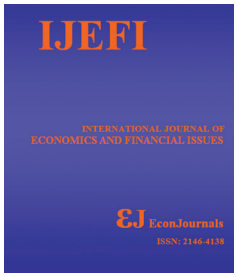

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Effect of Speed of Adjustments on Capital Structure Decision: A Conceptual Analysis

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ABSTRACT

This study conceptually examines the effect of speed of adjustments on capital structure decisions. The study provides a conceptual and theoretical underpinning focused on the review of several studies on the effect of speed of adjustments on capital structure decisions. The study discovered firm size, assets, growth, profitability, and other factors that influence the speed of adjustments. The findings from a prior study showed that estimators of the speed of adjustments include the regression analysis, generalized methods of moments (GMM) and stochastic frontier analysis (SFA) models without a predictive model. The study recommends for a generalized predictive model that determines the speed of adjustments to the optimum capital structure of firms.

Keywords: Speed of Adjustment, Capital Structure Decision, Generalized Predictive Model
JEL Classifications: G34

1. INTRODUCTION

A growing body of knowledge recognises that the speed of adjustments influences the optimum capital structure decision of firms under financing decisions in developed and developing countries. Speed of adjustments shows how quickly a company can change its capital structure based on its desired goal and expectations within a given period. Factors like growth opportunities influence the pace of change, age and size of the firm, profitability, macroeconomic factors, and distance to the target (Haron et al., 2013; Lemma and Negash, 2014; Ezeani, 2019; Arief et al., 2020; Bolarinwa and Adeghoye, 2020; Warmana et al., 2020). However, it has been observed that the result of the pace of adjustments is inconsistent when the capital structure target is observed under different models, industry or firm level parameters, and country-specific factors.

One way to achieve and attain the optimum speed of adjustments is to determine a generalised predictor and aggregated factors that influence it (Gan and Chen, 2021; Giovanni et al., 2021; Cardoso and Pinheiro, 2020; Ezeani, 2019). For example, Haron et al. (2013) argued that the speed of adjustment relies on the firm's size and period due to the adjustment costs incurred by the firms. More recently, Ezeani (2019) established that the legal, political, and regulatory environment on firms' capital structure, which, when added to firm-level determinants, may give a better understanding of factors influencing the financing behaviour, especially in Nigerian firms. While Bolarinwe and Adegboye (2020) re-examined the determinants of capital structure in Nigeria using a combination of models like difference generalised method of moments (GMM), system GMM and stochastic frontier analysis (SFA). However, some studies which concentrated on developed countries found contrasting results, while fewer studies were on developing countries (Bajaj et al., 2020; Cardoso and Pinheiro, 2020; Goel, 2019; Ganiyu et al., 2018). The limited study in developing countries like Nigeria may create a misleading assumption that the theory and estimators applied in developed countries can be sustained and generalised in developing countries.

Besides, the variations in the results, industries, and estimators used for the speed of adjustments between and within the developed and developing countries, are creating contradicting results (Haron et al., 2013; Ezeani, 2019; Bolarinwa and Adegboye, 2020). The consequence of not establishing and standardising the model that fits into the reality of Nigeria's peculiar nature may result in managers selecting estimators that pander to biases when making capital structure decisions.

Furthermore, there is a need to understand the effect of intervening variables that may determine the optimisation level and influence the speed of adjustments. These include economic cycle and macroeconomics variables (Gan and Chen, 2021; Giovanni et al., 2021; Cardoso and Pinheiro, 2020), efficiencies of cost and production (Bolarinwa and Adegboye, 2020), Corruption (Ezeani, 2019), and assets maturity along with an inconsistent measure for growth opportunities (Warmana et al., 2020; Arief et al., 2020). Ignoring any controllable factor during the study may reduce the validity of the work, especially when the variables are determining factors that lead economic risk to override business risks. This study examines the factors that influence the speed of adjustments and how it influences the capital structure decision. Based on these factors, there is a need for a generalised predictor that will aid in the determination of the speed of adjustments of capital structure decisions, especially in developing countries. This study conceptualises the factors influencing the rate of adjustments on the capital structure decision and justification for a generalised predictor.

