The investment opportunity set and policy decisions: the association between leverage; dividend; B-BBEE policies and growth opportunity

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Abstract

The investment opportunity set was the component of the organisation's value resulting from the option to make future investments or growth opportunity. The value of an organisation comprised of assets in place and discretionary investments in positive net present value projects or growth opportunity. This investment opportunity set or growth opportunity was relevant to both the organisation and the economy for value creation. The discretionary investments included any discretionary expenditure necessary for the future growth the organisation and were packaged as policy decisions. This study elected debt policies, dividend policies, and broad-based empowerment shareholding as relevant policy decisions with the purpose of establishing the relationship between these policies and growth opportunity.

This study was conducted over a five year period at company-level and industry-level. T-tests, correlation and regression tests were employed to explore the relationship between the variables. The results revealed that debt and growth opportunity was positively associated; dividend and growth opportunity was negatively associated although the evidence was weak; and black economic shareholding was negatively associated with growth opportunity and positively associated with assets in place.

Keywords

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Declaration

I declare that this research project is my own work. It is submitted in partial fulfillment of the requirements for the degree of Masters of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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I dedicate this research to the memory of my mother who was tragically killed on 4 September 2011. I stand testament to her teachings of courage and strength.

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Chapter 1 - Introduction to the Research Problem

1.1   Research title

The investment opportunity set and policy decisions : the association between leverage; dividend; B-BBEE policies and growth opportunity.

1.1   Definition of problem and purpose

There have been considerable studies undertaken over the recent years in determining the association between the investment opportunity set (IOS) and policy decisions (Adam & Goyal, 2008; J.J. Gaver & Gaver, 1993; Jones & Sharma, 2001). The IOS represents a firm's investment or growth option (Myers, 1976). According to Myers, the value of an organisation comprises of assets in place (actual assets on the balance sheet) and future investment options (discretionary investments in positive net present value projects). Investment or growth option depends on discretionary expenditures by managers, which are policy decisions around the IOS such as debt, dividend or compensation policies (Adam & Goyal; J.J. Gaver & Gaver; Iturriaga & Crisostomo, 2010).

Investment or growth opportunity has extensive cross-sectional variations, and may further include new projects or exploitation of emerging opportunities that may improve debt levels; market perception with general accounting-based performance indicators of the organisation (J.J. Gaver & Gaver, 1993; Jones & Sharma, 2001). The IOS influences the way the organisation is viewed by managers, owners, investors and creditors; and investment opportunities to an organisation constitute an important component of market value (Kallapur & Trombley, 2001).

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This was supported by Riahi-Belkaoui (2001) who stated that growth opportunity represented by the IOS signifies value to the firm, where the higher the growth option the greater the likelihood of good performance of the firm.

It was noted at this stage that organisations differ with respect to various factors including size; growth or profitability, and that factors influencing policy decisions vary immensely (Jensen, Solberg & Zorn, 1992). This study was limited to debt, dividend and ownership structure in the form of broad-based black economic empowerment as predominant, significant and relevant policy decisions (J.J. Gaver & Gaver, 1993; Jensen et al.). The motivations for electing these specific policies are discussed below.

Policy decisions entail discretionary expenditures and costs by managers which explains the cross sectional variation in financing and dividend policies (J.J. Gaver & Gaver, 1993; Smith & Watts, 1992). These seminal studies were supported by a deluge of empirical research where it was agreed that these major policy variables are related to the IOS and each other (Adam & Goyal, 2008; Kallapur & Trombley, 1999, 2001; Jones & Sharma, 2001; Rajan & Zinagales, 1995; Skinner, 1993). Both leverage decisions and dividend payout policies have been the focus of extensive research, and are closely related to most financial and investment decisions that a firm makes (Abor & Bokpin, 2010).

Supported by the above reasoning, this study undertook to investigate the relationship between the IOS and policy decisions relating to leverage and dividend policies. An additional variable was included that related specifically to the South African environment. This included ownership structure in the form of broad-based black economic empowerment (B-BBEE). The purpose of

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including this variable was to measure the association of ownership change through transformation and expectations of growth opportunity brought about by such ownership change.

The discussion thus far revealed that the IOS included discretionary expenditures necessary for the future performance of organisations. It was noted that virtually any discretionary expenditure can be viewed as a growth option, and the factors influencing the IOS included any firm-specific factors such as human capital in place or capital structure; industry-specific and macro-economic factors. The result was that there were several policy decisions relating to growth opportunity that may impact the IOS such as organisation size; profitability; revenue growth; political, environmental, social, technological or legal issues; capital market issues or internal company matters such capabilities and resources.

It was not possible to consider the full extent of confounding factors and for this reason this study was exploratory. The selection of debt and dividend policies were based on past empirical studies on the IOS, and ownership structure in the form of B-BBEE was based on relevance to South Africa.

This study was therefore defined as the measurement of the association between the IOS (representing growth opportunity) and policy decisions (represented by leverage; dividend; B-BBEE policies). The purpose of this study was to contribute to the process of growth opportunity and policy decisions in creating value; and to further understand the association of the cross sectional variation within the South African context.

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1.2   Background to the problem

The various past empirical studies relating to the IOS and policy decisions explored this relationship to better understand how to improve or create value by considering future investment options rather than assets in place (Myers, 1976). By managers better understanding how policy decisions are made enhances the possibility of improving or creating value for the organisation. However the theoretical explanations have been diverse in providing managers with this knowledge. The following represented the several empirical and theoretical accounts that underpinned the relationship between the IOS and policy decisions.

Traditional theories included tradeoff and pecking order theories for capital structure (Fama & French, 2002); alternatively, signaling and agency theories have been offered for dividend policies (Myers, 1984; Fama & French). Similarly, ownership structure may be explained through traditional models of agency theory or entrenchment (Cho, 1988; Grugler, Mueller & Yurtoglu, 2008). Contemporary models over the past decade have emerged recommending alternates to this relationship such as the dynamic capital structure model by H. DeAngelo, DeAngelo, and Whited (2011) for capital structure or the life-cycle theory by H. DeAngelo, DeAngelo and Stultz (2006) for dividend policies.

The decision to implement B-BBEE ownership into ownership structure was also influenced by the changing nature of B-BBEE transaction models over the past decade (Chabane, Goldstein & Roberts, 2006). It was concluded from the various empirical studies that there was a disparity in results and theoretical models relied upon. The relationship between the IOS and policy decisions also varied when studies conducted in emerging and developed markets were compared.

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It was on this premise that this study proposed to establish the relationship between the IOS (represented by growth opportunity) and policy decisions (debt, dividend payouts and ownership structure in the form of B-BBEE). The literature review considered the various selections of theories mentioned above, but mainly deliberates optimal contracting that is rooted in agency theory as the dominant theory. Based on empirical findings optimal contracting permeates all three policy decisions undertaken by this study.

In addition to the varied empirical findings and theoretical reasoning as a backdrop to this study, B-BBEE bears relevance to the South African environment. B-BBEE in the form of ownership was relevant as it firstly, affected the ownership structure of the organisation, and this ownership structure affected investments which in turn affected growth opportunity (Andrews, 2008; Chabane et al., 2006; Cho, 1998). Secondly, the relevance was applicable to the South African economy, where B-BBEE as a transformation device has been scrutinised for its inadequacy in creating growth opportunity for the economy (Andrews).

As a consequence of the above it was concluded that managers firstly employed B-BBEE policies to commit to a vision of societal and economic reform as set out by the Department of Trade and Industry as an initiative to increase the number of black people that manage, own and control the country's economy and to decrease income inequalities. Secondly, managers implemented B-BBEE policies with an expectation of future growth opportunities of the organisation. Wolmarans and Sartorius (2009) supported this logic, by referring to B-BBEE as a vehicle for corporate social responsibility that assists previously disadvantaged groups in obtaining a larger share of the equity of South African listed companies.

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1.3   Research objective and motivation

The aim of this study was to better understand the cross sectional characteristics of policy decisions, and simultaneously contribute to corporate policy-making when empirical findings were divergent (Serrasqueiro & Nunes, 2010). The different empirical studies are discussed in the content of this report. The objective of the study was particularly relevant when excessive risk taking through high debt levels and low dividend payouts have become central in emerging markets (Mitton, 2007).

The IOS and growth opportunity was relevant to organisations to create value for stakeholders and improve sustainability, and is particularly relevant to organisations within emerging markets (Mitton, 2007). This was due to the changing characteristics of emerging markets that affect organisations, and one of the most significant drivers of an emerging market's economy is growth opportunities (Mitton). This was supported by Iturriaga and Crisostomo (2010), where the study of leverage; dividend payout; ownership concentration and growth opportunity was based on 213 Brazilian firms. Iturriaga and Crisostomo stated that that growth opportunity was relevant to both the organisation and the economy, particularly within emerging markets where empirical studies were lacking. Iturriaga and Crisostomo further related growth opportunities at both firm level and country level, particularly with regard to emerging markets and was supported by Mitton.

The objectives set out above are relevant to South African organisations and the economy, mostly due to growth opportunity being a significant driver for both the organisation and the economy. The South African government has identified improved gross domestic product (GDP) to accelerate growth rate as a mechanism to address unemployment among other national

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objectives (Gordhan, 2011). Investment opportunity relates to growth opportunity of both the organisation and the economy (Goyal, Lehn, & Racic, 2002; Iturriaga & Crisostomo, 2010). It was concluded that the growth opportunity utilised within this study was closely linked to the growth opportunity within the context of the South African economy due the organisation's contribution to the market value of all goods and services produced, which comprises GDP.

