

AN ANALYSIS OF THE RELATIONSHIP BETWEEN
ASSET STRUCTURE AND DEBT POLICY FOR
COMPANIES LISTED AT THE NAIROBI STOCK
EXCHANGE

BY

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
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2005

DEDICATION

DECLARATION

Grateful to my parents and siblings, your love, support, friendship and patience have been

This research project is my original work and has not been presented for a degree in any other University.

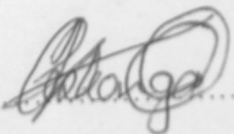
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This research project has been submitted for examination with my approval as a University supervisor.

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DEDICATION

Dedication to my parents and siblings, your love, support, friendship and patience have been a source of inspiration to me.

My special thanks go to Mr. Lushenga for his intellectually stimulating comments, guidance and patience throughout the entire project. Thank you very much.

To all business and fellow MBA students, thank you for your invaluable guidance and support throughout the entire program.

Lastly, I thank my parents, siblings, friends and colleagues for their support and encouragement during my studies.

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ABSTRACT

This paper examined the relationship between asset structure and debt policy of listed companies at the Nairobi stock exchange over the period 1999 to 2003 excluding companies in the financial sector. Several studies have shown that asset structure is a significant factor affecting capital structure of companies. Companies needing new finance will issue equity or debt, depending on prevailing circumstances. The debt policy measures examined were levels of corporate debt, maturity structure, and private versus public debt and priority structure of debt. The study considered book value of total assets and market values as well. The study found a direct relationship between asset structure and both the level of corporate debt, and private versus public debt when market values and book values of total assets were considered. A negative relationship exists between asset structure and maturity structure of corporate debt when both market values and book values of total assets were considered. For priority structure of corporate debt the analysis gave an inconclusive answer.

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CHAPTER 1

1.0 INTRODUCTION

1.1 Background

Any discussion dealing with a company's capital structure decisions and any other value determining aspect of a company must begin with a review of the context for the issue provided by Modigliani and Miller (MM). In their seminal article, Modigliani and Miller (1958) argue that, with perfect capital market, capital structure is irrelevant and that the value of the firm is determined by the earning power of its assets, not how they are financed. The finance literature has made significant progress in explaining corporate financing decisions; increasingly the focus has moved beyond an examination of the basic leverage choice to more detailed aspects of financing decisions such as debt priority, debt maturity structure, and contract provisions.

Since MM (1958), many factors have been identified that may help explain a firm's capital structure decisions. Among the more prominent are corporate taxes, (Modigliani and Miller, (1963)) and bankruptcy costs, (Baxter, (1967)). Other contributions in the field of finance introduce market imperfections in particular, agency costs of equity and debt to bridge the gap between theory and observed reliance by corporations on complex financial instruments. Jensen and Meckling (1976) identify such agency costs associated with managerial consumption of perquisites, and costs associated with managerial incentive to undertake sub optimal risky projects, which transfer wealth from bondholders to stockholders. More recently firm specific factors such as research and development; advertisement, depreciation, intangible assets and risk have been identified as determinant of a firm's capital structure (Titman and Wessel, (1988)). Balakrishnan and Fox (1993) found that firm specific factors account for over 52 percent of the variance in capital structure.

This study looked at asset structure effects on company's debt policy. An asset is a resource controlled by an enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise (IASC-2003). Assets are recognised in the balance sheet when it is probable that the future economic benefit will flow to the enterprise and the assets have value that can be measured reliably. Assets are classified as either current or fixed assets, although this classification has brought about some controversies in regards to what can be termed as liquid hence classified as current and vice versa. Muturi, (1990) argues that current and fixed assets are different in terms of their liquidity. He notes that a firm requires many years to recover the initial investment in fixed assets such as plant and machinery or land and buildings as opposed to investment in current assets, which is turned over in one year. Asset structure plays an especially important role in determining a firm debt policy.

The value of the firm with future discretionary investments can be broken down into the present value of currently held assets and the present value of future options (intangible assets). Intangible assets command value not only to the extent that their yield exceeds the cost of capital, and hence they are analogous to options and valued as such. Specifically Modigliani and Miller (1961) split firm value into two: the present value of the uniform, perpetual earnings on assets currently held; and the present value of the options that the firm offer for making additional investments in real assets that will yield more than the 'normal' (market) rate of return.

A firm basic resource is the stream of cash flow produced by its assets. When the firm is financed entirely by common stock, all the cash flows belong to the stockholders. When it issues both debt and equity securities, it undertakes to split up the cash flows into two streams, a relatively safer stream that goes to the debt holders and a more risky one that goes to the

stockholders. Firm managers are continually faced with choices among various options for their firms' investments. Their investment decisions depend not only on the initial capital requirements and risk exposure of these different investments options, but also on their firm's current budget and costs of raising funds. Furthermore, their decisions will often influence the firm's future asset returns and the potential default or bankruptcy risk in cases where debt is preferred. Due to the limited capital available, in order to undertake investment projects, a firm typically needs to raise funds from external sources of finance. Two general solutions are usually considered: raising additional equity capital, and debt financing.

Debt policy is a course of action adopted or proposed by an organisation on how to finance its operations by debt. Debt is not the same; it can differ in several aspects: maturity, covenants restrictions, convertibility, security, and whether the debt is privately placed or held by widely disbursed public investors. Often firm's managers have to choose the appropriate amount of debt for their firm. Some of the factors considered are for example potential of cost of bankruptcy or near bankruptcy financial distress, debt levels of other firms in the industry, volatility of earnings, and financial flexibility among others. Therefore it is crucial for a firm to have a debt policy in place as the environment keep on changing and financing needs arise.

Firm with large intangible assets are expected to have little debt and high proportion of their debt is expected to be short term rather than long term, private instead of public and senior instead of junior, Goyal et al (2002). Jensen (1986) notes that it is the low growth industries with high levels of free cash flows that leverage should provide the greatest benefit. He points out that slow growth firms will have large amounts of excess cash that managers may decide to use for personal perquisites and other non-positive net present value projects. If the firm issues

debt, then the manager will own an increasing percentage of the firm's stock and excess cash will be reduced significantly. The debt covenant and bondholders will act as monitoring and controlling agents over the manager's behaviour. Following this argument, low growth firms should demonstrate increasing debt levels in their capital structure. Most of these firms have relatively large amounts of tangible assets. Myers (1977) demonstrate that debt financing by a firm in the MM (1958) sense with more future options induces sub optimal investment decisions if the debt maturity falls beyond the options for future investment. Abai (2003), find that firms with future options in their opportunity sets issue more short-term debt. The result are consistent with Myers (1977) prediction that reducing debt maturity help control the under investment problem.

