

TESTING THE PECKING ORDER AND SIGNALLING THEORIES OF QUOTED NON-FINANCIAL FIRMS IN SOUTH AFRICA

MONDAY OSAYANDE

Michael and Cecilia Ibru University, Agbarha-Otor, Nigeria
osayandemonday26@gmail.com

AKUNOMA ONOME OMENA

Federal Polytechnic, Orogun, Nigeria
akunomaonome@gmail.com

BENEDICTA O. OROBATOR

University of Benin, Nigeria
benedicta.orobator@uniben.edu

Abstract

The purpose of the research was to examine pecking order and signaling theories from three angles: investment, cash flow, and leverage, for non-financial enterprises in South Africa. Specifically, the research ascertained, if non-financial firms in South Africa followed pecking order and signaling theories with respect to making financial decision.

As a result of the nature of research, secondary data ranging from 2010-2021 were applied, and population of the study consists of all non-financial enterprises registered on South African Stock Exchange. During the time of the study, there were total of 176 firms; however, due to statistical screening, only 156 businesses were included in the final sample. In addition to descriptive and correlative analysis, data were analyzed using Generalized Least Square (GLS) estimator.

According to Myers (1984), a negative sign for delayed leverage suggests that enterprises should maintain lower current debt level in order to accrue financing capacity for future investments. In contrast, the results of this investigation shown that, non-financial enterprises do not necessarily carry less leverage in anticipation of financial requirement of future investment needs, since lag of leverage had positive sign. Both cash flow and revenue variables revealed negative coefficients, disproving signaling hypothesis. The signaling theory was validated in cash flow equation, and the signaling effect and the pecking order effect were confirmed in leverage equation. The findings provided sufficient evidence to support inferences that pecking order and signaling theories hold true for non-financial enterprises, and that information released has value in the market. However, the signaling theory seems to be more widely accepted in the contexts we've looked at. The

study recommends that; managers of non-finance firms should utilize their assets appropriately for provision of sufficient internal funds (retained earnings) for their businesses rather than equity.

Keywords: Signaling Theory; Pecking Order Theory; Non-Financial Companies; Financing Decision

JEL Classification: G3, N6, C4

1. INTRODUCTION

For many years, financial policy decisions have been grounded in the pecking order and signalling theory, two of the cornerstones of finance study. According to Kalui (2017), the method of firms' financing on whether to use debt or other means to finance it investment, can best be determine by adopting pecking order theory, as well as market timing theory. Kalash (2019) & Nguyen, et al. (2019) observed that, one of the effective ways to guarantee efficient operationalization of business, is to follow a sound capital structure decision, which is capable of promoting firms' performance.

Myers (1984) claims that the pecking order theory is one of the most important theories of corporate leverage because, due to adverse selection, information asymmetry, and moral hazard, corporations prefer to raise capital from within rather than from outside investors. Due to the lower information costs associated with debt offerings and the inability of debt to dilute the control of equity capital, corporations will choose debt when external funds are required rather than equity. But according to the signaling theory, advanced by Barclay & Smith (2005), managers' financing decisions are made primarily to demonstrate their financial autonomy and confidence in the firm's future prospects to external investors. Although there has been relatively little research done on the theories, there is abundant evidence from industrialized economies that this is an important topic. Both the signaling and pecking order theories (Barclay & Smith, 2005) are concerned with the link between a company's debt structure and cash flow when faced with asymmetric information, moral hazard, and adverse selection.

Cash flow and debt structure are said to have a positive link in the signaling theory but a negative one in the pecking order, as stated by Barry et al. (2004). Ravid & Sarig (1991), adopting a signaling theory stance, argue that, through a mix of dividends and loan capital, firms can best convey their financial autonomy. Based on their findings, highly leveraged companies that perform well financially will have a greater dividend yield than their lower-leveraged counterparts. Financial institutions and lenders suffer from adverse selection with regards to investment prospects, as suggested by the signaling theory (Ravid & Sarig, 1991). This study seeks to investigate, if pecking order and signaling theory hold in listed non-financial firms in South Africa.