The relevance to South Africa was further extended to measuring the relationship between B-BBEE as part of ownership and growth opportunity. B-BBEE ownership transactions have been questioned in the past in terms of growth opportunity due to the nature of funding models and value contributions of B-BBEE shareholders (Chabane et al., 2006). Similarly various discussions have emerged such as Ponte, Roberts and van Stittert (2007) who argued that B-BBEE was rampant with limitations by economic policies such as trade liberalisation, or the association of B-BBEE with risk in a recessionary economic climate.

However, there have been empirical findings of general positive impact on value and performance of companies that have implemented B-BBEE policies, or at the very least did not have a negative impact (Jackson, Alessandri & Black, 2005; Wolmarans & Sartorius, 2009). It was concluded based on the above discussion that the decision to implement B-BBEE policies in terms of ownership structure was based on commitment to transformation and due to expectations of improved financial performance and growth opportunity brought about by ownership change.

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The purpose of this study was to contribute to corporate policy-making when empirical findings were divergent, in doing so contribute to improving the IOS and growth or investment opportunities for improving or creating value for both the organisation and the economy. The scope of this research was within the field of corporate finance.

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Chapter 2 - Theory and Literature Review

2.1 Introduction

The theory and literature review section is organised as follows. The first part encompasses an introduction to the concept of the IOS as a representation of growth opportunity. This is followed by a discussion on the main theories and empirical reasoning underpinning the three major policy decisions of debt, dividend and B-BBEE policies. Each section evaluates a limited selection of the predominant theories, but mainly deliberates optimal contracting that is rooted in agency theory as the dominant theory that forms the foundation of the hypotheses stated in Chapter Three. Based on empirical findings optimal contracting permeates all three policy decisions undertaken by this study. This chapter is concluded by a discussion on the IOS proxy variable.

2.2 The Investment opportunity set (IOS)

According to Myers (1976), the value of an organisation comprises of assets in place (actual assets on the balance sheet) and future investment options (discretionary investments in positive net present value projects). These future investment options are unobservable growth opportunities or options that are higher when assets in place are lower; and the higher the growth option the better the value of the firm (Riahi-Belkaoui, 2001). The component of the organisation's value resulting from this option to make future investment was referred to as the investment opportunity set (IOS) (J.J. Gaver & Gaver, 1993; Kallapur & Trombley 1999, 2001; Myers, 1976; Skinner, 1993; Smith & Watts, 1992).

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Myers (1976) indicated that although the book value was accurate in reflecting a value of an enterprise, a significant part of the enterprise's value is accounted for in assets not in place which was the present value of future growth opportunities. This future growth opportunity representing the manager's discretionary investment was more clearly represented by Myers' formula illustrated in Equation 1. The value of the organisation represented by V assumes no corporate taxes or liquidation costs; manager's act in shareholders' interest; markets are perfect and complete therefore in equilibrium.

Equation 1 : Market Value

$$V = V(A) + V(G)$$

where,

V = the current equilibrium market of the firm

Vd, Ve = the current equilibrium market values of debt and equity respectively

V is broken down into present value of assets already in place, and present value of future growth opportunities

Based on this,

V (A) = the market value of assets already in place

V (G) = the present value of future investment opportunities

In interpreting the above equation, Myers (1976) indicated that a positive V(G) reflected future investments that are expected to yield a rate of return in excess of the opportunity cost of capital. However Myers added that since organisations may choose not to pursue future investment

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opportunities, V(G) is best regarded as a present value of the organisation's options to make future investments.

Relying on Myers (1976), the basic distinction was assets that depended on further discretionary investments of the firm. The IOS included discretionary expenditures necessary for the future performance of the organisation such as mining and exploration rights or research and development in new technology (Jones & Sharma, 2001). Although the IOS may traditionally include new capital expenditures to introduce new products; expansion of existing products; or brand advertising, it was argued by Kallapur and Trombley (1999; 2001) that it also included expenditures to reduce costs such as corporate restructuring costs. Virtually any discretionary expenditure can be viewed as a growth option (J.J. Gaver & Gaver, 1993).

It was concluded that any expenditure at the discretion of management to improve the success of the performance of the organisation may be included in the IOS, including costs relating to debt levels; dividend payouts and the costs of concluding a B-BBEE transaction. The IOS may also be preserved by deliberately underinvesting in projects such as the decision not to expand capacity for existing products (Kallapur & Trombley, 2001). Generally, the IOS depended on firm-specific factors such as human capital in place or capital structure; industry-specific and macro-economic factors (Kallapur & Trombley 1999; J.J. Gaver & Gaver, 1993).

The IOS is unobservable and several proxies have emerged over time including price-based proxies such as market-to-book-value ratio or Tobin's Q ratio; investment-based proxies such as research and development costs; and variance measures such as variance of returns and asset betas (Adam & Goyal, 2008; J.J. Gaver & Gaver, 1993; Kallapur & Trombley, 1999, 2001;

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Skinner; 1993; Smith & Watts 1992). Due to a lack of consensus an ensemble of proxies was generally utilised depending on availability (J.J. Gaver & Gaver; Riahi-Belkaoui & Picur, 1998; Smith & Watts). This study elected the use of Tobin's Q ratio or the Q ratio based on Skinner and supported by Adam and Goyal; and Lang, Ofek and Stultz (1996) which is discussed in further detail below.

As indicated thus far the IOS represented future investment or growth opportunities. Growth opportunities play a prominent role in the theory of corporate finance, and are especially important in determining debt and dividend policies (Goyal, 2002; Nash, Netter & Poulsen, 2003). Kallapur and Trombley (2001) argued the distinction between growth and growth opportunity. They asserted that growth refers to the ability to grow firm size while growth opportunities are options to invest in positive net present value projects. Kallapur and Trombley illustrated this argument through conglomerate acquisitions where there is possibility of increasing size without increasing value; or profitable growth due to positive market pricing that does not require future discretionary expenditure is not a component of the IOS.

Central to the decision faced by managers was the variation in the IOS which was defined as the "optimality of alternative financing, dividend, and compensation policies" (J.J. Gaver & Gaver, 1993, p.128). However, Iturriaga and Crisostomo (2010) concurred with J.J. Gaver and Gaver on the strength of the relation between capital structure; dividend payout policies and growth opportunities. The relationship between growth opportunity and ownership structure in the form of B-BBEE was unknown. Iturriaga and Crisostomo (2010) included ownership concentration in the investment opportunity set, which collectively underpinned policy decisions which they argued was strongly conditional on growth opportunities.

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Relying on these arguments set out above, policy decisions around leverage; dividend policies and ownership structure (in the form of B-BBEE) represented management's internal choices, which impacted growth opportunities of the organisation. This study undertook to establish the relationship between these policy decisions and growth opportunity to determine the extent and nature of the association.

2.3   Policy decisions

2.3.1   Introduction

The three main types of policy decisions undertaken in this study were debt levels; dividend payout policies and finally ownership structure in the form of B-BBEE. This section sets out each of the variables and related theories based on empirical studies.

Policy decisions by managers have been cause for academic debate since the pioneering contribution of Modigliani and Miller (1958). According to Modigliani and Miller, an organisation's value was independent from policy decisions such as capital structure due to the imperfections of capital markets. Market imperfections were described as taxes, agency costs and asymmetric information (Modigliani and Miller). However, since then there has been a growing body of evidence in favour of policy decisions by managers and rejecting the separation principle, which included the relation between policy decisions and growth opportunities (Fama & French, 2002; Goyal, 2002; J.J. Gaver & Gaver, 1993).

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Kallapur and Trombley (2001) set out the single most important determinant of the IOS and policy decisions to exercise investment options as optimal contracting rooted in the agency theory. This was supported by J.J. Gaver and Gaver (1993). Other empirical findings included various variables based on the agency theory that impacted the IOS such as profitability (Riahi-Belkaoui, 1998); use of income smoothing accounting techniques (Skinner, 1993); signaling, tax and size of the organisation (Smith & Watts, 1992). These empirical findings were considered in relation to the three variables representing the main types of policy decisions elected.

2.3.2 Debt policies

The optimal capital structure or the optimal mix of debt and equity has been the centre of academic debate as early as the 1950s with Modigliani and Miller (1958). The introduction of various theories over time such as tradeoff and pecking order theories, were still cause for deliberation among academics as recent as 2011 (de Jong, Verbeek & Verwijmeren, 2011). When referring to these theories de Jong et al. referred to equity as an option of last resort and that managers are urged to consider debt first based on a balance of debt targets and debt capacity, with debt capacity of the pecking order theory dominating as a stronger predictor of capital structure decisions.

Studies by Fama and French (2002); J.J. Gaver and Gaver (1993); Goyal et al. (2002); and Rajan and Zingales (1995) indicated a robustness in empirical data offering management's capital structure decisions based on profitability, size, tangibility of assets, policies and growth opportunity. It was evident that the common thread of the relationship between debt policies and the IOS or growth opportunity was pervasive among many current studies of optimal capital

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structure as supported by Iturriaga and Crisostomo (2010); Ovtchinnikov (2010) and Serrasqueiro and Nunes (2010). The following sets out theories that have traditionally been offered explaining managers' decisions pertaining to debt policies and growth opportunity.

i.   Traditional theories relating to debt policies

Ovtchinnikov (2010) described tradeoff theory as picking a target of leverage by weighing the benefits and costs of additional debt. Ovtchinnikov described the benefits as tax deductibility of interest and reduction of the free cash flow problem. Jensen (1986) referred to the costs of debt as expected financial distress costs and costs arising from agency conflicts between shareholders and bondholders. The tradeoff theory was described as when the benefit of the marginal debt exactly equals the cost (Fama & French, 2002).

