THE RELATIONSHIP BETWEEN FIRM VALUATION METHODS AND MARKET VALUE FOR COMPANIES QUOTED AT THE NSE

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DECLARATION

This research project is my original work and has not been submitted for a degree in any other university

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This research project report has been submitted for examination with my approval as the university supervisor.

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DEDICATION

Dedicated to my Wife (Judie), and our children Wangechi and Mwangi for their support and understanding, and the persevering heart of my mother for believing in me.

ABSTRACT

There are practical problems in firm valuation due to uncertainty and the instability surrounding income attributable to equity holders. This study seeks to investigate the relative explanatory power of the alternative firm valuation models when applied to firms quoted on the NSE. This helps understand which method has a higher explanatory power than the other. When investing in bonds there is certainty in income as long as interest and principal on a bond are adequately secured. It is this complication in income attributable to equity holders that has led to a number of models and this study seeks to test two of this valuation models.

Data collected included market prices, income statements, balance sheet and dividend payouts of the various firms quoted on the NSE. Two methods, the discounted free cash flow method, and the economic profit method were used to estimate the value of the firm and the resulting value compared to the market values, where a regression analysis was done.

The findings were that when the market values were compared with the equity values derived from the discounted free cashflow method the regression resulted in an r^2 of 0.31 within a confidence level of 95%. The market value when compared with equity value derived from the economic profit model derived an r^2 of 0.01 and the p-value was more than 0.05.

We therefore concluded that the test of significance carried out to determine whether the two equity values were significantly different showed that, while the discount cash flow had a p-value of 0.02 showing the differences were not significant and therefore the model was a good indicator of the market equity value. The economic capital method had a p- value of 0.6 showing the differences were significant and therefore the model was not a good indicator of the market equity value.

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ABBREVIATIONS

DIV	- dividend to infinity
WACC	-weighted average cost of capital
APN	-adjusted present value
CAPM	-capital assets pricing model
EMH	-efficient market hypothesis
K_s	-required rate for return on equity
K_d	-cost of debt
V_f	-value of a Firm
V_d	-value of a debt
V_s	-value of equity
OLS	-ordinary least square
RIM	-Residual income model
FCF	-Free cashflow
DDM	-Dividend discount model
NSE	-Nairobi stock exchange

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CHAPTER ONE

INTRODUCTION

1.1 Background

Valuation is the process of forecasting the present value of the expected payoffs to shareholders and of converting this forecast into one number that corresponds to the fundamental-intrinsic firm value. According to Barker (2001), a good understanding of valuation methods requires two main things. The first is an analytical review of the models, identifying their relationship and exposing their assumptions. The second is an evaluation of the data that are available for use of these models. Therefore, there is a significant relationship between the choice of valuation models and the available data.

Firm valuation is the process of determining how much a firm is worth. The value of the firm is obtained by discounting expected cashflows to the firm, i.e., the residual cashflows after meeting all operating expenses and taxes, but prior to debt payments, at the weighted average cost of capital, which is the cost of the different components of financing used by the firm, weighted by their market value proportions. Damodoran (2001).

A formulaic approach to firm valuation demonstrates that the values of a firm can be partitioned into the value of assets in place, plus the discounted value of future economic profits. In Entity approach to valuation, we first value the free cashflows from operations by discounting them at the weighted average cost of capital, and then add the present value of the non operating cashflows. We then subtract the market value of debt and other liabilities like unfunded pension plans liabilities and preferred stock in order to estimate the market value of equity. Copeland et al (2005).

Damodoran (2001) describes the value of the firm as the present value of the expected cash flow from both the assets in place and the likely future growth, discounted at the cost of capital. He says that for a firm to increase its value it has four options; First, Increase the cash flows generated by the existing investments. Second, Increase the expected growth rate in earnings or cash flows. Third, Increase the length of the high-growth period. And, finally, the firm has the

option of reducing the cost of capital. The two widely used methods employed to estimate the value of a firm are, first, the static approach for a single point in time, where the current market value of the equity (V_s) and the debt (V_d) are known. The market value of the firm is;

$$V_f = V_s + V_d.$$

Second approach estimates the intrinsic value of a firm by discounting the free cash flows to a firm (FCFF) at the weighted average cost of capital (WACC).

Damodoran (2001) argues that a corporation is owned by its shareholders and the shareholders' equity is the portion of total assets that belong to the shareholders. The value of shareholders' equity as recorded on the balance sheet is the book value of equity; dividing the book value of equity by the number of outstanding shares gives the book value per share. The market value of each share is the price required to purchase a share in the firm from a trade on a stock exchange; multiplying the share price by the number of outstanding shares gives the market value of equity. These two equity values (book vs. market) are seldom equal, for most healthy firms, market value exceeds book value.

Market value is the highest price that a marketable asset will bring in an open and competitive market, assuming that both buyer and seller are informed and acting independently. In theory, this is the highest price a seller is willing to accept and the lowest price a buyer is willing to pay. It may differ from the appraisal value. This value is established in the capital markets. Brealey et al (2001).

Market valuation levels are determined by the company's absolute level of long-term performance and growth, that is, expected revenue and earnings growth and return on invested capital (ROIC). Total return to Shareholders is measured by changes in the market valuation of a company over some specific time period and is driven by changes in investor expectations for long-term future returns on capital and growth. The relative market value of a company, as measured by the market-value-to-capital ratio, is determined by the company's growth and its spread of ROIC over the weighted average cost of capital (WACC). Higher returns (for the same level of growth) lead to higher valuations. Also, when the return on invested capital exceeds the

cost of capital, growth leads to higher value. When ROICs fall below the cost of capital, it leads to lower valuations.

Studies by Koller et al (2005) confirmed that the stock market supports these conclusions. In fact, the empirical results were similar when compared to the market-value-to-capital ratios of more than 500 of the largest U.S. listed companies versus their 10-year growth in sales and 10-year average return on invested capital (ROIC). The firms were grouped by sales growth and ROIC (e.g., companies with average sales growth between 5 percent and 10 percent and ROICs between 12 percent and 15 percent), calculating the average market-value-to-capital ratio for each group. Although the empirical results do not fit the theoretical model perfectly, they demonstrate that for any level of growth, higher returns lead to higher market-value-to-capital ratios. Indeed, the market seems to value companies based on revenue growth and ROIC. Koller (2005)

The application of valuation theory is the accurate valuation of a firm. Adams and Thornton (2009) pointed out that in theory, the valuation of the firm should reflect the price at which a business would change hands between a willing buyer and the seller when both parties have reasonable knowledge of the relevant facts. The public equity markets comes closest to this idealized form of perfect capital markets and as a result firm market value is readily available for quoted firms on the stock exchange.

In Kenya, dealing in shares and stocks started in the 1920's when the country was still a British colony. There was however no formal market, no rules and no regulations to govern stock broking activities. Trading took place on a gentleman's agreement in which standard commissions were charged with clients being obligated to honour their contractual commitments of making good delivery, and settling relevant costs. At that time, stock broking was a sideline business conducted by accountants, auctioneers, estate agents and lawyers who met to exchange prices over a cup of coffee. Because these firms were engaged in other areas of specialisation, the need for association did not arise. Over the years this has grown to the current vibrant formal stock market that we see today. The NSE uses the NSE 20 share index and the NASI index to measure and track performance of stocks trading on a daily basis. (http://www.nse.co.ke)

This study examines the relationship between valuation methodology to estimate the actual observed market value of the Forty Seven quoted firms on the Nairobi stock exchange. Adams and Thornton (2009) argue that if one assumes that public markets are at least semi-strong form efficient, then the closing price on a large publicly traded security accurately reflects the systematic risk associated with investing in that company and the implicit growth rates for the company. The study seeks to present the theoretical framework for the process of firm valuation and investigates explanatory power of alternative firm valuation models when applied to firms quoted on the NSE.

The focus is on firms quoted on the NSE since, for small privately held firm's market values may not be available since most privately held Companies are not listed and thus not traded on the stock exchange. Accordingly, the price prediction performance of alternative valuation models that incorporate earnings, book value, and amount of invested capital in the firm would be investigated to find correlation with market prices and use this to estimate value of private firms.

This study adds to the literature by providing an analysis of the relationship between the various valuation models and market values based on companies quoted in the NSE. For instance, investors are exposed to poor recommendations and financial institutions such as investment bankers, stockbrokers and accountants are exposed to bad reputation and lawsuits due to errors and therefore important that the valuation models are correctly used.

Market value does not equal book value, because share price is based on the returns or cash flows that the investor expects to receive from owning the share (depends on the ability of the company to earn a profit), while book value depends on the historical costs of the firm's assets. However the book value is a good value driver of the market value. The replacement value of the firm's assets, does not necessarily reflect the ability of the firm to turn the assets into profits. Market value is determined by the ability of the firm to earn a return on its investments above the opportunity cost of capital). Compared to bonds, stocks are more difficult to value because, cash flows are not pre-specified, have no maturity date, and one can't easily determine or observe required market return.

1.2 Statement of the problem

There are practical problems in firm valuation and this study seeks to investigate the relative explanatory power of the alternative firm valuation models when applied to firms quoted on the NSE. This helps understand which method has a higher explanatory power than the other and the reasons. The question to answer is:
"What is the nature of the relationship between the market values and the values derived from the financial statements and other data for firms quoted on the Nairobi stock Exchange?"

Chege, D. M. (2006), did a survey of the different methods of business valuation used by the business valuation practitioners in Kenya. The objective of the study was to find out which methods are preferred by the practitioners and the reason for use of those methods. Comparative analysis indicated more use of the discounted cash flow (DCF) method by the investment bankers than by accountants. Although accountants use the DCF less than the bankers they trust the method more in arriving at the value of a business. Subjectivity was identified to be of significant influence in arriving at business valuations. The study concluded that this is an indicator of difficulties in practical application of the methods preferred by the practitioner. This therefore leads into a conflict as to what method explains more the market value of a firm in Kenya.