In terms of empirical models of corporate leverage, the pecking order is presented as a realistic description of the hierarchy. To sum up, the intertemporal relationship between investment and lagged cash, cash flow and lagged leverage, and vice versa exemplifies the signaling implications of pecking order theory, while also embodying the theoretical impart of the pecking order theory. In terms of econometrics, the fact that pecking order theory views the finance deficit as exogenous is a major problem. To verify the pecking order hypothesis, we must examine the immediate connection between cash flow and leverage (Myers, 1984). Meanwhile, the signaling theory (Myers, 1984) would be supported by the dynamic interplay between prior investment, leverage, and future cash flow. According to the signaling theory, businesses can attract lenders' backing by highlighting their track record of profitable cash flow and high levels of historical leverage. Myers (2001) verifies that the majority of organizations' external financing comes from debt, making debt transactions and negotiations where the pecking order theory is most applicable. The pecking order theory states that negative selection costs influence financing behavior.

Based on the above, it is important to clarify that, studies that have tested for pecking order theory, as well as signaling theory for non-financial firms in South Africa are few. There is need for more empirical literature in this direction. For instance, Yulianto, et al. (2023); Anwuli, et al. (2022); Anwuli, et al. (2024); Joel & Evbayiro-Osagie (2020); & Ose et al. (2023) empirically researched on Pecking Order Theory (POT) and signaling theory in Nigeria. While Yuldirim & Celik (2019) & Rahman (2019) investigated Turkey and Bangladesh, respectively. This research set out to econometrically examine the hypotheses of both the pecking order theory and the signaling theory, to determine whether or not non-financial enterprises listed on the South African Stock Exchange adhere to these tenets.

The rest of this paper was organized as follows. In the second section, we describe the literature review and the empirical hypothesis that stems from it. In Section 3, the literature review was presented, and in Section 4, the research methods were described. In section 5, the data and analysis were provided, and in section 6, the conclusions and suggestions were made.

2. LITERATURE REVIEW

The effects of pecking order and signaling theory in Nigeria was empirically examined by Anwuli, et al. (2022), using system Generalized Method of Moments (GMM). The scope of the study spans from 2010-2019, and the finding revealed evidence of pecking order, and absence of signaling theory in non-financial firms in Nigeria.

Joel & Evbayiro-Osagie (2020) looked at pecking order and signaling theory of Nigerian non-financial firms, adopting panel dynamic least square.

Secondary sources of data were employed, ranging from 2006-2018. The empirical results shown that, when it comes to financing decision in Nigeria, non-financial firms do observe pecking order and signaling theory.

Testing the validating of the pecking order of capital structure of deposit Money Banks in Nigeria was undertaken by Ose, et al. (2023), using secondary data between 2010 -2019. The researchers adopted system GMM, and the study found that, financing decision of DMBs in Nigeria followed pecking order.

In their study, Zhao, et al. (2004) put the pecking order and signaling theories to the test in the context of agricultural enterprises. The empirical study relied on information from the Illinois Farm Business Farm Management (FBFM) system, specifically on certified annual balance sheets from farms in the state from 1995 to 2002. Farms in the study's sample have all been open for business for at least two years. There are 1,419 eligible farms. The findings provide weight to the pecking order theory and the signaling theory, as viable frameworks for understanding the dynamics of agricultural companies.

Yulianto, et al. (2023) employed ordinary least square (OLS) regression to examined signaling or pecking order theory from quoted energy and mining sector in Indonesian Stock Exchange, from 2007-2022. The finding revealed that, the companies adopted the financing order, when sales decline more than signaling mechanism.

Wanja & Muriu (2020) used dataset of thirty-seven firms to ascertain the relationship between pecking order theory and Kenyan listed firms. The study adopted secondary data from Nairobi Securities Exchange, from 2011-2016, using panel regression model. The results found strong evidence of POT among Kenyan firms.

Rahmah (2019) investigated trade-off and pecking order theory of capital structure of banks in Bangladesh, with the help of advanced panel data model. The scope of the study covered between 2009-2013, and the finding showed that, banks' variables depict evidence of trade-off and pecking order theory.

Yildirim & Celik (2019) used a sample of nineteen Turkey listed manufacturing firms between 2000-2018 to find evidence of similar results in an empirical analysis. Panel quantile regression approach was employed. The empirical finding revealed smaller firms complied with pecking order, while large firms do not adhere to it.

Mabrouk & Boubaker (2019) evaluated the pecking order theory and life cycle of French firms, from 2005-2014, adopting panel data model. The empirical results showed that French firms followed pecking order theory.