The pecking order theory introduced by Myers (1984) was best described as when the costs of issuing new security dominates compared to other considerations, and a hierarchical order was created (internal before external) (Fama & French, 2002). Fama and French stated that in terms of the pecking order theory, organisations with more investments due to higher growth opportunities have more leverage. Fama and French also stated that in terms of the tradeoff theory organisations with larger investments due to growth opportunities have less book and market debt, depending on the complexity of the model utilised. Gaud, Jani, Hoesli and Bender (2005) found that growth opportunities and leverage were negatively related based on both the tradeoff and pecking order theories. Fama and French concurred.

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In line with these findings, Ovtchinnikov (2010) stated that despite the significant contributions of these theories, the understanding of capital structure decisions was incomplete. He further argued that consistent with these theories previous research had revealed that leverage was related to profitability or market value among other variables. However, policy decisions by managers appear to contradict with either the tradeoff or pecking order theories, where there was failure to consider target debt levels; or take advantage of tax deductions of debt; or counteract market values such as share prices (Ovtchinnikov).

Regarding use of information, consistent with Ovtchinnikov (2010), information associated with growth opportunities was greater than that associated with assets in place (Myers, 1976; Serrasqueiro & Nunes, 2010). Asymmetrical information may cause managers to rely on retained earnings first, and on debt second in terms of the pecking order theory for organisations with high growth opportunities (Serrasqueiro & Nunes).

H. DeAngelo et al. (2011) argued against traditional trade off and pecking order theories. They recognised that organisations issue transitory debt, and temporarily but deliberately deviate from targets in order to fund investments. H. DeAngelo et al. stated that this model differs radically from aforementioned theories such as tradeoff in that capital structure was linked to variations in investment decisions; volatility of shocks to investment policy; marginal profitability of investments and variation in costs. According to H. DeAngelo et al. transitory debt and target capital structures were systematically related to the nature of investment opportunities, in other words to high growth and low growth opportunities available to organisations. This correlation was attributed to the cost-efficient means of raising capital when investment opportunities dictated a funding need;

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and that debt issuance is a scarce resource that depends on variations or volatility of investments (H. DeAngelo et al.).

In addition to the traditional theories in explaining the link between policy decisions and the IOS the following optimal contracting theory was presented.

ii.   Optimal contracting

Optimal contracting is the result of several factors but is rooted in agency theory with the central ideas around shareholder-bondholder conflict; agency costs and performance measurement problems (J.J. Gaver & Gaver, 1993; Kallapur & Trombley, 2001). The following section consists of shareholder-bondholder conflict and agency costs as reflected in Goyal et al. (2002). Performance measurement problems were eliminated due to limited relevance to debt policies and were beyond the scope of this study.

Shareholder-bondholder conflict : Myers (1976) referred to manager's discretion to exercise investment options. If the organisation has debt outstanding, the organisation maybe motivated to underinvest in risky projects because debt holders have senior claim from the cash flows of the project (Kallapur & Trombley, 2001). This reduces the probability of exercising investment options thereby reducing value of the organisation (Kallapur & Trombley). Controlling this underinvestment and loss of value is to finance growth with equity rather than debt (Smith & Watts, 1992). This results in organisations with higher growth opportunities containing lower debt and higher equity, implying that this conflict increases in importance in terms of the IOS (investment opportunity rather than assets in place (Myers, 1976).

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Agency costs : Jensen (1986) stated that managers may use free cash flow on non-optimal investments such as ill-advised acquisitions or non-positive net present value projects. The costs of such action are mitigated by contracting the free cash flow to regular payment of debt (Jensen). According to Jensen's reasoning, the result was that free cash flow and debt was positively associated and free cash flow and IOS was negatively associated as debt wass used to fund the investments rather than cash. Serrasqueiro and Nunes (2010) concurred that the relationship between growth opportunity and leverage was negative only if the there were costs caused by underinvestment; but positive if there were costs caused by overinvestment (Serrasqueiro & Nunes).

However, Kallapur and Trombley (2001) argued that with a high IOS the need to use mechanisms such as debt to impose discipline on manager's use of cash was reduced, as managers were unlikely to use cash in sub-optimal ways when positive net present value projects were available. As a result there was a negative relation between IOS and debt (Kallapur & Trombley). This was supported by Lang et al. (1996), where irrespective of firm size there was a strong negative relation between leverage and growth opportunity due to leverage restricting managers of organisations with poor investment opportunities from investing when they should not be. For the purposes of this study the findings of Kallapur and Trombley, and Lang et al. are relied upon.

iii.   Evidence of leverage in emerging markets

The influence of organisations operating in an emerging market has bearing on debt financing that has played an increasingly visible role over the past quarter century (Mitton, 2007). Mitton found that market value of debt increased by 15% between 1980 and 2004 in 11,850

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organisations in Latin America, Asia, Africa, Middle East and Eastern Europe. He attributed the increase of debt levels to changes in the characteristics of emerging market organisations over this period, and one of the most significant drivers was growth opportunities.

Mitton further viewed debt financing as an "engine for growth that enabled firms to undertake profitable investments that otherwise might not be financed" (Mitton, 2001, p. 127). Mitton further criticised the use of debt that increased excessive risk taking that leads to instability at country economic level in emerging markets. This may be coupled with the growth opportunity available to the organisation within emerging markets.

As a comparison to developed countries Goyal et al. (2002) demonstrated the important role of growth opportunity in determining organisations' debt policies. According to the study based on the United States defense force, Goyal et al. found that the relationship between debt and growth opportunity was inversely related, and was supported by J.J. Gaver and Gaver (1993). Serrasqueiro and Nunes (2010) conducted a study on Portuguese companies and measured book and market value of debt against growth opportunities represented by two proxy variables : R and D ratio (research and development expenses to total assets); and Tobin's Q ratio (replacement value of assets to market value) represented as follows.

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Equation 2 : Research and development ratio

$$R\&D\ ratio = \frac{R\&D\ expenses}{Total\ assets}$$

where,

R&D expenses = research and development expenses

Total assets = all assets

Equation 3 : Tobin's Q ratio

$$Tobin's\ Q\ = \frac{Market\ Value\ of\ Equity + Book\ Debt}{assets\ valued\ at\ replacement\ cost}$$

where,

market value of equity = market capitalisation

book debt = all interest bearing debt

assets = replacement cost of productive assets adjusted for inflation

The relationship between the debt (market value) and growth opportunity (Tobin's Q) was described as a cubic function : the relationship was positive for low and high levels of growth opportunities and negative for intermediate levels of growth opportunity (Serrasqueiro and Nunes, 2010). Serrasqueiro and Nunes (2010) concluded that the relationship was non-linear and that the relationship depended on the on the level of the organisation's growth opportunity. This relationship is illustrated through Figure 1 below.

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Figure 1 : The relationship between leverage and growth opportunity

Leverage
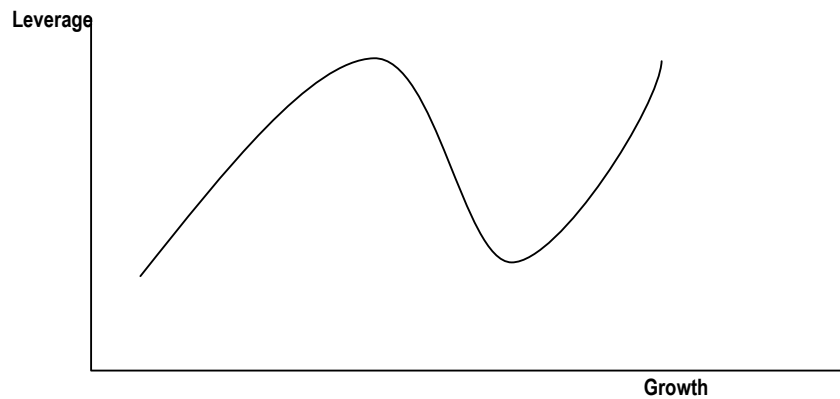
Growth

Source : Serrasqueiro and Nunes, 2010, p. 875

In applying this relationship and the various empirical evidence presented thus far, it was concluded that organisations with low debt levels have high growth opportunities. It was further concluded from the discussion, that decisions regarding optimal capital structure within emerging markets are influenced by the conditions of the environment and the level of growth opportunity presented to the organisation.

2.3.3 Dividend policies

Dividend payout policies similarly have received insurmountable attention due to its significance in corporate finance; and are referred to by its puzzling nature where explanations to pay out dividends are divergent (Easterbrook, 1984; Fama & French 2002; Gupta & Banga, 2010). Lintner (1956) stated that organisations target dividend payout ratios by relying on past dividends and current earnings. Adjustments are made to the dividend policy resulting in stable policies

(Lintner). Linter's model is discussed in further detail below. Miller and Modigliani (1961) and Modigliani and Miller (1958) argued dividends as irrelevant as investors create own dividends by selling or borrowing against share portfolio, and due to market imperfections.

However various studies since then have concluded that there is relevance in determining dividend policies such as Barclay, Smith and Watts (1995). Barclay et al. considered the following theorising factors that influenced the decision to pay dividends and noted the difficulty of deciding among competing theories and factors: corporate and personal income tax; controlling benefits of overinvestment or the free-cash flow problem; signaling effects; and pecking order.