1.2 Statement of the problem

The financial economic literature has increasingly focused on the capital structure decisions. Different factors that influence capital structure decisions have been addressed for example, Tax (Brick and Ravid, (1985)), liquidity (Diamond, (1991)) and future options (Goyal et al, (2002)), (Baker, (1993)), and (Barclay and Smith, (1995a)) among others. Little has been done on relation between a firm's asset structure and financial policies. To be precise, focus on asset structure has not been accorded the right attention; mostly studies focus on the capital structure decisions ignoring the important influence of the asset side of the balance sheet. Few authors have analysed asset structure of firms, for example, Greenbaum and Thakor (1987) addressed the relevance of asset structure in connection with the process of securitization. Although this does not address the issue of financing decisions directly it gives some light into the analysis of asset structure in liquidity context.

Although firms are financed through debt, managers are encountered with challenges on deciding the right mix of debt for their companies. This is because debt is not the same; it can differ in several

aspects: maturity, security and its mix i.e. between private and public debt. Decisions have to be made that suit the company considering all internal and external factors, for example, the prevailing economic conditions, and competition within an industry.

Most of the studies in Kenya have focused on capital structure decisions for example, Maturity structure of debt, (Abai, (2003)), priority structure of debt, (Muriuki, (2003)), and others general overview of capital structures in Kenya for example, Omondi, (1996) and Kamere (1987). Extant studies in Kenya on asset structure include Mwithiga (2003), and Muturi (1990) these studies have treated the asset structure in general, focusing entirely on its determinants and forecasting. The current effort focused fully on the asset structure and sought to investigate the central role such structure play in deciding the level, structure and type of debt used by companies.

1.3 Objective of the study

To determine the relationship between asset structure and debt policy practises of companies listed at Nairobi stock exchange.

1.4 Importance of the study

- i) Managers: This study will help manager appreciate the importance of asset structure in capital structure decisions and therefore structure their debt portfolios appropriately.
- ii) Academicians: It will provide a basis for further study in this area that has not been well explored hence unveil more knowledge.

CHAPTER 2

2.0 LITERATURE REVIEW

In this section, I will review related literature by other scholars in this and other related areas.

2.1 Asset structure

Different theories of capital structure have suggested some attributes that may affect the firm's debt equity choice. These are, non-debt tax shields, size, earnings volatility, asset tangibility, and profitability just to mention a few. From these theories it is evident that asset structure is one factor that may affect capital structure and also value of a firm. Kamere (1987), in his analysis found that the stability of future cash flows, the level of interest rates, the firms asset structure, the firms tax advantage of debt, and the maturity of debt are all important factors in deciding a firm's capital structure. Omondi (1996) concurred with Kamere (1987) in that asset structure, and profitability are significant factors affecting capital structure. The term asset structure means the different proportions of current and fixed assets held by a firm at any one time or a certain period of time. On the other hand, asset structure can be looked at from the point of liquidity whereby companies may hold highly liquid assets hence liquid asset structure or less liquid asset structure where less liquid assets are held. If asset structure is looked at from this point, then it can be defined as the degree of liquidity of company's total assets. Pandey (1999) points out that the difference between current and fixed assets is basically in terms of liquidity.

Myers (1977) notes that future options may affect firm's capital structure; firms with large intangible assets may hold more options for future investments than firms with large tangible assets. If firms with what Myers (1977) terms as "real option" decide to issue debt, they may decide not to maximize firm's value because such a decision decreases the value for

shareholders. That is, if some future date exists when an additional equity investment is necessary to exercise an option, a firm with outstanding debt may forego this opportunity because such an investment effectively transfers wealth from stockholders to debt holders. Firms do not exercise these options even though the investment has a net present value.

Based on a sample of 15 companies, Kester (1984) find that the present value of future options on average accounts for more than 50% of company market values. In his 1986 paper (based on a total sample of nine companies split between three industries), Kester find future option account for approximately 56% of total market value for electronics companies, 43% for chemicals companies, and 48% for paper companies. Similarly, Brealey and Myers (1996) find that, for their set of five 'income' stocks, future options accounts, on average, for 34% of total market value. For the five 'growth' stocks, future option accounts for approximately 66% of the total market values.

Modigliani and Miller (1961) split firm value into: The present value of the uniform, perpetual earnings on assets currently held; and the present value of the options that the firm offers for making additional investments in real assets that will yield more than the 'normal' (market) rate of return. Both present value calculations are made using the same 'cost of capital' discount rate. Myers (1977) records the distinction as between: assets that can be regarded as call options to purchase real assets where ultimate value depends on further discretionary investment by the firm; and real assets with a market value, which does not depend on further discretionary investment. As far as finance literature is concerned, assets held by a firm are quite important as well as intangible assets, although these intangible assets cannot be collateralized and do not generate current taxable income.

2.1.1 Measures of asset structure

The asset structure of companies can be measured in a variety of ways. The measures commonly used are based on asset liquidity and asset interest coverage. These measures are based on the tangible assets of a firm, and the assumption is that the book values of assets proxies for asset carrying amount or value of assets in place. De Angelo et al, (2000) state that, asset liquidity can be an important determinant of corporate capital structures. They show that firms with large market capitalization exhibit high degree of asset liquidity.

Some of the measures of asset structure include, Current assets / total assets (%), Fixed assets / total assets (%), and cash / interest expense (%). It is generally easier to measure asset structure when tangible assets are employed. In most cases, firms will have intangible assets in their balance sheet for example, good will, and patent rights and in other cases the intangible assets are not reflected in the book values for example, future options. The intangible assets not reflected in a company's balance sheet can also be measured and some value attached.