Murray & Vidhan (2002) examined a large sample of publicly traded American companies from 1971 to 1998 in order to evaluate the pecking order

theory of corporate firms. In contrast to the pecking order hypothesis, net equity issues correlate positively with the funding gap, whereas net debt issues correlate negatively. The evidence for pecking order behavior among large enterprises was weak, and cannot withstand the addition of traditional leverage factors or the examination of evidence from the 1990s. Over time, the size of a company has less of an impact on the significance of the financing gap in explaining net debt difficulties.

Testing the validity of Pecking Order Theory (POT) of Nigerian capital structure of non-finance sector, Anwuli, et al. (2024) empirically used Error Correction Model (ECM) and co-integration technique to analyzed data spanning from 2010-2022 to establish relationship. The study found that Pecking Order Theory exists, specifically, during short-term debt (STD), STD to equity, and long-term debt (LTD) in Nigeria.

To put the pecking order and signaling theories for Ghanaian banks to the test, Akorsu (2014) performed a study. The insurance and banking industries in Ghana, as well as the National Insurance Commission database, provide the raw data for the empirical analysis. The study used data from 2005 to 2012, to guarantee that the number of years represented in the data was the same for both industries. Then, 26 banks were chosen using a purposive sample method. Based on the findings of this research, financial institutions in Ghana made extensive use of the pecking order theory and the signaling theory.

Chang, et al. (2013) empirically tested Pecking order theory's ability to describe capital structure. One of the most important tenets of corporate finance, the "pecking order" idea of capital structure, was emphasized. Thus, the pecking-order hypothesis allowed them to investigate the most crucial elements of a company's capital structure. The researchers conducted their analysis using hierarchical regression. In addition, they analyzed the factors that affected the debt-related choices of 305 Taiwanese electronic firms listed on the Taiwan Stock Exchange in 2009. The study's findings suggested that businesses would rather use cash flow from operations than borrow money to fund those operations. It would appear that large corporations use the tax benefits associated with debt financing.

Shyam-Sunder & Myers (1999) created an empirical model connecting financing shortfalls and net debt problems in an effort to concretize the pecking order theory. In the limitless debt scenario, the pecking order theory predicts that enterprises will issue as much debt as is necessary to cover their deficit, with the pecking order coefficient (po) equal to one and the intercept term (i) equal to zero. The scope of the research spans from 1971-1989, and the study found that, pecking order model was a good first-order description of corporate behavior.

Frank & Goyal (2003) investigated whether small businesses are less likely to issue equity than large ones. The study employed the regression method, and the

entire data set included more than 140,000 observations, spanning from 1971–1998. The empirical finding showed that, large organizations issued more equity than small ones to demonstrate pecking order behavior. They also discovered that as the size of the typical publicly traded company decreased over time, the pecking order model lost some of its explanatory power.

Based on the above, the null hypotheses for this study were specified below;

H₀₁: There is no evidence of pecking order effect for non-financial firms in South Africa

H₀₂: There is no evidence of signaling effect for non-financial firms in South Africa

3. THEORETICAL REVIEW

3.1 THE PECKING ORDER THEORY

Capital structure ideas such as "pecking order" are very important to how businesses use leverage. The model was first proposed by Myers-Majluf (1984) and considers the impact of enterprises' and capital markets' varying degrees of transparency when it comes to information asymmetries (regarding currently owned assets and investment opportunities). Myers-Majluf (1984) claims that companies prefer to spend their own money since it is cheaper than raising money from investors. When raising capital from outside sources, debt is typically issued rather than equity because of the lower information costs associated with debt offerings. Pecking order behavior is most pronounced in corporations that have low long-run dividend payment policies, which is consistent with later theories that were refined into testable predictions and proven by Vogt (1994).

3.2 THE SIGNALLING THEORY

When it comes to capital markets, a good company can set itself apart from a bad company, by sending a credible signal about its quality, a concept first explored by Akerlof (1970), and Arrow in the context of job and product markets, and later developed into signal equilibrium theory by Spence (1973). Only if the malicious firm is unable to send an identical signal as the good firm will the signal be taken seriously. A signal may be believable if it discourages the bad type from imitating the good firm by making imitation too expensive. Ross (1977) demonstrates how debt may be utilized as a prohibitively expensive indicator distinguishing good from poor enterprises. Given the information gap between management and investors, it is essential for businesses to send the right signals to attract funding. Therefore, high-quality enterprises would use greater debt as a signal of their future optimism, while low-quality firms would use less debt.