Included in the disparity of features that explained dividend policies were capital mix or profitability or the link to an organisation's IOS (H. DeAngelo et al., 2006; Fama and French, 2001). To recapitulate, the IOS includes discretionary expenditures necessary for the future performance of the organisation, and includes dividend payouts (J.J. Gaver & Gaver, 1993; Kallapur & Trombley, 2001; Smith & Watts, 1992). Organisations with high growth opportunities may preserve flexibility and cash flows by maintaining lower debt levels and lower dividend payouts (J.J. Gaver & Gaver; Jones & Sharma, 2001; Smith & Watts).

Dividend payout policies are influenced by funding requirements for investment purposes (growth opportunity); existing debt obligations where long term debt negatively influences dividend paid; or agency costs (Rozeff, 1982). Fama and French (2001) found a strong negative relation between dividend and investment opportunities. J.J. Gaver and Gaver (1993) found that high growth firms have significantly lower dividend yields than low growth firms. Jones and Sharma (2001) expected to concur with J.J. Gaver and Gaver since investments and dividends are linked

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through the firm's cash flow, however found the outcome to be mixed and inconclusive due to their choice of proxy variables.

The following discussion sets out two key classic theories, Lintner's classic model and optimal contracting, as have been identified from empirical studies to be integral in explaining the association between dividend policy decisions and the IOS or growth opportunity. The dividend irrelevance theory of Miller and Modigliani (1961) was ignored for the purpose of this study due to violation of assumptions referred to in vast empirical studies (Bhattacharyya, 2007).

i.   Lintner's classic model

Lintner's classic study in 1956 demonstrated that existing dividend rates formed a benchmark and that manager's have definitive payout targets with a reluctance to reduce dividends (Lintner). The payout ratios are slowly adjusted over the years to move closer to the target ratio ensuring stable dividends (Bhattacharyya, 2007; Fama & French, 2002; Gupta & Banga, 2010). According to Lintner the following five observations demonstrates how organisations smooth dividends.

a. The organisation offers stable dividends to shareholders based on adjusting existing payout rate rather than setting a new payout ratio, by first considering whether a change from existing rate is necessary. This is based on the manager's belief that the market places premium value on firms with stable dividends.

b. Earnings were the most significant determinant of dividends as an observable indicator to shareholders implying the need for managers to explain behavior to shareholders.

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c.   The dividend policy was set first and other policies were then adjusted given the existing dividend policy. This included events of investment opportunities arising and if there were insufficient internal funds external funds would be raised.

d.   Lintner's model (1956) illustrated below explained 85% of dividend changes in his sample and was supported by Fama and French (2002) in a study of dividend policies and investment opportunities.

Equation 4 : Lintner's Model

$$D^*{}_{it} = \pi_i E_{it},$$

$$D_{it} - D_{i(t-1)} = a_i + c_i(D^*{}_{it-} D_{i(t-1)) + \mu_{it}},$$

Where for firm i

$D^*{}_{it}$ = desired dividend payment during payment t,

D_{it} = actual dividend payment during payment t,

π_i = target payout ratio,

E_{it} = earnings of the firm during period t,

a_i = constant relating to dividend growth,

c_i = partial adjustment factor,

μ_{it} = error term.

e.   The market reacts positively to announcements of dividend increases and negatively to announcements of dividend increasing. This was supported by Jensen (1986). Myers

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(1984) in referring to John Lintner's (1956) model commented that from this model it was known that share prices responded to dividend changes, so it was clear that dividends have information content. Easterbrook (1984) however indicated that signaling through dividends was unclear as to what dividends signal or how they do so as they do not reveal the prospects of the firm.

H. DeAngelo, DeAngelo and Skinner (2000) concurred that managers used cash dividends to convey information about firm profitability, but signaling was not pervasively important. They added that signaling had limited importance, such as organisations where managers pay regular and even special dividends. H. DeAngelo et al. found that the principle of dividends as a useful mechanism only works when the message is clear. However, Smith and Watts (1992) argued that if the signal increases with information disparity between managers and investors, organisations with greater information disparities (typically with greater growth options) should pay higher dividends.

Following Lintner's model (1956) that partially explained dividend policies and growth opportunity, optimal contracting was considered as presented below.

ii.   Optimal Contracting

Kallapur and Trombley (2001) set out the single most important determinant of the IOS and policy decisions to exercise investment options as optimal contracting. This was supported by J.J. Gaver and Gaver (1993) and Smith and Watts (1992). Optimal contracting was rooted in agency theory (Kallapur & Trombley; Goyal et al., 2002).

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The IOS and cash flow are linked, where the greater the amount of investment results in a smaller dividend payout due to reduced cash flow (Smith & Watts, 1992). Jensen (1986) stated that managers may use free cash flow on non-optimal investments such as ill-advised acquisitions or non-positive net present value projects. The costs of such action are mitigated by contracting the free cash flow to regular payment of dividends (Jensen). This results in a positive relation between the assets in place and dividend payouts; and a negative relation between the IOS and dividend payouts (Smith & Watts). This optimal contracting was extended to include agency costs by providing effective monitoring (Easterbrook, 1984; Rozeff, 1982). Fama and French (2002) concurred that dividends and debt are substitutes for controlling the free cash flow agency problem.

Rozeff (1982) referred to agency costs as the discrepancy between owner-managers and non-owner-managers. According to Rozeff, to reduce this cost owners incur monitoring, auditing and bonding costs. Rozeff asserted that dividends are regarded as bonding or auditing costs which is employed to reduce agency cost of liquidity. This was supported by Easterbrook (1984), however adding that these devices that monitor, bond and readjust managers' incentives to act as better agents also risks aversion in growth opportunities, reducing the IOS.

Kallapur and Trombley (2001) argued that with a high IOS the need to use mechanisms such as dividends to impose discipline on manager's use of cash is reduced, as managers are unlikely to use cash in sub-optimal ways when positive net present value projects are available. As a result there is a negative relation between IOS and dividend (Kallapur & Trombley). This was supported by J.J. Gaver and Gaver (1993).

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Barclay et al. (1995) concurred that organisations with high investment opportunities are likely to pay low dividends as they have more profitable use of funds, whereas low growth firms use higher dividends to address a potential overinvestment problem. Barclay et al. added that paying higher dividends meant the more frequent raising of funds from capital markets and floating of costs of new securities. This was supported by Smith and Watts (1992).

However, D'Souza and Saxena (1999) criticised the overwhelming evidence in support of the relationship between dividend payouts and the IOS as evidence that had predominantly emerged from the United States of America. D'Souza and Saxena conducted a study that included dividend policies and the IOS by utilising 349 worldwide companies and found that there was a statistically insignificant relationship. D'Souza and Saxena reasoned that organisations paid dividends irrespective of investment opportunities. It was for this reason that studies conducted in the emerging market was considered.

iii. Evidence of dividend policies in the emerging market

Firms in the emerging market are expected to exhibit different dividend behavior from those of developed markets due to levels of efficiency and institutional arrangements between developed and emerging markets (Arbor & Bokpin, 2010). Amidu and Abor (2006) examined the determinants of dividend payout ratios of 22 companies listed on the Ghana stock Exchange. They found a negative relationship between dividend payout ratio, and market-to-book value of firms. Arbor and Bokpin confirmed a significantly negative relationship between the IOS and dividend payout policy based on a study of publicly trading firms in 34 emerging market countries including South Africa.

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Clearly (2003) confirmed that the average emerging market firm behaved similarly to organisations from the United States of America with regard to dividend payout policies and growth opportunity. Clearly however found that organisations within emerging markets paid higher dividends but demonstrated greater sensitivity by country to variables such as business risk; organisation size; or asset mix.

It was concluded that the decision by managers to pay dividends was perplexing and was derivative of several dynamic aspects. Based on the overwhelming support in favour of the negative relationship between dividend payout and investment opportunity, it was further concluded that high growth organisations have low dividend payouts and low growth organistions have high dividend payouts.

2.3.4 B-BBEE Policies - ownership structure

B-BBEE was identified to be applicable to the IOS as it firstly, affected the ownership structure of the organisation, and this ownership structure affected investments which in turn affected growth opportunity (Andrews, 2008; Chabane et al., 2006; Cho, 1998). Secondly, the B-BBEE was applicable to the South African economy, where B-BBEE as a transformation device has been scrutinised for its inadequacy in creating growth opportunity for the economy (Andrews). One of the reasons for B-BBEE transactions receiving close inspection was that initial B-BBEE deals included the black elite that consisted of people with strong political connections who brought political capital to the new ownership structure rather than managerial skills (Chabane et al., 2006).

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In a strategy document for the economic reform for South Africa the Department of Trade and Industry described B-BBEE which can be traced back to the Freedom Charter of 1955 as "an integrated and coherent social process that directly contributes to the economic transformation of South Africa" with the objective of significantly increasing the number of "black people that manage, own and control the country's economy" and to decrease income inequalities (Department of Trade and Industry, 2007, p. 12). One of the objectives of the various legislations in support of this vision was to increase the number of black people who have ownership and control of existing and new enterprises in priority sectors such financial and resources (Department of Trade and Industry).

Decisions by organisations to amend ownership structure to accommodate B-BBEE legislation may be in terms of stakeholder's commitment to societal and economic reform, and is measured by the Empowerdex B-BBEE scorecard (Cahan & van Staden, 2009). Cahan and van Staden quoted ownership as one of seven progress indicators on the scorecard, and noted that B-BBEE policies are not enforced by law.

Main stream studies regarding growth opportunity and ownership structure as policy decisions include, among others, insider or managerial ownership; ownership concentration or institutional ownership or board composition (Abdelsalam & El-Masry, 2008; Fama & Jensen, 1983; Harada & Nguyen, 2011; Iturriaga & Crisostomo, 2010; Jensen et al., 1992; Serrasqueiro & Nunes, 2010). It was concluded that the findings were analogous with this study as there was an overall relation between policy decisions such as debt; dividend payouts; ownership structure and growth opportunity.