The valuation question is further complicated by the need to accurately value the firm so as to correctly price the additional debt or equity required to grow the firm. Therefore different models of firm valuation are therefore examined with the aim of understanding the impact of each and comparing this with the market value. This helps to understand how to price the additional capital requirement for growth of the firm and maximization of shareholder value. The different valuation methods have different underlying assumptions and could give different values due to the method used and assumptions made. The question that arises is what should the shareholders, analysts, or potential investors be aware of as they look at each of the valuation methods and values derived from them.

1.3 Research objectives

The objective of this study is to establish the relationship between firm valuation methods and the market value of a firm, specifically looking at the case of companies quoted on the Nairobi Stock exchange.

1.4 Value of the study

Findings of this study will be of interest to management of quoted companies to determine the impact of debt or additional equity on firm value and relationship with the market firm value, post sale of the debt or acquisition of additional equity.

The study will also be important to financial consultants and market analysts interested in further understanding of the impact of method of valuation and what to expect when different valuation methods are used to value the firm compared to the market value.

Lenders and creditors will also be interested to understand how additional debt affects or equity affects the value of a firm and in relation to the security that they hold in their books against the debt that they are owed by the firm. Whether there is value addition and therefore possibility of them being paid or default and best method to use to understand the value of the firm compared to the market value.

This is important to scholars who want to understand the methodology that firms may use to arrive at pricing decision in Kenya for debt or rights issues in order to expand the firm and maximize shareholder value.

Potential investors are also interested in finding out the best method to use to value potential investment opportunities and the possible errors or pitfalls in the valuation methods and compare these values with the current market values.

This is important to current shareholders who would want to know the value of their investment and compare with the market and therefore to tell when their investments in the firm is appreciating and how internally generated value or profits will impact or affect firm value.

Regulators such as the Kenya revenue authority and Central bank of Kenya would also be interested in understanding the implication of the different valuation models as they have an impact on the fiscal and monetary policies of the country, for example the impact on capital gains tax and how valuation of such a tax can optimally be assessed.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter describes the literature on firm valuation and the various models and theories identified for firm valuation. The models identified include first, the Asset-Based Valuation Model, secondly the Discounted Cash Flow Models which consist of three sub categories, the Free Cash Flow, the Dividend-Based and the Earnings-Based Model and thirdly the Discounted Residual Income Model. The section also examines the empirical finding to create a background for the study and also demonstrate the knowledge gaps.

2.1.1 Theoretical Framework

There are several fundamental concepts involved in estimating the intrinsic value of a stock, a bond and a firm. Williams (1938) developed a theory for estimating the value of a stock based on the idea of discounting a constant stream of dividends to infinity (DIV) that is the future cash flows that stockholders would receive.

Firm valuation is the process of determining how much a firm is worth. The value of the firm is obtained by discounting expected cashflows to the firm, i.e., the residual cashflows after meeting all operating expenses and taxes, but prior to debt payments, at the weighted average cost of capital, which is the cost of the different components of financing used by the firm, weighted by their market value proportions. Damodoran (2001).

Fernandez, (2002) did a study which describes the three alternative approaches for estimating the potential value of a firm. The first approach looks at capitalizing the residual earnings of the firm. The Residual Income Model (RIM) expresses firm value as the sum of its invested capital and the discounted present value of the residual income from its future activities. The second approach is assets based and thirdly the discounted cash flows method. The market value of a firm is a function of three factors: one the amount and timing of cash flows, two the anticipated growth rate in cash flow for the future, and three the capitalized return (risk premium) investors require on their investment.

A study by Plenborg (2000), has shown that there is a theoretical equivalence between the free cash flow model, the dividend discount model and the residual income model. Plenborg (2000) states that these valuation techniques should give consistent and identical estimates of intrinsic firm value, provided that all the forecasts of the different items are consistent with each other and the assumptions are identical. Moreover, for all sets of accounting rules, these models produce the same valuation when infinite-horizon forecasts are used. Thus, the dividend, cash flow and residual income approaches are equivalent when the respective payoffs are predicted to infinity. However, these zero-error conditions are very restrictive. In practice, forecasts are made over finite horizons so different accounting principles yield different estimates with finite-horizon forecasts. For this reason, steady state terminal values, which usually have considerable weight in equity valuation, are calculated in practice to correct for error introduced by the truncated forecast horizon.

Ohlson (1991) argue that the steady state conditions ensure that the company's forecasted performance remains stable after the valuation horizon. They also claim that steady state is a necessary condition for the three models to yield identical results when terminal values are used. Therefore, any steady state condition violation can cause internal inconsistencies in valuation models and thus have a significant effect on the equity value estimates.

According to Ohlson (1991), valuation models give different value estimates when different simplifying assumptions are introduced, since these assumptions introduce bias in the firm value estimates. Penman and Sougiannis (1998) have done further studies that do not take into account the fact that the same assumptions must be applied to the models so that they yield identical valuations. The use of simplifying assumptions in both studies makes the link between the forecasted financial statements and the input in the different valuation approaches most likely inconsistent. Based on these distinct assumptions, both studies suggest that Residual Income Model RIM is superior to the other models. Therefore, these two studies indicate that if the internal coherence between the three valuation models is violated, the RIM yields more accurate firm value estimates than the Free Cash Flow FCF, most likely due to the use of different assumptions.

According to the 'Efficient Market Hypothesis', as defined by Fama (1970), security prices fully reflect all available information. Whether security markets are informational efficient is of great interest to investors, shareholders, managers, lenders, regulators and other market participants who care about intrinsic value of the firm.

Mylonakis and Vardavaki (2007) explain that in an ideal world, where markets are perfect and efficient, the intrinsic firm value equals the equity book value. However, in the real world, the book value of shareholder equity is generally lower than the market equity value. That is, the book-to-market ratio is less than the unity.

As pointed out by Copeland et al. (2005) the Discounted Cash Flow model (DCF model), the residual income model (RI model) and other similar models based on capitalization of earnings are often used for firm valuation. These models yield identical results i.e., based on the same underlying assumptions these models are equivalents. In practice the implementation of different capitalization models may produce different results due to either one forecast errors (e.g., revenue growth and profit margins that are not based on realistic assumptions) or two errors in the implementation and application of the valuation approach (i.e., methodological errors).

Lundholm and O'Keefe (2001a). In their study demonstrate that the first type of errors is due to an over/underestimation of the true potential of a company and is difficult to avoid, although careful analysis mitigates this estimation error problem. The second type of errors, referred to as methodological errors, is caused by incorrect implementation and/or application of the valuation model. It is possible to avoid this type of errors if the user understands the underlying assumptions and carefully implements the valuation model.

Courteau et al. (2001) compare the accuracy of firm value estimates based on the dividend discount model (DDM), the DCF and the residual income (RI) approaches, respectively. They find that the residual income model yields more accurate firm value estimates than the DCF and DDM models. However, their findings are in conflict with the fact that the RI, DCF and DDM

models are equivalents and, thus, from a theoretical perspective, must yield the same value estimates.

When different present value models provide different results it must be due to improper implementation. Consequently, the studies conclusion that valuation models may yield different value estimates in practice as security analysts apply the models incorrectly (e.g., estimate the terminal value incorrectly). The studies, however, do not provide evidence that the implementation of valuation models is flawed.

Sweeney (2002) provide evidence that valuation models based on the present value concept yield exactly the same firm value estimates. This shows that accrual accounting models (e.g., RI-model) and cash flow models (e.g., FCF-model) provide the same value estimates if two conditions are met: (a) forecasts are internally consistent, and (b) discount rates are consistent with value additivity as derived by Modigliani and Miller (1958).

2.1.2 Modigillian and Miller (1958)

According to the seminar paper by Modigillian and Miller (1958) the method of financing a firm is irrelevant as far as the firm's value is concerned. There were a wide range of assumptions on the efficiency of the market, the absence of taxes and the absence of transaction costs in the operations of the market. Gordon (1962) extended Williams DIV by allowing the stream of dividends to grow at a constant forecasted rate from time period zero to infinity. The model has been extended to incorporate dividends growing at uneven rates. The estimation of bond value is similar to the dividend discount model (DIV), in that the bond value equals to a discounted stream of interest payments and the final maturity value at the yield to maturity, Homer et al (1972).

Price of share of stock is the present value of all expected future cash inflows discounted at market capitalization rate. The model was developed by Williams (1938) and then expanded by

Gordon (1963), cited in Brealey and Myers (2003: 64-66)

$$V_1 = \frac{D_1}{(1+K_1)^1} + \frac{D_2}{(1+K_2)^2} + \ldots\ldots\ldots\ldots + \frac{D_n}{(1+K_n)^n}$$

Where

V_1 = the current or present value of an investment.

D_n = expected returns at time n.

n = the number of periods over which returns are expected to be generated.

However, later MM (1963) relaxed the assumptions by introducing taxes into their model in which case the method of financing become relevant. Van Horne (1995) explains the impact of the market on the value of the firm. If the expected return of a firm security is derived using Capital Asset Pricing Model (CAPM), it follows that a firm's value is not dependent on its own risk but more on the unsystematic risk. He concludes that all decisions of the firm should be judged in the market context.

In equity valuation, unlike bonds or preferred stock the investor in uncertain about the size of the returns, their time pattern and the required rate of return (k). For bonds, the only unknown is the required rate of return, which is the prevailing normal risk free rate plus the risk premium. Certain information is unavailable and investment in equity shares requires that future earning, dividend and price be estimated. Amling (1978)

2.1.3 Valuation models Descriptions

The following theoretical valuation models can be applied to firm valuation, First, the Asset-Based Valuation Model, secondly the Discounted Cash Flow Models which consist of three sub categories, the Free Cash Flow, the Dividend-Based and the Earnings-Based Model and finally and thirdly the Discounted Residual Income Model

2.1.4 Asset Based Valuation Model

This model assigns a value to the firm based on the fair value of individual component assets. Liabilities (also at fair prices) are deducted to arrive at the value of the firm's equity. This model can be applied when balance sheets are perfect, that is, the assets and liabilities are recorded at fair market value. Since they are priced efficiently in the market, they will earn at their cost of capital. In this case, intrinsic value equals book value and the expected future residual income is zero. Residual income for period t is defined as the comprehensive earnings available to common equity for the period less a charge against the earnings for the book value at the beginning of the period Bt-1, earning at the cost of capital. Therefore, when there is neither unrecorded goodwill nor omitted value, the asset-based valuation model defines the firm value V_t as the sum of fair values of net tangible and intangible assets:

$$V_t = \sum_{t=1}^{\infty} fv_t$$

This model is most applicable to value net financial obligations which are recorded at market value but not to value net operating assets since some of them are measured at depreciated historical cost (such as property, plant, equipment) and some at zero value (omitted knowledge assets and other intangibles). Therefore, this model can be used to value firms with large fixed assets and firms applying simple technology.

This method does not consider the assets which may not be recorded by the firm yet they may be critical to the future of the company. E.g. Firm human resources capital and image for a law firm may not be valued at they are the most critical asset to the future of the form.

2.1.5 Discounted Valuation Models

This model assigns a value to the firm that equals the present value of expected future accounting measures, based on all currently available information. The parameters that make up Discounted Valuation Models are related to risk (the required rate of return) and the return itself (CF_{t+1} which are the cash flows), as:

$$V_t = \sum_{t=1}^{\infty} \frac{E_t(CF_{t+1})}{(1+i_e)^1}$$

These models use three alternative cash flow measures: one, free cash flows, two, dividends and three accounting earnings. Under the assumption of perfect markets, these models give the same results as the asset-based valuation model.

Discounted cash flows formulae take into account the risk on the value of an investment; hence the value can be determined as follows,

$$V_o = \frac{C_1}{(1+K_1)^1} + \frac{C_2}{(1+K_2)^2} + \ldots\ldots + \frac{C_t}{(1+K_t)^t} + \frac{C_n}{(1+K_n)^n}$$

Where

V_o = the current or present value of an investment.

C_t = expected returns at time t.

K_t = required rate of return for each period.

n = the number of periods over which returns are expected to be generated.

Free Cash Flow Model assumes that the firm's value equals the present value of cash flows from all the projects in its operations. Free cash flow is the difference between the cash flow from operations and cash investment. It is the cash available to debt and equity holders after investment. The Free Cash Flow Model (FCF) is specified by Copeland, et al (2005) as:

$$V_t = \sum_{t=1}^{\infty} \frac{E_t(CF_{t+1})}{(1+r_f)^1} + ECMS_t - D_t - PS_t$$

Where

V_t is the market value of equity at time t,

r_f is the weighted average cost of capital,

$ECMS_t$ is the excess cash and marketable securities,

D_t is the market value of debt at time t

PS_t is the market value of preferred stock at time t.

Damadoran (2001) and Reilly and Brown (2000) presented a methodology for estimating the free cash that flows to equity shareholder. Thus it is possible to compare the intrinsic estimates generated by two equity valuation models, value of the stock to the value of dividends. Whether free cash that flows to equity shareholder or dividends are used to estimate the value of stock, the required equity discount rate (ks) is the same.

Dividend Discount Model assumes that a stock's fundamental equity value can be defined as the present value of its expected future dividends based on all currently available information.

$$V_t = \sum_{i=1}^{\infty} \frac{E_t(D_{t+i})}{(1+r_e)^i}$$

Where:

V_t is the stock's fundamental value at time t,

$E_t(D_{t+i})$ are the expected future dividends for period t+i conditional on information available at time t, and

R_e is the cost of equity capital based on the information set at time t.

This definition assumes a flat term-structure of discount rates.

Graham, et al [1962] reconciled their "earning power" theory of value to the DIV valuation models of Williams and Gordon, by discounting low-dividend paying growth stocks in a manner comparable to discounting a stream of future dividends to infinity. They concluded that the elements of uncertainty and risk assume a dominant position in the discounting of a future dividend stream. Second, they reached a conclusion, that investors in popular growth stocks do not explicitly think in terms of discounting future dividends.

Earnings-Based Valuation Approach.

Under this approach a firm's equity value can be expressed as the sum of the expected earnings, discounted at an appropriate risk-adjusted discount rate:

$$V_t = \sum_{i=1}^{\infty} \frac{E_t(X_{t+i})}{(1+r_e)^i}$$

In the case that the expected future annual income level E (X) t is constant, the 'capitalization of earnings' approach can be applied:

$$V_t = \frac{E_t(X)}{r}$$

where r is the risk adjusted capitalization rate. Unlike the asset-based approach, this model can capture unrecorded goodwill, that is, the difference between the book value and market value of the firm's assets. The earnings-based model is often applied to firms such as technology intensive firms (computer firms, telecommunication firms) that have considerable unrecorded intangible assets and high expected future cash flows.

2.1.6 Discounted- Residual Income Model,

This provides a way of thinking about value generation in the business where the concept is the residual income, a measure of accounting income in excess of a normal/required return on capital employed. As far as the model of Ohlson (1991), the parameters that make up the Discounted Residual Income Model are:

$$V_t = B_t + \sum_{i=1}^{\infty} \frac{E_t(NI_{t+1} - (r_e * B_{t+i-1}))}{(1+r_e)i}$$

Where

Bt is the book value at time t,

B_{t+i-1} is the beginning-of-year book value at t,

E_t is expectation based on information available at time t,

NI_{t+i} is the Net Income for period t+i,

r_e is the cost of equity capital

The Residual Income Model (RIM) also shows that equity value can be split into two components: an accounting measure of the capital invested (B_t), and a measure of the present value of future residual income, defined as present value of future discounted cash flows not captured by the current book value. If a firm earns future accounting income at a rate exactly equal to its cost of equity capital, then the present value of future residual income is zero, and $V_t=B_t$.

Firms that neither create nor destroy wealth relative to their accounting-based shareholders' equity, will be worth only their current book value. However, firms with expected ROEs higher (lower) than r_e will have values greater (lower) than their book values. Therefore, the RIM is a combination between asset-based valuation model for firm's financial activities and earnings-based model for operating activities. Since it incorporates firm's stock and flow components, it is most applicable to companies with high fixed and intangible assets and whose values are generated by both assets and future stream of earnings.

Graham and Dodd (1934, 1940) proposed an intrinsic-value approach to equity valuation. They stated that the most important single factor determining a stock's value is now held to be the indicated average future earning power, i.e., the estimated average earnings for a future span of years. They indicated intrinsic value would then be found by first forecasting this earning power and then multiplying that prediction by an appropriate capitalization factor. They stated that any estimate of earning power extending over future years may easily be off the mark, since the major business factors of volume, price and cost are all largely unpredictable.

There are disadvantages to this approach as earnings are derived by use of approximations and subjective accounting policies of the firm. Quality of earnings may be questioned when they differ significantly with cash generated. To overcome the vague measures of earnings cashflow are used instead. The discount factor is the weighted average cost of capital of the firm.

Practitioners have agreed the discounted cash flow method, at least in theory, is the most ideal method of business valuation. Damodoran (2001) terms it as the most fundamental method.

2.1.7 Market Prices

A firm or comparable firm with past valuations transactions whether in stock market or elsewhere is identified. Appropriate multiples are derived to compare the firm being valued with the guideline firm and then derive the value accordingly. For example the number of subscribers for the cellular phone company, This was used by Dyer and Blair investments Bank to compare the value of Safaricom Limited and Kencell communications limited whose part shareholding had been sold (Daily Nation, 12th July 2005). The market price of the share of the company being valued can also be used as a basis for valuation.

Conclusion

Maximizing shareholder value is fundamental goal of firm and therefore the need for method or tool for firm valuation. There is empirical evidence that increasing shareholder value does not conflict with the long run interests of other stakeholders. Value is best measured using the discounted cashflow method (DCF) as it requires completed information, and therefore results in a comprehensive measure of corporate performance. The DCF approach captures all the elements that affect the value of the company in a comprehensive way. Under the DCF approach value is the future expected cashflow discounted at a rate reflecting the riskiness of the cashflow. (Koller et al 2005).

2.2. Empirical evidence

Mylonakis and Vardavaki (2007), did a study on the theoretical framework for the process of equity valuation and investigated the relative explanatory power of alternative linear equity valuation models when applied to firms in the UK food and drug retail sector.

The empirical tests that were applied to equity valuation for firms in the examined sector were based on the following models; Asset-based, earnings-based and combined valuation model which captures the spirit of the Feltham and Ohlson (1995) valuation framework. Alternative equity valuation models were introduced and tested empirically, using the ordinary least square (OLS) estimation method on a sample of 10 UK food and drug retailers. These tests included the estimation of linear regressions with the firms' equity market values as the dependent variable and various components taken from the financial statements as independent variables.

Overall, the results of the empirical analysis indicated that the linear accounting-based valuation model, that incorporates both stock and flow components, provides greater explanatory power and thus better captures the different aspects of equity values of firms in the UK food retail sector than either purely asset-based or purely earnings-based models.

The average reported value of adjusted R^2 statistic for the basic combined model is 0.97, compared to 0.86 and 0.75 respectively for models based only on assets or earnings. Although one could expect that the combined model that contained both book value and abnormal earnings would be more informative, the average value of R^2 (0.94) was lower than that of the basic combined models that included earnings as independent variable. In fact, the combined models that gave the highest explanatory power are those that combined earnings with balance sheet components, irrespective of whether these items were taken from period t or t-1.

The split of book value into separate items intended to capture the spirit of Feltham and Ohlson model (1995) which suggests that the separation of financial from operating activities plays a substantial role in equity valuation for these firms. Thus, the empirical analysis supported the

view that the asset-based or the earnings-based model produces benchmark valuations that can be used as a starting point but cannot capture all the determinants of equity values.

In practice, Free cash flows which is the income before interest, tax, depreciation and amortization alone, explains the smallest proportion of cross-sectional variation in equity values. On the other hand, book value alone gives a satisfactory degree of explanatory power. However, a combination of both book value and current earnings in a separate valuation model provides a better and more accurate estimation of equity market price. In their paper, Mylonakis and Vardavaki (2007), assumed a linear relationship in the valuation models.