4. METHODOLOGY

The population of this study consists of all non-financial enterprises registered on the South African Stock Exchange, and the research approach is ex-post causal. The overall number of businesses throughout the study period was 176; after statistically filtering the data to remove those with incomplete records, a sample of 156 businesses was used. The scope of the study, which ranged from 2010 to 2021, was taken from the Machame-Ratios database. Data was analyzed using a combination of descriptive and correlative methods, as well as the Generalized Least Square (GLS) estimator.

Due to the pecking order theory's view of the finance deficit as exogenous, this is a crucial econometric issue that must be addressed in the model specification used to evaluate it against the signaling theory. It was crucial to ascertain the theories' veracity by investigating the nature of the relationships between the variables assumed to be true. Investments have an effect on cash flow and vice versa, and both are impacted by leverage. Companies will invest cash, then debt, and finally equity if they are presented with a promising investment opportunity. Because of this, assessing the immediate connection between cash flow and leverage supported the pecking order hypothesis. As enterprises might gain financial backing by signaling their past leverage and consequent positive cash flow record to lenders, the signaling theory would be supported by the dynamic interaction between the lag of investment, leverage, and future cash flow. Therefore, the study uses the revised models of Zhao et al (2004) to provide three models—the cash flow model, the investment model, and the leverage model—as a foundation upon which to test the hypotheses.

4.1 MODEL SPECIFICATION

The research set out to put hypotheses on the hierarchy and signaling behavior of publicly traded non-financial companies in South Africa. Below is a presentation of the estimated pecking order and signaling theory models;

PECKING ORDER MODEL

$$CFOA_{it} = \beta_0 + \beta_1 STDE_{it} + \beta_2 LTDE_{it} + \beta_3 DETE_{it} + \beta_4 FSIZ_{it} + \beta_5 FGR_{it} + \beta_6 FAGE_{it} + U_{it} \quad (1)$$

$$FCFA_{it} = \beta_0 + \beta_1 STDE_{it} + \beta_2 LTDE_{it} + \beta_3 DETE_{it} + \beta_4 FSIZ_{it} + \beta_5 FGR_{it} + \beta_6 FAGE_{it} + U_{it} \quad (2)$$

The condition under which pecking order theory holds are: The coefficient of short-term debt to equity ratio, long-term debt to equity ratio and total debt to equity ratio were expected to be negative (β_1 , β_2 , β_3). When it meets this condition, then we say that pecking order theory holds, but if it is otherwise, then we say that pecking order theory does not hold.

SIGNALLING THEORY MODEL

$$CFOA_{it} = \beta_0 + \Psi_1 STDE_{(t-1)it} + \Psi_2 LTDE_{(t-1)it} + \Psi_3 DETE_{(t-1)it} + \Psi_4 FSIZ_{it} + \Psi_5 FGR_{it} + \Psi_6 FAGE_{it} + U_{it} \text{ --- (3)}$$

$$CFOA_{it} = \beta_0 + \Psi_1 STDE_{(t-1)it} + \Psi_2 LTDE_{(t-1)it} + \Psi_3 DETE_{(t-1)it} + \Psi_4 FSIZ_{it} + \Psi_5 FGR_{it} + \Psi_6 FAGE_{it} + U_{it} \text{ --- (4)}$$

The condition under which signaling theory holds is that, the coefficient of lag of short-term debt to equity ratio (ψ_1) was expected to be positive and significant, the coefficient of long-term debt lag (ψ_2) lag should be positive and significant, and finally, the lag of total debt to equity ratio (ψ_3) lag was expected to be negative and significant.

Where:

- CFOA= Cash flow from Operations-Total asset ratio
- FCFA= Free cash flow to total asset ratio
- STDE= Short term debt to equity ratio
- LTDE= Long term debt-equity ratio
- DETE= Total debt-equity ratio
- FIRMG= firm growth
- FIRA= Firm age
- FSIZE= Firm size

5. PRESENTATION OF RESULTS

The respective tests carried out were descriptive statistic, Pearson correlation analysis, and Generalized Least Square.(GLS). We used descriptive statistic in order to summarize the statistical properties of data in a bid to presenting them in a convenient form. Correlation analysis was used to ascertain the magnitude and direction of relationship that exists between the dependent and independent variables.