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Limited studies have been conducted in South Africa with regard to the organisation's performance on concluding B-BBEE transactions. Jackson et al. (2005) tested the change in stock prices of companies listed on the Johannesburg Stock Exchange (JSE) post B-BBEE transactions and found positive abnormal returns. Wolmarans and Sartorius (2009) confirmed a general positive impact on value and performance of companies that have implemented B-BBEE policies or at the very least did not have a negative impact. However there has been a lack of empirical studies conducted pertaining to the association between ownership structure in the form of B-BBEE and growth opportunity. Due to the lack of empirical data in associating B-BBEE policies to the IOS existing managerial and ownership structure related theories were applied within this context.

The following sections set out two main arguments based on optimal contracting rooted in the agency theory that impacts growth opportunity of an organisation when implementing B-BBEE transactions as an investment opportunity: firstly, it was concluded that the nature of the transaction imposed changes to capital structure and contractual obligations such as dividend payout policies; and secondly, the exogenous nature of B-BBEE shareholding was discussed.

i. **Transaction structures**

According to Ernst & Young (2010), early B-BBEE deals were heavily leveraged, and current deals are conducted based on complicated financial structures. Chabane et al. (2006) refer to B-BBEE transactions that were split into two distinct time frames. Ponte et al. (2007) concurred that the first phase (between 1994 and 2000) was characterised by ownership transactions with the absence of any legislative framework, whereas the second phase (since 2000) included

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transactions that were guided by specific empowerment charters; the Broad-Based BEE Act, codes and procurement legislation. The transactions concluded within these two distinct time frames are more fully described as follows.

Phase 1 – transfer of ownership was facilitated through special purpose vehicles (SPVs), where financial institutions provided debt to black entrepreneurs who in turn offered as collateral equity capital in the companies. The transactions relied on share values outweighing the debt cost. More than half of black ownership on the JSE listed securities was created via SPVs in the second half of the 1990s. It was found that conglomerates and large corporate concluded highly visible and large scale B-BBEE transactions, such as the JCI Limited transaction.

Phase 2 – transfer of ownership was characterised by concrete normative levers such as the Mining and Financial Services Charters with specified target levels of B-BBEE. The transactions were based mainly on private equity models where B-BBEE transactions dominated merger and acquisition activity. It was found that more focused companies emerged, such as Mvelaphanda Group Limited.

It was inferred from Chabane et al. (2006) that in introducing B-BBEE shareholders an organisation may have increased debt levels for earlier deals to fund the new B-BBEE shareholders, whereas there may have been an increase in equity for later deals where the B-BBEE shareholders were self-funded. Based on the discussions of optimal contracting rooted in agency theory, the transactions further impose contractual obligations to pay or not pay dividends; created limitations of debt or interest levels or performance related covenants.

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Lucas-Bull (2007, p.144) indicated that leveraged transactions are common in empowerment transactions as buyers have neither capital of their own, are unable to raise own capital or have inadequate assets to raise capital. The implication was that the association between B-BBEE policies and growth opportunity was related depending on the nature and extent of the B-BBEE transaction, and the contractual obligations imposed by the transaction such as debt and dividend behaviour.

ii.   **Exogenous ownership structure**

The purpose of B-BBEE was to introduce historically disadvantaged individuals to opportunities not previously available (Department of Trade and Industry, 2007, p. 12). This introduction of new shareholders changes the organisational structure (Chabane et al., 2006). It was on this premise that it was assumed that exogenous shareholding increased, affecting growth opportunity of the organisation.

Cole and Mehran (1998) found that restrictions in terms of ownership of shares harm an organisation's performance as it prevents shareholders and managers from choosing an optimal structure. In measuring changes in ownership structure from insider to outsider and based on the agency theory, Cole and Mehran asserted that regulatory obligations prevented companies from choosing optimal insider ownership thereby weakening managerial incentives.

Weakening managerial incentives results in using free cash flow on non-optimal investments such as ill-advised acquisitions or non-positive net present value projects (Jensen, 1986) and increases agency costs (Jensen & Meckling, 1976). The result was that there is a negative

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relation between ownership structure and investments depending on the level of insider control or concentration (Jensen & Meckling; Cho, 1988). Following the agency and free cash flow argument, there was a negative relation between change in ownership from insider to outsider, and the IOS. This view was supported by Cho who stated that ownership structure affects investments which in turn affect value when the ownership structure is endogenous.

Demsetz and Villalonga (2001) rejected this argument by utilising Tobin's Q ratio as a proxy for growth and performance when measuring the association between ownership structure and Tobin's Q ratio. Demsetz and Villalonga considered managerial ownership in conjunction with external ownership and found that there was no statistically relevant relationship due to the various complexities of interest involved in ownership structure, whether concentrated or diffused. Demsetz and Villalonga argued that these complexities included buying and selling of ordinary shares in exchange transactions or secondary market. In applying this to B-BBEE shareholding, the B-BBEE ownership structure may suit the conditions under which the organisation operates in.

It was argued by Andrews (2008) that structural variables from B-BBEE influence growth opportunity in terms of idea generation; innovation; and production of products. Andrews added that B-BBEE changes and shapes the organisation and the objective is to create changes that are necessary to open the economy and to adjust its racial composition. Andrews argued that entrenchment applies to existing patterns that if remain static will not result in inclusion of previously excluded groups, and economic growth. Andrews further argued that B-BBEE can be seen as a potential growth catalyst. Relying on this reasoning policy decisions pertaining to

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change in ownership structure to include B-BBEE shareholding represented an investment opportunity with a positive net present value that improves growth opportunity of an organisation.

To recapitulate, the IOS includes discretionary expenditures necessary for the future performance of the organisation (J.J. Gaver & Gaver, 1993; Kallapur & Trombley, 2001; Smith & Watts, 1992). It was argued that the expenditure incurred to implement B-BBEE ownership was considered as an investment in a positive net present value project, and was included in the IOS. The expectation of this expense incurred on the B-BBEE shareholding was to improve the value of the organisation based on future investment opportunities rather than assets in place. It was concluded that based on this reasoning the decision to implement B-BBEE policies in terms of ownership, managers chose to amend ownership structure due to firstly, commitment to transformation, and secondly due to expectations of improved growth opportunity.

2.4   The investment opportunity set proxy variable

The IOS is unobservable and several proxies have emerged over time, and with lack of consensus an ensemble of proxies are generally utilised depending on availability (J.J Gaver & Gaver, 1993; Riahi-Belkaoui & Picur, 1998; Smith & Watts, 1992). The proxies for the IOS that have emerged include price-based proxies such as market-to-book-value ratio or Tobin's Q ratio; investment-based proxies such as research and development costs; and variance measures such as variance of returns and asset betas (Adam & Goyal, 2008; J.J Gaver & Gaver; Kallapur & Trombley, 1999, 2001; Skinner, 1993; Smith & Watts 1992).

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Price-based proxies rely on the idea that the organisation's growth prospects are linked to its share price, and that growth firms will have higher market value relative to its assets in place (Kallapur & Trombley, 2001). The price-based proxies for the IOS was appropriate within this study, as the data delt with publicly trading and listed entities; the availability of priced-based ratios across companies and industries; and most significantly priced-based ratios include market values as opposed to book values. Myers (1976) indicated that market value ratios were more pertinent, as book values refer to assets already in place whereas market values account for assets not already in place which is the future value or future growth opportunity.

Adam and Goyal (2008) undertook an evaluation of four of the most commonly used proxy variables in observing growth opportunity by outsiders, MBA (market-to-book assets ratio) or Tobin's Q ratio; MBE (market-to-book equity ratio); EP (earnings-price ratio) and CAPEX/PPE (capital expenditures over the net book value of plant, property and equipment). Adam and Goyal found that the MBA and Tobin's Q ratio ratios were similar, and to be the best performing proxy as it had the highest information content with respect to growth opportunities.

This study elected the use of Tobin's Q ratio or Q ratio based on Skinner (1993) and supported by Abor and Bokpin (2010); Adam and Goyal (2008); Cho (1998); Demsetz and Villalonga (2001); Grugler et al. (2008); Lang et al. (1996); and Skinner (1992). Growth opportunity is based on market values of assets, as it is a proxy for assets in place and investment or growth opportunities (Adam & Goyal). Market-to-book assets ratio or Tobin's Q ratio is the best performing proxy variable for measuring investment opportunities (Adam & Goyal). Tobin's Q was utilised to measure growth opportunity as it measured market value of equity to the value of the enterprises assets adjusted for inflation.

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Based on Myers' formula (Myers, 1956) and Adam and Goyal (2008), a high MBA or Tobin's Q ratio indicates that an organisation has high growth opportunities relative to its assets in place. However Adam and Goyal stated a shortcoming of the ratio as market value of debt requires an estimation or the book value of assets which may not represent replacement value. Nonetheless there was agreement that that MBA or Tobin's Q was a superior proxy for measuring growth opportunity (Goyal et al., 2002; Iturriaga & Crisostomo, 2010; Mitton, 2007).

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Chapter 3 - Research Hypotheses

The objective of this study was to determine the relationship between the IOS and policy decisions. The IOS represents growth opportunity, and the policy decisions elected are debt policies, dividend payout policies and ownership structure in the form of B-BBEE. The literature review provided the foundation and significance of each concept setting out the potential relations.

