



**Strathmore**  
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**TESTING THE TRADE OFF THEORY AND THE PECKING ORDER THEORY  
OF CAPITAL STRUCTURE IN KENYA'S LISTED FIRMS.**

**KARANI LINDA SILINGI.**

**ADM NO: 082457**

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..... Karani Linda Silingi ..... [Name of Candidate]  
..... Karani ..... [Signature]  
..... 14/12/17 ..... [Date]

This Research Project has been submitted for examination with my approval as the Supervisor.

..... Dan Chere ..... [Name of Supervisor]  
..... [Signature] ..... [Signature]  
..... 14 Dec 2017 ..... [Date]

Strathmore Institute of Mathematical Sciences  
Strathmore University

### Abstract

The static tradeoff and pecking order models are tested on a sample data of 19 Kenyan firms listed on the Nairobi stock exchange for the period 2006-2016. Empirical results prove that both models can explain some part of the capital structure. The static tradeoff model shows that firm leverage is affected by several determinants, and the pecking order model displays similar movements between the change of long-term debt and financial deficit. However, both models have shortcomings. The static tradeoff model fails to explain the differences across sectors and the pecking order model fails to explain the low deficit coefficient.

Keywords: Static tradeoff theory; Pecking order theory; Capital structure



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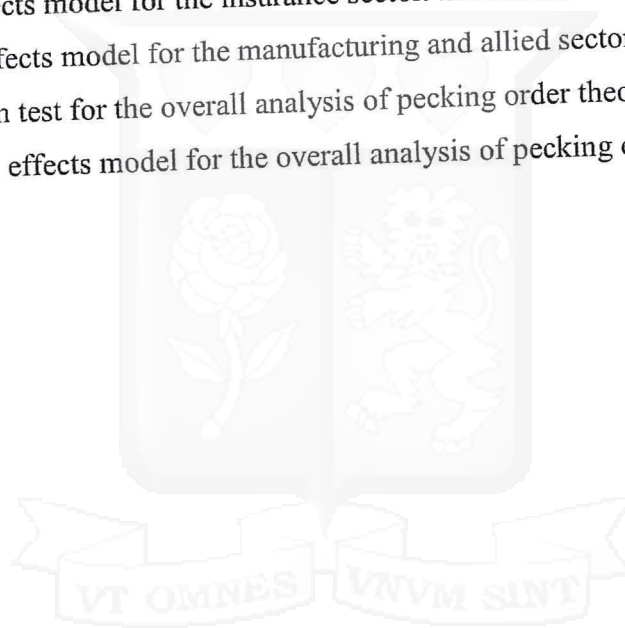
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## CHAPTER ONE: INTRODUCTION.

### 1.1 Background of the study.

The theory of capital structure is important for firms as they are constantly making financing decisions. This theory attempts to explain the sources and strategy of finance for assets of the firm. The decision of capital structure is called 'The Capital Structure Puzzle' by Stewart Myers (1984). This is so because no single theory can explain the financing decision of the firms. One of the prominent forms of dilemma is choosing between debt and equity for financing. How is the leverage of the firm determined in the world in which future cash flows are uncertain and in which capital can be obtained in various forms ranging from pure debt to pure equity is quite a paradox. Adding to this is the complex agency problem at all levels, that is, between insiders and the outsiders as well as among the insiders. Corporate decisions on capital structure policy have long been a subject of debate and still remain an unresolved issue.

Awan & Amin (2014) state that there are two schools of thought on capital structure. First, that the value of a firm is independent of its capital structure: this means that a firm's combination of securities does not have an effect on its value. Modigliani & H. Miller, (1958) put a proposition that the market value of any firm is independent of its capital structure and market securities in a perfect financial market where there is no taxes, bankruptcy costs, agency costs, and asymmetric information. However, in reality, the assumptions are irrelevant. Therefore in 1963, Modigliani and Miller considered the implication of taxes on debt versus equity in the companies' capital structure and Miller (1977) addressed the issue more specifically, showing that under some conditions, the optimal capital structure can be complete debt finance due to the preferential tax treatment of debt relative to equity.

The second school of thought says that the value of a firm is dependent of its capital structure: this means that a firm's combination of securities have an effect on its value.

Shahar et al (2015) state that from a theoretical point of view, the two widely used models for capital structure are the trade-off theory and the pecking order theory. They are the more accepted theories to model the financing behavior followed by the firms.

According to these two main theories, capital structure decisions are influenced by several firm characteristics, namely: profitability, size, age, growth opportunities, risk, asset structure, non-debt tax shields, and others. Pecking Order and Trade-off theories do not converge regarding the influence of these determinants on capital structure decisions. The establishment of a theory which explains a particular firm's behavior is more of an empirical issue. Hence a careful testing based on a proper model is very crucial for understanding the capital structure behavior which this study aims to achieve.

### **1.1.1 Theories of capital structure.**

#### **1.1.1.1 Trade off theory.**

This theory fits in the literature initiated by Modigliani and Miller (1958) upon strong assumptions such as capital markets are perfect and there are neither tax or agency costs nor transaction costs and demonstrate that financial structure is neutral vis-à-vis the value of the company. Later on, Modigliani and Miller (1963) relax the neutrality axiom and include taxation: the value of an indebted company is equal to that of a non-corporate debt, plus the present value of the tax savings from debt and less the present value of costs related to potential financial difficulties. Hence, because interest are deductible from taxable profits, firms have an incentive to use debt rather than equity

According to the trade-off theory of capital structure, there exists an optimal leverage ratio of the firms. A firm would always want to be near the optimal (target) debt level and if any deviation happens, it gradually moves back to it. This optimal level is achieved by making tradeoff between the gains from debt or equity to the loss from them. Benefits include interest tax shield and the costs include bankruptcy costs, agency costs, etc.

#### **1.1.1.2 Pecking order theory.**

Myers and Majluf (1984) developed Pecking Order Theory (POT) upon the asymmetry of information between internal stakeholders (owners and managers) and external providers of the firm. Business leaders adopt a financial policy, which aims at minimizing the costs associated with asymmetric information, especially adverse selection, and prefer internal financing to external financing. The pecking order theory says that there is no well-defined target debt level which firms try to achieve. Firms raise external finance only when internal

finance is not sufficient. The theory says that firms prefer internal finance over external finance and debt over equity.

Asymmetric information should drive the issue of debt over equity. Debt issuance signals the confidence of the board that an investment is profitable and that the current stock price is undervalued. Equity issuance signals a lack of confidence in the board that may feel the share price is overvalued. An issue of equity would therefore lead to a drop in share price.

However, this may not apply to intangible assets.

## **1.2 Statement of the problem.**

Since the formulation of the Modigliani and Miller irrelevance proposition, financial economists have been debating whether there is such a thing as optimal capital structure—a proportion of debt to equity that maximizes current firm value. Some finance scholars have followed Modigliani and Miller by arguing that both capital structure and dividend policy are largely “irrelevant” in the sense that they have no significant, predictable effects on corporate market values. According to Myers (2001), “there is no universal theory of the debt -equity choice, and no reason to expect one”. However most of the studies use a conditional theory to examine the determinants of capital structure in one company, sector or country. A conditional theory means that there are some determinants related to the case subject to analysis. Frank and Goyal (2009) explain that the conditional theories can be divided into three theories: Pecking-order theory, Tradeoff theory and Market timing theory.