Table 1: Descriptive Statistics

	Mean	Median	Max	Min	Std. Dev.	J-B	Prob	Obs
STDE	28.82325	25.5742	256.4058	-24.421	20.55587	18393.14	0.00	1247
LTDE	53.5625	25.1224	2251.181	-270.3746	140.1867	753841.2	0.00	1247
DETE	1.293311	0.8417	47.8556	-4.0974	2.323657	1730731	0.00	1247
CFOA	-4.541785	0.073	28.6005	-1869.224	74.87416	8531796	0.00	1247
FCFA	-454.8978	4.1757	2839.409	-186878.7	7487.203	8522950	0.00	1247

FIRMG	40.33888	9.2572	24578.61	-100	704.6765	72373019	0.00	1247
FIRA	37.93745	18	2016	1	169.7066	896237.9	0.00	1247
FSIZ	6.478397	6.5698	8.4967	3.0711	0.887396	36.5344	0.00	1247

Source: Author's Compilation, 2024)

For example, STDE had a mean of 28.82 and a standard deviation of 20.556, both of which can be seen in Table 1. LTDE ratio averaged 53.563% and varied by -140.19% from the mean. The average of DETE was 1.293 and the standard deviation was 2.324. The average CFOA score was -4.5418 and the SD was -0.073. Standard deviation for FCFA was 7487.2 and the mean was 454.897. Standard deviation for FIRMG was 704.67, with a mean of 40.33. The average FIRA score was 37.937 and the SD was 169.71. Standard deviation for FSIZE was 0.887, with a mean of 6.4784. All of the variables had Jacque Bera probabilities lower than 0.05, indicating that the distribution was most likely normal and free of outliers.

Table 2: Pearson Correlation Analysis

	STDE	LTDE	DETE	CFOA	FCFA	FIRMG	FIRA
STDE	1						
LTDE	-0.1499	1					
DETE	0.19179	0.22452	1				
CFOA	-0.0439	0.02226	0.008	1			
FCFA	-0.043	0.02213	0.0081	0.99995	1		
FIRMG	-0.0431	-0.0109	-0.018	0.00573	0.0056	1	
FIRA	-0.069	-0.0293	-0.037	0.01229	0.0123	-0.0043	1
FSIZ	-0.1025	0.1335	0.0337	0.2072	0.207	-0.0309	-0.053

Source: Author's Compilation, (2024)

The correlation statistics for the variables revealed that STDE was negatively correlated with CFOA ($r=-0.0439$) and CFOA ($r=-0.0439$). LTDE positively correlated with CFOA ($r=0.022$) and CFOA ($r=0.0221$). DETE was positively correlated with CFOA ($r=0.008$) and CFOA ($r=0.0081$). The strong correlation between CFOA and FCFA ($r=0.999$) was expected as both variables were cash flow variables, and formed the dependent variable for the study. The correlations between the independent variables were moderate, and hence do not indicate any potential for multicollinearity. For example, STDE and LTDE were negatively correlated (-0.1499), DETE and LTDE were positively correlated (0.225) and STDE and DETE were positively correlated ($r=0.19179$). The correlations were generally quite low, and thus do not indicate likely presence of multicollinearity.

Table 3: Pecking Test Regression Analysis

	Aprori sign	CFOA	FCFA
C		-4.2308* (0.1265) {0.000}	-380.93* (12.988) {0.000}
STDE		0.0005 (0.0006) {0.3992}	0.3848 (12.988) {0.000}
LTDE		-0.0001 (0.0001) {0.2639}	-0.0115 (0.0271) {0.6736}
DETE		-0.0032 (0.009) {0.7189}	-3.4655 (1.9226) {0.0717}
FIRMG		-3.91e06 (2.20e-06) {0.0759}	-0.0008 (0.0007) {0.1910}
FIRA		-1.98e-05 (1.66e-05) {0.2315}	-0.0248* (0.0020) {0.000}
FSIZ		-0.0484* (0.0207) {0.0197}	-12.1917* (2.3766) {0.000}
R ²		0.392	0.333
Adj R ²		0.300	0.233
F-statistic		4.287	3.321
Prob		0.000	0.000
D.W Stat		2.1	2.1
Model Diagnostics			
$\chi^2_{Hausman}$		0.000	0.011
χ^2_{Hetero}		0.546	0.536
$\chi^2_{Serial/Corr}$		0.443	0.592
χ^2_{Norm}		0.765	0.740
Ramsey Reset test		0.120	0.558