It was concluded from the literature review that there was a negative association between debt and growth opportunity, and a similar negative relation between dividend and growth opportunity. It was further concluded that there was a positive association between B-BBEE shareholding and growth opportunity. At the very least it was assumed that there was a discernable difference in growth opportunity at high and low levels of debt; or dividend or B-BBEE shareholding. It was on this premise that the following three hypotheses were formulated.

3.1 Hypotheses 1

The null hypothesis states that the mean growth for organisations with Low debt levels (LDL) is **equal to** the mean growth for organisations with High debt levels (HDL). The alternative hypothesis therefore states that the mean growth for organisations with Low debt levels (LDL) is **not equal to** the mean growth for organisations with High debt levels (HDL).

$$H1_o : \mu_L = \mu_H$$

$$H1_1 : \mu_L \neq \mu_H$$

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3.2   Hypotheses 2

The null hypothesis states that the mean growth for organisations with Low dividend yields (LDY) is **equal to** the mean growth for organisations with High dividend yields (HDY). The alternative hypothesis therefore states that the mean growth for organisations with Low dividend yield (LDY) is **not equal to** the mean growth for organisations with High debt levels (HDY).

$H2_o : \mu_L = \mu_H$

$H2_1 : \mu_L \neq \mu_H$

.

3.3   Hypotheses 3

The null hypothesis states that the mean growth for organisations with Low B-BBEE levels (LBEE) is **equal to** the mean growth for organisations with High B-BBEE levels (HBEE). The alternative hypothesis therefore states that the mean growth for organisations with Low B-BBEE levels (LBEE) is **not equal to** the mean growth for organisations with High B-BBEE levels (HBEE).

$H3_o : \mu_L = \mu_H$

$H3_1 : \mu_L \neq \mu_H$

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Chapter 4 - Research Methodology and Design

4.1   Introduction to the research methodology

This chapter sets out the research design; unit of analysis; population of relevance; and sampling method and size. This was followed by the data collection and treatment process; and analysis approach. The data collection process includes a discussion on the independent variables elected. This section is concluded with identified research limitations.

It was noted that the IOS included virtually any discretionary expenditure and that factors that influenced the IOS included various policy decisions such as organisation size; profitability; internal company factors such as capabilities and resources; or external factors. It was for this reason that it was not possible to consider the full extent of confounding factors that affected the IOS. It was on this premise that this study was considered exploratory. Zikmund (2003, p. 55) referred to exploratory research as providing information on how to analyse a situation without providing conclusive course of action, and that subsequent research will be required.

The main research methodology employed was exploratory however descriptive measures were also employed, which according to Blumberg, Cooper, Pamela and Schindler (2008), included through the collection and examination of data, an assessment of the interaction of two or more variables which this study undertook. Underpinning the study was the relationship between two principles: growth opportunity and policy decisions. The hypotheses were that one was impacted by the outcome of the other. According to Creswell (2003), a quantitative approach was the best in determining the relationship between predictors and outcome. The data was categorised as

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cross-sectional where the analysis was conducted at a distinct point in time (Albright, Winston & Zappe, 2009).

4.2   Research design

The research method included quantitative analysis of secondary data. The data was based on publicly available information from the Johannesburg Securities Exchange (JSE), and accessed through McGregor Bureau of Financial Analysis (McGregor BFA) and the economic empowerment rating agency Empowerdex (Empowerdex). Both the data sets adequately met the objective of the study, in terms of accessibility to the appropriate ratios; financial models; shareholding information and access to adequate sample size. This information represented the identified policy decisions and growth opportunities of companies. The limitations of the data sets included *inter alia* formatting to meet analysis approach, and are more fully discussed under research limitations.

The first part of this research design was to identify ratios relating to debt levels; dividend payout policies; B-BBEE shareholding (representing the investment opportunity set) and growth. The second part of the research design was analysing the ratios of the data sample to determine the impact of policy decisions on the IOS or growth opportunity. The data was grouped according to the debt-to-equity ratio (D/E) to represent debt level decisions; dividend yield (DY) to represent dividend payout decisions; B-BBEE shareholding (B-BBEE S/H) to represent transformation decisions in terms of black economic empowerment; and the Q ratio or Tobin's Q to represent growth opportunity.

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4.3   Unit of analysis

The unit of analysis was a single organisation listed on the JSE main board. This study was conducted at both company-level and industry-level as it allowed for more powerful tests of hypotheses (J.J. Gaver & Gaver, 1993).

4.4   Population of relevance

The population of relevance was companies listed on the JSE main board between 1 December 2006 and 31 December 2010. The population of companies listed on the JSE and retrieved from McGregor BFA was 317. The reason this population and time period elected is discussed below.

4.5   Sampling method and sample size

Judgmental sampling was employed based on the success of previous empirical studies. This included studies that eliminated inconsistently recorded data (Serrasqueiro & Nunes, 2010) or the elimination of financial and utility firms (Fama & French, 2001). By utilising judgmental sampling method the sample more adequately reflected manager's decisions concerning policy decisions of leverage; dividend payouts; B-BBEE ownership. The following data was eliminated.

i.   Missing information was eliminated in order to maintain consistency of data (Serrasqueiro & Nunes, 2010). This included elimination of any company that did not reflect the Q ratio which represented the independent variable.

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ii.   Organisations within financial and resources sectors were removed due to regulation of capital structure (H. DeAngelo et al., 2006) and due to compliance with empowerment transformation charters.

iii.   Observations for each variable were recorded as either ratios or percentages. However some variables were recorded as "not applicable" or "0". Variables recorded as "not applicable" were excluded. The assumption was that observations recorded as "not applicable" were not available for publication at McGregor BFA. It was further assumed that any company not listed by Empowerdex but was listed on the JSE at the time had no B-BBEE S/H.

The sample consisted of cross sectional data of companies listed on the JSE for a period of five years (1 January 2006 to 31 December 2010). The cross-sectional approach was supported by studies measuring the IOS and policy decisions at a distinct moment in time such as Danbolt et al. (2002); de Jong et al. (2011) and J.J. Gaver and Gaver (1993). The range of five years was elected due to the increased number of empowerment transactions conducted during this period and this range further accommodated other confounding factors that affected growth opportunity during the economic downturn of 2008. Therefore the data consisted of two years prior and two years post the economic downturn of 2008.

It was acknowledged that the companies listed on the JSE may have changed over this five year period creating the potential of survivorship bias. Davis (1996) studied the cross section of stock returns and survivorship bias with particular reference to book-to-market equity; earnings-to-price or cash flow-to-price. Davis found that by adding firms that do not survive moderately impacted

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average slopes. However the magnitude of coefficients appeared to be overstated. Danbolt et al. (2002) measured growth opportunities for 172 firms in the United Kingdom. Danolt et al. found that there was no significant difference between the means (annual and overall) for the total sample and for surviving firms indicating that results were not driven by survivorship bias. For this reason survivorship biased was ignored.

4.6   Data Collection

Data relating to leverage; dividend and growth ratios were downloaded from McGregor BFA. B-BBEE shareholding was provided by Empowerdex. The proxy variables were financial ratios and B-BBEE shareholding grouped according to D/E ratio; DY percentage; B-BBEE shareholding percentage and Q ratio. This data was publically available from the JSE and Empowerdex. The measurement scale was financial ratios and consisted of the following proxy variables.

4.6.1 Debt policy variable

Leverage ratios are based on interest bearing debt as a proportion of book value of assets and shareholder's equity contribution (Higgins, 2009, p. 49; 71). The purpose of the D/E ratio was to measure the mix of funds, including owners' equity and debt. The numerator included all interest bearing debt and current liabilities including trade creditors and accruals such as dividends, tax and other miscellaneous amounts (Walsh, 2002, p. 128). Walsh further asserted that by including debt due to a supplier was just as real and important as bank debt to a company.

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As a possible determinant of growth opportunity it was critical to include all interest bearing debt and current liabilities, as it represented the full extent of management decisions. The denominator represented shareholder's equity or capital contribution. The D/E ratio formula is represented as follows.

Equation 5 : Debt to equity ratio

$$D/E = \frac{Total\ Liabilities}{Shareholders'Equity}$$

where,

Total liabilities =   long term loan capital plus total current liabilities

Shareholders' equity =   total owner's interest

4.6.2 Dividend policy variable

The critical component of dividends was the manager's decision to pay out money to shareholders, or retain that money to invest it for shareholders (Firer, Ross, Westerfield and Jordan, 2004). Dividend yield percentage was utilised rather than actual dividend payout to accommodate multiple dividend payouts over a single financial year for a single organisation. Dividend yield ratio represented a cash return as a percentage of investment to shareholders (Higgins, 2009, p. 311). It was the return to shareholders on their equity contribution, or the actual dividend paid to shareholders as a percentage of the current share price (Walsh, 2002, p. 162; 166). The DY ratio is represented as follows.

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Equation 6 : Dividend yield ratio

$$Dividend\ Yield = \frac{Dividend\ per\ share}{Price\ per\ share}$$

where,

Dividend per share = 	total ordinary dividends paid / number of shares in issues at company financial year end

Price per share = 	share price at company financial year end

4.6.3 B-BBEE shareholding

Empowerdex recognised ownership as voting rights; economic interest and ownership fulfillment. To meet the objective of this study, B-BBEE shareholding represented the economic interest of black individuals within a company, and excluded voting rights as a measurement. This measure of economic interest assessed ownership and included new entrants and broadening of ownership to include black participants in employee ownership schemes; broad-based ownership schemes and co-operatives. B-BBEE S/H was based on percentage of B-BBEE shareholding to total shareholding. The B-BBEE S/H ratio is represented as follows.

