome of the adjusted R squared may not pose estimation threats to the results (Madalla, 1999; Woodridge, 2002). The F value of 39.76 easily passes the significance test at the 1 percent level and it indicates the impressive overall performance of the model.

Table 5: Short Run Dynamics based on the VECM

Error Correction:	D(CFL)	D(LEV)	D(INV)	D(DIVP)
Constant	132198.3	862179.5	2.058647	80927.88
D(CFL(-1))	-0.235181	-1.037924	1.89E-07	0.053204
	-2.67440*	-2.82185*	0.94942	2.14386*
D(CFL(-2))	-0.113029	-0.821730	1.11E-07	0.018033
	-1.77521	-3.08554*	0.77198	1.00360
D(LEV(-1))	-0.109043	0.078792	-7.49E-08	0.006151
	-6.53583*	1.12909	-1.97931	1.30640
D(LEV(-2))	-0.053922	-0.017516	-3.31E-08	-0.005120
	-3.21327*	-0.24955	-0.86968	-1.08122
D(INV(-1))	89571.94	-150881.8	-0.508061	10608.26
	2.87699*	-1.15864	-7.19596*	1.20737
D(INV(-2))	47772.71	-217750.7	-0.188552	205.0273
	1.64843	-1.79636	-2.86898*	0.02507

D(DIVP(-1))	-0.165131	0.965575	-1.52E-07	-0.463953
	-0.70129	0.98040	-0.28433	-6.98191*
D(DIVP(-2))	-0.371681	1.328721	-1.07E-06	-0.404080
	-1.53701	1.31367	-1.94992	-5.92113*
CointEq1	-0.930 (-8.58)*	2.581 (5.69)*	-2.55 (-1.04)	-0.040 (-1.32)
R-squared	0.602	0.218	0.234	0.243
Adj. R-squared	0.587	0.188	0.206	0.215
F-statistic	39.76	7.291	8.047	8.444

Source: Author's Computation 2020.

In Table 5 we present the results for signaling theory in quoted firms in Nigeria using the VECM estimates. First, from the cash flow (CFL) model, the first lagged and the second lagged values of leverage (-6.53583* and -3.21327*) have significant negative relationship with cash flow (CFL); but the first lagged value of investment (INV) (2.87699*) has significant positive relationship with cash flow (CFL). Thus, the CFL model results do not seem to fulfill the necessary condition for signaling theory (which holds that both lagged values of LEV and INV should be positive related with CFL). The result is mixed in that, while previous LEV (debt) provides negative signals about the firm's financial credibility to investors and creditors, previous INV provides positive signals about the firm's financial credibility to creditors. The negative sign of LEV is an indication that the firm is a highly levered firm which has not been able to recover or settle previous debt owners. Hence, we conclude that firm's cash flow (CFL) model is not effective enough in providing the needed positive signals to convince investors about its future prospect given the negative sign of previous LEV results. Thus, this finding refutes the submission of Zhao, Katchova and Barry (2004) and Akorsu (2014) on the existence of signaling theory in their studies.

Most often, firms use cash flow and dividend payment as positive signals to convince investors and creditors that they are doing well and also have what it takes to pay any amount of cash loaned to them. Thus, under the leverage (LEV) model, it is expected that previous cash flow (CFL_{t-1}) and previous dividend payments ($DIVP_{t-1}$)

should be positively related with leverage (LEV). However, the result obtained from the LEV model indicate that the first and second lagged values of cash flow (CFL) are negative and significantly impact LEV (-2.82185* -3.08554*); however, the lagged value of dividend payment (DIVP) though positively signed, failed the 5 percent significance level (0.98040). This suggest that cash flow and dividend payment do not provide the necessary positive signals that would effectively convince creditors and investors about the ability of the firms to service their debt obligations. Though the dividend portion is positive but was not sufficient to convince the firms' creditors since it failed the 5 percent significance level. Hence, signaling theory does not hold with respect to leverage model in Nigeria. This finding agree with those of Chen, Firth and Gao (2002), Abeyratna and Power (2002) and Vieira (2009) who could not confirm dividend signaling hypothesis and cash flows model. It however disagree in part with respect to cash flow/free cash flow in the findings of Tarek, Chong and Philip (2005) and Ziad, Iaad and Hasan (2014) that dividend payout and debt free cash flow are not effective instruments for mitigating agency costs as it relates to signaling theory.

Again, looking at the investment (INV) model, it is seen that the lagged value of cash flow (CFL_{t-1}) and those of dividend payments ($DIVP_{t-1}$) failed the 5 percent level of significance. More specifically, though cash flow is positively related with INV but is not strong enough to convince investors and creditors about the viability of the investment to provide sufficient funds to guarantee future

dividend payments. The negative sign of dividend payment in relation to INV is an indication of the inability of the firm to pay dividend to its shareholders. It goes further to show that if the firm could not pay dividend, it means its investments are not profitable hence, weak cash flow (CFL). These results suggest that signaling theory does not hold in quoted firms in Nigeria. This finding does not agree with those of Bhattacharaya (1979), “Myers (1987) who contends that the combination of agency, and signaling theory should better explain dividend policy than any other theory alone”. It also does not align with those of Gurgul, Madjosz and Mestel (2003), Yilmaz and Gulay (2006), Munyua, Pokhariyal and Muroki, Mwaura (2012) who provided evidences that dividends are employed to convey information concerning future earnings expectations of the firm. However, “the finding however agrees with those of Lang and Litzenberger (1989), Benartzi, Michaely and Thaler (1997), Chen, Firth and Gao (2002), Abeyratna and Power (2002) and Vieira (2009) where dividend signaling hypothesis did not give support for a positive relationship between dividend change announcements and share returns and investment”.

5. Conclusion and Recommendations

The relevance of signaling theory of capital structure cannot be under estimated due to the fact that firms often embark on capital projects on a continuous basis, which off course requires huge sums of money that are not usually available to them. Hence, they either end up using internal sources fund through equity or external sources such as debt financing. However, when a firm uses debt to finance an investment, certain vital information (signals) which are either positive or negative are passed to the investing public on the managers' view about the future prospects of the firm. Given this scenario, this study embarked on testing the signaling theory in quoted firms in Nigeria in order to determine the extent to which the theory holds in the country. To this end, a sample size of 25 firms was randomly selected from the 113 non-financial firms listed on the Nigerian Stock Market for the period 2006 to 2020. The Vector Error Correction Model (VECM) was employed for the analysis of the three models stated in the study. The empirical results

showed that the signaling theory does not hold under the cash flow (CFL) model. It was not effective enough in providing the needed positive signals to convince investors about its future prospect given the negative sign of previous LEV results. Under the leverage model, signaling theory does not also hold in Nigeria because the lagged values of cash flow (CFL) were negative and significant while those of dividend payment (DIVP) were positive but failed the 5 percent level of significance. Theoretically, both cash flow and dividend payment were expected to be positively related with leverage for the signaling theory to hold. With respect to the investment (INV) model, signaling theory does not hold in quoted firms in Nigeria because the lagged value of cash flow (CFL_{t-1}) and those of dividend payments ($DIVP_{t-1}$) failed the 5 percent level of significance.

Flowing from the findings of this study, the following recommendations are made for policy guidance:

Firstly, since dividend payment in this study is not an effective tool for signaling, contrary to existing theories that say that dividend payments carry important information content which are used as signals and therefore, “alternative methods of signaling are not perfect substitutes”; management should therefore understand that in the Nigerian context, more attention should be focus on other factors such as cash flows and leverage which have proven to be better perfect substitutes for signaling theory than dividend payment.

Secondly, the level of debt employment by firms in Nigeria should be minimized and properly monitored by management so that it will not begin to have adverse effect on the future prospect of the firms. This became necessary because the results from the cash flow model clearly showed that leverage was negatively signed, an indication that the firms are highly levered and are not able to recover or settle previous debt owners, let alone to prosecute new investment opportunities. This negative sign is a bad omen for the firms as well as the management.

Finally, if debt financing are properly managed, it can be effectively used as signals to facilitate financing in order

to attract lenders who prefer to issue loans to firms with credible track record of loans' repayment. Hence, appropriate policy decision that will assist management in proper debt management decision should be vigorously pursued.

Limitations

One of the limitations of this study is the sample size. A sample size of 25 non-financial firms were randomly selected on the bases of those firms whose stocks have been very active consistently over a period of time at the stock market; coupled with those firm that must have fulfilled their obligation of publishing annual reports for the year ended 31st December 2018. The sample size might not be representative enough given a population of 113 non-financial firms listed on the stock exchange.

References

- Abeyratna, G., & Power, D. M. (2002). The post-announcement performance of dividend-changing companies: the dividend-signaling hypothesis revisited. *Accounting and Finance* 42, 131-151.
- Allen, F., & Michaely, R. (2003). Payout policy. *Handbook of the Economics of Finance* 1, 337-429.
- Asquith, P., & Mullins, D.W. (1986). Signaling with dividends, stock repurchases, and equity issues. *Financial Management*, 15(3), 27-44.
- Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *Journal of Finance*, 57(1), 1-32.
- Benartzi, S., Michaely, R., & Thaler, R. (1997). Do changes in dividends signal the future or the past? *The Journal of Finance*, 52 (3), 1007-1034.
- Bernhardt, D., Douglas, A., & Robertson, F. (2005). Testing dividend signaling models. *Journal of Empirical Finance*, 12(1), 77-98.
- Bhattacharya, S. (1979). Imperfect information, dividend policy, and the bird in the hand fallacy. *Bell Journal of Economics*, 10, 259-270.
- Brickley, J.A. (1983). Shareholder wealth, information signaling and the specially designated dividend: An empirical study. *Journal of Financial Economics*, 12(2), 187-209.
- Brounen, D., Jong, A., & Koedijk, K. (2006). Capital structure policies in Europe: Survey evidence. *Journal of Banking and Finance*, 30, 1409-1442.
- Chen, G., Firth, M., & Gao, N. (2002). The information content of concurrently announced earnings, cash dividends, and stock dividends: an investigation of the Chinese stock market. *Journal of International Financial Management & Accounting*, 13(2), 101-124.
- DeAngelo, H., DeAngelo, L., & Skinner, D. J. (2009). Corporate payout policy. *Foundations and Trends in Finance*, 3(2/3), 95-287.
- Georges, D., & Karima, O. (2010). *Corporate risk management and dividend signaling theory*. HEC Montréal, 1-15.
- GraduateTutor.com (2019). *Signaling in Corporate Finance: What is Tesla really saying?* Retrieved on 01/12/2020 from <https://graduatetutor.com/corporate-finance-tutoring>.
- Gurgul, H., Madjosz, P., & Mestel, R. (2003). GARCH modelling of Austrian stock market reactions on dividend announcements, *Working Paper, VII Ogólnopolskie Seminarium Naukowe*, 1-17.
- Hayes, A. (2020). Debt Signaling. *Investing Portfolio Management*, 1-5.

Recommendations for Future Research

Since a sample size of 25 non-financial firms out of the 113 non-financial firms listed on the Nigerian Stock Exchange were used in this study, we suggest that a further studies should be carried out where the sample size will be increased beyond 25 firms or possibly employed all the 113 firms.

Also, in terms of method of analysis, we also suggest that a different method of analysis outside the one used in this study (VECM) should be employed in this regard. To this end, we suggest the General Method of Moment (GMM) and the fully modified OLS should be engaged.

- Iqbal, Z., & Habibur, R.M. (1992). An investigation of earnings anomaly following dividend cuts and omissions. *Journal of Banking and Finance*, 2(2), 1-15.
- Isidro, H., & Marques, A. (2016). *Signaling Financial Performance with Alternative Performance Measures*, 1-34.
- Lang, L.H.P., & Litzenberger, R.H. (1989). Dividend announcements: cash flow signaling versus free cash flow hypothesis. *Journal of Financial Economics*, 24(1), 181-191.
- Manakyan, H., & Carroll, C. (1990) (2004). An empirical examination of the existence of a signaling value function for dividends. *Journal of Financial Research*, 13(3), 201-210.
- Michaelyy, R., Rossiz, S., & Weberx, M. (2018). *The Information Content of Dividends: Safer Profits, Not Higher Profits*, 1-86.
- Miller, M. H., & Rock, K. (1985). Dividend policy under asymmetric information. *Journal of Finance*, 40(4), 1031-1051.
- Mohamed, A. A. (2010). *Signaling Effect of Dividend Payment on the Earnings of the Firm: Evidence from the Nairobi Stock Exchange*. A Management Research Project Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Business Administration, School of Business University Of Nairobi, 1-53.
- Munyua, K., Pokhariyal, G.P., Muroki F., & Mwaura, M.F. (2012). The signaling hypothesis: evidence from the Nairobi securities exchange. *Journal of Business Studies Quarterly*, 3(4), 105-118.
- Myers, C. (1987). *Comments on "The Informational Content of Dividends"*, in *Macroeconomics: Essays in honor of Franco Modigliani*, John Bosons, Rudiger Dornbusch, and Stanley Fischer, eds., Cambridge, Massachusetts: MIT Press.
- Naveed, A., Ishfaq, A. & Zulfqar, A. (2010). Determinants of capital structure: A case of life insurance sector of Pakistan, *European Journal of Economics, Finance and Administrative Science* 24, 7-11.
- Rajiv, S. & Arnold, C. (1994). Do dividends signal earnings? The case of omitted dividends. *Journal of Finance and Banking*, 1(2), 16-28.
- Ross, S. A. (1977). The determination of financial structure: The incentive-signaling approach. *The Bell Journal of Economics*, 8(1), 23-40.
- Smith, C. (1986). Investment banking and the capital acquisition process. *Journal of Financial Economics*, 15, 3-29.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374.
- Study.com (2017). What is signaling theory of capital structure? 1-4.
- Tarek, I. E., Chong, J. C., & Philip, C. (2005). Testing Debt signaling hypothesis for making investment decisions in transitional market: evidence from Egypt. *Investment Management and Financial Innovations*, 4, 1-19.
- Venkatesh, P. (1989). The impact of dividend initiation on the information content of earnings announcements and return volatility. *Journal of Business*, 62(2), 175-197.
- Yilmaz, M. K., & Gulay, G. (2006). Dividend policies and price-volume reactions to cash dividends on the stock market: evidence from the Istanbul stock exchange. *Emerging Markets, Finance & Trade*, 42(4), 19-49.
- Ziad, Z., Iaad I. M. S., & Hasan, A. (2014). Empirical investigation of free cash flow hypothesis: evidence from Jordanian capital market. *International Business Research*, 7(3), 137-150.