In general, the firm's future options will depend on firm's specific factors such as human capital in place, as well as on industry specific and macro economic factors. Because the firm's future options consist of projects, which allow the firm to grow, the options can be thought of as the intangible assets of the firm. Several proxies have been used in finance literature to capture Myers (1977) idea of the intangible assets or future options. They can be classified into three categories: Price based proxies, investment based proxies and variance measures. (Kallapur and Trombley, (1999)). The price-based proxies are: market to book value of equity (Collins and Kothari, 1989; Chung and Charoenwong, 1991), book to market

value of assets (Smith and Watt, 1992), earnings to price ratio (Kester, 1984; Chung and Charoenwong, 1991), ratio of plant, property, and equipment to firm value (Skinner, 1993); and ratio of depreciation to firm value (Smith and Watts, 1992). The investment-based proxies are: the ratio of research and development (R&D) to assets (Gaver and Gaver, 1993), R&D to sales (Skinner, 1993), R&D to firm value (Smith and Watts, 1992), the ratio of capital expenditures to value (Smith and Watt, 1992). Variance measures include the variance of return (Gaver and Gaver, 1993; Smith and Watts, 1992), and asset betas (Skinner, 1993). Some of the commonly used measures of future options include,

The ratio of the market value of a firm's assets to the book value of its assets (MBA), measured as the ratio of the sum of the book value of debt, the book value of preferred stock, and the market value of equity to the book value of assets at yearend. (Smith and Watts, (1992)).

The ratio of the market value of equity to the book value of equity (MBE), measured as the ratio of the market value of equity to the book value of equity at yearend (Collins and Kothari (1989)).

The earnings-to-price ratio (EPR), computed as the ratio of earnings per share divided by closing stock price at yearend (Chung and Charoenwong (1991)).

The ratio of capital expenditures to the book value of assets at yearend (CAPEX) (Smith and Watts, (1992)).

The ratio of research and development expenditures to the book value of assets at yearend (Smith and Watts, (1992)).

2.2 Corporate Debt

An important question facing companies in need of new finance is whether to raise debt or equity. In principal, companies needing new finance should issue equity if they are above their target debt levels and debt if they they're below assuming that these firms have target ratios. In practice this does not happen because factors like floatation costs will have to be considered among others. The issues of corporate debts have been well documented by many scholars. There has been evidence on issues like determinants of maturity of debt, level of debt, and mix of debt. Some of the evidence has separated issues on debt for example; some studies have concentrated on specific areas while others on corporate debt policy generally. James and Houston (1996) deals with mix of private and public debt, which is one element of debt policy, Goyal et al (2002) deals with the entire elements of debt policy. This study will look into the levels of corporate debt and structure.

2.2.1 The level of corporate debt and asset structure

The asset structure of a firm significantly affects the firm's capital structure. Since tangible fixed assets, serving as collateral, can lower the risk of the lender suffering the agency cost of debt, a greater portion of tangible fixed assets on the balance sheet leads to higher leverage. It is easier for the lender to establish the value of tangible assets because there is more systematic information about the value. The argument is that firms with greater percentage of their total assets composed of tangible assets will have higher capacity to raise debt. Omondi (1996) found a positive relationship between asset tangibility and leverage in Kenyan firms. On the other hand, Grossman et al, (1982) show that a firm's tangible fixed assets can be negatively correlated with its leverage. The above finding gives contradicting evidence on asset tangibility and level of corporate debt. According to Grossman et al,

(1982), a firm with limited tangible fixed assets has less collateralized debts and more difficulty monitoring the extravagancy of its employees because of asymmetric information. In this case, a firm can attempt to reduce its agency costs by increasing leverage, which allows the firm to be more stringently monitored by creditors such as bondholders and financial intermediaries.

As discussed by Wald (1999), the amount of physical assets in place such as plant and equipment may show creditors that these assets are being gainfully employed. Firms, which usually have a majority of their capital invested in fixed assets, may access more debt. It follows that there is direct relationship between the use of debt and the amount of physical assets for these firms. I would expect a positive relationship to exist between asset tangibility and level of corporate debt.

Growth increases managers' power by increasing the resources under their control. It is also associated with managers' compensation, because changes in compensation are positively related to the growth in sales (Kevin Murphy, (1985)). Firms may generate free cash flow that may be misused by managers, for example, investing in sub optimal risky projects especially for firms with large intangible assets. This becomes costly to the shareholders since the return from such projects is low. But when cash is paid out to shareholders, this reduces the resources under managers' control, thereby reducing managers' power, and making it more likely they will incur the monitoring of the capital markets which occur when the firm must obtain new capital (Rozeff, (1982)). The problem of agency cost of free cash flow can be mitigated or reduced. Jensen (1986) argues that debt can reduce the agency costs of free cash flow, which are most severe for firms with large intangible assets. Managers and

shareholders interests are likely to conflict in industries that generate abundant free cash flow (i.e. cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital). Managers have the incentive of retaining the free cash flow within the firm so that they can have more resources within their control or rather build more empires. On the other hand the stockholders prefer to use the free cash flow to payout higher dividends and share repurchase. This conflict can be resolved by issuing debt as Jensen (1986) notes. By issuing debt firms commit to pay out future free cash flows to investors, thereby reducing the likelihood that managers will misuse it on value-reducing investments. The threat caused by failure to make debt service payment serves as an effective motivating force to make organizations more effective. But Jensen (1986) cautions that leverage has costs, firms cannot issue very high levels of debts in view of controlling the free cash flow problem. As leverage increases the usual agency costs of debt rise, including bankruptcy cost. The optimal debt equity ratio is the point at which the firm value is maximized; the point where the marginal cost of debt just offset the marginal benefit, and therefore should be the aim of all firms.

Bodie and Taggart (1978) analytically demonstrate the existence of agency costs of debt associated with sub optimal future investments. The firm with risky debt outstanding, which makes decisions in the interest of its stockholders, cannot capture the full benefit of future options, because they partially accrue to debt holders in the form of a reduction in probability of default, and a corresponding increase in the value of debt. Consequently, investments incentives are curtailed despite the possibility that these options generate positive net present value. But by paying the proceeds of the debt issues to shareholders in

the form of dividends and share repurchase, stockholders capture the value increase associated with the reduced agency costs of free cash flow.

Myers (1977) argues that the value of future options depends on the likelihood that the firm will exercise them optimally. Stockholders in most cases do not realize normal returns from profitable projects since bondholders tend to capture enough of the benefits. In such cases stockholders have incentives to reject positive net present value projects. This is what Myers (1977) referred to as under investment problem. It is clear that the more future options there are in a firm's investment set the greater the conflict between the stockholders and debt holders over the exercise of these options. Since the cost of the under investment problem increases with a firm's future options, firms have an incentive to finance their operations with equity rather than debt. More generally, debt holders face higher costs of monitoring stockholders in firms with large amounts of intangible assets than they do in firms with large amount of tangible assets. As a result, the costs of debt financing are higher in firms with more intangible assets. Hence, a firm's debt level is expected to vary inversely with its level of intangible assets.

Myers (1977), argues that under investment problem can be mitigated through several ways: by including less debt in the capital structure, by including restrictive covenants in indenture agreements, or shortening the effective maturity of its debt. Myers notes that if the debt matures before any opportunity to exercise the future options, this disincentive is eliminated. Barclay and Smith (1995a), find that firms with more future options in their investment sets issue more short-term debt. This result is consistent with Myers (1977) prediction that reducing debt maturities helps control the under investment problem. Myers (1984) argue

that firms holding valuable intangible assets tend to borrow less than firms holding mostly tangible assets.

2.2.2 Structure of corporate debt and asset structure

Asset tangibility is expected to affect the structure of corporate debt, including its maturity structure, its priority, and the mix of public versus private debt.

2.2.2.1 Maturity

Business firms face financial decisions in many areas but some of the crucial ones include: the total amount of investment a firm should undertake, the relative proportion of the firm's total finance which is to be raised in the form of debt and in the form of equity, the determination of the maturity of debt it is to issue, that is, the mixture of short term and long term debt it wishes to issue among many others.

Corporate debt can either be short term or long term. Short-term debt is a debt whose maturity is within one year or twelve months where else long-term debt, the maturity extends to more than one year. Firms structure maturity of their debts to suit their operations. For example, a firm that finances its projects with short-term debt risks having financial difficulties if the debt cannot be extended. This is because short-term debt means high cash out flows within a short period. Similarly if a firm finances its projects with long-term debt, it will sacrifice profits by needlessly risking mismanagement of resources after cash flow are returned from investments, but before they are due to debt holders. The choice between short term and long term debt will depend upon the cost and availability of debt, upon the

variability of the firm's need for debt, and upon the firm's willingness to take financing risks to lower the expected cost of financing.

Several studies have attempted to explain the variation in the maturity of corporate debt. Some of the hypotheses put forward include, contracting cost hypothesis (Myers, (1977)), signaling hypothesis (Flannery, (1986)), Tax hypothesis (Brick and Ravid, (1985)), and liquidity hypothesis (Diamond, (1991)). I will briefly look into the above hypotheses.

Contracting cost hypothesis, Myers (1977) argues that with future options in a firm's opportunity set, the conflict between the stockholders and bondholders over the exercise of these options is greater. Including less debt in capital structure, including restrictive covenants in indenture agreements, or by shortening the effective maturity of its debt can control this. Firms with more intangible assets in their investment opportunity sets should employ shorter maturity debt.

Signaling hypothesis, Flannery (1986) argue that a firm's choice of debt maturity structure can signal insiders information about firm's quality when firm insiders are systematically better informed than outside investors. If lower quality firms cannot afford the cost of rolling over short-term debt, they will self select into the long-term debt market. In the resulting equilibrium, high quality firms signal their type by issuing short-term debt. Because short-term debt is less sensitive to under pricing, firms that have under priced liabilities choose to issue debt of shorter-term maturity. Similarly, firms whose liabilities are overpriced are more likely to issue debt of longer term to maturity because long-term issues will be most overpriced in equilibrium.

Liquidity risk, Diamond (1991) show that given a firm's private information, short-term debt allows for reduction in borrowing costs when a firm receives good news and debt is refinanced. However, short-term debt exposes the firm to liquidity risk, that is, loss of unassignable control if lenders will not allow refinancing and the firm is liquidated. Very low rated borrowers with a high probability of having insufficient cash flow to support long term debt have no choice rather than to borrow short-term. It is predicted that firms with risky intangible assets will finance with long-term debt to avoid the threat of inefficient liquidation.

Tax hypothesis, Brick and Ravid (1985) argue that issuing long-term debt reduces the firms expected tax liability and consequently increases the firm current market value. Conversely, if the term structure is downward sloping, issuing short-term debt increases the firm value. Borrowers will only extend the maturity of their borrowing in an upward sloping term structure environment when the benefits of debt tax shields are significant, that is when the firm expects unshielded income. Thus the tax hypothesis implies that firms employ long-term debt when the term structure has a positive slope.

Myers (1977) argue that risky debt financing may engender sub optimal investment incentives when a firm investment opportunity set includes future options. Myers asserts that the under investment incentive can be controlled by issuing short-term debt that matures before the future options are exercised. The empirical hypothesis is that firms whose assets have a large proportion of intangible assets use short-term debt as opposed to tangible assets. Barnea et al (1980) argue that decreasing the maturity of debt can control

Myers (1977) under investment problem. This result holds because the value of short-term debt is less sensitive to changes in firm risk than is the value of long-term debt.

Guedes and Opler (1996), find that firms attempt to control the agency cost of debt by altering the maturity of their borrowings. Firms with large amounts of intangible assets tend to issue debt that is shorter in maturity than other firms. This appears to be a rational adaptation to contracting difficulties that arise in the presence of future options in corporate borrowing. This explanation of corporate debt maturity is very similar to those obtained in Barclay and Smith (1995a) and Stohs and Mauer (1994) using balance sheet measures of debt maturity. One would expect firms with more assets in place to not only have more debt, but more long-term debt as well. Furthermore, recent research by Wald (1999) provides empirical evidence of a positive relationship between assets-in-place (property, plant and equipment) and the use of long-term debt for a wide variety of domestic and international firms.

2.2.2.2 Private versus public debt

Private debt is debt that is issued or sold directly to a few number of qualified lenders including insurance companies, banks and even pension funds. This debt is not freely traded at the stock market but there is active trading among the qualified investors.

Public debt is debt that is offered to the public generally, anyone can buy once issued and its freely traded at the stock market.

Private debt, which is usually bank debt, is generally tightly held, while public debt is typically diffusely held. Since private lenders bear a large proportion of the wealth consequences

associated with a given debt claim, they have stronger incentives to invest in information and monitor the activities of the borrowing firm. Diamond (1984, 1991) contends that banks have scale economies and comparative cost advantages in information production that enable them to undertake superior debt related monitoring. Further, diffused public debt ownership and the associated free rider problem diminish bondholders' incentives to engage in costly information production and monitoring. Given the benefits of private lender monitoring and control, without offsetting cost, then firms would prefer to borrow exclusively from private lenders. Monitoring costs, banks regulatory taxes, and agency costs of delegated monitoring are potentially offsetting costs associated with the use of private debt (Diamond 1991). Incorporating these costs suggest that a firms reliance on bank debt will depend on the potential information asymmetries between borrowers and lenders, as well as the agency costs of debt financing. Where these costs are large the benefits of private lenders are likely to be large relative to the potential costs of private lender monitoring.

A major advantage of private debt is that it mitigates adverse selection and moral hazard problems associated with lending activity. This is because it is more flexible to restructure if a firm has financial difficulties unlike public debt. On the other hand public debt is thought to have advantage over private debt. The transaction costs of issuing public debt may be lower than those associated with private placements, owing to economies of scale in public debt issues (Blackwell and Kidwell, (1988)).

Owing to information asymmetry outside investors are weakly informed of the firms' future options and are concerned about agency problems. Hence, they demand for higher premium. Negotiable bank debt is preferred to public debt in order to mitigate asset

substitution and under-investment problems (Berlin and Loeys (1988)). Blackwell and Kidwell (1988) argue that less risky firms are likely to issue public debt that contains less detailed restrictive covenants. Informational asymmetry can affect a company's financing choice. Ross (1977) and Leland and Pyle (1977) contend that a firm can use leverage as a signaling device to resolve asymmetries of information about its quality.

2.2.2.3 Priority structure of debt

Another approach to explaining the mix of private and public debt is based on the observation that while greater lender control over the actions of the borrower mitigates agency problem, control by private lender can adversely affect investment incentives. For example, private debt can be costly because the lender when determining whether to roll over a loan or call the loan and force liquidation does not consider borrowers control rights. By borrowing from both public and private sources, borrowers reduce the private lenders control and thereby reduce costly liquidation (Houston and James, (1996)). Rajan (1992) argues that while bank monitoring and control can improve investment decisions, a single bank lender may obtain an information monopoly that adversely affect investment incentives. Borrowing from the public market limits banks bargaining power and can improve investment efficiency.

It is expected that firms with large amounts of intangible assets will rely more on private debt than firms with large amounts of tangible assets. Since firms with large amounts of intangible assets are more difficult to monitor, the information production and monitoring provided by private lenders is especially valuable to these firms (Goyal et al, (2002)). A direct relation is expected between a firm with large amounts of intangible assets and its use of private debt. Houston and James (1996) find that this relation holds for firms with multiple

banking relationships, but not for firms with single bank relationships, presumably because of the hold-up power of single bank lenders. Yosha (1995) contends that firms with potentially valuable future projects will not borrow from public debt markets due to high disclosure costs of revealing sensitive information.

2.2.2.3 Priority structure of debt

When a firm becomes highly leveraged, its debt contracts are often prioritized into several classes, so that, in the event of bankruptcy liquidation, some lenders will have claims on the firm's assets before others do. Debt may be issued with varying priority, for example, some debts may be secured, ordinary, and subordinate among other classes. In cases of bankruptcy the debts are settled on hierarchy of priority, for example among the various fixed claims, capital leases are given priority, followed by secured debt, and subordinate debt, until all debt is settled if available resources are sufficient.

Stulz and Johnson (1985) argue that the under investment problem identified by Myers (1977) can be mitigated if new investment projects are financed with secured debt. This is because secured debt limits the extent to which debt holders can benefit from positive net present value projects. This, in turn, makes it more likely that shareholders will accept such projects, thereby mitigating the under investment problem. Smith and Warner (1979) argue that high priority debt can also mitigate the asset substitution problem.

Bodie and Taggart (1978), argue that the existence of non-callable long-term debt in the firms' capital structure will have an adverse incentive on the firm's investment behavior in the presence of future options. Specifically if there is non-callable risky debt in the firm's

capital structure, bondholders will share with stakeholders in any profitable future investment thus curtailing the firm's incentive to invest the proper amount in such states of the world. This externality to shareholding, Bodie and Taggart (1978) maintain rationalizes the existence of the call provisions as a standard feature of long term bond since by calling the debt, stockholders are able to appropriate all the gains from their discretionary powers over future options.

2.3 Empirical evidence

Several papers have documented evidence on capital structure decisions in general, others have narrowed down to specific determinants of capital structure for example, firm's characteristics (Wald, (1999)). I wish to revisit some of these studies and their contribution to understanding capital structure decisions in relation to tangibility of assets.

Barclay and Smith (1995a) find that firms with more future options in their investment sets have less long-term debt in their capital structure. This is consistent with Myers (1977) contracting cost hypothesis. The evidence is also consistent with a pooling equilibrium in which firms with larger potential information asymmetries (measured*by the amount of future options in their opportunity sets) issue more short-term debt. Myers (1977) states that shareholders will prefer equity to finance future options in order to avoid the costs of debt holders' requirements. If they have to use debt, shareholders will give preference to short term debt contracts since the disincentive to invest is eliminated if debt matures before any opportunity to exercise any real investment option.

Flannery (1986), argue that firms with large potential information asymmetry, for example, future options are likely to issue short-term debt, where else those that have smaller potential information asymmetry are likely to issue long term debt. Myers and Majluf (1984), show that if investors are less well informed than current firm insiders about the value of the firm's assets then equity may be mispriced by the market. If firms are required to finance new projects by issuing equity, under pricing may be so severe that new investors capture more than the net present value of the new project, resulting in net loss to the existing shareholders. In this case the project will be rejected even if the net present value is positive. This under investment can be avoided if the firm can finance the new projects using a security that is not so severely undervalued by the market for example, internally generated funds. Myers and Majluf (1984) imply that leverage increases with the extent of the informational asymmetry. Long and Malitz (1985), Titman and Wessels (1988) generally concur that leverage increases with fixed assets, on debt tax shields, and firm size and decreases with volatility, advertising expenditure, bankruptcy probability and research and development expenditures.

Guedes and Opler (1996), find that firms attempt to control the agency cost of debt by altering the maturity of their borrowings. Firms with greater future options tend to issue debt that is shorter in maturity than other firms. This, they argue appears to be a rational adaptation to contracting difficulties that arise in the presence of future options in corporate borrowing. This study is very similar to those obtained by Barclay and Smith (1995a) using balance sheet measures of debt maturity. Stohs and Mauer (1994) empirical analysis is less supportive of agency cost hypothesis. They conclude that although smaller firms tend to have shorter average debt maturities, there is only mixed support for the prediction that debt

maturity is inversely related to future options as predicted by Myers (1977). Their result suggests that firms with larger amounts of intangible assets have little leverage. Kim and Sorensen (1986) concluded that firms that have experienced higher level of intangible assets tend to rely on less instead of more debt.

Agency cost perspective suggest that firms who's derive value from a large extent from future options that are particularly sensitive to the degree of management effort and talent have an incentive to borrow short term. This is in contrast with the liquidity risk hypothesis (Diamond, (1991)) that predicts that firms with future options have an incentive to finance themselves with long-term debt to avoid the threat of inefficient liquidation.

Myers (1984) argue that firms holding tangible assets in place having active second market will borrow more than firms holding specialized intangible assets. Specialized, intangible assets are more likely to lose value in financial distress and therefore firms holding valuable intangible assets tend to borrow less than firms mostly holding tangible assets.

Armen et al (1981), argue that target ratios are likely to be determined as a function of the relatively changing weights of both assets in place and intangible assets. In particular firms should use relatively more equity rather than debt in response to an increase in their value, if the change in value is generated by an increase in the perceived value of their intangible assets.

Zwiebel (1996), argue that firms in newly rapidly expanding industries, for which many good new investments are likely to be available, should have less debt than other firms; and conversely, firms in mature contracting industries should have more debt. Leverage should

decrease when the market is booming and should increase when the market is weak. In contrast, Gupta (1969), find that growth corporations also tend to have high total debt to total assets ratio. This is attributed to their desire for financial structure flexibility plus the fact that debt can be acquired and liquidated more easily, which magnifies the return on equity and carries a distinct income tax advantage as compared to equity funds.

Houston and James (1996), find that information monopolies associated with borrowing from a single bank lender limit the use of bank debt. Potential hold up problems appears particularly acute for firms with substantial future options. The results suggest that multiple banking relationships or borrowing in public debt market either mitigate or eliminate these hold up problems.

Wald (1999), find that the United States of America is the only country where high growth is associated with a lower debt equity ratio as compared to other countries like, Japan, United Kingdom, Germany, and France. He argues that it may be that the coefficients between countries are different partly because companies with higher debt ratios in the United States are in a different part of business cycle. Therefore future options are positively related to long-term debt to asset ratios for these countries apart from United States. Rajan and Zingales (1995), consider market to book ratios in their regressions, which are sometimes considered as an indicator of future rather than past growth. They find a negative coefficient on market to book ratios in all countries, although not significantly different from zero in Japan. They interpret these coefficients as indicating a higher cost to financial distress for companies with larger future options.

CHAPTER 3

3.0 RESEARCH DESIGN AND METHODOLOGY

3.1 Population

The population of this study consisted of all companies quoted at the Nairobi stock exchange between the years 1999 to 2003.

3.2 The Sample

The sample consisted of 32 firms listed at the Nairobi stock exchange between the years 1999 to 2003. Firms in the financial industry were excluded because they are highly regulated as opposed to the other industries. Data was not available for one firm hence its exclusion.

3.3 Data Collection

Data collected was secondary from annual reports of companies and records maintained at Nairobi stock exchange. Specifically data on fixed assets was corrected, book value of total assets, market value of total assets and data on debt, that is levels of debt, maturity of debt, private versus public debt, and priority of debt from the firms' balance sheet at year-end and notes to the financial statements.

3.4 Definition of variables

3.4.1 Measure of the independent variable

Asset structure

Asset structure of a company can be measured in a variety of ways but for purposes of this study I used the ratio of fixed assets to total assets.

$$\text{Asset structure} = \frac{\text{Fixed assets}}{\text{Total assets}}$$

Where,

Fixed assets are composed of property, plant, and equipment owned by the company. The book values of assets were assumed as proxies for value of assets in place.

Total assets. This consisted of all assets in company's balance sheet at each year-end.

Book value of total assets. This is the total asset-carrying amount in the company's balance sheets.

Market value of total assets. This was estimated as the book value of assets minus the book value of equity plus the market value of equity.

3.4.2 Measure of the dependent variables

Level of corporate debt

This was measured as the ratio of the book value of a firm's debt to the book value of its assets.

$$= \frac{\text{Total debt}}{\text{Total assets}}$$

Goyal et al, (2002) adopted the same ratio in their study.

Maturity structure of debt

This was measured as the ratio of long-term debt to total debt. This measure is similar to the one used by Stohs and Opler (1996).

$$= \frac{\text{Long term debt}}{\text{Total debt}}$$

Long-term debt for this study was defined as the amount of debt maturing after one year following a firm's year-end, where else short term debt was debt that was maturing within one year following the year-end.

Private versus public debt

This was measured as the ratio of private debt to total debt.

$$= \frac{\text{Private debt}}{\text{Total debt}}$$

Private debt was defined as bank debt plus privately placed debt, and public debt as publicly traded notes, bonds, debentures. This information came from the notes to the financial statements.

Priority structure of debt

This was measured as the ratio of high priority debt to total debt. Barclay and Smith (1995b) adopted the same measure in their study.

$$= \frac{\text{High priority debt}}{\text{Total debt}}$$

Secured debt and capitalized leases was regarded as high priority debt, where else ordinary debt and subordinate debt was regarded as low debt, (Goyal et al, (2002)). In case of bankruptcy, secured debt and capitalized leases are given priority over ordinary and subordinate debt.

3.5 Data Analysis

Basic analysis commenced with the determination of various measures of central tendency; namely mean, mode and median. Standard deviation and range were used as measures of dispersion. To compute the range, the maximum values and minimum values of each variable was used.

Regression Analysis

This study used simple regression to determine the relationship between the independent and dependent variables.

The form of the simple linear regression equation is,

$$Y_i = \beta_0 + \beta_1 X_i + \epsilon_i$$

Where

Y_i – represents the various measures of debt policy.

β_0 – is the y intercept.

X_i – represents the independent variable (asset structure).

β_1 – is the slope of the population.

ϵ_i – random error in y observations ;

Calculations were carried out for coefficient of correlation (R), coefficient of determination (R^2), F- test, t- test, Durbin Watson test, and linearity test.

Coefficient of correlation - R was used to establish the relationship between asset structure as an independent variable and various measures of debt policy as dependant variables. A positive R showed a direct relationship while a negative R showed an inverse relationship.

Coefficient of determination - (R^2) was used to measure the total variation in the dependent variable that was accounted for by variation in the independent variable.

F - Test was used to test for the significance of the overall model. The null hypothesis was rejected when the significance value F - statistic was less than 0.05.

T - Test was used to test for the significance of each predictor variables (constant and asset structure) in the model. Any t - statistic value under consideration less than -2 or more than +2 was considered significant.

Durbin Watson test was used to test for autocorrelation in the model. It tested the independence of each value of debt policy at different observations. Durbin Watson value above 2 showed the absence of autocorrelation.

Summary

Variable	Hypothesized relationship	Measure of variable
Level of debt	Positive	Total debt / total assets
Maturity	Positive	Long term debt / total debt
Private	Negative	Private debt / total debt
Priority	Positive	High priority debt / total debt

CHAPTER 4

4.0 RESEARCH FINDINGS & ANALYSIS

The study was aimed at determining the relationship between asset structure and debt policy practices of companies listed at Nairobi stock exchange.

4.1.1 Descriptive statistics using book values of total assets.

The table below reports descriptive statistics for measure of central tendency for asset structure, level of corporate debt, maturity of debt, private debt, and priority structure of debt using book values of total assets.

Table 1.

Descriptive statistics of asset structure, level of corporate debt, maturity structure of debt, private debt, and priority structure of debt using book value of total assets.

	Asset structure (%)	Level of corporate debt (%)	Maturity of debt (%)	Private debt (%)	Priority debt (%)
Mean	62.0	28.8	48.3	77.9	80.5
Median	63.5	20.0	46.0	86.5	94.5
Mode	18.0	6.0	6.0	100	100
Std.deviation	23.8	36.8	28.8	26.2	26.7
Minimum	18.0	.10	.10	16.0	13.0
Maximum	96.0	134.0	100	100	100
N	32	27	23	24	24

From the above table, the column with the mean show that priority structure of debt had the highest mean of 80.5% compared to the other measures of debt. This means that a greater proportion of loans acquired by these companies are of high priority or rather secured debt. The mean of private debt was

77.9%, this clearly show that these companies rely more on private debt for example bank debt. The mean for corporate debt was 28.8% indicating that these companies are not highly geared.

4.1.2 Descriptive statistics using market values of total assets.

The table below reports descriptive statistics of central tendency using market values of total assets.

Table 2.

Descriptive statistics of asset structure, and level of corporate debt using market value of total assets.

	Market value Structure of assets (%)	Market value Level of corporate debt (%)
Mean	70.9	39.6
Median	53.0	15.0
Mode	30.0	5.0
Std.deviation	51.0	60.5
Minimum	1.0	0.05
Maximum	190.0	232.0
N	32	27

Note: The Market value of total assets is only used to calculate the asset structure and level of corporate debt only. The other measures of debt policy are not affected and therefore remain as shown in table 1.

Table 1 and table 2 show variance in descriptive statistics between the book value of total assets and the market value. The market value reflect the true carrying value of the underlying asset unlike the book value that reflect the written down values as per accounting policies which are mere estimates and subjective.

4.2 Regression analysis.

The table below shows the coefficient of correlation (R) and coefficient of determination (R^2) using book values and market values of total assets.

Table 3.

Coefficient of correlation (R) and coefficient of determination (R^2) using book values and market values of total assets.

		Level of debt	Maturity of debt	Private debt	Priority debt
Book value	(R)	0.464	- 0.314	0.110	- 0.071
	(R^2)	0.215	0.099	0.012	0.005
Market value	(R)	0.708	- 0.152	0.105	0.257
	(R^2)	0.502	0.023	0.011	0.066
N	32	27	23	24	24

The coefficient of correlation between asset structure and the level of corporate debt was 0.464 when book value of assets was used and 0.708 when market value of assets was used. This gives a direct relationship. This relationship confirms the theoretical view that firms with tangible assets are favoured by lending institutions. The conclusion is that lenders look at these firms with tangible assets favourably because they can afford to offer security for loans. Omondi (1996) found a direct relationship between asset tangibility and leverage in Kenyan firms. He observes that tangible assets are used in the country as security to secure debt financing. Wald (1996) also confirms this in an international context whereby he found a direct relationship between the use of debt and the amount of physical assets held by firms.

When book value was considered the coefficient of correlation between asset structure and maturity structure of corporate debt was -0.314 and when market value was considered the coefficient of

correlation was -0.152 . This reveals an inverse relationship between asset structure and maturity structure of corporate debt. This is quite shocking since we expect companies to borrow long-term in order to finance assets. Abai (2003) found that on average Kenyan firms with more intangible assets (as proxied by market to book ratio) have significantly less long-term debt. This means that on average these companies borrow short term in Kenyan market. Muriuki (2003), provide evidence that short term secured debt is the most prevalent across firms at Nairobi Stock Exchange with 94% of the firms preferring this type of debt. Guedes and Opler (1996) found that firms with large amount of intangible assets tend to issue debt that is short term in maturity than other firms. One would expect firms with more assets in place to not only have more debts but long term debt. From my findings, it is evident that Kenyan companies borrow short term to finance assets. In Kenyan market it is easier for companies to get short-term facilities with banks especially where a strong business relationship has been established.

It is expected that firms with large amount of intangible assets will rely more on private debt than firms with large amount of tangible assets. The coefficient of correlation between assets structure and private debt was 0.110 when book value of assets was used and 0.011 when market value was used. This reveals a direct relationship. Yosha (1995) found that firms with potentially valuable future project would not borrow from public due to high disclosure cost of revealing sensitive information. Since the Kenyan market is not well developed, firms mostly rely on privately placed debts and bank debts as opposed to publicly trading of for example bonds, debentures etc. This would be attributed to the effect of stringent regulations put in place by Capital Market Authority that sometimes end up frustrating the market. It is also evident that compliance with the rules and regulations has been a problem to some companies hence leading to their delisting. With all these possible problems you will find that companies will shy away from the public market.

While using the book value of total assets the coefficient of correlation between asset structure and priority structure of debt was -0.071 showing an inverse relationship. When market value was considered, it was 0.066 showing a positive relationship. This gives us an inconclusive answer. But one may argue that since the market value of total assets reflects the true value of the underlying asset, then the positive relationship may exist.

4.3 Test of the overall model

The table below reports test of the overall model, significance of individual parameters, test of linearity and test for autocorrelation.

Table 4.

Test of the overall model, significance of individual parameters, test of linearity, and test of autocorrelation

		Level of debt	Maturity of debt	Private debt	Priority debt
Book value	F – Test sig (α)	0.015	0.144	0.609	0.742
	T – Test (t)	2.617	- 1.516	0.519	- 0.333
	Durbin Watson test	2.459	2.323	1.981	1.981
	Linearity test (β_1)	0.706	- 3.850	0.123	- 0.076
Market value	F – Test (α)	0.000	0.490	0.625	0.225
	T – Test (t)	5.019	- 0.703	0.496	1.249
	Durbin Watson test	2.016	2.254	2.009	2.364
	Linearity test (β_1)	0.825	- 0.088	0.052	0.127
N	32	27	23	24	24

Note: All computations made using 0.05 as significance level

The F-statistics in table 4 indicate that each of the regression in the table above is significant at reasonable level. The significance value of F-statistics for level of corporate debt as dependent variable was 0.015 when book value of total assets was used and 0.0 when market value was used. The model had explanatory power of the total variation in the level of corporate debt that was accounted for by the variation in the asset structure.

The significance value for F-statistics for maturity structure of debt, private debt and priority structure of debt as dependent variable were 0.144, 0.609 and 0.742 respectively when book value of total assets was considered and 0.490, 0.625 and 0.225 respectively when market value of total assets was considered. These models lacked explanatory power to account for the total variation in their respective debt structure that was accounted for by variation in the asset structure. This can be explained by the fact that in Kenya companies borrow not only to finance fixed assets but also to finance other activities for example financing working capital, paying dividends.

The value of t-statistics of 2.617 when both book value and 5.019 when market value of total assets were used show that asset structure as a parameter in the model was of relative importance when level of corporate debt was considered and of no importance when other measures of debt policy were considered.

The value of Durbin Watson shows absence of autocorrelation when market value of total assets was used and presence of auto correction when book value was used for private debt, and priority structure of debt.

CHAPTER 5

5.0 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The finding gives an insight into the relationship between asset structure and debt policy practices of listed companies at the Nairobi Stock exchange. There exists a positive relationship between asset structure and level of corporate debt. It is very clear that companies at NSE finance their operations with debt for example acquisition of assets. This means that companies do not generate enough internal funds to satisfy some of their requirements hence the need to visit the debt market.

An inverse relationship exists between asset structure and long-term debt. This means that companies tend to borrow short term to finance operations. This is quite surprising since short-term debt is more expensive as compared to long-term.

A direct relationship exists between asset structure and private debt. Companies will find it easy to walk to the bank and borrow rather than turn to the public market in Kenya to acquire funds. These companies tend to form strong relationships with the banks hence making it easier for them to acquire loans easily. In future these companies are also able to give collateral to these banks, which is one of the major requirements, hence accessing credit easily.

The relationship between asset structure and high priority debt is not clear. When book value of total assets was considered there was an inverse relationship and when market value

of total assets was considered there was a positive relationship. This gives us an inconclusive answer.

5.2 Limitations of the study

The three models, the maturity structure of debt, private versus public debt, and priority structure of debt lacked explanatory power to account for the total variations in their respective debt structure that was accounted for by the variation in the asset structure when both book values and market values of total assets was used.

Some quoted companies at Nairobi stock exchange were not included in the sample due to unavailability of data and other companies had no debts in their balance sheets. This reduction in sample size would have affected the calculations of this study.

5.3 Suggestions for further research

It is important that a similar study be conducted a few years later to cover a longer period for example ten years or more that would be long enough to see whether there would be any change.

A study could be done to investigate the relationship between intangible assets and debt policy practices of companies listed at Nairobi stock exchange for the same period or longer.

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Listed companies at Nairobi stock exchange as of 31st March 1998

Agricultural sector

1. Brooker bond limited
2. Eazpac Limited
3. George Williamson Kenya Limited
4. Kenya Limited
5. Kenya Tea Plantations Limited
6. Kenya Tea Company Limited
7. New Kenya plantation limited
8. Kenya Tea & Coffee Limited

Commercial & Service companies

1. A Bank Kenya Limited
2. CBA Kenya
3. Citibank Kenya Limited
4. Capital Kenya Limited
5. Kenya Airways Limited
6. Marshall F.A. Limited
7. Nairobi Stock exchange
8. TFS Services limited
9. Standard Newspaper group
10. Uchumi supermarket

Industrial & Allied sector

1. Africa Milk Kenya
2. BAT Kenya Limited
3. Borden Kenya Limited
4. B.C.C. Kenya Limited
5. Crisp Kenya Ltd
6. Dunlop Kenya Limited

APPENDIX

Listed companies at Nairobi stock exchange excluding those in financial sector.

Agricultural sector

1. Brooke bond limited
2. Eaagads Limited
3. George Williamson Kenya Limited
4. Kakuzi Limited
5. Kapchorua Tea Company Limited
6. Limuru Tea Company limited
7. Rea Vipingo plantation limited
8. Sasini tea & coffee limited

Commercial & Services sector.

1. A Bauman & company
2. CMC holdings
3. Car & general Kenya Limited
4. Express Kenya Limited
5. Kenya Airways Limited
6. Marshall E.A Limited
7. Nation Media group
8. TPS Serena limited
9. Standard Newspaper group
10. Uchumi supermarkets

Industrial & Allied sector

1. Athi river Minings
2. BAT Kenya Limited
3. Bamburi cement Limited
4. B.O.C. Kenya Limited
5. Crown Berger Ltd
6. Dunlop Kenya Limited

7. E.A.Cables
8. E.A packaging Ltd
9. E.A. Portland cement Ltd
10. East Africa Breweries
11. Firestone East Africa
12. Kenya power & Lighting co Ltd
13. Kenya Orchards Ltd
14. Total Kenya limited
15. Unga group Ltd