Equation 7 : B-BBEE shareholding

$$B - BBEE\ S/H = \frac{No.\ of\ shares\ issued\ to\ BBBEE\ shareholder}{Total\ number\ of\ shares\ issued}$$

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4.6.4 The investment opportunity set proxy variable

The IOS or growth opportunity was based on market values of assets, as it was a proxy for assets in place and investment or growth opportunities (Adam & Goyal, 2008). Market-to-book assets ratio or Tobin's Q ratio was the best performing proxy variable for measuring investment opportunities (Adam & Goyal). Tobin's Q or Q ratio was utilised to measure growth opportunity as it measured market value of equity to the value of enterprises assets adjusted for inflation (McGregor BFA). Myers (1976) indicated that market value ratios were more pertinent, as book values refer to assets already in place whereas market values account for assets not already in place which is the future value or future growth opportunity.

The numerator in the Q ratio consisted of market value of equity calculated as market capitalistion (number of shares in issue multiplied by the share price per share), and book value of interest bearing debt. According to Higgins (2009, p. 45) the market value of debt may include market value or book value as the difference may be small, although market values are superior as they reflect the true worth of a business. The denominator included all tangible and productive assets in place utilised for generating income. If the ratio was larger than one, the enterprise had successfully created growth and value. The Q ratio is represented as follows.

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Equation 8 : Tobin's Q ratio

$$Tobin's\ Q = \frac{Market\ Value\ of\ Equity + Book\ Debt}{assets\ valued\ at\ replacement\ cost}$$

where,

market value of equity =   market capitalisation

book debt =   all interest bearing debt

assets =   replacement cost of productive assets adjusted for

                                  inflation

4.7   Data analysis approach

The data analysis approach was conducted over three main phases. Phase one included sample generation and preparation; phase two included testing the differences between mean Q ratio scores for high and low levels of the independent variables (D/E; DY and B-BBEE S/H); and phase three included assessment of these relationships. Each phase is set out below.

4.7.1 Phase 1 – sample generation and data preparation

Secondary data was utilised which required preparation to meet testing requirements. This included utilising the full data set for the five year period; splitting in terms of high and low independent variables; followed by splitting the data by sectors. The reason for this was to allow for comprehensive testing and to generate more powerful results.

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All companies listed on the JSE for the periods 1 January 2006 to 31 December 2010 as reflected by Macgregor BFA were retrieved. Based on judgmental sampling method this was followed by eliminating by eliminating enterprises from resources sector (approximately 55) and financial sector (approximately 52) (JSE, 2011). Standardised D/E; DY and Q ratios from McGregor BFA and B-BBEE S/H from Empowerdex for the stated period for the total companies were retrieved. The data was derived from two independent sources, McGregor BFA and Empowerdex. To consolidate the data differences in names, abbreviations, acronyms, and name changes from each source and for each year was edited to create uniformity.

The data was further reduced by eliminating companies that did not reflect the Q ratio and data missing for the consecutive five year period. The data was consolidated and formatted into excel spreadsheets to meet the statistical analysis programme requirements. The total number of companies in the sample was 172, and is attached hereto marked as Appendix 1. The following sets out the two data conversion processes employed.

i.   Data conversion one - full data set

The total observations for the periods 1 January 2006 to 31 December 2010 were consolidated into single panels for each variable. The data was sorted by variables into four distinct panels representing each variable (D/E; DY; B-BBEE S/H and Q ratio). Each panel consisted of all periods (five years) from 1 January 2006 to 31 December 2010. The independent variables were then ranked and the median split technique was utilised. Variables below the median were re-coded as low and variables above the median were re-coded as high. This permitted testing of hypotheses when the independent variables were high and low.

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ii.   Data conversion two - sector split

The second data consolidation consisted of formation of clusters by sectors for the full five year period commencing 1 January 2006 and ending 31 December 2010. A minimum count of 20 was maintained to ensure large enough sample size for each cluster in attempt to influence normal distribution.

Upon concluding the data preparation, a description of data in terms of distribution was concluded. The descriptive statistics supplied statistical summaries with the purpose of providing an overall, coherent and straightforward picture of the large amount of data (Struwig & Stead, 2001). At this stage the data was utilised to determined measures of central tendency and dispersion (Albright et al., 2009).

4.7.2 Phase 2 – testing the difference between the mean Q ratio scores for the different levels of the independent variables - hypotheses analyses

Phase two comprised of testing the difference between the mean Q ratio scores for the high and low levels of the independent variables (DE; DY and B-BBEE S/H). To accomplish this t-test analysis were conducted to reject or not to reject the null hypotheses stated in Chapter three. Albright et al (2009, p. 499) indicated that as the null hypotheses were the current thinking, the burden of proof is traditionally on the alternate hypotheses. It was for this reason that the t-tests were utilised to discover evidence in favour of the alternate hypotheses. The significance of the sample evidence in favour of the alternate hypotheses was reported utilising the p value at a 95 percent confidence level.

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A two sample (independent groups) two-tailed t-test was conducted with each of the three independent variables at high and low levels against the dependent variable. The high and low levels were based on a median spilt technique.

4.7.3 Phase 3 - assessing the relationship between the Q ratio and the independent variables - correlation and regression analyses

To assess the relationship between the dependent variable (Q ratio) and the independent variables (D/E; DY and B-BBEE S/H) correlation and regression analyses were conducted.

i. **Correlation tests :** The correlation between each independent and dependent variable was tested to determine the association, strength and direction of the relationships. The correlation coefficient ranges from +1.0 to -1.0 was reported to determine this relationship. Zikmund (2003, p. 554; 555) cautioned that correlation does not mean causation. This was interpreted as D/E, DY and B-BBEE S/H may be related to growth opportunity, but does not cause growth opportunity.

ii. **Regression analysis** : Multivariate liner regression analyses were employed to assess the extent of the association between the independent and dependent variables. Regression tests were conducted on the full data set and with the data set split by sector. Final models were constructed based on the most significant relationships between the variables. The format of this model is presented as follows.

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Equation 9 : Regression equation

$$Q\ ratio = a\ +\ b_1 Debt +\ b_2 DIV +\ b_2 BBBEE\ +\ e$$

where,

a   = Y intercept

b_k = slopes

e   = error

4.7.4 Summary of analysis approach

The three-phased approach included sample generation and preparation; testing the differences in mean Q ratio at high and low levels of independent variables by hypotheses testing; and assessing the nature and extent of the relationship of the dependent and independent variables through correlation and regression analyses. Due to the exploratory nature of this study the design of the analyses ensured exploration of possible connection of the variables.

4.8   Research limitations

i.   The research period was limited to 1 January 2006 to 31 December 2010, and therefore excluded the full spectrum of activity over all time. It also meant that analyses were conducted on averages which did not account for variations over time.

ii.   The financial information was limited to companies listed on the JSE main board, and therefore excluded the Altx listed and privately held entities.

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iii.   The study utilised a broad range of cross sectional data (1 January 2006 to 31 December 2010) which presented large dispersion and outliers. Three large outliers were recorded as missing variables.

iv.   The limitations of secondary data included formatting of ratios and models create uniformity for the various analyses and treatment to reflect low, high and means of variables. A significant limitation of the secondary data was the use of prescribed financial models that differ somewhat from academic literature.

v.   It was impossible to consider the full extent of confounding events or other major contributors of growth opportunity, such as the impact of size of the company, political, environmental, social, technological or legal issues, capital market issues or internal company matters such capabilities and resources.

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Chapter 5 - Results

5.1   Introduction

The objective of this study was to determine the relationship between the IOS and policy decisions. The IOS represented growth opportunity. The policy decisions elected were debt policies, dividend payout policies and ownership structure in the form of B-BBEE. The independent variables (D/E; DY and B-BBEE S/H) were measured against the dependant variable (Q ratio) and each other.

This chapter delineates the results of the statistical analysis conducted. This chapter includes details of sample generation and sample description followed by a presentation of the t-test results to reject or not to reject the null hypotheses stated in Chapter 3. Due to the exploratory nature of the t-test additional statistical analyses were conducted to determine the nature and extent of the relationships of the variables. The additional statistical analysis included additional data conversion; followed by correlation and regression analyses. The results of the various tests are set out in tables for ease of review.

5.2   Three phase analysis approach

In order to address the above, the results are presented based on a three phase analysis approach.

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i. Phase 1 - sample generation and description

ii. Phase 2 - testing differences between the mean Q ratio scores for the different levels (high and low) of the independent variables (D/E; DY and B-BBEE S/H)

iii. Phase 3 - assessing the relationship between the dependent variable (Q ratio) and the independent variables (D/E; DY and B-BBEE S/H)

5.3 Phase 1 - sample generation and description

Secondary data was utilised which required a series of activities to meet research requirements. This included utilising the full data set followed by splitting the data by sectors. The reason for this was to allow for further comprehensive testing due to the exploratory nature of this study and based on the outcome of the t-tests. This section also briefly describes the challenges encountered with the data. The following sets out the data conversion process employed.

The total number of companies listed on the JSE for the periods 1 January 2006 to 31 December 2010 as reflected by Macgregor BFA was retrieved (317). This was followed by eliminating companies from the financial and resources sectors due to the regulated environment in which they operated; and companies with missing data for more than one consecutive year. The total number of companies observed for this period was 172. Frequencies within sectors are illustrated in Table 1 below. The complete set of companies observed are annexed hereto and marked as Appendix 1.