Rees (1999) found out that the valuation model is very sensitive to firm characteristics, most notably firm size. Thus, the analysis could be extended by including an additional variable in the models, which is firm size, which according to Rees (1997), has a strong impact on the explanatory power and the estimated coefficients, suggesting that there is a scope for improving the model. Rees finds that firm size is positively related with value and the results are consistent with either lower cost of capital or higher growth for larger firms.

Rees (1997) did a study on accounting based valuation models to investigate financial firms from six European countries with substantial financial sectors: France, Germany, Italy, Netherlands, Switzerland and the UK. Not only are these crucial industries worthy of study in their own right, but unusual accounting practices, and inter-country differences in those accounting practices, provide valuable insights into the accounting-value relationship.

His sample consisted of 7,714 financial firm/years observations from 1,140 companies drawn from 1989-2000. Sub-samples included 1,309 firm/years for banks, 650 for insurance companies, 1,705 for real estate firms, and 3,239 for investment companies.

He concluded that in most countries the valuation models work as well or better in explaining cross-sectional variations in the market-to-book ratio for financial firms as they do for industrial and commercial firms in the same countries, although Switzerland is an exception to this generalization. The results were sensitive to industrial differences, accounting regulation and

accounting practices. In particular, marking assets to market value reduces the relevance of earnings figures and increases that of equity.

2.2.1 Kenyan Studies

A study by Kerandi A. M, (1993), sought to determine the predictive ability of the dividend valuation model on the ordinary shares on Firms quoted on the Nairobi Stock Exchange. Data collected in form of share prices, market indices and dividend per share from the Nairobi stock exchange (NSE) secretariat were used to predict share prices for each of the thirteen firm's studied. The market model was used to provide a link between the expected values which are non observable and the real values that were used in testing the model.

The predictive share prices were compared with actual prices by computing the difference between them. The differences between the two prices were subjected to t tests. The test of significance showed that out of the thirteen companies studied only three showed that the differences were not significant and therefore concluded that the dividend valuation model was a poor predictor of share prices in the Nairobi Stock Exchange.

Omondi, T.O. (2003), also conducted study to establish the reliability of the dividend discount model (which is based on the discounted cashflow techniques) on the valuation of common stock at the Nairobi Stock Exchange. Data was collected in form of share prices, market indices and dividend per share from the Nairobi Stock Exchange secretariat and was used to predict share prices for each of the eighteen companies studied. Market model was used as model of equilibrium to provide a link between the expected values which are non observable and the real values that were used in testing the model. Predicted share prices were compared with actual prices by computing the differences between them. The differences were then subjected to t-test. The test of significance showed that out of the eighteen companies studied, only three showed that the difference was significant and therefore concluded that the dividend discount model is not a reliable in the valuation of common stock at the NSE.

Oliech J.O.(2002) did a study on the relationship between size, book to Market value and returns of NSE common stocks covering the years 1996 to 2000. The hypothesis was that there exists a negative relationship between size and return and positive relationship between the ratio of book to market equity and returns.

Data was collected from financial statements of the quoted companies and the market prices from the NSE. It was analysed using regression analysis and cross tabulation The F ratio and T ratio were used to test the significance of the model with a confidence level of 95%.

The findings of the research were that the size of the companies quoted on the NSE has no relationship with the returns of those companies and the ratio of both book to market value has no relationship to returns of the companies.

Chege, D. M.(2006), did a survey of the different methods of business valuation used by the business valuation practitioners in Kenya. The objective of the study was to find out which methods are preferred by the practitioners and the reason for use of those methods. The practitioners selected for the study were categorised into four groups: accountants, Investment bankers, stockbrokers, and investment advisors. A sample of 96 valuation practitioners were selected out of which 61 were accountants representing 10% of the total population of the practising accountants. The total population of the other categories of practitioners was used due to the small population sizes.

Primary data was collected through questionnaire and 30 practitioners responded positively. Data was analysed through descriptive statistics and presented in tabular & graphical forms. Comparison was made between two categories of respondents, accountants and investments bankers to find out if there were preferences for certain methods by one category compared to the other. Analysis was also made of the choice for the different valuation methods for the two categories of practitioners. The study found out that the discounted cash flow is the most frequently used valuation method of business valuation, followed by market valuation method and the asset book value method.

Comparative analysis indicated more use of the discounted cash flow (DCF) method by the investment bankers than by accountants. Although accountants use the DCF less than the bankers they trust the method more in arriving at the value of a business. Subjectivity was identified to be of significant influence in arriving at business valuations. The study concluded that this is an indicator of difficulties in practical application of the methods preferred by the practitioner.

There are a number of reasons why business valuation is not as straight forward and simple as theoretically stated. First each business entity is unique and therefore there is no generally accepted value for certain types or sizes of a business. Secondly each business owns different types of assets some of which are intangible and have no direct measurable values in the market. Thirdly the supply and demand forces may not apply in practice due to inefficiencies in the market, for example the flow of information may not be achieved, there may be a limited number of suppliers and buyers and taxation may be imposed during transfer.

Fourthly that valuation of a firm involves some form of forecast of the future of the firm. This is because the value today depends to a large extent on the expected value in the future. Even in cases where a business is valued for liquidation purpose the value is based on a "near" future value. Another reason is that different valuation methods usually yield different values for the same business. For example Dyer and Blair investment bank used two alternative methods in valuation of Safaricom limited in June 2005 which yielded different values : ksh 145B and Ksh 223B(Daily Nation 12th May 2005). Different values may justify their different methods which is an indication of the extent of subjectivity that may be involved in business valuation.

2.2.2 Conclusions

From the studies done on the Kenyan market there is scope for more studies to look at the various methods of firm valuation to determine the relationships with the market values. The local studies done so far differ from the international studies since they show that dividend discount model as not being reliable in valuation of equity. From the review of the models, firm valuation is influenced by various factors and some errors may occur. Copeland (2005) identifies this errors as one failure to forecast complete income statements and balance sheets, making it

difficult to forecast capital expenditure in a manner consistent with growth in revenues, two interpretation of what the tax rate to be used should be, and thirdly misinterpreting what working capital is, leaving out some of the variables and fourthly instead of using an earning formula using a convenient earning surrogate.

Previous studies have focused on the discount dividend model and this study seeks to look at the other valuation models as explained in the literature review and identify the relationship if any and strength of the relation with the market values.

The purpose of this study is to present the theoretical framework of valuation models and to empirically test these valuation models in a sample of Companies in Kenya quoted in the Nairobi stock exchange. This will be done through an examination of the relationship between the worked value and the market value of firm based on the different valuation methods on firms quoted on the NSE.

Alternative DCF frameworks provide the same mathematical results, Koller et al(2005) recommends the use of entity DCF and economic profit model. He concludes from previous studies done that they are straightforward to use and provide insights to underlying economics of business being valued.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter will outline the research design, population of the study, the sample size, data collection method, and the data analysis model.

3.2 Research Design

Research design is the blue print for fulfilling the research objectives. A design is used to structure the research, to show how all of the major parts of the research project, the samples, measures, treatments or programs, and methods of assignment. Cooper and Schindler (2006).

This study is a causal study utilizing secondary data. The historical data inform of descriptive statistics has been used and sourced from the Nairobi stock exchange and the capital markets authority. The purpose of the study is to present some valuation models applicable to the firms quoted on the Nairobi Stock Exchange and test which valuation model explains the largest proportion of variation in equity values. Data from the financial statements has been used to work out values using the two recommended models, entity DCF and economic profit model. Tests include the estimation of linear regressions with dependent variable as the firm's equity market value and different derived value as the independent variables, from the valuation methods. The reason for using this method is that there is a linear relationship between the equity market value and the derived values.

3.3 Population

Cooper and Schindler (2006) define a population as the total collection of elements about which we wish to make some inference. The population considered for the study was the Forty Seven

(47) listed firms on the Nairobi stock exchange between the years 2005 and 2009. (As per appendix 1). Current year (2010) has not been covered due to unavailability of data on the NSE handbook. This duration is considered representative for the study as Kenya's economy experienced mixed results of growth and decline.

3.4 Sample Design

A sample of 16 firms that were continuously listed at the NSE between the years 2005 and 2009 has been selected through judgmental sampling. This is to ensure that the sample conforms to a criterion of being representative of all the sectors of the economy represented on the NSE. It's also to ensure that only firms listed and active in the entire period are included. the suspended firms were excluded. Banks have also been excluded due to the problems associated with financial institutions where there are conceptual difficulties in determining the quality of the loan portfolio. measuring the amount of current accounting profits attributable to interest-rate mismatch (difference between long term rates earned on loans and short term rates paid on deposits). There is also the challenge of establishing the transfer price between the functions (retail. corporate. treasury) to arrive at how banks should allocate its marginal resources.

For an outsider banks are opaque business because of blind pool risking their loan portfolio and adequate information is not available concerning actual hedging practices. There are also differences among banking business units reflected in their expected free cashflow to shareholders. Therefore a modified model would be required for these firms. (Koller et al 2005).

3.5 Data collection

Data collection is gathering empirical evidence in order to gain new insights about a situation and answer the questions that necessitated the study. Secondary data been used and collected from the annual financial statements of the target firms quoted on the Nairobi stock exchange. This information is available at the Nairobi stock exchange. the capital markets authority. Data include was market value i.e. share prices. and financial statements data i.e. profit and loss statement. balance sheet and the cashflow statements.

3.6 Data analysis and presentation

Data analysis is the process of editing and reducing accumulated data to a manageable size, developing summaries. looking for patterns and applying statistical techniques. Cooper and Schindler (2006).

Data presentation and processing was done using MS-Excel and SPSS software to run the regression analysis.

Applying the entity DCF Model, where:

Equity value = Company's operations - Market value of debt + Market value of preferred stock.

And Economic profit Model where:

Firm Value = Capital Invested + Premium (Present value of Value created).

Also equal to Invested capital x (ROIC –WACC).