The study is organised into four sections as follows. Section one has discussed the introduction of the study. Section two will discuss the Literature review, conceptualisation, theoretical framework, and review of prior studies. Section three presents the discussion and implication of the study findings. Section 4 concludes with the recommendation.

2. LITERATURE REVIEW

2.1. Conceptualisation of the Speed of Adjustments and Capital Structure Decisions

Capital structure has been defined as the permutation of equity and debt, which is used to derive the cost of capital (Oino and Ukaegbu, 2015; Ayabe, 2015). Using a more extended inclusive definition, Giovanni et al. (2020) define capital structure as a fundamental aspect of corporate financial decisions that maximise firm value and minimise capital costs by determining the appropriate proportion of debt and equity that can minimise the company's financial difficulties. Furthermore, Shahar and Manja (2018) defines capital structure as the financial decisions regarding raising funds from several sources comprising internal (retained earnings) and external financing (debt and equity). Wrong capital structure decisions will harm the company.

Ma and Xu (2020) sees capital structure as the ratio between all liabilities and owner's equity, which reflects the relationship between total liabilities and assets, total liabilities and total equity, different liabilities and different rights and interests. That capital structure optimisation theory establishes the model that describes the corporate characteristics and dynamic adjustment of capital structure recognised for its role in the development of enterprises.

The speed of adjustments to a capital structure is defined as how fast a company can change its capital structure to meet its target within a period (Warmana et al., 2020; Arief et al., 2020). It entails the extent to which a firm can quickly change its target of debt or equity within a defined period. Arief et al. (2020) stated that the change in the capital structure might be determined by factors like marginal benefit and the firm's marginal cost. On the contrary, Oino and Ukaegbu (2015) recognised the internal financing approach as the best influence on the speed of capital structure adjustments. A firm can decide to vary or maintain its optimal capital structure at any time depending on the optimal target influenced by factors linked to the firm's strategy.

Several studies have postulated a convergence for factors that determine the speed of adjustments, such as information asymmetry, cost of distress, profitability, solid financial needs, macroeconomic needs, distance form, and Growth Opportunities (Haron et al., 2013; Lemma and Dagash, 2014). Arief et al. (2020) stated that changes within the marginal benefits and marginal cost also affect the speed of adjustments, with the extent of their influence determined differently (Bolarinwa and Akingboye, 2020; Ezeani, 2019). In addition, Oino and Ukaegbu (2015); Oztekin and Flannery (2012) identified that transaction costs, including legal, financial environment and investment bank fees, may prevent firms from adjusting their target leverage continuously, especially if these costs are prohibitively high.

Traditionally, it has been argued that growth, size, targetability, profitability, debt ratio, and expected inflation determine capital structure decisions, including speed of adjustments (Frank and Goyal, 2009; Elsas and Florysiak, 2008). Kisgen (2006) included ratings of external rating agencies. Elsas and Florysiak (2008) argue that potential rating changes through financing decisions can alter the target debt level or the marginal benefit of debt over equity, rendering the corporate rating a potentially important determinant with competition, regulatory changes, and behavioural corporate finance are other factors that also determine the speed of adjustments.

The review revealed that though the speed of adjustments has been influenced by several factors highlighted, country level, industry and firm-specific variables create different responses.

2.2. Theoretical Review

Since the emergence of Modigliani and Miller's (1958, 1963) theory on capital structure, several other approaches have been developed. Theories like the trade-off theory, the pecking order theory, market timing theory, and other theories like the signalling theory and agency theory. While some theories posit the relationship between capital structure and firm performance, others explain the rationale behind an optimum capital structure and rank which form can best create value for the firm.

The Modigliani and Miller theories (1958; 1963) made the prepositions that capital structure does not affect the firm's value.

They argued that, in a frictionless world, no difference exists between debt and equity. This has resulted in several empirical criticisms of the theory, with Stitgis (1963) and Luigi and Sorin (2009) noting that the assumptions are unreal and impractical to be tested in a practical situation. Further to this, Eze and Uzochukwu (2020), Ejem and Ogbonna (2019), Onyinyechi (2019), Ezirim and Ezirim (2017), and Cline (2015) tested the theory with modification of some of the assumptions yet found the result inconsistent with the claim by Miller and Modigliani. Despite the shortcomings, Ezeani (2019) and Ardalan (2017) argued that Modigliani and Miller's (1958) theorem is recognised as the first theory of capital structure, with its contributions acknowledged as the cornerstone of contemporary finance research. However, the idea only remains as far as a reference point to the historical, theoretical underpinning of capital structure.

In trying to remedy the gap in the Modigliani and Miller theory, especially the inability of the authors to limit the firm's debt capacity, the trade-off theory (Kraus and Litzenberger 1973; Myers, 1984) suggests that profitability, asset tangibility and firm size will be positively related to leverage while business risk and strong growth will show a negative relationship with leverage. The theory recognised that debt is related to cost and benefits (Arief, 2020); however, the bigger the debt, the more risk may occur. In addition, it assumes that a firm will adjust its target capital structure consisting of debt and equity composition to the optimal level to lower its capital cost and bankruptcy risk (Kane et al., 1984). According to Arief (2020), this movement is called the speed of adjustments. Though the theory suggests that the ideal debt-to-equity ratio will involve the identification of a trade-off point, which may be unique for each firm, the theories pay attention to the efficiency of firms in capital structure decisions (Bolarinwa and Adegogboye, 2020). The emphasis is on the debt tax shield while ignoring other tax shields (Ezeani, 2019), making it unattractive to a liquid and profitable firm.

The pecking order, as postulated by Myers and Majluf (1984) and Myers (1984), acknowledges the roles of information asymmetry in the agency relationship and hence notes that firms follow an order of hierarchy financing (Khemiri and Noubbigh, 2018). That the managers adopt a financial hierarchy while acting in the interest of the shareholders, starting with the retained earnings, debt, and issue of new equity. Myers and Majluf (1984) emphasised that firms prefer debt to equity if they need external funds, as further explained by Oino and Ukaegbu (2015). They noted that investors expect a higher return on equity despite equity being riskier than debt. Notwithstanding this position, the pecking order theory ignored the criteria for adjustments to the capital structure. Still, it relied more on the ranking and preferences of managers' internal financing and debt in the first instance before equity. Goyal and Frank (2009) stated that in its current form, the pecking order theory does not help organise many of the prevalent features in how firms are financed. Although, it is credited for correctly predicting the effect of profits (Shyam-Sunder and Myers, 1999).

The market-timing theory states that firms issue equity when market prices are irrationally overpriced, using the corresponding "window of opportunity" (Baker and Wurgler, 2002). Baker and Wurgler argued that capital structure is best understood as the cumulative effect of past attempts to time the market by considering the current conditions in debt and equity markets. If financing arises, managers use whichever market conditions look more favourable. Frank and Goyal (2009) see market timing theory in terms of predictions for the market-to-book assets ratio and the effect of expected inflation but weak for not making any predictions for many of the patterns in the data that are accounted for by the trade-off theory. On the weakness of the approach, Frank and Goyal recommended that the market timing theory needs considerable theoretical development to explain all empirical regularities observed.

Also, the dynamic trade-off theory recognises that firms have a targeted debt ratio in their capital structure decision which is adjusted for the firm to maintain a targeted debt level influenced by both exogenous and endogenous factors (Oztekin and Flannery, 2012). Previous methods of adopting the debt ratio by firms are weakened by the noise created by the bias associated with the firm-specific models and optimal dynamic behaviour (Fisher et al., 1989). The theory generates predictions about firms' capital structure decisions that are not based on static leverage ratios. Hence, the empirical tests are not subject to the problems strictly stated by the static and previous theories. Therefore, a classicalist view of the factors that influence the adjustments, the speed of adjustments and not entirely the pursuit of optimality of the capital structure will suffice to explain this study better.

This study argues that the theories underpinning the capital structure model have revealed inconsistent results (Bajaj et al., 2020). The combination of two theories to explain any of the capital structure phenomena will demonstrate the level of influence each of the factors has on the speed of adjustments. Though the dynamic model is an extension of the static trade-off theory, it recognised the dynamism created by the changes attributed to some factors that influence the capital structure.

2.3. Review of Prior Literature

Several studies have reviewed the speed of adjustment in developed countries (Fischer et al., 1989; Flannery and Rangan, 2006; Huang and Ritter, 2009; Ma and Xu, 2020; Gan and Chen, 2021) and developing countries (Haron et al., 2013; Lemma and Negash, 2014; Oino and Ukaegbu, 2015; Ezeani, 2019; Warmana et al., 2020; Bolarinwa and Adegboye, 2020). However, most studies rely on different theories, factors, models, and inconsistent results.

Warmana et al. (2020) evaluated the influence of some variables like growth potential, profitability, company size, the ratio between capital structure and its target, short-term loan, asset maturity, growth of GDP and inflation rate towards capital structure SOA in Nigeria using the generalised method of moment (GMM). The results showed the existence of a partial adjustment model estimation with target leverage with SOA of 64.73% per year on manufacturing companies in Indonesia. However, Ma and Xu (2020) analyse capital structure's characteristics and present its simplified mathematical model using a comprehensive panel data analysis by selecting from listed companies with continuous

financial data of A-shares in Shenzhen and Shanghai. The findings showed that the optimisation approach could improve the statistics result of capital structure adjustment. Empirical analysis shows that equity financing is preferable for the listed companies. Furthermore, a capital structure optimisation problem with uncertainty under equity financing constraints is studied and formulated as a two-stage stochastic optimisation problem.

In the same vein, Gan and Chen (2021) extend the DeMazro and He (2019) model of capital structure dynamics by introducing macroeconomic conditions. The study analysed how business cycle risks impacting a firm's capital structure adjustment speed. Gan and Chen attempt to theoretically link macroeconomic conditions to capital structure adjustment speed using the DeMarzo and He (2019) model of capital structure dynamics. The model estimated that capital structure adjustment is slower in the presence of macroeconomic risk. By contrast, Huang and Ritter (2009) examined time-series patterns of external financing decisions using the system GMM Estimator. The findings show that publicly traded U.S. firms fund a much more significant proportion of their financing deficit with external equity than the cost of equity capital.

Further investigation by Giovanni et al. (2020) on the implementation of Pecking order Theory and Trade of Theory on the speed of adjustments (SOA) used the panel regression model analysis with the result showing that SOA performed faster with the economic and business risks positively influencing the SOA. Contrary to the findings of Bolarinwa and Adeboye (2020), who adopted the static model to estimate the determinant of the Capital Structure in Nigeria. Bolarinwa and Adeboye argue that static models of random and fixed effects are robust and account for persistence and dynamism in the modelling of determinants of capital structure.

Also, Lemma and Negash (2014) examine industry and firm-specific characteristics of the adjustment speed of corporate capital structure in developing countries. The model parameters were estimated using the generalised system method of moments (sys-GMM) estimator, which found that some firms in developing countries deviate from their target capital structures due to the gap between observed and target leverage ratios, unlike Daniela et al. (2020) who examined the effect of growth opportunities using fixed and random regression model and find out that growth opportunities have a significant relationship with debt ratio and demand yield.

In addition, Haron et al. (2013) focus on the dynamic aspect of capital structure by employing panel data of 790 non-financial listed firms in Malaysia for the period 2000–2009. The study was conducted using the dynamic partial adjustment model and estimated based on the generalised method of moments to determine the existence of target capital structure, speed of adjustment and factors affecting the speed of adjustment. The study finds strong evidence of the relationship between speed of adjustment and distance from target leverage. Therefore, this study did not confirm the commonly held argument on the non-existence of any relationship between growth opportunity and speed of adjustment.

In developing country-level studies, Bolanrinwe and Adeboye (2020) examined the determinants of capital structures and speed of adjustments in Nigeria using deference GMM, system GMM and stochastic frontier analysis (SFA). The results showed that firms' efficiency affects capital structure while short-term debt has a higher speed of adjustments in Nigeria. Likewise, Ezeani (2019) examined the capital structure determinants and speed of adjustment (SOA) of Nigeria's non-financial firms and the impact of the financial crisis on the SOA.

The study uses dynamic capital models and the two-step GMM system estimation. The result shows 63% SOA for listed non-financial firms in Nigeria, with SOA being faster after the financial crisis compared to the pre-crisis situation.

Similarly, Oino and Ukaegbu (2015) investigated the impacts of capital structure on the performance of Nigerian-listed non-financial firms. The study used the pool OLS and GMM to determine the speed of adjustment to the target capital structure. The descriptive statistics show that 63% of the capital structure of Nigerian firms is leveraged, with short-term leverage dominating. The study observed that profitability and asset structure were negatively related to leverage, while the firm's size and non-debt tax shield were positively associated with leverage. The adjustment speed of Nigerian firms is stated at 47% compared to most developed countries.

Besides, most of the studies above used estimators of regression analysis, systems and differential GMM and the SFA models to determine the appropriate models deprived of any form of biases. The review further showed that scholars focused less on the predictive relevance of the dynamic factors that influence the speed of adjustment.

3. DISCUSSION OF FINDINGS AND IMPLICATIONS

3.2. Factors that Influence Speed of Adjustments (SOA)

Several studies identified factors that influence the speed of capital structure decisions. Though the findings of most studies reviewed (Lemma and Negash, 2014; Oino and Ukaegbu, 2015; Oztekin and Flannery, 2012) may have been divergent in some instances, they showed the relevance of some of the factors that have influenced the speed of adjustments.

3.2.1. Size of firm

The firm's size depends on whether a firm is big or small. Prior studies have argued about its influence on the speed of adjustments (Flannery and Hankins, 2007; Haron et al., 2013; Lemma and Dagash, 2014; Ezeani, 2019). The results of previous studies, according to Ezeani (2019), showed that SOA for large and small firms are 50% and 58%, respectively, indicating a slower leverage adjustment process for both types of firms, with a slightly higher SOA for small firms which may be attributed to a higher proportion of short-term leverage used by smaller firms when compared to larger firms. The firm's size is measured using a Log of assets and

a mature firm (Goyal and Frank, 2009; Bolarinwa and Akingboye, 2020). The results revealed that in determining the factors that influence the SOA, the firm's size is considered the main factor influencing the speed of adjustments.

3.2.2. Profitability

Profitability involves the gains that accrue to a firm during the business. In the dynamic trade-off model, leverage can appear to be negatively related to profitability in the data due to various frictions (Elsas and Florysiak, 2008). Therefore, profitability has been theoretically and empirically supported as a determinant that influences the speed of adjustments.

3.2.3. Growth opportunities

Thus, the trade-off theory predicts that growth reduces leverage. By contrast, the pecking order theory implies that firms with more investments—holding profitability fixed—should accumulate more debt over time. Thus, growth opportunities and leverage are positively related under the pecking order theory.

3.2.4. Tangible assets

Tangible assets like property, plants and equipment are internal factors that determine the extent to which a firm can access capital structure and the volume it may require. While it is easier to measure tangible asset because it is visible, it is not easy with intangible assets.

3.2.5. Taxes

The accessibility of the debt market is another disturbing factor that influences the speed of adjustments. While the debt market is highly effective in developed countries like the USA, it cannot be stated as the same in developing countries as it is very restrictive. The h high-interest rates are discouraging factors in developing countries like Nigeria compared to developed countries like the USA.

3.2.6. Stock market condition

Welch (2004) argues that firms do not rebalance capital structure changes caused by stock price shocks. Therefore, stock returns are considerably more important in explaining debt-equity ratios than all previously identified proxies. Market timing theories make similar pre- dictions, but the effects come from managers actively timing equity markets to take advantage of mispricing. The arguments indicate that the stock market condition is critical to the speed of adjustments.

3.2.7. Macroeconomic conditions

During expansions, stock prices go up, expected bankruptcy costs go down, taxable income goes up, and cash increases. If pecking order theory holds, leverage should decline since internal funds increase during expansions, all else equal. In Nigeria, Growth in GDP would adequately spur the speed of adjustments.

Conclusively, the factors discussed in this study influence the speed of adjustments to the capital structure decision, country models and level of development, making it difficult for the effect to remain consistent; however, in a broader application, the existence of these variables have remained constant and can be used to tests the estimates of the speed and develop a predictive instrument.

3.3. Deployment of a Generalised Predictor

The findings from the review indicate that most scholars concentrated on determining the speed of adjustments to capital structure decision estimates. Though understanding the speed of adjustments will explain how fast the capital structure targets can be attained, a predictive model can further strengthen financial decisions. Appendix Table 1 shows the models adopted by several studies on estimating the speed of adjustment.

Table 1 shows that most scholars discussed estimating the speed of adjustments using either the regression model, GMM or citation analysis. Though Ayala and Balzsek (2020) used the Harvey and Chargrity (2008) model in their estimation, which is an extended regression model, some studies adopted the pooled OLS regression model, difference GMM, and systems GMM (Ezeani, 2019; Bolarinwa and Adegboye, 2020). However, most studies relied on the regression model as a tool for analysis. The analysis revealed that none of the studies used the estimator as a predictive model to establish whether the existence of some of the controlled factors that influence the speed of adjustments, whether combined or controlled, may give the theoretical underpinnings of the targeted adjusted trade-off theory combined with the pecking order theory would provide an explained prediction that may be generalised.

4. CONCLUSION AND RECOMMENDATION

The study explored the speed of adjustments in the capital structure decision of non-financial firms in Nigeria, a conceptualisation analysis. The study identified key factors of the size of firms, profitability, assets, growth, and economic factors, amongst others, as determinants of the speed of adjustments relying on the pecking order theory and dynamic trade of theory as theoretical underpinnings explaining the effect on the capital structure. In addition, this study noted that regression analysis, systems and differential GMM and the SFA models were used as estimators of the speed of capital structure adjustments. But none of the reviewed studies did not argue for using a predictor that can be adopted as a generalised model.

This study recommended empirical research that combines factors of firm, industry, or country-specific characteristics in determining the speed of adjustments of capital structure in Nigeria. It is also recommended that further study on the capital structure should attempt the use of a generalised model that can sufficiently predict the optimum target capital structure by firms. The predictive model would ensure that firms determine the most appropriate capital structure and financing mix.

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APPENDIX 1

Appendix Table 1: Analysis of models for estimation of the speed of adjustments of capital structure

S/N	Author	Models
1.	Gan and Chen (2021); Daniela et al. (2020); Giovanni et al. (2020); Hussain et al. (2020); Ayala and Blazsek (2020); Ma and Xu (2020); Cardoso and Pinheiro (2020); Dao and Ta (2020); Arief et al. (2020); Goel (2019); Li et al. (2019); Ezeani (2019); Apanisile and Olayiwola (2019); Karpavičius and Yu (2019); Oino and Ukaegbu (2015); Haron et al. (2013); Chekanskiy (2009); Huang and Ritter (2009)	Regression analysis: Various variants of regression analysis like fixed and random effect regression models; dynamic partial equilibrium model developed; dynamic partial adjustment
2	Bajaj et al. (2020).	Citation analysis
3	Bolarinwa and Adegboye (2020); Warmana et al. (2020); Ezeani (2019); Ganiyu et al. (2018); Oino and Ukaegbu (2015). Lemma and Negash (2014)	Difference GMM, system GMM and stochastic frontier

Source: Author's Compilation, 2021