The focus of this study is the pecking order theory and the tradeoff theory. Capital structure decisions are essential to shareholders, managers and researchers seeking to understand market dynamics. Several studies have been in this area unfortunately researchers have obtained different results as discussed in the literature review e.g Fama and French (2002), Frank and Goyal (2003) and Shyam-Sunder and Myers (1999).

Although the vast majority of empirical studies that analyze the determinants of firm financing usually examine large publicly listed companies that often raise funds by issuing corporate debt or equity onto capital markets (Zingales 2000), they fail to conduct a sector analysis which is a problem this study aims to address. In addition, a lot of research has been conducted in developed countries. The conclusions drawn from theoretical and empirical research carried out in developed economies may not be appropriate for developing countries.

Lastly, most research has also focused on capital structure determinants as a whole rather than testing a particular theory (e.g., Jordan et al. 1998; Michaelas et al. 1999; Sogorb-Mira 2005). This study also aims at addressing this problem which may in turn help in improving future policy decisions.

### **1.3 Research objective.**

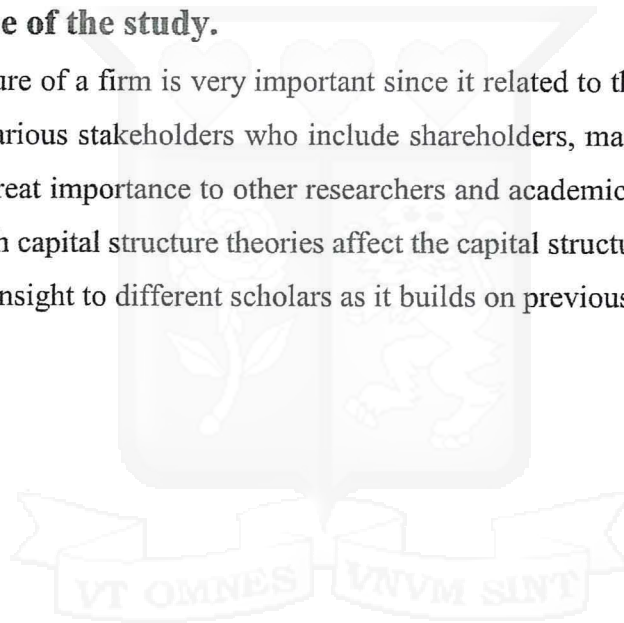
The objective of this study is to determine to what extent the pecking order theory and the tradeoff theory determine the capital structure of listed companies in Kenya.

### **1.4 Research question.**

To what extent do the pecking order theory and the tradeoff theory determine the capital structure of listed companies in Kenya?

### **1.5 Significance of the study.**

The capital structure of a firm is very important since it related to the ability of the firm to meet the needs of its various stakeholders who include shareholders, managers and researchers. This study will be of great importance to other researchers and academicians who seek to understand the extent to which capital structure theories affect the capital structure of different companies. It will also provide insight to different scholars as it builds on previous research.



## CHAPTER TWO: LITERATURE REVIEW.

This section outlines the different literature on the trade off and pecking order.

### 2.1 Trade off theory.

According to this theory, companies seek to obtain optimum capital structure and weigh up the advantages and disadvantages of an additional monetary unit of debt. The advantages of this approach include interest payments being deductible from company tax (Modigliani and Miller 1963; DeAngelo and Masulis 1980). Furthermore, the problem of free cash flow is reduced (Jensen 1986; Stulz 1990). The disadvantages of debt include the potential cost of financial distress (Kraus and Litzenberger 1973; Kim 1978) and agency costs arising between owners and financial creditors (Jensen and Meckling 1976; Myers 1977). If optimal capital structure is reached the benefits and shortfalls of debt offset each other and equilibrium is achieved. In this sense, Myers (1984) showed that the trade-off approach implied the rate of real company indebtedness reverting to a target or optimum level.

Companies are more likely to choose debt financing up to a certain level where the cost of financial distress start to surface. Type of assets owned by the companies will determine the cost. For example, if a company has a considerable portion tangible assets i.e. land or property, they would have less financial distress compared to companies that rely on intangible assets. Normally, for debt financing the company needs to provide a guarantee in the form of collateral. Frank and Goyal (2005) break Myers's earlier notion of trade-off into two parts:

- i. The static trade- off theory - Myers (1984) defines the static theory as “setting a target debt-to-value ratio and then gradually moving towards it” (Myers, 1984). Optimal debt ratio is a combination of benefits and costs related to borrowing. The time period for the trade-off must be, according to Frank and Goyal (2007), one single period. This includes balancing debt tax shields against the cost of bankruptcy. Equity is substituted by debt and the opposite way around until the maximal value of the firm is reached (Myers, 1984).
- ii. Dynamic trade off theory-The dynamic models contain features that allow the trade-off theory to provide a better account of how firms finance their operations than had been

previously thought” (Frank and Goyal, 2007). Unlike the static trade-off theory, a dynamic theory contains multiple periods. This makes it possible to include adjustment costs and expectations for the future.

## **2.2 The pecking order theory.**

The theory emerges as a result of asymmetric information present in financial markets. That is, corporate managers often have better information about the health and prospects of their companies than outside investors. Apart from the transaction costs involved in issuing new securities, companies have to accept the information costs arising from asymmetric information. In this sense, new securities issued on financial markets could be undervalued due to information asymmetries. This is especially the case with new equities. Consequently, company managers may decide not to launch potentially profitable projects if they have to be financed by risky financial instruments (Myers and Majluf 1984). As a result, theory predicts a hierarchical order in a company's financing policy. This order is led by the financial sources that are least subject to information costs and at the same time involve less risk. Internally generated funds are the preferred source of financing, followed by low-risk short-term debt and then higher- risk long-term debt. The last option is new capital, which is the source of financing with the highest information costs (Donaldson 1961; Myers and Majluf 1984).

From the perspective of this approach, changes in the level of debt are not motivated by the need to reach a given debt target, but rather the need for external financing, once internal resources have been exhausted and assuming that opportunities for profitable investment exist. In line with this theory, the key to a firm's financing is the amount of internal resources that are obtained and the existence of profitable investments. Thus, one way of testing this theory is by examining financing decisions made after short-term changes in profits and investments, that is, by using the theoretical relationship between changes in the level of debt and a firm's need for funds. In this manner, debt is increased or decreased depending on whether or not investment requirements exceed the funds available internally (Shyam-Sunder and Myers 1999)

Additionally, the pecking order theory can be alternatively tested by regressing a firm's debt over the main factors that summarize the essential financial behavior in this approach (Jordan

et al. 1998; Michaelas et al. 1999). Thus, firms will tend to be less indebted as they generate more internal resources.

The pecking order theory predicts that debt typically grows when investment exceeds internal funds and falls when investment is less than internal funds. Therefore, the managers' problem in each period is to decide which changes they will make in each financing resources, given the size of their financing deficit (surplus) and the market conditions.

### **2.3 Empirical evidence.**

Shyam-Sunder and Myers (1999) test the static tradeoff against the pecking order models, using a sample of 157 U.S. firms that had traded continuously over the period 1971 to 1989. In the paper, they embody the pecking order theory in a basic model, indicating the external debt financing driven by the internal financial deficit, and adopt a target adjustment model as the proxy for the static tradeoff theory. They find that the pecking order model has greater time-series explanatory power than the tradeoff model. They furthermore investigate the statistical power of the two models on hypothetical data generated by Monte Carlo simulation. Their result is that the target-adjustment model can generate statistically significant results even when the financing is generated only by the pecking order, while on the contrary the pecking order model is correctly rejected when the data is generated following the target adjustment model.

Chirinko and Singha (2000) inquire into the validity of inferences based on Shyam-Sunder and Myers' basic pecking order model. They illustrate that in three situations, namely, i) when "equity issues constitute a more substantial percentage of overall external finance", though the firm prefers debt to equity financing; ii) when "equity issues are in the middle of the financial hierarchy", rather than at the end of the hierarchy; and iii) when "debt and equity are always issued in fixed proportions" (Chirinko and Singha, 2000, pp.422-24), the basic model proposed by Shyam-Sunder and Myers would generate misleading results. They claim that Shyam-Sunder and Myers' empirical evidence cannot evaluate the pecking order theory, and call for alternative models to test the competing theories.

Hovakimian, Opler, and Titman (2001) examine the firms' debt-equity issuance (reduction) choice and find that deviation from the target leverage plays a more significant role in the repurchase decision than in the issuance decision of securities. Their results are consistent with the pecking order model in the short-run and reversion to the target leverage in the long-run.

Fama and French (2002) test the tradeoff and pecking order predictions about debt and dividends with target-reverting models, different from models applied by Shyam-Sunder and Myers and Frank and Goyal. By testing on over 3000 firms covering the period of 1965- 1999, they find that the tradeoff and pecking order models share many predictions about debt and dividends, but differ at two points, where each of the two suffers a failure, the tradeoff failing to explain why more profitable firms have lower book leverage, and the pecking order failing to explain why small low-leverage growth firms issue large equity. Furthermore, they point out that when the two theories share common predictions, it is difficult to tell which theory the empirical results follow.

Lemmon and Zender (2002) find no supporting evidence for the trade-off theory, yet the costs of adverse selection were not able to explain the pecking order financing behavior that they documented.

Frank and Goyal (2003) adopt Shyam-Sunder and Myers' pecking order model with some modification, and test the theory on a broad cross-section of publicly traded U.S. firms over the period 1971 to 1998. They conclude that when it comes to a larger sample, firms of all sizes, and a longer period, the pecking order model cannot provide a satisfactory explanation, and net equity issues better track the financing deficit.

Korajczyk and Levy (2003) find that the deviation from the target capital structure has a significant role in the firm's choice of which type of security to issue or repurchase. In addition, their findings support the Hovakimian, Opler, and Titman's (2001) results that firms adjust toward the target leverage more actively than suggested by Shyam-Sunder and Myers (1999).

## 2.4 Research gap in existing literature.

There are three identified gaps from the existing literature which are addressed in this study, these gaps are identified below:

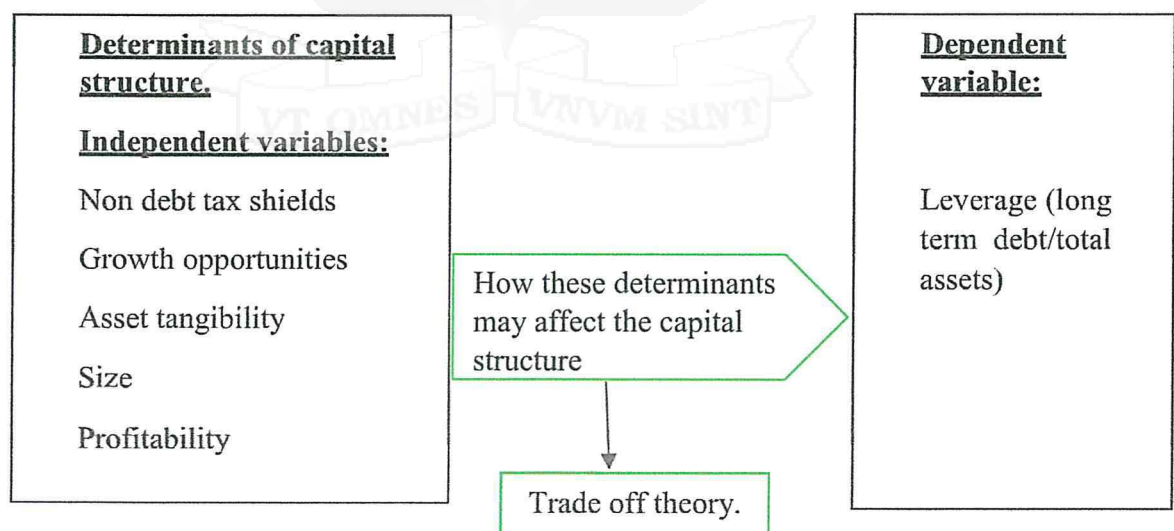
First, most of the above studies have been carried out in already developed countries. Very few studies have been conducted in emerging and developing countries which is a problem this study will address.

Second, most previous empirical works on the tradeoff theory use the partial adjustment model. The partial adjustment model employed to examine the trade-off theory assumes that firms within the same industry and across industries adjust toward their target capital structure with the same rate. Such an assumption ignores the fact that there are significant differences in the characteristics of firms within the same industry and across industries that affect the rate of adjustment.

Another existing gap is that most studies focus on the determinants of capital structure as a whole rather than testing a particular theory.

## 2.5 Trade off theory conceptual framework.

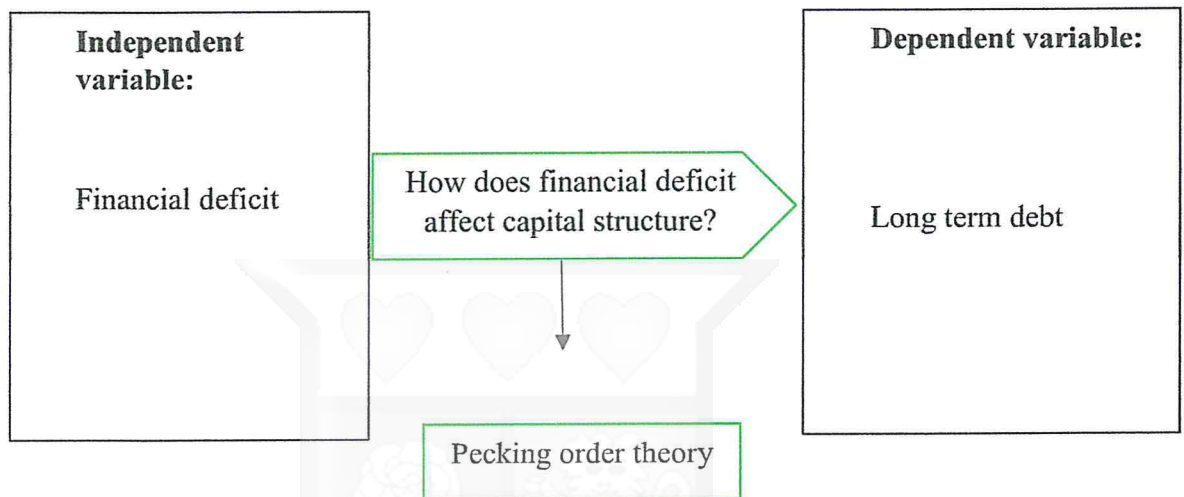
Figure 1: trade off theory conceptual framework



As shown in the above diagram the independent variables are non-debt tax shields, growth opportunities, asset tangibility, size and profitability while the dependent variable is leverage.

## 2.6 Pecking order theory conceptual framework.

Figure 2: pecking order conceptual framework



As shown in the above diagram the independent variable is financial deficit while the dependent variable is long term debt.

## CHAPTER 3: RESEARCH METHODOLOGY.

This chapter will include research design, research approach, variables, population, sample and sampling techniques. The chapter will also cover the estimation models used to perform the study.

### 3.1 Research design.

The research follows a causal (explanatory) design approach as it aims to explore and explain the relationship between dependent and independent variables while providing additional information about the topic.

### 3.2 Population.

The population consists of a total of 65 companies traded on the Nairobi Securities Exchange from different sectors.

### 3.3 Sampling.

To obtain a representative sample from the population, I will select 18 listed companies from different sectors using simple random sampling. Every firm will have an equal probability of being chosen.

### 3.4 Data collection.

Data will be collected from secondary sources. The secondary data will be derived from the annual financial statements of these companies. The study used data for the period 2006- 2016

### 3.5 Variables.

The choice of variables and respective proxies was based on previous studies, such as Titman and Wessels (1988); Michaelas *et al.* (1999); De Miguel and Pindado (2001); Sogorb-Mira (2005); Ramalho and Silva (2009); González and González (2012), and Serrasqueiro and Maçãs Nunes (2012).

The following table presents the variables to be used in this study, together with their corresponding measures.

VARIABLES	MEASUREMENT
<b>Dependent variable</b>	
Leverage	Long term Debt/ total assets
<b>Independent variables</b>	
Non debt tax shields(NDTS)	Measured using the ratio between depreciation and total assets
Growth opportunities(GO)	Ratio between intangible assets and total assets (Michaelas et al., 1999).
Asset tangibility( TANG)	Ratio between fixed assets and total assets (Michaelas et al., 1999; Bevan and Danbolt, 2000).
Size(SIZE)	Obtained using the natural logarithm of total assets, with the aim of controlling a possible non-linearity in the data, and the consequent problem of heteroskedasticity (Cardone and Cazorla, 2001; Fama and French, 2002).
Profitability(PROF)	Ratio between earnings before interest and taxes (EBIT) and assets (Michaelas et al., 1999; Fama and French, 2002).

### **3.6 The model**

#### **3.6.1 The static trade off model.**

##### **3.6.1.1 The conventional regression model.**

Static tradeoff theory is mostly tested by two types of models, the target-adjustment model and the conventional regression model. The target-adjustment model argues that the firm has a target optimal capital structure. Random events drive current debt ratio to deviate from the target, while the firm will try to stick to its target, therefore shows a reverting movement toward the target. However, in empirical analysis, the target debt ratio is not attainable, and then the historical average level of debt ratio is often taken as a substitute.

The conventional regression model is based on the idea that capital structure of the firm is determined by many factors, and by trading off among those factors, the firm can reach an optimal capital structure. In empirical analysis, the conventional regression model is more often applied than the target-adjustment model. One reason is that the latter requires data covering a much longer span, which is not always attainable. In this paper, the conventional regression model is applied to test the static tradeoff theory. The model is as below with the variables of firm  $i$  measured at the end of period  $t$ .

$$\text{Leverage}_{it} = \alpha + \beta_1 \text{Profitability}_{it} + \beta_2 \text{Tangibility}_{it} + \beta_3 \text{Size}_{it} + \beta_4 \text{NDTS}_{it} + \beta_5 \text{GO}_{it} + \varepsilon_{it}$$

##### **3.6.2 Determinants of Capital Structure and Their Theoretical Implications.**

In the above model, the dependent variable is the leverage of the firm, and the five independent variables, also the five determinants of capital structure, are profitability, tangibility, firm size, non-debt tax shields (NDTS), and growth opportunity (GO), respectively. Theoretical studies of the static tradeoff theory have done much on defining determinants of the capital structure and predicting their signs on the capital structure. This study discusses the summary below:

### **3.6.2.1 Profitability.**

The static tradeoff theory generally predicts a positive correlation between profitability and firm leverage. According to tax-based models, an important benefit of debt is the corporate tax shields of debt. More profitable firms with higher returns will, *ceteris paribus*, have the incentive to borrow more, in order to acquire more income tax shields. Agency-cost-based models also suggest that firms with higher profitability will tend to have higher debt ratio. According to Jensen (1986), debt can serve to control the free cash flow problem. Large amount of free cash flow under the control of the managers will lead to their investment in low-return projects and a waste of firm resources. Substituting debt for stock can limit the managers' control over free cash flow and reduce the consequent agency costs. Therefore, firms with higher profitability will tend to have more debt in their capital structure.

### **3.6.2.2 Tangibility.**

The static tradeoff theory predicts a positive correlation between capital structure and firm tangibility. Jensen and Meckling (1976) point out that agency costs of debt happen because managers have the incentive to transfer wealth from debt holders to themselves (as equity holders) by investing in high risky projects after selling bonds. Lenders would be more willing to offer loans to firms with higher proportion of tangible assets. Large proportion of tangible assets can serve as collateral, reducing lenders' risk of suffering from wealth transferring; tangible assets are also suggested to have higher liquidation value than intangible assets. Therefore leverage of a firm will increase with its tangibility.

### **3.6.2.3 Size.**

Leverage and firm size are theoretically predicted to have a positive correlation. First, large firms are generally considered to be able to borrow at a cheaper cost of capital, because of their advantages in economic scale. Second, large firms are more likely to have diversified financing resources, and therefore have less possibility of going bankruptcy. Third, large firms are supposed to be sounder in their economic activities with less volatility. Therefore leverage and firm size are positively correlated.

### **3.6.2.4 Non-Debt Tax Shields.**

DeAngelo and Masulis (1980) first introduce the concept of "non-debt corporate tax shields," referring to depreciation deductions, depletion allowances and investment tax credits. They

argue that non-debt corporate tax shields can substitute for debt in shielding from corporate tax. More tax benefits from non-debt tax shields, *ceteris paribus*, will lead to less need for debt, and therefore leverage of the firm is negatively correlated to the non-debt tax shields.

### 3.6.2.5 Growth Opportunity.

The static tradeoff theory suggests a negative correlation between growth opportunity and firm leverage. One reason is that high growth is mostly considered to be accompanied by high bankruptcy risk, and consequently lowers down debt ratio. Also according to the agency costs of debt pointed out by Myers (1977), highly levered firms are more likely to pass up profitable investment opportunities. The reason is that when debt ratio is very high, equity holders bear the risk and cost of investments, while debt holders might gain most of the returns.

### 3.6.3 The Pecking Order Model.

In this paper the simple pecking order model originally developed by Shyam-Sunder and Myers (1999) and modified by Frank and Goyal (2003) will be applied to test the pecking order theory.

Define:

$DIV_{it}$  = dividend payments

$X_{it}$  = capital expenditure

$\Delta W_{it}$  = net increase in working capital

$C_{it}$  = operating cash flows after interest and taxes

$D_{it}$  = long-term debt outstanding

With the variables of firm  $i$  measured at the end of period  $t$ . The funds flow deficit is defined as:

$$DEF_{it} = DIV_{it} + X_{it} + \Delta W_{it} - C_{it}$$

The basic equation to be tested is:

$$\Delta D_{it} = \alpha + \beta_{PO} DEF_{it} + \varepsilon_{it}$$

Where  $\Delta D_{it}$  is the amount of long-term debt issued - or retired, if  $DEF_{it}$  is negative. The pecking order coefficient is  $\beta_{PO}$ .

According to Shyam-Sunder and Myers (1999), this simple model of the pecking order theory indicates that when a firm has need of external cash flows for its real investment and dividend payment commitments, the firm issues debt.

The strict form of the pecking order hypothesis expects  $\alpha = 0$  and  $\beta_{PO} = 1$ , predicting that all funds flow deficit is made up by issuing debt. But they also point out that, "if costs of financial distress are serious, the firm will consider issuing equity to finance real investment or pay down debt. Thus a broader pecking order hypothesis would accommodate some equity issues" (Shyam-Sunder and Myers, 1999, p.225). Therefore, the broader form of the model will expect  $\beta_{PO} < 1$  but close to 1.



## CHAPTER 4: FINDINGS OF THE STUDY.

This chapter presents results of data analysis and research findings. The study uses panel data analysis to estimate the parameters of interest. All estimations in this study are undertaken by the statistics package, Stata. First, a joint regression analysis for the combined sectors is conducted for both the trade off and pecking order theories followed by a separate regression analysis for each sector. The study then presents an interpretation of the findings.

### 4.1 Trade off theory.

#### 4.1.1 Overall analysis.

The parameters of the tradeoff model are estimated using both the fixed effects and random effects model. A test to choose between the fixed effects and random effects model is then carried out. A p-value of 0.0001 is less than the level of significance (0.05) and hence the random effects model is rejected. Therefore the fixed effects model can be applied. This is shown below:

**Figure 3:** Hausman test for overall analysis of trade off theory.

```

hausman fixed random

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	Coefficients		(b-B) Difference	sqrt (diag (V_b-V_B)) S.E.
	(b) fixed	(B) random		
go	.3508465	.2322315	.118615	.0569586
tangibility	.4370423	.393215	.0438272	.0473656
size	.0335462	.0453378	-.0117916	.0071459
profitability	.0749264	.0545189	.0204075	.0210891
ndts	-.5830808	-1.02684	.443759	.3160272

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$\chi^2(5) = (b-B)' [(V_b-V_B)^{-1}] (b-B)$   
 = 27.23  
 Prob>chi2 = 0.0001

Results from the fixed effects model are shown below:

Figure 4: fixed effects model for overall analysis of trade off theory.

```

Fixed-effects (within) regression
Group variable: companynum

R-sq:  within = 0.1398
        between = 0.1470
        overall = 0.1434

Number of obs   = 209
Number of groups = 19
Obs per group: min = 11
                avg  = 11.0
                max  = 11

corr(u_i, Xb) = -0.2357
F(5,185)      = 6.01
Prob > F      = 0.0000
    
```

leverage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
go	.3508465	.3443444	1.02	0.310	-.3285003 1.030193
tangibility	.4370423	.0965339	4.53	0.000	.2465935 .6274911
size	.0335462	.0234218	1.43	0.154	-.012662 .0797544
profitability	.0749264	.0962342	0.78	0.437	-.1149312 .2647839
ndts	-.5830808	.7703477	-0.76	0.450	-2.102877 .936715
_cons	-.192183	.1758048	-1.09	0.276	-.5390231 .1546571
sigma_u	.18462821				
sigma_e	.07496878				
rho	.85845842	(fraction of variance due to u_i)			

F test that all u\_i=0: F(18, 185) = 43.77 Prob > F = 0.0000

**Interpretation.**

Jointly all the variables are significant as shown by the F test with a probability of 0. Looking at the variables individually only asset tangibility is significant, this could be due to differences across the panel indicated by a high rho of 85.84%.

**Growth opportunities.**

The go coefficient of 0.35084 indicates a positive relationship between growth opportunities and leverage although not statistically significant (significant level=0.310). This is contrary to most prior studies such as Myers (1984) who get a negative relationship. Myers states that as bankruptcy and agency costs are greater for firms with high expectations of growth opportunities, firms can be reluctant to use high amounts of debt so as not to increase their

likelihood of bankruptcy. As a result, firms with high growth opportunities may not use debt as the first financing option.

#### **Asset tangibility.**

The tangibility coefficient of 0.437 which is significant indicates a positive relationship. This result confirms with most prior studies such as Long& Malitz (1985), Rajan&Zingales (1995) and Booth et al (2001). Michaelas et al. (1999) claim that firms, with valuable tangible assets, which can be used as collaterals, have easier access to external finance, and they have probably higher levels of debt than firms with low levels of tangible assets.

#### **Size.**

The size coefficient of 0.0335 indicates a positive relationship of size and leverage although it is statistically insignificant (significance level=0.154). This is consistent with most prior studies such as Rajan&Zingales (1995) and Booth et al (2001) who also find a positive relationship. Larger firms tend to have greater diversification of activities that implies less likelihood of bankruptcy (Titman, Wessels 1988). In addition, large firms with less volatile profits are more likely to take advantage of the debt tax shields, so increasing the potential benefits of debt (Smith, Stulz 1985).

#### **Profitability.**

The profitability coefficient of 0.07492 indicates a positive relationship between profitability and leverage. The profitability coefficient is however statistically insignificant (significance level=0.437). This result is consistent with some prior studies. The most profitable firms have capacity for a higher level of debt, taking advantage of debt tax shields (Fama, French 2002). Highly profitable firms are likely more able to fulfil their responsibilities regarding the repayment of debt and interests, which contributes to a less likelihood of bankruptcy.

Rajan&Zingales (1995) and Booth et al (2001) however, find a negative relationship.

#### **Non debt tax shields.**

The ndts coefficient of -0.58308 indicates a negative relationship between non debt tax shields and leverage. The ndts coefficient is however statistically insignificant (significance level=0.45). According to DeAngelo and Masulis (1980), non-debt tax shields, such as

deductions allowed by depreciations and investment tax credit could substitute the role of tax savings permitted by debt. This implies that a firm with a high level of non-debt tax shields will probably have a lower level of debt than a firm with low non-debt tax shields. Bradley, et al. (1984) and Chaplinsky and Niehaus (1990) also find a negative relationship between non debt tax shields and leverage.

#### 4.1.2 Sector analysis.

##### 4.1.2.1 Agriculture industry results.

The hausman test is carried out and the random effects model is chosen. The results are as shown below:

**Figure 5:** Random effects model for the agriculture industry.

```

Random-effects GLS regression           Number of obs   =       22
Group variable: companynum~r          Number of groups =        2

R-sq:  within = 0.3996                 Obs per group:  min =       11
      between = 1.0000                   avg =      11.0
      overall = 0.4042                   max =       11

Wald chi2(5) =      10.86
Prob > chi2 =      0.0543

corr(u_i, X) = 0 (assumed)
theta = 0
  
```

leverage	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
go	-8.546476	4.840075	-1.77	0.077	-18.03285	.9398971
tangibility	-.1193047	.1116901	-1.07	0.285	-.3382134	.0996039
size	.0101717	.0579713	0.18	0.861	-.1034501	.1237934
profitability	.1807339	.1487929	1.21	0.224	-.1108948	.4723626
ndts	3.39079	1.893149	1.79	0.073	-.3197125	7.101293
_cons	.1074205	.3835119	0.28	0.779	-.6442489	.8590899
sigma_u	0					
sigma_e	.04065871					
rho	0	(fraction of variance due to u_i)				

For the agriculture sector, this study found growth opportunity and asset tangibility to be negatively but insignificantly correlated with leverage. The coefficients recorded were -8.5464 and -0.1193 respectively. Size, profitability and non-debt tax shields were positively but insignificantly correlated with leverage. The coefficients recorded were 0.01, 0.181 and 3.391 respectively.

**Table 1: Agriculture industry comparison with overall analysis results.**

<b>Variable</b>	<b>Coefficient sign</b>	<b>Comparison with the overall analysis</b>
Growth opportunity	-	Inconsistent
Asset tangibility	-	Inconsistent
Size	+	Consistent
Profitability	+	Consistent
Non debt tax shields	+	Inconsistent

#### **4.1.2.2 Banking industry results.**

For the banking industry, the hausman test was carried out but the test could not choose between the random effects or fixed effects model. This is because the data failed to meet the asymptotic assumptions of the hausman test.

#### **4.1.2.3 Commercial and services results.**

The hausman test was ran and the fixed effects model was chosen. The results are as shown below:

**Figure 6:** Fixed effects model for the commercial and services sector.



Fixed-effects (within) regression		Number of obs	=	22
Group variable: companyno		Number of groups	=	2
R-sq: within	= 0.9356	Obs per group: min	=	11
between	= 1.0000	avg	=	11.0
overall	= 0.9480	max	=	11
corr(u_i, Xb) = -0.9947		F(5,15)	=	43.55
		Prob > F	=	0.0000

leverage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
go	-.7095968	.2270684	-3.13	0.007	-1.193582	-.2256121
tangibility	2.238216	.166028	13.48	0.000	1.884336	2.592097
size	.0484068	.0401482	1.21	0.247	-.037167	.1339806
profitability	-.3527868	.161748	-2.18	0.046	-.6975444	-.0080291
ndts	-1.249688	.4949609	-2.52	0.023	-2.304672	-.1947035
_cons	-.8063948	.291377	-2.77	0.014	-1.42745	-.1853393
sigma_u	.72323744					
sigma_e	.02462256					
rho	.99884229	(fraction of variance due to u_i)				

F test that all u_i=0:	F(1, 15) =	97.23	Prob > F =	0.0000
------------------------	------------	-------	------------	--------

In the commercial and services sector, growth opportunity, profitability and non-debt tax shields were found to be negatively and significantly correlated with leverage. The coefficients recorded were -0.7095, -0.3527 and -1.2496 respectively. Tangibility and size were found to be positively correlated with leverage with the coefficients 2.238 and 0.0484 respectively. Size was statistically insignificant while tangibility was statistically significant. The overall R squared observed was quite high.

**Table 2: Commercial and services comparison with results of the overall analysis.**

Variable	Coefficient sign	Comparison with overall analysis.
Growth opportunity	-	Inconsistent
Asset tangibility	+	Consistent
Size	+	Consistent
Profitability	-	Inconsistent
Non debt tax shield	-	Consistent

#### 4.1.2.4 Construction and allied results.

The Hausman test was ran and the random effects model was chosen. The results are shown below

**Figure 7:** Random effects model for the construction and allied sector.

Random-effects GLS regression		Number of obs	=	20
Group variable: company1		Number of groups	=	2
R-sq: within	= 0.0909	Obs per group: min	=	9
between	= 1.0000	avg	=	10.0
overall	= 0.8384	max	=	11
corr(u_i, X) = 0 (assumed)		Wald chi2(5)	=	72.64
		Prob > chi2	=	0.0000

leverage	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
go	-4.098813	6.786461	-0.60	0.546	-17.40003 9.202406
tangibility	.4290187	.2734777	1.57	0.117	-.1069878 .9650251
size	-.1765469	.0667014	-2.65	0.008	-.3072793 -.0458145
profitability	-.0505395	.5402062	-0.09	0.925	-1.109324 1.008245
ndts	-8.990804	2.582014	-3.48	0.000	-14.05146 -3.93015
_cons	1.595226	.5952908	2.68	0.007	.4284774 2.761975
sigma_u	0				
sigma_e	.06009235				
rho	0	(fraction of variance due to u_i)			

In the construction and allied sector, growth opportunity, size, profitability and non-debt tax shields were found to be negatively correlated with leverage. The coefficients observed were - 4.098, - 0.1765, -0.051 and -8.991 respectively. Size and non-debt tax shields were statistically significant while growth opportunity and profitability were statistically insignificant. Asset tangibility was the only determinant found to be positively correlated with leverage. Asset tangibility was however statistically insignificant. The overall R squared observed was quite high (83.84%).

**Table 3: Construction and allied comparison with overall analysis results.**

Variable	Coefficient sign	Comparison with the overall analysis
Growth opportunity	-	Inconsistent

Asset tangibility	+	Consistent
Size	-	Inconsistent
Profitability	-	Inconsistent
Non debt tax shield	-	Consistent

#### 4.1.2.5 Energy and petroleum results.

The hausman test was ran and the random effects model was chosen. The results are as shown below:

**Figure 8:** Random effects model for the energy and petroleum sector.

Random-effects GLS regression		Number of obs = 22	
Group variable: company2		Number of groups = 2	
R-sq: within = 0.7614		Obs per group: min = 11	
between = 1.0000		avg = 11.0	
overall = 0.9349		max = 11	
corr(u_i, X) = 0 (assumed)		Wald chi2(5) = 229.82	
		Prob > chi2 = 0.0000	

leverage	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
go	-.6602037	1.463065	-0.45	0.652	-3.527757 2.20735
tangibility	.712094	.3245196	2.19	0.028	.0760472 1.348141
size	.1911328	.0878049	2.18	0.029	.0190384 .3632273
profitability	.185707	.19898	0.93	0.351	-.2042867 .5757007
ndts	-8.439111	5.756979	-1.47	0.143	-19.72258 2.844361
_cons	-1.406122	.6338855	-2.22	0.027	-2.648515 -.1637291

sigma_u	0
sigma_e	.05390289
rho	0 (fraction of variance due to u_i)

From the results above we observe that tangibility, size and profitability are positively correlated with leverage with the coefficients 0.7121, 0.1911 and 0.1857 respectively. Tangibility and size are statistically significant while profitability is statistically insignificant. Growth opportunity and non-debt tax shields were found to be negatively but insignificantly correlated with leverage with the coefficients -0.6602 and -8.43911 respectively. The overall R squared observed is quite high (93.49%).

Table 4: Energy and petroleum comparison with overall analysis results.

Variable	Coefficient sign	Comparison with the overall results
Growth opportunity	-	Inconsistent
Asset tangibility	+	Consistent
Size	+	Consistent
Profitability	+	Consistent
Non debt tax shields	-	Consistent

#### 4.1.2.6 Insurance sector results.

The hausman test was run and the fixed effects model was chosen. The results are as shown below:

Figure 9: Fixed effects model for the insurance sector.

```

Fixed-effects (within) regression
Group variable: company3
R-sq:  within = 0.8655
        between = 1.0000
        overall = 0.0003
Number of obs   = 22
Number of groups = 2
Obs per group: min = 11
                avg  = 11.0
                max  = 11
corr(u_i, Xb) = -0.6003
F(5,15) = 19.31
Prob > F = 0.0000
    
```

leverage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
go	-6.149049	1.895202	-3.24	0.005	-10.18858	-2.109521
tangibility	-4.293792	2.844493	-1.51	0.152	-10.35669	1.769102
size	-.0580856	.0149425	-3.89	0.001	-.0899348	-.0262364
profitability	-.793114	.2802746	-2.83	0.013	-1.390505	-.1957228
ndts	-1.535705	6.12223	-0.25	0.805	-14.58493	11.51352
_cons	.586875	.1071289	5.48	0.000	.3585351	.8152149
sigma_u	.08001641					
sigma_e	.01263657					
rho	.97566667					

(fraction of variance due to u\_i)

F test that all u\_i=0: F(1, 15) = 39.68 Prob > F = 0.0000

From the results above we observe that all the variables are negatively correlated with leverage with the coefficients -6.149, -4.2937, -0.058, -0.7931 and -1.5357 respectively. Growth opportunity, size and profitability are statistically significant while tangibility and non-debt tax shields are statistically insignificant. The overall R squared as shown above by the fixed effects model is very low. This means that the dependent variables have very little explanatory power.

**Table 5: Insurance industry comparison with overall analysis results.**

Variable	Coefficient sign	Comparison with overall analysis
Growth opportunity	-	Inconsistent
Asset tangibility	-	Inconsistent
Size	-	Inconsistent
Profitability	-	Inconsistent
Non debt tax shields	-	Consistent

#### 4.1.2.7 Manufacturing and allied results.

The hausman test was ran in Stata and the fixed effects model was chosen. The results were as shown below:

**Figure 10: Fixed effects model for the manufacturing and allied sector.**



```

Fixed-effects (within) regression
Group variable: company4

R-sq: within = 0.6620
      between = 0.9656
      overall = 0.5239

Number of obs   = 33
Number of groups = 3

Obs per group: min = 11
                avg  = 11.0
                max  = 11

corr(u_i, Xb) = -0.9415

F(5,25) = 9.79
Prob > F = 0.0000

```

leverage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
go	-.5785103	1.548822	-0.37	0.712	-3.768368	2.611347
tangibility	1.374424	.419299	3.28	0.003	.5108613	2.237986
size	.3234443	.1637334	1.98	0.059	-.0137709	.6606594
profitability	.3824457	.243474	1.57	0.129	-.1189985	.8838898
ndts	-2.761343	2.673634	-1.03	0.312	-8.267795	2.745109
_cons	-2.792339	1.161438	-2.40	0.024	-5.184365	-.4003124
sigma_u	.25390796					
sigma_e	.08129215					
rho	.90702547	(fraction of variance due to u_i)				

F test that all u\_i=0: F(2, 25) = 6.45 Prob > F = 0.0055

From the results above we observe that asset tangibility, size and profitability are positively correlated with leverage with the coefficients 1.374, 0.3234 and 0.3824. Asset tangibility is statistically significant while size and profitability are statistically insignificant. Growth opportunity and non-debt tax shields are negatively but insignificantly correlated with leverage with coefficients -0.5785 and -2.7613 respectively. The overall R squared observed is 52.39%.

**Table 6: Manufacturing and allied Comparison with overall analysis results.**

Variable	Coefficient sign	Comparison with the overall analysis
Growth opportunity	-	Inconsistent
Asset tangibility	+	Consistent
Size	+	Consistent
Profitability	+	Consistent
Non debt tax shields	-	Inconsistent

#### 4.1.2.8 Automobiles, Investment and Telecommunication results.

For these three sectors, a regression could not be run due to the limited data available (one company per sector).

#### 4.1.2.9 Summary.

From the sector analysis conducted above, a higher overall R squared is observed in comparison with the overall analysis in some of the sectors that is commercial and service, construction and allied and energy and petroleum. This indicates a high explanatory power. The static trade off model fails, however, to explain the differences in results across sectors.

### 4.2 Pecking order theory.

#### 4.2.1 Overall analysis.

The parameters of the pecking order model are also estimated using both the fixed effects and random effects model. A test to choose between the fixed effects and random effects model is then carried out. An observed p -value of 0.6853 is greater than 5% level of significance hence the random effects model is chosen. This is shown below:

**Figure 11:** Hausman test for the overall analysis of pecking order theory.

```
. hausman fixed random
```

	Coefficients			sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random	(b-B) Difference	
deficit1	.0647808	.0551248	.0096561	.0238295

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

```
chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
          = 0.16
Prob>chi2 = 0.6853
```

The results from the random effects model are shown below:

**Figure 12:** Random effects model for the overall analysis of pecking order theory.

```

Random-effects GLS regression                Number of obs   =    209
Group variable: companyno                   Number of groups =    19

R-sq:  within = 0.0040                      Obs per group:  min =    11
        between = 0.0013                      avg   =    11.0
        overall = 0.0014                      max   =    11