Once the different values were computed using the different methods above the regression analysis was performed to establish if there is a relationship between the variables computed under the two models above and the market values, the nature of the relationship, and strength of the relationship.

The regression line used is:

$$Y = \alpha + bx + \varepsilon$$

Where:

Y is the market value.

α is the intercept of the regression line.

b is the slope, degree of change in the intrinsic value as market value changes.

x is the intrinsic value worked out.

ε is the error term.

The strength of the relationship was determined by correlation coefficient r and coefficient of determination r^2. A t-test was also performed to test the significance of the two models with a confidence level of 95%.

Software used in analyzing the relationship between the variables is the statistical social sciences (SPSS) version 17. Regression is used as it's a powerful tool for analyzing relationships between variables. The results will be presented in prose, tabular and graphical form.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The study sought to determine the nature of the relation between the different valuation models and the market values. Data collected in form of market prices and the financial statements were used to predict the future financial statements and the equity value of each of the firms studied. The study focussed on 16 firms quoted on the NSE and had traded over the period of study which was between the years 2005 and 2009.

4.2 Discounted Free cash flow method

The five year (2005-2009) balance sheet and profit and loss were tabulated on an excel spreadsheet to analyse the historical performance. The free cash flow, invested capital and NOPLAT (net operating profits less adjusted taxes) were calculated.

We then forecasted the ten year performance using the forecast function on the MS excel, and checked for reasonableness of the forecast. We then estimated the weighted average cost of capital, by first estimating the cost of equity financing and the cost of non equity financing by combining the weight of each.

We then estimated the continuing value and discounted it to the present using the cost of capital estimated above. We then calculated the equity values and regressed them against the market values resulting in regression statistics as below:

Table 1: DFCF Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
CFM	0.564245585	0.31837308	0.26968544	46.64213227

The above regression statistics gives the overall goodness of fit measures, with r^2 giving the variation of y (market equity value) around its mean, explained by x (Discounted free cash flow equity vale) at a 95% confidence level.

With an r^2 of 0.31 it means that the value derived using DFCF (Discounted Free cashflow) explains up to 31.8% of the market value. The correlation between the market price and the worked equity value based on the discounted free cash flow is 0.31.

An ANOVA (analysis of variance) table as below is also given which splits the sum of squares into its components. I.e. residual (or error) sum of squares and regression (or explained) sum of squares.

Table 2: ANOVA DFCF model

Model		Sum of Squares	df	Mean Square	F-statistic	p-value
CFM	Regression	14225.7258	1	14225.7258	6.539095	0.022798
	Residual	30456.839	14	2175.488503		
	Total	44682.5648	15			

The column labeled F statistic has the associated P-value. Since 6.5390 > 0.05, we do not reject the relationship that exists between the market value and the computed value at significance level 0.05. The p-value is 0.022 which is less than 0.05 and therefore within the confidence level of 95%.

Table 3: DFCF Model Coefficients

		Coefficients	Std. Error	t-statistic	p-value
CFM	(Constant)	37.4183542	14.6929448	2.546688542	0.023266
	Cash Flow Model	0.37965158	0.14846579	2.557165406	0.022798

Y(Market Value) = 37.4183542 + 0.37965158x(Discounted Cash Flow value)

Based on the coefficients in the table above the regression equation can be expressed as per the equation shown above on market value.

4.3 Economic profit method (residual income model)

The five year (2005-2009) balance sheet and profit and loss were tabulated on an excel spreadsheet to analyse the historical performance. The free cash flow, invested capital, NOPLAT (net operating profits less adjusted taxes) and return on economical capital were calculated.

We then forecasted the ten year performance using the forecast function on the MS excel, and checked for reasonableness of the forecast. We then estimated the cost of capital, by first estimating the cost of equity financing and the cost of non equity financing by combining the weight of each.

We then estimated the continuing value and discounted it to the present using the cost of capital estimated above. We then calculated the equity values and then regressed against the market with the following regression statistics results.

Table 4: Model summary economic profit

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
ECP	0.105718172	0.01117633	0.0594539	56.17776483

With an r^2 of 0.0111 it means that the value derived using Economic profit model explains up to 1.1% of the market value. The correlation between the market price and the worked equity value based on the economic capital model is 0.011.

The ANOVA (analysis of variance) results are as follows:

Table 5: ANOVA economic profit model

Model		Sum of Squares	df	Mean Square	F-statistic	p-value
ECP	Regression	499.387178	1	499.3871779	0.158237	0.696784
	Residual	44183.1777	14	3155.941262		
	Total	44682.5648	15			

The column labeled F statistic has the associated P-value. Since 0.1582 < 0.696, we do reject the relationship that exists between the market value and the computed value at significance level of

0.05. The p-value is 0.696 which is greater than 0.05 and therefore not within the confidence level of 95%.

Table 6: Coefficients for economic profit model

		Coefficients	Std. Error	t-statistic	p-value
ECP	(Constant)	56.3442845	17.1768219	3.280250836	0.005473
	Economic Profit Model	0.0647779	0.16284433	0.397790345	0.696784

Whereas the constant coefficient (intercept) in the equation has an associated p-value of 0.0054 and therefore within the confidence level of 95%, same cannot be said of the coefficient slope which has a p-value of 0.696 which is above the 0.05 confidence level.

The resulting summary of the above output is that the fitted line is.

Y (Market Book Value) = 56.3442845 +0.0647779EP

4.4 Conclusions

Empirical results are heavily dependent on the methodology employed in tests. They are also impacted by the type of data available as well as the way the method is used. Tests on the discounted cash flow method shows it explains a higher percentage of the relationship with the market at 31% while the economic capital explains only 1.1%.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the research and shows how they relate to the objective put forward in chapter 1. Limitations of the study and the suggestions for further research are also discussed.

5.2 Conclusions

The objective of this study was to establish the relationship between firm valuation methods and the market value of a firm, specifically looking at the case of companies quoted on the Nairobi Stock exchange. To achieve this, two models discussed in chapter 3 (Discounted Free cash flow and Economic profit-Residual income) were used to predict the equity value per share and then compared with the market.

The r^2 for the discounted free cashflow was 0.3 while the economic capital method had an r^2 of 0.01 to the market showing a high correlation for the discounted free cash flow method to the market as compared to the economic capital method.

A test of significance was carried out to determine whether the two prices were significantly different. While the discount cash flow had a p- value of 0.02 showing the differences were not significant and therefore the model was a good indicator of the market price. The economic capital method had a p- value of 0.6 showing the differences were significant and therefore the model was not a good indicator of the market price.

The differences between the market value and the predicted value could be caused by the absence of perfect market, in appropriate discount factors, or the possibility of the irrelevance of dividend policy in determining equity value.

It's also evident that from the study that the valuation of equity is quite difficult since the variables included, i.e. future financial position and market prices are uncertain in amount and

time of occurrence. The valuation models are only as good as the assumptions used in estimating these variables. Inaccurate data will also result in incorrect valuation.

This does not mean that use of such models in financial decision making is undesirable. Without such models there would be no means to value a firm. By using such theoretical models, the financial manager is forced to identify the real economic factors that affect equity values and therefore shareholder value. This results in better investment decisions. This study should therefore be understood in light of such research limitations.

5.3 Limitations of the study

The respective models have inherent limitations as they assume similar state in projecting the financial statements like steady growth or decline while in real situations this may not apply. Therefore errors in forecasting of financial statements will affect the outcome, also errors in financial statements and assumptions will also manifest themselves in the values computed.

Historical data was used to get surrogates for expected future profit and loss and the balance sheet. However these forecasted numbers may not fit the reality. The inherent assumption is that what happened in the past will be the greatest determinant of the future performance which may not be the case.

Population under study was defined as sample of 16 selected firms. The procedure of selecting the sample was judgmental therefore difficult to generalize the results. Data availability could skew the results of the valuation making generalization of the results difficult although it's a good starting point.

The time selected for the study (years 2005 to 2009) may not be very representative and may have been affected by other external factors in the economy which have not been isolated in the study. Such factors may include the post election violence in late 2007 and early 2008.

5.4 Suggestions for further study

A similar study should be conducted with a different or longer time frame for the study to capture more factors affecting the derived prices. A longer frame could capture more macroeconomic factors as well as financial statements for a longer period of time. This will help remove any skew caused by the period of study.

The role of change in investor expectations has not been scoped in the study as this would determine what investors look at when making investment decisions. This would in turn affect the market values and therefore making comparison with the other valuation models complicated.

A separate study looking at financial institutions which have peculiar characteristics would be important as they are an important sector of the economy. Banks have been excluded due to the problems associated with financial institutions as there are conceptual difficulties experienced in determining the quality of the loan portfolio, measuring the amount of current accounting profits attributable to interest-rate mismatch (difference between long term rates earned on loans and short term rates paid on deposits). There is also the challenge of establishing the transfer price between the functions (retail, corporate, treasury) to arrive at how banks should allocate its marginal resources. There are also differences among banking business units reflected in their expected free cashflow to shareholders. Therefore a modified model would be required for these firms. (Koller et al 2005).

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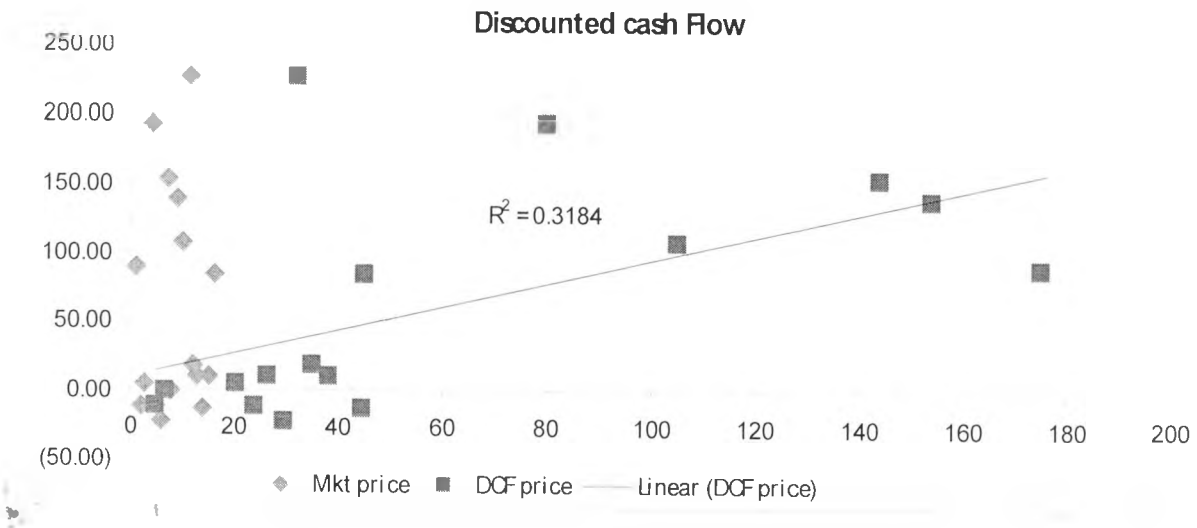
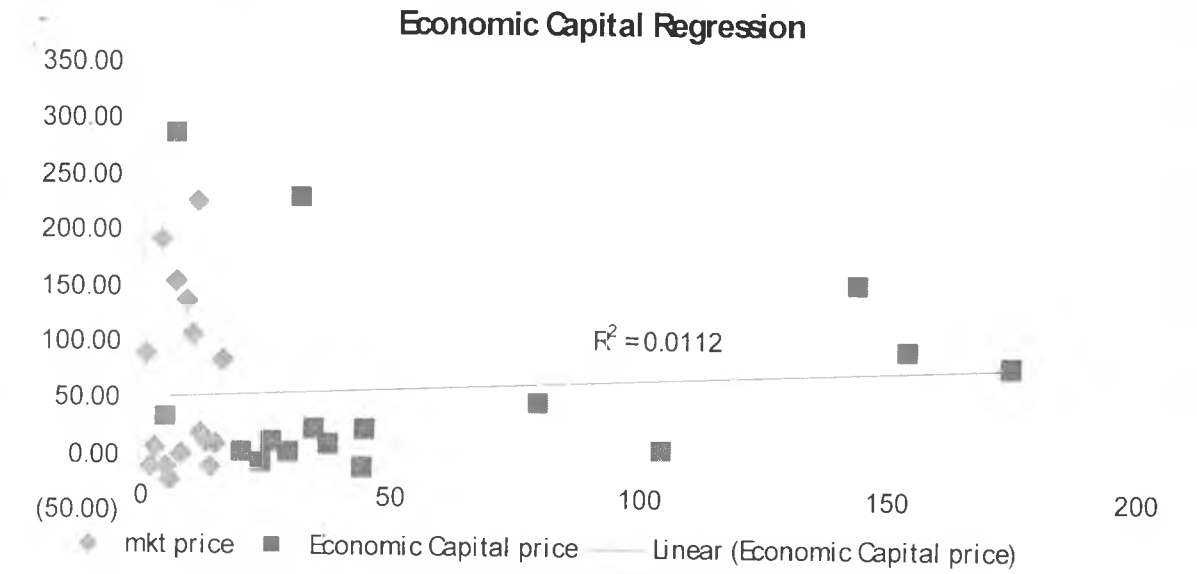
Appendix A: List of valued companies

Firm name	Firm code		Sector Code	Market price 30th Dec 2009	Free cash flow Method	Economic Profit Method
British American Tobacco Kenya Ltd	X1	Industrial	B1	175	88.81	81.64
Crown Berger Ltd	X2	Industrial	B1	24	(12.28)	(8.32)
E.A.Cables Ltd	X3	Industrial	B1	20.25	4.33	1.32
E.A.Portland Cement Ltd	X4	Industrial	B1	80	190.96	47.16
Sameer Africa Ltd	X5	Industrial	B1	5	(11.97)	32.15
Total Kenya Ltd	X6	Industrial	B1	29.75	(23.45)	1.48
East African Breweries Ltd	X7	Industrial	B1	144	152.38	153.71
Mumias Sugar Co. Ltd	X8	Industrial	B1	6.95	(0.95)	285.92
Bamburi Cement Ltd	X9	Industrial	B1	154	136.71	94.06
Athi River Mining	X10	Industrial	B1	105	105.95	5.82
Kakuzi	X11	Agricultural	B2	31.75	225.43	229.20
Car & General (K) Ltd	X12	Commercial	B3	35	18.28	21.18
Standard Group Ltd	X13	Commercial	B3	38	10.22	8.31
TPS Eastern Africa (Serena) Ltd	X14	Commercial	B3	44.5	(12.93)	(12.93)
ScanGroup	X15	Commercial	B3	26.25	9.17	9.73
Pan Africa Insurance Holdings Ltd	X16	Financial	B4	45	82.74	21.22

Appendix B: Regression analysis Graphs





Appendix C: Individual Company Valuation

KAKUZI

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	539.9	0.8045	434.31
2011	568.4	0.6472	367.84
2012	639.9	0.5206	333.17
2013	712.7	0.4188	298.48
2014	786.4	0.3369	264.96
2015	860.9	0.2710	233.36
2016	936.2	0.2181	204.13
2017	1,012.0	0.1754	177.52
2018	1,088.3	0.1411	153.58
2019	1,165.0	0.1135	132.26
Continuing Value	1,846.1	0.0913	168.60
Value of Operations			2,768.20
Value of Non Operating investments			1,650.20
Total Entity Value			4,418.40
Les value of debt			0.00
Equity Value			4,418.40
Equity Value per share			225.43
Number of shares			19,600

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	246.0	0.8045	197.87
2016	321.8	0.6472	208.29
2017	406.9	0.5206	211.83
2013	491.9	0.4188	206.03
2014	577.0	0.3369	194.40
2015	662.0	0.2710	179.44
2016	747.0	0.2181	162.89
2017	832.1	0.1754	145.96
2018	917.1	0.1411	129.42
2019	1,002.2	0.1135	113.77
Continuing Value	2,150.3	0.0913	196.38
Present value of economic profit			1,946.27
Invested capital			895.90
Value of Operations			2,842.17
Value of Non Operating investments			1,650.20
Total Entity Value			4,492.37
Les value of debt			0.00
Equity Value			4,492.37
Equity Value per share			229.20
Number of shares			19,600

Pan Africa Insurance
Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	(111.1)	0.8058	- 89.50
2011	(124.4)	0.6494	- 80.79
2012	(183.7)	0.5233	- 96.13
2013	(243.0)	0.4217	- 102.47
2014	(302.3)	0.3398	- 102.72
2015	(361.6)	0.2738	- 99.01
2016	(420.9)	0.2206	- 92.87
2017	(480.2)	0.1778	- 85.38
2018	(539.5)	0.1433	- 77.30
2019	(598.8)	0.1155	- 69.14
Continuing Value	(17,018.9)	0.0930	- 1,583.41
Value of Operations			- 2,478.73
Value of Non Operating investments			6,450.20
Total Entity Value			3,971.47
Les value of debt			0.00
Equity Value			3,971.47
Equity Value per share			82.74
Number of shares			48,000

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(329.9)	0.8058	- 265.82
2016	(407.9)	0.6494	- 264.85
2017	(483.7)	0.5233	- 253.11
2013	(559.5)	0.4217	- 235.94
2014	(635.4)	0.3398	- 215.90
2015	(711.2)	0.2738	- 194.74
2016	(787.1)	0.2206	- 173.66
2017	(862.9)	0.1778	- 153.43
2018	(938.7)	0.1433	- 134.50
2019	(1,014.6)	0.1155	- 117.14
Continuing Value	(51,336.1)	0.0930	- 4,776.22
Present value of economic profit			- 6,785.31
Invested capital			1,353.80
Value of Operations			- 5,431.50
Value of Non Operating investments			6,450.20
Total Entity Value			1,018.70
Les value of debt			0.00
Equity Value			1,018.70
Equity Value per share			21.22
Number of shares			48,000

Mumias sugar

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC		PV of FCF
2010	(245.2)	0.7778	-	190.69
2011	(1.082.8)	0.6050	-	655.07
2012	(1.236.9)	0.4705	-	581.99
2013	(1.390.9)	0.3660	-	509.05
2014	(1.545.0)	0.2847	-	439.79
2015	(1.699.0)	0.2214	-	376.17
2016	(1.853.1)	0.1722	-	319.11
2017	(2.007.2)	0.1339	-	268.83
2018	(2.161.2)	0.1042	-	225.15
2019	(2.315.3)	0.0810	-	187.60
Continuing Value	85.104.4	0.0630		5.363.45
Value of Operations				1.610.01
Value of Non Operating investments				215.00
Total Entity Value				1.825.01
Les value of debt				(3.280.00)
Equity Value			-	1.454.99
Equity Value per share			-	0.95
Number of shares				1,530,000

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC		PV of FCF
2015	(2.945.8)	0.7778	-	2.291.21
2016	(3.836.9)	0.6050	-	2.321.18
2017	(4.531.5)	0.4705	-	2.132.23
2013	(5.226.1)	0.3660	-	1.912.64
2014	(5.920.7)	0.2847	-	1.685.35
2015	(6.615.3)	0.2214	-	1.464.64
2016	(7.310.0)	0.1722	-	1.258.80
2017	(8.004.6)	0.1339	-	1.072.11
2018	(8.699.2)	0.1042	-	906.24
2019	(9.393.8)	0.0810	-	761.15
Continuing Value	7.010.551.2	0.0630		441.819.36
Present value of economic profit				426.013.82
Invested capital				14.511.00
Value of Operations				440.524.82
Value of Non Operating investments				215.00
Total Entity Value				440.739.82
Les value of debt				(3.280.00)
Equity Value				437.459.82
Equity Value per share				285.92
Number of shares				1.530.000

East African Breweries
Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	7,397.7	0.8933	6,608.51
2011	8,298.5	0.7980	6,622.43
2012	9,027.3	0.7129	6,435.57
2013	9,756.2	0.6368	6,213.21
2014	10,485.0	0.5689	5,965.06
2015	11,213.9	0.5082	5,699.14
2016	11,942.7	0.4540	5,422.08
2017	12,671.5	0.4056	5,139.27
2018	13,400.4	0.3623	4,855.10
2019	14,129.2	0.3237	4,573.08
Continuing Value	208,958.8	0.2891	60,417.08
Value of Operations			117,950.53
Value of Non Operating investments			2,553.00
Total Entity Value			120,503.53
Les value of debt			(2.00)
Equity Value			120,501.53
Equity Value per share			152.38
Number of shares			790,774

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	7,093.5	0.8933	6,336.77
2016	7,871.7	0.7980	6,281.82
2017	8,450.9	0.7129	6,024.65
2013	9,030.2	0.6368	5,750.85
2014	9,609.4	0.5689	5,466.91
2015	10,188.7	0.5082	5,178.11
2016	10,767.9	0.4540	4,888.71
2017	11,347.1	0.4056	4,602.13
2018	11,926.4	0.3623	4,321.06
2019	12,505.6	0.3237	4,047.58
Continuing Value	163,898.0	0.2891	47,388.49
Present value of economic profit			100,287.08
Invested capital			18,708.00
Value of Operations			118,995.08
Value of Non Operating investments			2,553.00
Total Entity Value			121,548.08
Les value of debt			(2.00)
Equity Value			121,546.08
Equity Value per share			153.71
Number of shares			790,774

Total Kenya

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	3,693.9	0.9161	3,384.09
2011	(1,294.2)	0.8393	- 1,086.19
2012	(1,207.7)	0.7689	- 928.59
2013	(1,121.2)	0.7044	- 789.79
2014	(1,034.7)	0.6453	- 667.73
2015	(948.3)	0.5912	- 560.60
2016	(861.8)	0.5416	- 466.74
2017	(775.3)	0.4962	- 384.68
2018	(688.8)	0.4546	- 313.11
2019	(602.3)	0.4164	- 250.83
Continuing Value	(11,175.0)	0.3815	- 4,263.24
Value of Operations			- 6,327.40
Value of Non Operating investments			942.00
Total Entity Value			- 5,385.40
Les value of debt			(13,161.00)
Equity Value			- 18,546.40
Equity Value per share			- 23.45
Number of shares			790,774

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(213.3)	0.9161	- 195.40
2016	(12.7)	0.8393	- 10.67
2017	(54.8)	0.7689	- 42.15
2013	(96.9)	0.7044	- 68.29
2014	(139.1)	0.6453	- 89.74
2015	(181.2)	0.5912	- 107.11
2016	(223.3)	0.5416	- 120.94
2017	(265.4)	0.4962	- 131.69
2018	(307.5)	0.4546	- 139.79
2019	(349.6)	0.4164	- 145.60
Continuing Value	(3,370.6)	0.3815	- 1,285.89
Present value of economic profit			- 2,337.26
Invested capital			15,727.00
Value of Operations			13,389.74
Value of Non Operating investments			942.00
Total Entity Value			14,331.74
Les value of debt			(13,161.00)
Equity Value			1,170.74
Equity Value per share			1.48
Number of shares			790,774

Sameer

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	99.2	1.0923	108.40
2011	184.9	1.1931	220.61
2012	196.0	1.3032	255.39
2013	207.0	1.4235	294.71
2014	218.1	1.5549	339.12
2015	229.2	1.6983	389.21
2016	240.2	1.8551	445.65
2017	251.3	2.0263	509.21
2018	262.4	2.2133	580.69
2019	273.4	2.4176	661.04
Continuing Value	(2,703.4)	2.6407	7,138.90
Value of Operations			3,334.88
Value of Non Operating investments			373.00
Total Entity Value			2,961.88
Les value of debt			(371.00)
Equity Value			3,332.88
Equity Value per share			11.97
Number of shares			278.342

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	310.8	1.0923	339.50
2016	318.0	1.1931	379.44
2017	320.1	1.3032	417.18
2013	322.2	1.4235	458.65
2014	324.3	1.5549	504.22
2015	326.4	1.6983	554.29
2016	328.5	1.8551	609.32
2017	330.5	2.0263	669.77
2018	332.6	2.2133	736.20
2019	334.7	2.4176	809.19
Continuing Value	306.8	2.6407	810.21
Present value of economic profit			6,287.96
Invested capital			2,659.00
Value of Operations			8,946.96
Value of Non Operating investments			373.00
Total Entity Value			9,319.96
Les value of debt			(371.00)
Equity Value			8,948.96
Equity Value per share			32.15
Number of shares			278.342

East African Portland Cement

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	1,362.1	0.8801	1,198.86
2011	1,223.7	0.7746	947.91
2012	1,452.2	0.6818	990.06
2013	1,680.6	0.6001	1,008.49
2014	1,909.1	0.5281	1,008.27
2015	2,137.6	0.4648	993.62
2016	2,366.1	0.4091	968.00
2017	2,594.6	0.3601	934.24
2018	2,823.0	0.3169	894.66
2019	3,051.5	0.2789	851.15
Continuing Value	37,021.9	0.2455	9,088.70
Value of Operations			18,883.96
Value of Non Operating investments			1,563.30
Total Entity Value			20,447.26
Les value of debt			(3,260.90)
Equity Value			17,186.36
Equity Value per share			190.96
Number of shares			90,000

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(137.2)	0.8801	- 120.77
2016	(154.7)	0.7746	- 119.86
2017	(178.9)	0.6818	- 121.96
2013	(203.0)	0.6001	- 121.84
2014	(227.2)	0.5281	- 120.00
2015	(251.4)	0.4648	- 116.84
2016	(275.5)	0.4091	- 112.72
2017	(299.7)	0.3601	- 107.91
2018	(323.8)	0.3169	- 102.63
2019	(348.0)	0.2789	- 97.07
Continuing Value	(2,170.4)	0.2455	- 532.83
Present value of economic profit			- 1,674.43
Invested capital			7,616.80
Value of Operations			5,942.37
Value of Non Operating investments			1,563.30
Total Entity Value			7,505.67
Les value of debt			(3,260.90)
Equity Value			4,244.77
Equity Value per share			47.16
Number of shares			90,000

East African Cables
Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	(423.1)	0.8127	343.86
2011	185.0	0.6605	122.19
2012	237.3	0.5368	127.38
2013	289.6	0.4363	126.34
2014	341.9	0.3546	121.23
2015	394.2	0.2882	113.60
2016	446.5	0.2342	104.57
2017	498.8	0.1903	94.94
2018	551.1	0.1547	85.25
2019	603.4	0.1257	75.86
Continuing Value	3,813.1	0.1022	389.61
Value of Operations			1,017.12
Value of Non Operating investments			228.00
Total Entity Value			1,245.12
Les value of debt			(368.20)
Equity Value			876.92
Equity Value per share			4.33
Number of shares			202,500

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(76.3)	0.8127	- 61.99
2016	(319.8)	0.6605	- 211.25
2017	(400.3)	0.5368	- 214.88
2013	(480.8)	0.4363	- 209.74
2014	(561.2)	0.3546	- 198.99
2015	(641.7)	0.2882	- 184.91
2016	(722.2)	0.2342	- 169.13
2017	(802.6)	0.1903	- 152.77
2018	(883.1)	0.1547	- 136.61
2019	(963.6)	0.1257	- 121.14
Continuing Value	(609.3)	0.1022	- 62.25
Present value of economic profit			- 1,723.67
Invested capital			2,130.30
Value of Operations			406.63
Value of Non Operating investments			228.00
Total Entity Value			634.63
Les value of debt			(368.20)
Equity Value			266.43
Equity Value per share			1.32
Number of shares			202,500

Crown Berger
Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	(87.4)	0.7465	65.27
2011	23.0	0.5572	12.81
2012	28.6	0.4160	11.89
2013	34.2	0.3105	10.61
2014	39.7	0.2318	9.21
2015	45.3	0.1730	7.84
2016	50.9	0.1292	6.58
2017	56.5	0.0964	5.45
2018	62.1	0.0720	4.47
2019	67.7	0.0537	3.64
Continuing Value	235.8	0.0401	9.46
Value of Operations			16.67
Value of Non Operating investments			35.60
Total Entity Value			52.27
Les value of debt			(343.70)
Equity Value			291.43
Equity Value per share			12.28
Number of shares			23,727

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(372.9)	0.7465	- 278.35
2016	(443.0)	0.5572	- 246.87
2017	(474.2)	0.4160	- 197.24
2013	(505.3)	0.3105	- 156.91
2014	(536.5)	0.2318	- 124.35
2015	(567.6)	0.1730	- 98.21
2016	(598.7)	0.1292	- 77.33
2017	(629.9)	0.0964	- 60.73
2018	(661.0)	0.0720	- 47.58
2019	(692.2)	0.0537	- 37.19
Continuing Value	3,893.4	0.0401	156.15
Present value of economic profit			- 1,168.60
Invested capital			1,279.30
Value of Operations			110.70
Value of Non Operating investments			35.60
Total Entity Value			146.30
Les value of debt			(343.70)
Equity Value			- 197.40
Equity Value per share			- 8.32
Number of shares			23,727

Bamburi Cement

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	5.003.6	0.8352	4.179.13
2011	4.722.3	0.6976	3.294.24
2012	5.839.6	0.5827	3.402.45
2013	6.957.0	0.4866	3.385.56
2014	8.074.3	0.4065	3.281.85
2015	9.191.7	0.3395	3.120.40
2016	10.309.0	0.2835	2.923.05
2017	11.426.4	0.2368	2.706.01
2018	12.543.7	0.1978	2.481.13
2019	13.661.1	0.1652	2.256.89
Continuing Value	107.879.8	0.1380	14.885.68
Value of Operations			45.916.40
Value of Non Operating investments			7.275.00
Total Entity Value			53.191.40
Les value of debt			(3.571.00)
Equity Value			49.620.40
Equity Value per share			136.71
Number of shares			362.969

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	659.1	0.8352	550.50
2016	1.020.8	0.6976	712.12
2017	1.010.5	0.5827	588.77
2013	1.000.2	0.4866	486.73
2014	989.8	0.4065	402.33
2015	979.5	0.3395	332.53
2016	969.2	0.2835	274.81
2017	958.9	0.2368	227.08
2018	948.5	0.1978	187.62
2019	938.2	0.1652	155.00
Continuing Value	4.959.1	0.1380	684.27
Present value of economic profit			4.601.76
Invested capital			25.834.00
Value of Operations			30.435.76
Value of Non Operating investments			7.275.00
Total Entity Value			37.710.76
Les value of debt			(3.571.00)
Equity Value			34.139.76
Equity Value per share			94.06
Number of shares			362.969

British American Tobacco

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	878.9	0.8839	776.85
2011	1.089.1	0.7813	850.88
2012	1.159.6	0.6905	800.75
2013	1.230.1	0.6104	750.78
2014	1.300.5	0.5395	701.63
2015	1.371.0	0.4768	653.76
2016	1.441.5	0.4215	607.56
2017	1.512.0	0.3725	563.26
2018	1.582.4	0.3293	521.07
2019	1.652.9	0.2910	481.08
Continuing Value	16.111.2	0.2573	4.144.69
Value of Operations			10.852.31
Value of Non Operating investments			0.10
Total Entity Value			10.852.41
Les value of debt			(1.971.60)
Equity Value			8.880.81
Equity Value per share			88.81
Number of shares			100,000

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	753.5	0.8839	666.02
2016	557.3	0.7813	435.40
2017	501.9	0.6905	346.56
2013	446.4	0.6104	272.49
2014	391.0	0.5395	210.94
2015	335.6	0.4768	160.01
2016	280.1	0.4215	118.07
2017	224.7	0.3725	83.71
2018	169.3	0.3293	55.74
2019	113.8	0.2910	33.13
Continuing Value	879.9	0.2573	226.36
Present value of economic profit			2.608.43
Invested capital			7.527.00
Value of Operations			10.135.43
Value of Non Operating investments			0.10
Total Entity Value			10.135.53
Les value of debt			(1.971.60)
Equity Value			8.163.93
Equity Value per share			81.64
Number of shares			100.000

Scan Group

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	182.9	0.7946	145.32
2011	235.6	0.6314	148.75
2012	294.3	0.5017	147.66
2013	353.1	0.3986	140.74
2014	411.8	0.3167	130.43
2015	470.5	0.2517	118.42
2016	529.3	0.2000	105.84
2017	588.0	0.1589	93.43
2018	646.7	0.1262	81.65
2019	705.5	0.1003	70.77
Continuing Value	3.933.3	0.0797	313.51
Value of Operations			1.496.49
Value of Non Operating investments			536.20
Total Entity Value			2.032.69
Les value of debt			(9.30)
Equity Value			2.023.39
Equity Value per share			9.17
Number of shares			220.689

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	97.8	0.7946	77.71
2016	97.1	0.6314	61.28
2017	95.5	0.5017	47.88
2013	93.8	0.3986	37.41
2014	92.2	0.3167	29.21
2015	90.6	0.2517	22.81
2016	89.0	0.2000	17.80
2017	87.4	0.1589	13.89
2018	85.8	0.1262	10.83
2019	84.2	0.1003	8.45
Continuing Value	338.1	0.0797	26.95
Present value of economic profit			354.23
Invested capital			1.265.79
Value of Operations			1.620.02
Value of Non Operating investments			536.20
Total Entity Value			2.156.22
Les value of debt			(9.30)
Equity Value			2.146.92
Equity Value per share			9.73
Number of shares			220.689

TPS
Serena

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	36.7	0.5418	19.88
2011	(0.6)	0.2935	-0.19
2012	(2.9)	0.1590	-0.45
2013	(5.1)	0.0861	-0.44
2014	(7.3)	0.0467	-0.34
2015	(9.5)	0.0253	-0.24
2016	(11.7)	0.0137	-0.16
2017	(13.9)	0.0074	-0.10
2018	(16.2)	0.0040	-0.06
2019	(18.4)	0.0022	-0.04
Continuing Value	(23.2)	0.0012	-0.03
Value of Operations			17.83
Value of Non Operating investments			146.60
Total Entity Value			164.43
Les value of debt			(1,533.50)
Equity Value			1,369.07
Equity Value per share			12.93
Number of shares			105,865

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(4,017.5)	0.5418	-2,176.48
2016	(4,303.2)	0.2935	-1,262.99
2017	(4,577.1)	0.1590	-727.77
2013	(4,850.9)	0.0861	-417.86
2014	(5,124.8)	0.0467	-239.16
2015	(5,398.6)	0.0253	-136.49
2016	(5,672.4)	0.0137	-77.69
2017	(5,946.3)	0.0074	-44.12
2018	(6,220.1)	0.0040	-25.00
2019	(6,494.0)	0.0022	-14.14
Continuing Value	17,730.1	0.0012	20.92
Present value of economic profit			-5,100.79
Invested capital			5,118.40
Value of Operations			17.61
Value of Non Operating investments			146.60
Total Entity Value			164.21
Les value of debt			(1,533.50)
Equity Value			-1,369.29
Equity Value per share			-12.93
Number of shares			105,865

Standard
Group

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	(53.4)	0.8369	44.71
2011	98.2	0.7004	68.77
2012	154.4	0.5861	90.49
2013	210.6	0.4905	103.30
2014	266.8	0.4105	109.52
2015	323.0	0.3435	110.96
2016	379.2	0.2875	109.02
2017	435.4	0.2406	104.76
2018	491.6	0.2014	98.99
2019	547.8	0.1685	92.31
Continuing Value	4,121.1	0.1410	581.16
Value of Operations			1,424.57
Value of Non Operating investments			158.90
Total Entity Value			1,583.47
Les value of debt			(834.60)
Equity Value			748.87
Equity Value per share			10.22
Number of shares			73,275

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(52.2)	0.8369	- 43.68
2016	(102.9)	0.7004	- 72.04
2017	(155.3)	0.5861	- 91.05
2013	(207.8)	0.4905	- 101.93
2014	(260.3)	0.4105	- 106.84
2015	(312.8)	0.3435	- 107.44
2016	(365.2)	0.2875	- 105.00
2017	(417.7)	0.2406	- 100.50
2018	(470.2)	0.2014	- 94.67
2019	(522.6)	0.1685	- 88.07
Continuing Value	(1,878.7)	0.1410	- 264.94
Present value of economic profit			- 1,176.16
Invested capital			2,460.70
Value of Operations			1,284.54
Value of Non Operating investments			158.90
Total Entity Value			1,443.44
Les value of debt			(834.60)
Equity Value			608.84
Equity Value per share			8.31
Number of shares			73,275

Car & General

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	67.3	0.8170	54.95
2011	17.9	0.6675	11.96
2012	69.3	0.5453	37.79
2013	120.7	0.4455	53.76
2014	172.0	0.3640	62.62
2015	223.4	0.2974	66.44
2016	274.8	0.2430	66.76
2017	326.2	0.1985	64.74
2018	377.5	0.1622	61.22
2019	428.9	0.1325	56.83
Continuing Value	2.247.6	0.1082	243.30
Value of Operations			780.38
Value of Non Operating investments			617.50
Total Entity Value			1.397.88
Les value of debt			(990.60)
Equity Value			407.28
Equity Value per share			18.28
Number of shares			22.279

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(237.0)	0.8170	- 193.60
2016	(270.9)	0.6675	- 180.85
2017	(316.5)	0.5453	- 172.58
2013	(362.0)	0.4455	- 161.29
2014	(407.5)	0.3640	- 148.34
2015	(453.1)	0.2974	- 134.74
2016	(498.6)	0.2430	- 121.14
2017	(544.1)	0.1985	- 108.01
2018	(589.7)	0.1622	- 95.63
2019	(635.2)	0.1325	- 84.16
Continuing Value	(2.432.6)	0.1082	- 263.32
Present value of economic profit			- 1.663.66
Invested capital			2.508.70
Value of Operations			845.04
Value of Non Operating investments			617.50
Total Entity Value			1.462.54
Les value of debt			(990.60)
Equity Value			471.94
Equity Value per share			21.18
Number of shares			22.279

Athi River Mining

Summary of the free Cash Flow Valuation

Year	FCF	Discount Factor at WACC	PV of FCF
2010	1.948.4	0.8557	1.667.23
2011	685.7	0.7322	502.08
2012	1.056.3	0.6266	661.83
2013	1.426.9	0.5361	765.02
2014	1.797.5	0.4588	824.65
2015	2.168.1	0.3926	851.14
2016	2.538.7	0.3359	852.80
2017	2.909.3	0.2874	836.27
2018	3.279.9	0.2460	806.75
2019	3.650.6	0.2105	768.33
Continuing Value	39.734.1	0.1801	7.156.02
Value of Operations			15.692.12
Value of Non Operating investments			15.10
Total Entity Value			15.707.22
Les value of debt			(5.212.00)
Equity Value			10.495.22
Equity Value per share			105.95
Number of shares			99,055

Summary of Economic profit Valuation

Year	Economic Profit	Discount Factor at WACC	PV of FCF
2015	(903.3)	0.8557	- 772.99
2016	(445.1)	0.7322	- 325.89
2017	(612.9)	0.6266	- 384.01
2013	(780.7)	0.5361	- 418.58
2014	(948.6)	0.4588	- 435.17
2015	(1.116.4)	0.3926	- 438.25
2016	(1.284.2)	0.3359	- 431.39
2017	(1.452.0)	0.2874	- 417.38
2018	(1.619.9)	0.2460	- 398.43
2019	(1.787.7)	0.2105	- 376.26
Continuing Value	(4.231.9)	0.1801	- 762.16
Present value of economic profit			- 5.160.49
Invested capital			10.933.62
Value of Operations			5.773.13
Value of Non Operating investments			15.10
Total Entity Value			5.788.23
Les value of debt			(5.212.00)
Equity Value			576.23
Equity Value per share			5.82
Number of shares			99.055