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Table 1 : Frequency distribution

Observation	Count	Frequency Distribution
Basic Materials	9	5.23%
Consumer Goods	27	15.70%
Consumer Services	37	21.51%
Healthcare	8	4.65%
Industrials	67	38.95%
Oil & Gas	4	2.33%
Technology	15	8.72%
Telecommunication	5	2.91%
Utilities	0	0.00%
Total	172	100%

Standardised D/E; DY and Q ratios from McGregor BFA and B-BBEE S/H from Empowerdex for the stated period for the total companies were retrieved. The data was consolidated and formatted into excel spreadsheets to meet the statistical analysis programme requirements. Variables recorded as "not applicable" were recorded as "missing". The assumption was that observations recorded as "not applicable" was not available for publication at McGregor BFA or Empowerdex. Three observations were recorded as missing due to the unusually high values. This included Dorbyl with dividend yield of 200.61 percent; Control with dividend yield of 286.12 percent and Afro C with Q ratio of 589.96. The following sets out the two data conversion processes employed.

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The total observations for the periods 1 January 2006 to 31 December 2010 were consolidated into single panels for each variable. The outcome was that the data was sorted by variables into four distinct panels representing each variable (D/E; DY; B-BBEE S/H and Q ratio). Each panel consisted of all periods (five years) from 1 January 2006 to 31 December 2010.

The median of each variable was calculated and values above the median were re-coded into the category 'High' while values below the median were re-coded into category 'Low'. The data set below the median represented low levels of variables and the data set above the median represented high levels of variables. This permitted the study of the means at high and low variables and hypotheses testing when the independent variables were high and low.

ii. **Data conversion type 2 : sector split**

The second data consolidation consisted of formation of clusters by sectors. This sample split permitted the study of the means; the means at high and low variables and regression testing within each sector. The purpose of the sample split was to improve results generated.

A minimum count of 20 was maintained to ensure large enough sample size within each cluster in attempt to influence normal distribution. The clusters consisted of consumer goods (27); consumer services (37); industrial (67); technology and telecommunication (20) and other sectors (21) comprising of basic materials (9); healthcare (8); and oil and gas (4). This sample split is presented in Table 2.

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Table 2: Data reconstruction by sector

Observation	Frequency	Frequency Distribution
Consumer goods	27	15.70%
Consumer services	37	21.51%
Industrials	67	38.95%
Technology & telecommunication	20	11.63%
Other	21	12.21%
Total	172	100.00%

During the process of generating the sample the following difficulties were encountered.

a. The data was retrieved from two sources, namely Macgregor BFA and Empowerdex. This required consolidation into a single document. The challenge was recognising company names when they were abbreviated or coded differently. Empowerdex, in particular utilised different abbreviations or codes to identify companies over various years. The data retrieved from Macgregor BFA also included companies not listed on the JSE which required identification and removal. The different data sources also presented a challenge as they were formatted differently in terms of columns and rows.

b. Certain companies had undergone name changes during this period which required identification.

c. Observations for each variable were recorded as either ratios or percentages. However some variables reflected "not applicable" or "0". Variables recorded as "not applicable" were excluded. The assumption was that observations recorded as "not applicable" were

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not available for publication at McGregor BFA. Empowerdex only reflected the names of companies that concluded B-BBEE transactions. It was assumed that any company that was not listed by Empowerdex but was listed on the JSE at the time had no B-BBEE S/H.

d.   The large data set utilised presented large ranges or dispersion of observations. In addition the data included many outliers. Three extreme outliers were recorded as "missing" variables and consisted of no more than two percent of the sample.

5.3.1 Description of sample

This section describes the overall behaviour of the variables based on the two main approaches discussed above. The data was sorted and presented as follows :

i.   The average of the variables for the period 1 January 2006 to 31 December 2010; and

ii. The variables for the period 1 January 2006 to 31 December 2010 by sector.

The purpose of this sample split approach was to accommodate the exploratory nature of this study, and to conduct additional tests to improve the quality of results generated. Tables 3(a) to 3(c) below describes the characteristics of the data based on the five year means of the variables (Table 3(a)); means of Q ratio at high and low variables (Table 3(b)); and the Q ratio means at high and low variables by sector (Table 3(c)).

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Table 3(a) : Description of the distribution of means

VARIABLE	Maximum	Minimum	Median	Mean	Standard Deviation	N
Q ratio	22.826	-5.377	3.137	2.746	2.893	164
D/E	29.918	-67.69	1.192	1.341	7.852	166
DY	41.42	0.42	4.163	4.888	4.448	129
B-BBEE S/H	55.92	0	13.9	16.353	14.187	124

The mean and medians for each variable are presented above indicating the general tendency of frequency of the observations. However it was noted by the minimums and maximums that the range for each variable was high indicating a high dispersion of observations. In particular D/E had a minimum value of -67.69 and a maximum of 29.918. The high dispersions were confirmed by high standard deviations from some of the means, indicating high dispersion of observations in the sample, such as B-BBEE S/H with a standard deviation of 14.187. This indicated non-normality in the data; and prompted caution when considering the value of the means and results of tests that were conducted.

Table 3(b) : Description of Q ratio means at high and low independent variable levels

Variable	Split on the median	Variable	Low mean Q ratio	High mean Q ratio
D/E	1.19	High / Low D/E	2.85	2.34
DY	4.16	High / DY	2.59	3.05
B-BBEE S/H	13.19	High / Low B-BBEE S/H	2.76	2.73

Table 3(b) sets out the sample over the five year period for each variable split by the median. Column two reflects the median at which the sample was split. Columns four and five set out the Q ratio at high and low levels of D/E; DY and B-BBEE S/H. At low levels of D/E the Q ratio was slightly higher (by 0.51) than at high levels. At low levels of DY the Q ratio was lower (by 0.46) than at higher levels of DY. The difference in Q ratio between low and high levels of B-BBEE S/H

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was less significant (0.03). When compared to the mean Q ratio in Table 3(a) of 2.746, the difference in Q ratios at high and low variables were similar and the difference was insignificant.

Table 3(c) : Description of distribution of Q ratio means at high and low independent variable levels by sector

		Mean Q ratio	
		Low	High
Sector	Variable	Mean	Mean
Consumer Goods	H/L D/E	3.98	2.22
	H/L DY	4.62	3.66
	H/L B-BBEE S/H	2.53	1.84
Consumer Services	H/L D/E	3.12	2.87
	H/L DY	2.85	3.61
	H/L B-BBEE S/H	3.98	2.31
Industrial	H/L D/E	2.20	2.26
	H/L DY	1.86	2.34
	H/L B-BBEE S/H	2.04	2.38
Technology & Telecom	H/L D/E	2.55	2.97
	H/L DY	2.63	2.75
	H/L B-BBEE S/H	2.69	2.79
Other	H/L D/E	1.76	4.56
	H/L DY	2.48	3.62
	H/L B-BBEE S/H	3.36	2.01

By splitting the sample into sectors demonstrated where the high and low means were located. Among D/E variables the most significant difference was in the consumer goods sector. Within this sector at low D/E levels the Q ratio mean (3.98) was significantly higher than at high D/E levels (2.22). The Q ratio was also higher at low levels than at high levels of D/E in the consumer services sector, although not significantly (by 0.25). Among the balance of the sectors the Q ratio was lower at lower levels of D/E than higher levels of D/E. In particular, the other sectors demonstrated a 2.8 difference.

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In general the Q ratio was lower at low levels of DY than at high levels, barring the consumer goods sector where the Q ratio was higher (4.62) at low levels than high levels (3.66) of DY. The most significant difference among DY was in the other sector (difference was 1.14). Among the industrial; and technology and telecommunication sectors the Q ratio was lower at low levels of B-BBEE S/H than at high levels, although not significantly. However among the balance of the sectors Q ratio was higher at low levels than high levels of B-BBEE S/H, and significantly so. Consumer goods reflected a 0.69 difference; consumer services reflected a 1.67 difference and other sectors a 1.35 difference.

When compared to Table 3(b) the mean Q ratio was higher at low levels than high levels of D/E and B-BBEE S/H. In general the findings in Table 3(b) were similar to results within the sectors in Table 3(c). In general the mean Q ratio was lower at low levels than high levels of DY for both the full sample in Table 3(b) and the sectors in Table 3(c). However the observations reflect that among the sectors there were more significant relationships with greater variances in value and direction among the Q ratio.

5.3.2 Summary of descriptive data

The following describes a few key observations of the distribution of variables over the indicated period and sectors.

Q ratio : The minimum average Q ratio of -5.377 and maximum average Q ratio of 22.826 for the full data set indicated a moderate to high dispersion of observations (Table 3(a)). However the standard deviation from the mean was a low 2.893. This meant that the variances in values

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among companies were moderate. The mean Q ratio for the overall sample was 2.746 which was similar when the variables were split by high and low values. This implied that the Q ratio remained fairly unchanged at high and low levels of D/E; DY and B-BBEE S/H. However, in comparison to sectors although the general trend in relationships remained intact greater variances emerged within certain sectors. Such as the significant negative relationship among Q ratio when DY was low in the consumer goods sector (at low levels Q ratio was high at 4.62); or the significant positive relationship when DY was low in other sectors Q ratio was lower than at high levels (2.48).

D/E : The dispersion of D/E for the full data set (Table 3(a)) ranged from a minimum average of -67.69 to a maximum of 29.918. This was the highest range from all the variables. This was supported by a moderate to high standard deviation from the mean of 7.852. The mean (median) D/E for the five year period for all sectors was 1.341 (1.92). When Table 3(b) was compared to Table 3(c), the relationship was consistent within consumer goods and consumer services sectors. