“Target capital structure for managerial decision making: Dynamics and determinants”

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TARGET CAPITAL STRUCTURE FOR MANAGERIAL DECISION MAKING: DYNAMICS AND DETERMINANTS

Abstract

The study examines the dynamics and determinants of target capital structures among manufacturing firms listed on the Nigeria Stock Exchange during the period from 2012 to 2021. The study is motivated by the disparity in the Speed of Adjustment (SOA) to target leverage, which is influenced by firm-specific attributes largely dependent on macroeconomic indices. Therefore, understanding the determinants of SOA to target leverage is germane because no two macro-economic environments are the same. A longitudinal research design is used with a population of 75 manufacturing firms. The sample consists of 42 firms, drawn using a simple random technique. Secondary data is sourced from the annual report. Generalized Method of Moments is the estimation technique. The result shows that manufacturing firms adjust to a target capital structure with a high speed of 72%. This confirms the application of dynamic trade-off theory among listed manufacturing firms in Nigeria. Profitability, firm size, and asset tangibility are significant determinants of SOA to a target capital structure, confirming pecking order, agency, and static trade-off theories, respectively. Tax shelter and growth were not significant determinants. The study concludes that there is evidence of dynamic adjustment to the optimal capital structure of listed manufacturing firms in Nigeria. Governments and policymakers in firms should make effective policies that aid speedy access to long-term funds by these firms to increase their SOA to target capital structure.

Keywords target leverage, speed of adjustment, partial adjustment, growth

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INTRODUCTION

Dynamic trade-off theory, which is in contrast to static trade-off theory, suggests that firms' financial behavior is represented by a partial adjustment towards target leverage that maximizes their worth when there is deviation. Graham and Harvey (2001) posit that financial managers should pursue a target capital structure. The dynamic trade-off hypothesis explains how businesses deviate from their target capital structure over time and gradually re-adjust to the balance (target leverage) when the benefit outweighs the cost. Therefore, when the cost of adjustment is cheap, firms will desire to re-balance to such a target, but the speed of adjustment (SOA) to the target capital structure differs (Mukherjee & Mahakud, 2010). This suggests that financial managers are likely to be deliberate in choosing the amount of debt and equity that maximizes the value of a firm.

Prior literature generally agrees that long-run target leverage exists and that firms converge to it at a particular SOA. However, the extent of the SOA to target leverage is still a subject of controversy (Elsas & Florysiak, 2011; Fannery & Rangan, 2006; Huang & Ritter, 2009; Ozkan, 2001). Several studies have discussed the disparities in the

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SOA to target capital structure in both developed and developing countries. The exogenous shocks that necessitate firms' deviation from a target capital structure vary between economies and across different companies. Therefore, it is unlikely for the SOA and the time for adjustment to a target capital structure to be the same. Suffice it to say that the exogenous shocks, which account for the disparity in the SOA to target leverage, are influenced by macroeconomic factors such as stock market performance and firm-specific attributes. Cook and Tang (2010) posit that firms adjust more quickly when economic conditions are favorable. Also, a firm's borrowing capacity could be influenced by less lending and higher borrowing costs during times of recession or economic meltdown (Harrison & Widjaja, 2014). Furthermore, research has demonstrated that economic conditions affect company characteristics and adjustment behavior even within a single country (Harrison & Widjaja, 2014; Loof, 2004; Iqbal & Kume, 2015). The disparity in the SOA and the time of adjustment to the target capital structure has germane implications for firm value. Identifying the desired capital structure maximizes a firm's value, which is the crux for management and investors. Therefore, in choosing the desired capital structure, financial managers must pay close attention to factors that affect the dynamics of the SOA. The differences in firm-specific characteristics are important in understanding the varying levels of SOA of firms to target capital structure.

1. LITERATURE REVIEW AND HYPOTHESES

A company's capital structure, according to Aljamaah (2018), is the company's long-term financial composition, which is generally made up of long-term debt and equity. According to Frank and Goyal (2009), capital structure theories are grouped into the static and the dynamic framework. While the static framework believes that firms are already operating at their target levels, the dynamic capital structure concept, on the other hand, asserts that companies that depart from their target leverage will make upward or downward adjustments back to their target capital structure (Chaklader & Jaisinghani, 2017; Dang & Garrett, 2015; Haron, 2014; Loof, 2004, Cook & Tang, 2010). The dynamic adjustment to this target capital structure takes into account how far firms have departed from their target capital structure over time and how quickly they are adjusting to it. The degree to which a company's capital structure deviates from its target leverage is categorized as either over-leverage or under-leverage, and these deviations affect the SOA at which the firm adjusts back to its target leverage (Abdeljawad & Mat Nor, 2017; Lemmon et al., 2008). In the same vein, Cook and Tang (2010) classify companies' financial conditions as being in financial surplus or deficit, and their existing leverage as being over-leveraged or under-leveraged in relation to their target capital structure. When macroeconomic risk is high and firm risk is low, firms with leverage levels over the target will adjust their capital structure more quickly, resulting in a greater SOA than under-leveraged firms. Abdeljawad et al. (2017) opine that businesses are motivated by the desire to shield themselves from financial limitations. Firms with financial deficits and debt levels below their target capital structure will try to change their capital structure when macroeconomic and company risks are minimal.

The SOA to a target capital structure differs between companies, even in the same industry and across different economies. Transaction costs, as well as the costs of deviation influence firms' adjustment behavior (Dufour et al., 2018; Drobetz & Wanzenried, 2006; Flannery & Rangan, 2007, 2012). Transaction costs, which include monitoring, information, and negotiation, have a substantial impact on the SOA to target capital structure (Dufour et al., 2018). Deviation costs, on the other hand, occur when a firm's leverage moves away from the target, either higher or lower, near or off target. Firms are more likely to adjust to target leverage when deviation costs are higher than transaction costs, i.e., when such deviation is significant and non-persistent over time. On the empirical evidence on dynamic adjustment to target capital structure, William (2019) finds 62% SOA for Egyptian firms, Oino and Ukaegbu (2015) find 47% SOA for Nigerian firms, Emrah and Korayi (2014) find 29% SOA for firms listed on the Istanbul Stock Exchange, Aybar-Arias and Casino-Martinez (2011) find 26% SOA for Spanish firms, Dang et al. (2012), Antoniou et al. (2008), and Flannery and Rangan (2006) find that US firms adjust to their target capital structure at 30%, 32%, and 34% SOA, respectively, and Antoniou et al. (2008) find 32% and 39% for UK and French companies, respectively. However, the SOA in emerging market companies is quite high. For instance, the SOA for South African companies is 65.5% (Ramjee & Gwatidzo, 2012); the SOA for Kenyan non-financial companies is 70% (Ngugi, 2008); and the SOA for Indian listed companies is 50% (Bhaduri, 2002). The study proceeds to examine the firm-specific attributes of a target capital structure, such as profitability, firm size, growth opportunities, tax shield, and asset tangibility.

According to Chen and Hammes (2004), profitability refers to how well management utilizes all of its resources to make profits. The relationship between profitability and leverage is imprecise. According to the static trade-off theory, profitable businesses can use more debt, since they face fewer chances of insolvency and financial difficulties. Profitable firms can borrow more money, and debt lenders will be more eager to lend to them because they have a lower risk of default than non-profitable businesses. In the same vein, Baral (2004) posits that profitable businesses have a larger incentive to use more debt to take advantage of loan interest tax shelters. Also, Hutchinson and Hunter (1995) document that profitable firms will exploit debt as a tax shield. The most significant advantage of debt is that interest payments are tax deductible, resulting in a tax benefit. Profitable businesses have more clout because they can take advantage of tax breaks. Another reason that successful companies may take on more debt is to save money on agency fees. Huang and Ritter (2009) report that debt is used to cut agency costs because it is linked to mandatory interest payments. Bauer (2004) posits that using additional debt restricts management's actions and that it is used as a tool to penalize managers in terms of free cash flow. According to the static trade-off hypothesis, a high level of profitability leads to a high level of borrowing capacity, which reinforces the tax-shield advantage. Businesses with more profitability are likely to have a larger degree of leverage as a result of better lending capacity, reduced agency costs, and the benefit of tax shields, resulting in a positive relationship between profitability and capital structure. In order to control managers' behavior, agency cost theories predict that profitable organizations will take on greater debt in their capital structure. This implies that the more profitable a company is, the more debt it will accumulate. As a result, the trade-off theory suggests that profitability and capital structure are linked (Frank & Goyal, 2003). On the other hand, for corporations with significant retained earnings, gearing is less prevalent (Vasiliou et al., 2005). This implies that profitability and capital structure have a negative relationship. Most studies indicate a negative relationship between profitability and leverage, supporting the pecking order theory, which asserts that businesses prefer internal funding to borrowing from external sources (Baral, 2004; Booth et al., 2001; Drobetz et al., 2007; Fama & French, 2002). This implies that profitability and capital structure have a negative relationship. In order of choice, retained earnings are the most desired source of investment capital, followed by debt. While external funding is the most expensive source of financing, it will be a company's last resort. This implies that when profitable firms have larger retained earnings and choose to have less leverage, there is a negative relationship between profitability and leverage. The negative relationship between profitability and leverage has been confirmed by numerous studies (Dada & Ghazili, 2016; Ganiyu et al., 2019; Gunney & Paudyal, 2002; Otekunri et al., 2020; Paseda, 2016).

Firm size is one of the most well-known determinants of capital structure. Vasiliou et al. (2005) report that the size of a company is proportional to the amount of risk it carries. Larger enterprises are less risky than smaller businesses. This implies that larger businesses are less likely to be declared bankrupt, resulting in lower financial distress costs, and are more likely to borrow money to fund their investment strategies. According to Ezeoha and Francis (2010), larger, well-known enterprises have better access to the capital market and stock market than smaller businesses. This is because the chances of a larger company defaulting are far lower than the chances of a smaller company defaulting. Due to their higher credit ratings, larger companies have a better reputation in the security market because they are more secure and are more likely to receive financing from financial institutions more frequently and at cheaper interest rates

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than smaller businesses. Small businesses may be unable to get long-term loans, since their growth potential exceeds the quantity of assets that can be used as security. Smaller businesses will borrow less, since they are more likely to fail, resulting in higher capital costs. Bauer (2004) claims that larger organizations have less asymmetric information. The general public is more aware of what is going on because larger corporations tend to release more information than smaller companies. This implies that asymmetry is lessened, and the chances of an undervalued new stock offering are reduced, encouraging larger enterprises to use equity financing. Based on the knowledge of asymmetry described above, a negative association can be predicted. In the same vein, the static trade-off theory argues that the relationship between company size and capital structure is positive because large organizations are more diversified, have lower transaction costs for issuing more shares, and are less likely to collapse than smaller ones. Frank and Groyal (2008) report that large organizations use debt more frequently to finance new initiatives, while small firms utilize equity more frequently, implying a proportional relationship with leverage. Similarly, Ege and Bayrakdaroglu (2013) claim that larger Turkish firms have a greater debt ratio than smaller firms. In the same vein, the study by Alipour et al. (2015) on the determinants of Iranian enterprises' capital structures finds a positive relationship.

A firm's growth opportunity is a significant factor in corporate finance. Modigliani and Miller (1958) posit that for a company with significant growth potential, owners may initially finance a new project with debt, but once it has proven viable by increasing actual earnings, the loan may be repaid by supplying shares at higher prices or reserves, resulting in a positive relationship. High-growth enterprises have higher long-term finance requirements and tend to hold more earnings (Pandey, 2001). Companies with rapid sales growth often need to expand their fixed assets. To maintain the target debt ratio, a company must issue more debt as it grows, implying a significant correlation between capital structure and company growth. Byoun (2008) reports that growth opportunity and capital structure have a positive relationship. He claims that if a corporation has room to grow, it will require additional funds to accomplish it. The company will be forced to take on more debt due to a lack of internal resources. Dasgupta and Sengupta (2002) document that a rise or decrease in future growth potential might cause an organization's existing leverage to increase or diminish. Billet (2007) also opines a positive relationship between leverage and growth possibilities as a result of covenant protection. Lowering the agency cost of debt covenant, managers can help high-leverage expanding firms manage leverage effectively. Benuo (2003) reports that growth opportunity and capital structure have a positive relationship. The author argues that if a company has room for expansion, it will need additional money to do so. Due to the fact that internal resources are insufficient, enterprises will have a higher amount of debt. In the same vein, the study by Awan et al. (2010) on the influence of growth potential on leverage of Pakistani manufacturing firms finds a positive relationship. On the contrary, companies that are experiencing rapid growth, in line with trade-off theory, will take on less debt because the value of their future growth potential is close to zero in the event of bankruptcy. Firms with high future investment prospects invest more to protect their loan capacity and financial slack or liquidity while keeping low leverage.

A tax shield lowers the effective marginal tax rate on interest deductions. A company with a big non-debt tax shield is less likely to take on debt (Fisseha 2010). This is due to the fact that, unlike dividends, interest on debt is a tax-deductible expense (Odunai et al., 2013). Odunai et al. (2013) also report that firms with a large non-debt tax shield will choose to be debt free. When firms choose to take on greater debt, they benefit from the high-debt tax break. The study by Mukherjee and Mahakud (2010) investigates the factors that influence how soon Indian enterprises adjust to their target capital structure and finds that there is a positive relationship between tax shield and capital structure. According to the static trade-off theory, the capital structure and the no-debt tax shield have a negative relationship. These non-debt tax shelters compete for tax deductions with interest deductions. Companies having a larger non-debt tax shield are more likely to have a low debt-to-equity ratio. Tesfaye and Mings (2013) report that the relationship between the non-debt tax shield and the capital structure varies by tax type; they believe it has a negative influence on short-term debt but a

Table 1. Theoretical support for target capital structure determinants

Source: Researcher's computation (2022).

Variables	Dynamic Trade-off theory	Trade-off theory	Pecking Order theory	Agency theory
Lag leverage	Positive/Negative	Nil	Nil	Nil
Profitability	Nil	Positive	Negative.	Positive
Firm size	Nil	Positive	Nil	Negative
Growth	Nil	Positive/Negative	Nil	Nil
Tax shield	Nil	Positive	Nil	Nil
Asset tangibility	Nil	Positive	Nil	Nil

beneficial impact on total leverage. This study supports the theory that the larger the non-debt tax shield, the smaller the tax benefits from interest deductions. Enterprises with a high tax shield and marginal tax rate, according to Mbulawa (2014), use less debt in their leverage structure. Lei (2020) investigates the influence of the tax shield on the capital structure of businesses in China and finds a negative relationship between the non-debt tax shield and capital structure. The trade-off theory shows that a corporation with a high tax rate should take on greater debt so that it can deduct more tax from its income.

A company's asset structure has a significant impact on its capital structure. Companies having a lot of tangible assets have a greater liquidity value and will be able to provide more debt collateral. A similar relationship is suggested by the agency theory. The cost of equity is reduced when debt is secured by a tangible asset owned by a corporation (Booth et al., 2001; Vasiliou et al., 2005). Assets show a company's defining features (Akhtar 2005). In theory, tangible assets, especially non-current assets, are used as debt collateral, implying that the larger a company's tangible assets are, the smaller the risk to the financing source. If a company has tangible assets, the liquidation value of its assets will be higher, minimizing the risk of mispricing in the event of bankruptcy and making lenders more eager to lend (Huang & Vu Thi, 2003). Booth et al. (2001) report that having a large quantity of tangible assets improves a company's ability to offer secure loans. Furthermore, increased leverage is linked to tangible assets because they provide higher security for loans. The capacity to use non-current assets as collateral is the most compelling evidence for the idea that a company's asset structure influences its capital structure. A debt-collateralized corporation can borrow at a reduced interest rate (Rao, 2007). Companies can borrow at a reduced interest rate if their loan is backed by assets with a steady, long-term value (Akhtar & Oliver 2009). Companies with fewer noncurrent assets have higher borrowing costs due to a lack of collateralized assets. Most recent research has found a positive relationship between asset tangibility and leverage (Drobetz et al., 2007; Frank & Goyal, 2004; Olakunle & Oni, 2014; Vasiliou et al., 2005). This positive relationship backs up the static trade-off theory's prediction that debt capacity rises when physical assets are added to the balance sheet (Drobetz et al., 2007).

Below is a summary of the relationship between the independent variables and the dependent variable using the dynamic trade-off, trade-off, pecking order and agency theories.

Based on the extant literature, understanding the behavior of SOA with respect to firm-specific factors is germane for financial managers in formulating financial policies that will maximize the value of the firm. Therefore, the purpose of the study is to examine the firms' specific determinants of SOA to target capital structure among manufacturing firms listed on the Nigerian Stock Exchange (NSE) during the period 2012 to 2021.

The study formulates the following hypotheses:

H_{01}: *There is no significant level of dynamic adjustment to target leverage among manufacturing firms listed on the NSE.*

H_{02}: *Profitability has no significant relationship with SOA to the target capital structure of manufacturing firms listed on the NSE.*

H_{03}: *Firm size has no significant relationship with SOA to the target capital structure of manufacturing firms listed on the NSE.*

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H_{04}: *Growth opportunities has no significant relationship with SOA to the target capital structure of manufacturing firms listed on the NSE.*

H_{05}: *Tax shield has no significant relationship with SOA to the target capital structure of manufacturing firms listed on the NSE.*

H_{06}: *Asset tangibility has no significant relationship with SOA to the target capital structure of manufacturing firms listed on the NSE.*

2. METHODS

The study used a longitudinal research design method. The population of the study is 75 manufacturing firms listed on the NSE during the period 2012 to December 31, 2021. The manufacturing sector is appropriate because their capital structure is mostly comprised of both debt and equity. A sample size of 42 firms is determined using Yamane's (1967) sample size determination technique, and a simple random technique is used to select the 42 firms from the total population of the 75 firms. Secondary data is sourced from the annual reports. The data analysis method is the Generalized Method of Moments (GMM) proposed by Arrellano and Bond (1991). The GMM estimation technique is suitable due to the suspicion of endogeneity problems. It generates a consistent parameter estimate by employing instruments derived from orthogonality conditions between a variable's lag value and its disturbance terms. Other tests that are carried out in the course of the analysis are J-statistics and the Arrelano and Bond tests.

The partial adjustment model for target leverage is anchored on the Fischer et al. (1989) dynamics trade-off theory. Other theories such as the static trade-off, pecking order, and agency theories are also used to explain the relationship between firms' attributes and target leverage. The dynamic trade-off theory assumes that firms maximize their value when their capital structure is at its target (maximum). The target capital structure is denoted as LEV_{it}*. The determinant of LEV* is modeled thus

$$LEV_{it}^{*} = \sum k \cdot \beta k \cdot X_{it} + \mu_{it}, \tag{1}$$

where LEV* = target leverage, i =firm, t = time, X = firm attributes.

Since the target leverage is unobservable, it is proxied using fitted values from a regression of observed leverage. It can be expressed mathematically below:

$$LEV_{it}^{*} = LEV_{it} - LEV_{it-1}, \tag{2}$$

where LEV is the current leverage of the firm, while LEV_{it-1} is the 1-year lag leverage of the firm. The standard partial adjustment model requires the following to capture the dynamic adjustment to a target leverage:

$$y\left(LEV_{it}^{*} - LEV_{it-1}\right), \quad 0 < y < 1, \tag{3}$$

where y is the adjustment required to reach a target leverage, the coefficient of the y measures the SOA to a target leverage, which is inversely related to the cost of transaction or the cost of adjustment. y takes the value between 0 and 1. It is 1 when a full adjustment occurs, which is hardly the case because no market is perfect, while y = 0 implies the absence of adjustment, which also hardly occurs. This implies that the partial model adjustment lies between 0 and 1. As a result, the SOA to a target leverage is given as 1 – y, and the time required to achieve that adjustment is given as 1/1-y. Equations (2) and (3) are written thus:

$$LEV_{it} - LEV_{it-1} = y\left(LEV_{it}^{*} - LEV_{it-1}\right), \quad 0 < y < 1, \tag{4}$$

Note that when y = 0, it implies that there is no adjustment to target leverage. That is, current leverage is equal to a one-year leverage lag (LEV_{it} = LEV_{it-1}). The reason for the non-adjustment could be high transaction costs. Therefore, they would want to maintain the current position. If y = 1, it shows adjustment. This implies that target leverage becomes the same as current leverage (LEV_{it}*= LEV_{it}). This adjustment is due to the low transaction cost. When the target leverage, denoted as LEV_{it} -LEV_{it-1}, is substituted into LEV_{it}* = LEV_{it}, we will have LEV_{it} –$LEV_{it.-1}$ = $LEV_{it.}$ This can be rearranged as LEV_{it} – LEV_{it} = LEV_{it-1}. Therefore, LEV_{it} = LEV_{it-1}. To estimate the partial adjustment model using only one equation, we have:

$$LEV_{it} = yLEV_{it-1} + \sum k \ \beta k \ Xit + \mu_{it}. \tag{5}$$

Given that SOA to a target leverage is 1 – y, the equation is as follows:

$$LEV_{it} = (1-y)LEV_{it-1} + \sum k \cdot \beta k \cdot X_{it} + \mu_{it}, \quad (6)$$

Where β= the unknown coefficient of variables, X_{it} = the explanatory variables. The explanatory variables for this study are profitability (PROF), firm size (FS), growth opportunity (GROWTH), asset tangibility (TANG), and tax shield (TS). In inserting this variable into equation (vii), we have:

$$LEV_{it} = \beta + (1-y)\ LEV_{it-1} + \beta_1 PROF_{it} + \\ +\beta_2 FS_{it} + \beta_3 GROWTH_{it} + \beta_4 TANG_{it} + \\ +\beta_5 TS_{it} + \mu_{it}. \quad (7)$$

3. RESULTS AND DISCUSSION

The presentation, analysis, and interpretation of the data stream collected for this study is the focus of this section. Consequently, it embodies the application of both statistical and econometric techniques to provide the basis for the research hypotheses testing and form the basis for the conclusion and recommendations at the end of this study.

Table 2. System GMM estimation

Source: Researcher's computation (2022).

Variables	Coefficients	t-statistics	Prob.
LEV(–1)	0.277539***	12.49465	0.0000
SOA	1 – 0.28 = 0.72 (72%)		
PROF	–0.300369***	–15.89591	0.0000
FS	–0.093675***	–10.16535	0.0000
TANG	11.87100***	15.78948	0.0000
TS	–0.002477	–1.352705	0.1788
GROWTH	–0.000148	–0.082511	0.9344
J-statistic Prob. (J-statistic)	17.61061		0.283690
Instrument rank	21		
Arellano-Bond Serial Correlation Test			
AR(2)	0.280713		0.7789
Wald Test			
F-stat	72293.26*		0.0000

Note: ***, ** and * = 1%, 5% and 10% level of significance, respectively.

Table 2 reveals that the Instrumental Variables (IV) use are valid and satisfactory as indicated by the Sargan test (J-statistics value) of 17.61 approximately and it is highly not significant at a 5% confidence level with the related rank instrument of 21. This implies that the orthogonality conditions for the IV are used to satisfy their conditions and they are exogenously related to their stochastic error term. AR (2) coefficient is not significant at a 5% confidence level. This implies that there is no second-order serial correlation in the estimate, making the result more reliable and authentic for policy formulation. All the explanatory variables have a significant relationship with leverage when jointly considered as indicated by the Wald test F-statistics that is significant at a 5% confidence level. Only TS and GROWTH did not pass their significance test at a 5% confidence level, since their corresponding Prob. values are > 5%. Other independent variables pass their significant test at a 5% confidence level because their corresponding probability value is < 5%. The coefficient values in Table 2 show that the entire explanatory variables have various degrees of association with leverage, although in different magnitudes. Only LEV (-1) and TANG have a positive impact on leverage, while other variables inversely impacted leverage during the study period. Hence, the null hypotheses H_{01}, H_{02}, H_{03} and H_{06} are rejected, while H_{04} and H_{05} are accepted.

Also, it was determined that manufacturing firms fail to cover only 28% deviation from the desired capital structure decisions from the past period to the current period at a 5% confidence level as indicated by the lag LEV(-1) coefficient of 0.28 approximately. This implies that manufacturing firms adjust to their desired capital structure with a high speed of about 72%. This SOA was achieved within the period of one year, three (3) months, and nine (9) days. 1/0.72 = 1.39. This finding also buttresses that manufacturing firms in Nigeria adjust partially and not instantaneously to achieve their expense re-balancing objective. Also, the high SOA is attributed to the benefit of adjustment being perceived as higher than the cost of adjustment (Flannery & Rangan, 2006; Tamirat et al., 2017), coupled with the fact that the cost of adjustment among manufacturing firms is minimal (Devos et al., 2017). This finding is of serious policy implications that government financing policy formulation and management implementation of such policies in this sector is going in the right direction. The finding is in tandem with that of Ngugi (2008), Ramjee and Gwatidzo (2012) in the literature, who report 65% and 71% SOA in South Africa and Kenya, re-

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spectively, and conclude that non-financial firms in developing economies are more responsive.

The study also finds that PROF, FS, and TAN are significant determinants of SOA to the desired capital structure of listed manufacturing firms in Nigeria. First, PROF did not conform to the trade-off and agency theories because it was not correctly signed. However, being negatively correlated is in conformity with the pecking order theory. Therefore, it is safe to say that it meets a priori expectations, since it satisfies one of the theories in the study. The coefficient is negative and significant at a 5% confidence level. This implies that a unit increase in PROF reduces SOA to the desired optimal capital by approximately 30%, as indicated by its coefficient of -0.30. This finding demonstrates that Nigerian manufacturing firms are profitable; the more profitable they become, the less desire they have to use debt in their financing decisions. Therefore, upholding the assertion of the pecking order theory. This finding is in line with that of Booth et al. (2001), Fama and French (2002), Baral (2004), and Chen and Strange (2005) in the literature that suggests businesses prefer internal funding to borrowing from external sources in both developed and emerging economies. This finding is contrary to that of Frank and Goyal (2004), who uncovered a positive association between profitability and leverage to confirm the trade-off theory.

Second, FS has a significant inverse impact on SOA on the target capital structure of listed manufacturing firms in the NSE. This variable behaves contrary to the predictions of the trade-off theory. Rather, it confirms agency theories' prediction of the inverse relationship between FS and a firm's leverage. Therefore, it is safe to say that it meets a priori expectations, since it satisfies one of the theories in the study. The negative coefficient of -0.094 approximately shows that a unit increase in FS significantly reduces SOA to the desired LVR by 9% approximately. This inverse relationship is attributed to high earnings that are associated with large firms, due to their less desire to finance investment with more debt because they are highly diversified. Also, larger companies tend to disclose more, and, as such, stakeholders have sufficient information about them. This reduces information asymmetry, which favors equity financing. Similarly, the difficulty in accessing long-term loans in Nigeria could also be a fundamental factor why firm size is negatively correlated. This finding corroborates that of Myer (1984), Titman and Wessel (1988), who also found a similar result in their study that FS is a significant determinant of capital structure. However, this finding is contrary to that of Vasiliou et al. (2005), Rayam and Zingaales (2015), and Frank and Groyal (2008), among others.

Third, asset Tangibility (TANG) has a significant direct impact on SOA and the optimal capital structure of manufacturing firms listed on the NSE. The variable conforms to the static trade-off theory. A unit increase in TANG will result in an 11.87-unit increase in SOA to satisfy the desired capital structure. This finding corroborates that of Frank and Goyal (2004), Vasiliou et al. (2005), and Drobetz et al. (2007) in the literature; they found a positive nexus between TANG and leverage to back up the trade-off theory.

Tax shield (TS) has a non-significant inverse impact on SOA to target leverage. This is not in line with the a priori expectation. The inverse relationship implies that an increase in the tax shield decreases SOA to the target capital structure in an insignificant manner at a 5% confidence level. This could be attributed to the high debt tax shield among Nigerian listed manufacturing firms. This finding is in line with that of Mbulawa (2014), who found that firms with high tax shields and marginal tax rates use lower debt. Similarly, growth opportunities (GROWTH) have a non-significant negative correlation with SOA to the desired capital structure of manufacturing firms listed on the NSE. This variable conforms to *a priori* (trade-off argument) expectation, but it is not significant at a 5% confidence level. The finding is contrary to that of Benuo (2003) and Billet (2007), who report a positive relationship between growth and leverage. From the empirical result, it is observed that the trade-off theory and pecking order theory suggestions are endemic in the financing decisions of manufacturing firms listed on the NSE; and policy direction has been effectively implemented to encourage various stakeholders to manage a firms' activities to maximize shareholders' wealth.

CONCLUSION AND RECOMMENDATIONS

The study investigates the level of SOA to desire capital structure and its determinants for manufacturing firms listed on the NSE. Panel data consisting of forty-two (42) listed manufacturing firms within the period 2012 to 2022 is collected from the audited annual publication of each firm as published by the NSE. Several statistical and econometric techniques of descriptive statistics, correlation analysis, panel group unit root test, Kao and Pedroni co-integration test, and System GMM methodology within a dynamic panel estimation process are used. The result shows that manufacturing firms adjust with a high speed of approximately 72% to desire capital structure after deviation. Thereby, confirming the application of dynamic trade-off theory among listed manufacturing firms in Nigeria. Also, PROF, FS and TANG are shown to be significant determinants of SOA to desire capital structure in Nigeria, with PROF, FS and TANG in line with pecking order, agency and static trade-off theories, respectively. TS and GROWTH were not significant determinants of SOA to target capital structure. The study concludes that there is evidence of dynamic adjustment to the optimal capital structure of listed manufacturing firms in Nigeria.

Various policy recommendations are based on the findings of this study as follows: (i) government and policymakers in firms should make effective policies that aid speedy access to long-term funds by these firms to increase their SOA to target capital structure; (ii) managers of manufacturing firms must strive to balance the cost and advantage of using the marginal unit of debt to maximize shareholder's wealth; (iii) regulatory authorities like the Security and Exchange Commission (SEC), and the NSE should implement policies which would enable manufacturing firms to increase cash inflow, and reduce the cost of debt and bankruptcy risk in the sector to signal to investors that listed manufacturing firms are financially independent; (iv) manufacturing firms that lack tangible assets should be assisted by the government to increase their long-term debt-absorbing capacity; (v) managers should be effective and efficient in using their size to access long-term debt in the stock market to take advantage of the tax shield to maximize firm value; and (vii) in the face of future growth opportunities, reliable evaluation techniques should be employed by manufacturing to identify profitable investments and finance such investments with long-term debt.

AUTHOR CONTRIBUTIONS

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APPENDIX A

Table A1. Descriptive statistics

Source: Researcher's computation (2022).

Variables	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis	J–Bera	Prob
LEV	0.21	0.12	3.44	0.00	0.3614	4.98949	33.40336	17876.36	0.0000
PROF	0.055943	0.04	6.17	–2.36	0.4053	8.495604	136.2182	314874.7	0.0000
FS	7.257017	7.48	9.38	4.67	1.002	–0.32095	2.46673	12.15808	0.0023
GROWTH	3.80936	0	290.2031	–1.00	26.6682	9.120449	90.98304	55507	0.0000
TANG	0.013488	0.000488	0.282447	0.00	0.0424	4.49917	24.25957	9282.03	0.0000
TS	5.667364	5.715	7.82	2.47	1.0869	–0.30299	2.715202	6.874405	0.0322

Table A2. Correlation result

Source: Researcher's computation (2022).

Variable	LEV	PROF	FS	GROWTH	TANG	TS
LEV	1					
PROF	–0.236** (0.003)	1				
FS	0.031 (0.699)	–0.023 (0.777)	1			
GROWTH	–0.016 (0.843)	–0.001 (0.994)	–0.143 (0.071)	1		
TANG	–0.038 (0.636)	0.029 (0.718)	0.289*** (0.000)	–0.039 (0.624)	1	
TS	0.121 (0.125)	–0.046 (0.562)	0.803*** (0.000)	–0.223** (0.005)	0.291*** (0.000)	1

Note: ***, ** and * – 1%, 5% and 10% level of significance, respectively.

Table A3. Variance Inflation Factor (VIF) test

Source: Researcher's computation (2022).

Variable	Coefficient Variance	Center VIF
C	11.750	NA
LEV(–1)	0.006	1.091
PROF	0.001	1.147
FS	0.001	1.438
TANG	0.017	3.068
TS	0.001	1.630
GROWTH	0.142	3.608

Table A4. Group panel unit root test

Source: Researcher's computation (2022).

Variables	L L&C	B. Stat	IP & Shin West	Adf- Fisher	P-P Fisher	Order	Remark
LEV	–54.3106*	2.11928	–4.38201*	169.327*	310.065*	I(1)	Stationary
PROF	–67.2664*	1.98603	–8.87107*	221.262*	307.901*	I(1)	“”
FS	–20.4320*	–2.66364*	–2.80841*	175.337*	298.734*	I(1)	“”
GROWTH	–9.52751*	1.93155	–1.26531***	40.0315*	54.7615*	I(0)	“”
TANG	–188.198*	–2.63507*	–15.7980*	161.250*	228.406	I(1)	“”
TS	–14.7994*	0.54269	–1.70447*	108.470	172.682	I(1)	“”

Note: * and *** – 1% and 10% level of significance, respectively. L L&C = Levin, Lin & Chu t*, B. Stat = Breitung t-stat, IP & Shin West = Im, Pesaran and Shin W-stat, Adf-Fisher = Augmented Dickey-Fuller Fisher Chi-square, P-P Fisher = PhilipPeron Fisher Chi-square.

Table A5. Co-integration test

Source: Researcher's computation (2022).

Kao Panel Co-integration Result			
Statistic	**t-Stat**	**Prob.**	**Remark**
ADF	2.103862**	0.0177	Co–integrating association exist
Pedroni Residual Co–integration Test			
Group PP–Statistic	–13.39670*	0.0000	Co–integrating association exist
Group ADF–Statistic	–8.811857*	0.0000	“”

Note: * and ** = 1% and 5% level of significance.

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