corr(u_i, X) = 0 (assumed)                   Wald chi2(1)    =    0.61
                                                Prob > chi2     =    0.4347
  
```

longtermde~1	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
deficit1	.0551248	.0705688	0.78	0.435	-.0831875	.193437
_cons	99.2119	10.27788	9.65	0.000	79.06762	119.3562
sigma_u	26.269966					
sigma_e	55.26502					
rho	.18430813	(fraction of variance due to u_i)				

### **Interpretation.**

The simple pecking order model expects  $\alpha = 0$ , meaning if there is no financial deficit, there shall be no change to the debt ( $\Delta D_{it} = 0$  when  $DEF_{it} = 0$ ). However, in this study  $\alpha = 99.2119$ . This indicates that when  $DEF_{it} = 0$ ,  $\Delta D_{it} = 99.2119$ , if there is no funds flow deficit debt will increase by 99.2119 on average. This is contrary to the pecking order theory which states that the drive of change in debt or debt ratio is the need of external funding.

$B_{PO} = 0.05512$  proves that financial deficit (surplus) is part of the drive of the change of long-term debt, but it is far less than the model's expectation of equal to 1.

The ideal of the pecking order theory is that small firms have more problems of asymmetric information and adverse selection, and therefore will finance deficits with debt instead of equity; large firms with fewer asymmetric information and adverse selection problems will

finance with equity. However, the reality is: that small firms bear more bankruptcy risks and other agency problems leads to the difficulties in borrowing, and large firms, conventionally regarded as having sounder management and fewer bankruptcy risks, can borrow more easily and less costly. Small firms, against the theoretical inference, rely heavily on equity issues instead of the debt issues, while large firms issue debt to finance deficits.

Frank and Goyal (2003) prove this through testing the pecking order model for sub-samples by sorting firms into quartiles based on total assets. In their tests for period 1971-1989, the deficit coefficient  $\beta_{PO}$  is 0.164 for smallest firms against 0.753 for largest firms. In the tests for period 1990-1998,  $\beta_{PO}$  is 0.087 for smallest firms against 0.675 for largest firms.

This inherent weak point results in the difficulty of embodying the pecking order theory in concrete models, since firms act against what the theory expects them to do. Firm may have the hierarchy in financing activities, but their real possibility or capability to realize the hierarchy is questionable.

#### 4.2.2 Sector analysis.

The hausman test was ran carried out to choose between the fixed effects and random effects model. For the commercial and service sector, construction and allied sector, energy and petroleum sector and the insurance sector, the random effects model was chosen while for the manufacturing and allied sector the fixed effects model was chosen.

The coefficients observed are presented below:

**Table 7: Pecking order sector analysis coefficients.**

Sector	Coefficient( $\beta_{po}$ )
Commercial and service	0.0432
Construction and allied	0.1515
Energy and petroleum	0.1998
Insurance	-0.1828
Manufacturing and allied	0.0869

The coefficients for the commercial and service sector, construction and allied sector, Energy and petroleum sector and the manufacturing and allied sector show that only a fraction of the financial deficit drives the change in long term debt. This means that there are other factors other than financial deficit that drive the change in long term debt.

In the insurance industry, the relationship between financial deficit and change in the long term debt is negative as indicated by the negative coefficient.

For the agriculture and banking industry, the hausman test was carried out but the test could not choose between the random effects or fixed effects model. This is because the data failed to meet the asymptotic assumptions of the hausman test.

For the automobile, telecommunication and investment sectors, a regression could not be run due to the limited data available (one company per sector).

A very low overall R-squared was observed for all the sectors. This could also be attributed to limited data.



## CHAPTER 5: CONCLUSION AND RECOMMENDATIONS.

### 5.1 Discussion.

From a joint regression of all the sectors in the trade off model, this study shows that firm leverage is affected by the five determinants that is growth opportunity, asset tangibility, non- debt tax shields, size and profitability. Overall, four out of the five determinants are proved to have signs consistent with the theoretical predictions. Asset tangibility is the only variable found to be statistically significant. Growth opportunity was found to be positively correlated with leverage. Myers (1984) however finds a negative relationship. Asset tangibility and size were found to be positively correlated with leverage which is consistent with Rajan&Zingales (1995) and Booth et al (2001). Non debt tax shields were found to be negatively correlated with leverage which is consistent with DeAngelo and Masulis (1980). Profitability was found to be positively correlated with leverage which is consistent with (Fama, French 2002).

A separate regression of each of the sectors in the trade off model shows different results. In the agriculture industry, none of the factors were significantly correlated with leverage. In the commercial and services sector four out of the five factors were found to be significant that is asset tangibility, non-debt tax shields, profitability and growth opportunity. In the construction and allied sector size and non-debt tax shields were the only factors found to be statistically significant. In the energy and petroleum sector tangibility and size were the only factors found to be statistically significant. In the insurance sector growth opportunity, size and profitability were the factors found to be statistically significant. Lastly, in the manufacturing and allied sector, tangibility was the only factor found to be statistically significant.

Literature suggests that debt requirements of a firm in one industry differ from the firm in another industry; hence determinants of capital structure are different across industries (Titman & Wessels, 1988). The reason for this is because in the environment, business risk varies across the industries. In the trade off model, the study of the 10 sectors provided the evidences that determinants of capital structure are different across the sectors/industries as shown by the results in chapter 4. Factors found to be the key determinants in one segment were found to be insignificant in another segment.

The test of pecking order model displays similar movements between the change of long-term debt and financial deficit, indicating that financial deficit (surplus) is part of the drive for the change of long-term debt. However, rather than the model's expectation of a financial deficit coefficient equal to or close to 1, the deficit coefficient in this study is only 0.05512 for an overall analysis and 0.0432, 0.1515, 0.1998, -0.1828 and 0.0869 for a sector analysis. This result indicates that funds flow deficit (or surplus) is not the only drive for the change of long-term debt. This study cannot therefore support the pecking order theory. Frank and Goyal (2003) sort firms into quartiles based on total assets and find a deficit coefficient,  $\beta_{PO}=0.164$  for small firms and  $\beta_{PO}=0.753$  for large firms for the period 1971-1989. They also find a deficit coefficient  $\beta_{PO}=0.087$  for small firms and  $\beta_{PO}=0.675$  for large firms for the period 1990-1998. Shyam-Sunder, L., & Myers, S. C. (1999) find a deficit coefficient  $\beta_{PO}=0.84$  which is close to 1.

## 5.2 Conclusion.

This study tests the static tradeoff model and the pecking order model using panel data estimation on a sample data of 19 Kenyan firms listed on the Nairobi stock exchange for the period 2006-2016. The first chapter of the paper gives us a background of capital structure. The objectives and significance of the research are also mentioned here. The second chapter presents the literature review where the theories of capital structure and empirical literature are discussed. The third chapter presents the models to be tested and finally results are presented in the fourth chapter.

Several empirical studies have examined the pecking order and trade off theory. Shyam- Sunder and Myers (1999) asserted that Pecking Order Theory is better in explaining the firm's behavior rather than the Traditional Trade-off Theory. According to Fama and French (2002) some firms track Traditional Trade-Off Theory while others the Pecking Order Theory but none of them can be rejected.

This study concludes that the tradeoff theory is better at explaining the capital structure of firms.

### **5.3 Policy recommendations.**

Chief Finance officers of firms in various sectors of the economy should take into account the industry norms when making investment decisions. Capital structure of comparable companies in the industry should be considered because it might reflect the unique risks inherent in that industry.

Some of the factors to consider when making capital structure decisions include profitability, size of the firm, growth opportunities of the firm, non-debt tax shields and tangibility of assets.

### **5.4 Limitations of the study.**

Some of the sectors had very few firms due to data unavailability. A regression could not be conducted in these sectors.

The models used in this study are also very simple. Sharper and more dynamic models are called for.

### **5.5 Suggested areas for future research.**

Future research should include more firms and a longer period to increase the efficiency and robustness of the results. Firms should also be divided into small and large size firms for analysis. This is because according to pecking order and trade off theories small and large size firms have different theoretical predictions. Including more firms will also improve the sector analysis.

Secondly, future research should include the target adjustment model in addition to the conventional regression model. Future research should also extend the study period to investigate the effect of business cycles on firms' capital structure in the context of Kenya.

In conclusion future research should consider studying both listed and unlisted firms. This will provide more insight to the capital structure of firms.

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