Source: Author's compilation, (2024), Note: () are standard errors; { } are p-values, * sig at 5%

Table 3 revealed the test for the pecking order and the condition under which it holds. For pecking order theory to hold, the coefficient of short-term debt to equity ratio (ψ_1), long-term debt to equity ratio (ψ_2) and total debt to equity ratio (ψ_3) were expected to be negative and significant. When it meets this condition, then we say that pecking order theory holds. The $\chi^2_{Hausman}$ p-value of 0.000 indicates that the fixed effects estimation is appropriate and hence, this was used in this study. From the results, CFOA was used as dependent variable, STDE was positive (0.0005, $p=0.3992$), but not significant at 5%. On the other hand, LTDE was negative (-0.0001, $p=0.2639$), though, not significant at 5%, and DETE was also negative (-0.0032, $p=0.7189$) but not significant at 5%. The diagnostics for

the estimation revealed the absence of serial correlation [$\chi^2_{\text{Serial/Corr}} = 0.443$] and confirmed that the errors exhibit homoscedastic properties [$\chi^2_{\text{Hetero}} = 0.546$]. The residual normality [$\chi^2_{\text{Norm}} = 0.765$] reveals that, the residuals were normally distributed.

Regressing the independent variables on FCFA, the χ^2_{Hausman} p-value of 0.011 indicates that, the fixed effects estimation is appropriate and hence, this was used in this study. The results show that STDE was positive (0.3848, p=0.3848) and significant at 5%. LTDE was negative (-0.0115, p=0.6736), though not significant at 5%, and DETE was also negative (-0.0032, p=0.0717), but not significant at 5%. The diagnostics for the estimation revealed the absence of serial correlation [$\chi^2_{\text{Serial/Corr}} = 0.592$] and confirmed that the errors exhibit homoscedastic properties [$\chi^2_{\text{Hetero}} = 0.536$]. The residual normality [$\chi^2_{\text{Norm}} = 0.740$] reveals that the residuals were normally distributed.

In conclusion, the results showed that the condition under which pecking order theory holds was not satisfied, as the coefficient of short-term debt to equity ratio, and long-term debt to equity ratio were not negative, except for total debt to equity ratio, which was negative in both the CFOA and FCFA estimations, but again, none of the variables turned up significant. Hence, the null hypothesis [H_{01}]: that there is no evidence of pecking order effect for non-financial firms in South Africa was accepted. Therefore, the study does not show evidence that, when outside (external) funds are necessary, firms will not opt for debt than equity, because of lower information costs associated with debt issues.

Table 4: Test of Signaling Theory Results

	Aprori sign	CFOA	FCFA
C		-4.8672* (0.0723) {0.000}	-429.157* (26.492) {0.000}
STDE _(t-1)		0.0004 (0.0008) {0.5993}	-0.1365 (0.1683) {0.4176}
LTDE _(t-1)		0.0003 (0.0002) {0.0577}	0.0685 (0.0526) {0.1930}
DETE _(t-1)		-0.0296* (0.0095) {0.0021}	-1.8362 (2.6344) {0.4860}
FIRMG		0.0002* (9.19e-05) {0.0817}	-0.0086 (0.0232) {0.7091}
FIRA		-4.45e-05* (3.11e-05) {0.1524}	-0.0177 (-0.0178) {0.0280}
FSIZ		-0.0309* (0.0132) {0.0188}	-12.0085* (4.2445) {0.0048}
R ²		0.425	0.350
Adj R ²		0.326	0.239

F-statistic		4.328	3.160
Prob		0.000	0.000
D.W Stat		2.2	2.2
Model Diagnostics			
<i>Hausman</i>		0.011	0.046
χ^2_{Hetero}		0.209	0.317
$\chi^2_{\text{Serial/Corr}}$		0.643	0.409
χ^2_{Norm}		0.454	0.5566
Ramsey-Reset		0.795	0.120
<i>Ramsey Reset test</i>		0.558	

Source: Author’s compilation, (2024), Note: () are standard errors; { } are p-values, * sig at 5%

The signaling theory's test and the conditions under which it holds are shown in Table 4. If the ratio of long-term debt to equity (2) is positive and significant, and if the ratio of short-term debt to equity (1) is positive and significant, and if the ratio of total debt to equity (3) is negative and significant, then the theory of signaling holds. The 2 Hausman p-value for this investigation was 0.011; hence, the fixed effects estimation was employed. Using CFOA as the dependent variable, we find that STDE(t-1) is positive (0.0004, p=0.5993), although this is not statistically significant at the 5% level. Positive LTDE(t-1) (0.0003, p=0.0577) was not statistically significant at the 5% level, but negative DETE(t-1) (-0.0296, p=0.0021) was. According to the diagnostics for the estimation, the errors are homoscedastic [2Hetero = 0.546] and there is no serial correlation [2Serial/Corr = 0.643]. 2Norm = 0.765 indicates that the residuals followed a normal distribution.

In addition, the 2 Hausman p-value of 0.046 when regressing the independent variables on FCFA warranted the adoption of the fixed effects estimation for this investigation. Despite failing to reach statistical significance at the 5% level, the results suggest that STDE(t-1) was negative (-0.1365, p=0.4176). Both LTDE(t-1) and DETE(t-1) were negative (0.0685, -1.8362, p=0.4860), although none was statistically significant at the 5% level. According to the diagnostics for the estimation, the errors are homoscedastic [2Hetero = 0.317] and there is no serial correlation [2Serial/Corr = 0.409]. The residuals were found to be normally distributed [2Norm =0.557].

Last but not least, the FCFA estimation results demonstrated that the condition under which signaling theory holds was not satisfied, as evidenced by the positive values for the coefficient of lag of short-term debt to equity ratio (1) and the coefficient of lag of long-term debt to equity ratio (2) and the negative value for the coefficient of lag of total debt to equity ratio (3). At the 5% level of significance, however, none of the factors stood out. The CFOA estimation results corroborated these findings, showing that, as predicted by theory, the STDE and LTDE coefficients were positive, but the DETE coefficient was negative and statistically significant only at the 5% level. Since the coefficients, though correctly signed, were not all significantly different from zero at the 5% level, we accept the

null hypothesis that there is no signaling effect on non-financial enterprises in South Africa.

5. CONCLUSION AND RECOMMENDATION

The purpose of the research was to examine the investment, cash flow, and leverage practices of publicly traded non-financial companies in South Africa against the pecking order and signaling theory. The population of this study consists of all non-financial enterprises registered on the South African Stock Exchange, and the research approach is ex-post causal. The overall number of businesses throughout the study period was 176; after statistically filtering the data to remove those with incomplete records, a sample of 156 businesses was used. The dataset spanned the years, 2010-2021, and was retrieved from the Machame-Ratios database. Data was analyzed using a combination of descriptive and correlative methods, as well as the Generalized Least Square (GLS) estimator. Although the total debt to equity ratio was negative in both the CFOA and FCFA estimations, none of the variables turned out to be significant, suggesting that the condition under which pecking order theory hold was not satisfied. Thus, there is sufficient proof that neither of the pecking order theories holds true for non-financial businesses in South Africa. In addition, the condition for the validity of the signaling theory was met, in that the coefficient of lag of the short-term debt to equity ratio (1) was positive, the coefficient of lag of the long-term debt to equity ratio (2) was negative, and the coefficient of lag of the total debt to equity ratio (3) was negative. In the end, the CFOA estimation showed that only the total debt-equity lag was statistically significant. Companies that send signals about the performance of their leverage structure are not likely to dramatically alter their cash flow structure, the study finds.

On the basis of the above finding, the study recommends that, non-finance firms in South Africa should increase its debt-equity, in order to improve its valuation, and maximize shareholders' wealth. Finally, managers of non-finance firms should utilize their assets appropriately for the provision of sufficient internal funds for their businesses.

REFERENCES

- Akalof, G.A. (1970). The market for 'lemon' Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 84(3),488-500.
- Akorsu, P.E. (2014). Testing the pecking order and signalling theories for financial institutions in Ghana. *Research Journal of Finance and Accounting*, 5(16), 2222-2847.
- Anwuli, N.G., Benjamin, M.M. & Emakpo, O.H. (2024). Testing the applicability of the pecking order theory of capital structure within non-finance sector in

- Nigeria. *International Journal of Innovative Finance and Economics Research*, 12(10),103-118.
- Anwuli, N.G., Oshobuye. F.B. & Nosa, O. (2022). Applicability of pecking order and signalling theories: Evidence from non-finance sector in Nigeria. *IOSR Journal of Economics and Finance*, 13(3),60-82.
- Backlay, M.J. & Smith, C.W. (2005). The capital structure puzzle: The evidence revisited. *Journal of Applied Corporate Finance*, 17(2), 8-17.
- Barry, P. J., Katchova, A. L. & Zhao, J. (2004). Testing the pecking order theory and the signalling theory for farm businesses. Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Denver, Colorado, July 1-4, 2004.
- Chang, J., Chen, L. & Chen, S. (2013). How the pecking order theory explains capital structure. *Journal of Business Management*. 4(2), 45-65.
- Chirinko, R., Singha, A., (2000). Testing static trade-off against pecking order models of capital structure: A critical comment. *Journal of Financial Economics*, 58(2), 417-425.
- Frank, M., Goyal, V., (2003). Testing the pecking order theory of capital structure. *Journal of Financial Economics*, 67(2), 217-248.
- Joel, O. & Evbayiro-Osagie, E. (2020). Testing the pecking order and signalling theories of non-financial firms in Nigeria. *Ilorin Journal of Finance*,4(1), 60-72.
- Kalash, I. (2019). Testing the pecking order model of corporate leverage: An empirical investigation of Turkish firms. *International Journal of Social Sciences and Education Research*, 5(1), 26-28.
- Kalui, F.M. (2017). The applicability of pecking order theory in Kenyan listed firms. *Research Journal of Finance and Accounting*, 8(22).159-166.
- Mabrouk, L. & Boubaker, A. (2019). The pecking order theory and life cycle: Evidence from French firms. *Corporate Ownership and Control*, 16(2), 12-29.
- Murray, Z.F. & Vidhan, G. (2002). Testing the pecking order theory of capital structure. *Journal of Financial Economics*, 67(2003), 217—248.
- Myers, S.C. & Majluf. N. (1984). Corporate financing and investment decisions when firms have information investors do not have. *Journal of Financial Economics*, 13(2) 187-222.
- Myers, S.C. (1984). The capital structure puzzle. *The Journal of Finance*, 39 (3), 575- 592.
- Myers, S.C (2001). Capital structure. *Journal of Economic Perspectives*, 15(1), 187-221.

- Nguyen, H.H., Ho, C.M. & Vo, D.H. (2019). An empirical test of capital structure theories for the Vietnamese listed firms. *Journal of Risk and Financial Management*, 12(148), 2-11.
- Ose, E.C., Aigbedo, O.O., & Andrew, U.O. (2023). Validating the pecking order theory in the Nigerian Deposit Money Banks. *African Development Finance Journal*, 5(1), 126- 146.
- Rahman, M.T. (2019). Testing trade-off and pecking order theories of capital structure: Evidence and augment. *International Journal of Economics and Financial Issues*, 9(5), 63-70.
- Ravid, S.A. & Sarig, O.H. (1991). Financial signalling by committing to cash outflows. *The Journal of Financial and Quantitative Analysis*, 26(2), 165-180.
- Ross, S.A. (1977). The determination of financial structure: the incentive-signalling approach. *Bell Journal of Economics*, 8 (3),23-40.
- Shyam-Sunder, L., & Myers, S., (1999). Testing static trade-off against pecking order models of capital structure. *Journal of Financial Economics*, 51(3), 219-244.
- Spence M. (1973). Job market signalling. *The Quarterly Journal of Economics*, 87(3), 355-374.
- Tarek I., Chong J. & Philip C. (2016). Testing debt signalling hypothesis for making investment decisions in transitional market: evidence from Egypt. Retrieved from www.ssrn.com
- Vogt, S.C. (1994). The role of internal financial sources in firm financing and investment decisions. *Review of Financial Economics*, 4(1),1-24.
- Wanja, D.M. & Muriu, P. (2020). Does pecking order theory holds among Kenyan firms? *Journal of Economics and Business*, 3(1), 3887-397.
- Yildirim, D. & Celik, A.K. (2019). Testing the pecking order theory of capital structure: Evidence from Turkey, using panel quantile regression approach. *Borsa Istanbul Review*, 21(4), 317-331.
- Yulianto, A., Widiyanto, & Witiastuti, R.S. (2023). Signalling or pecking order theory: An evidence from mining and energy sector. *International Journal of Professional Business Review*, 8(8),231-252.
- Zhao, J., Katchova, A. & Barry, P. (2004). Testing the pecking order theory and the signalling theory for farm businesses. Retrieved from www.ssrn.com.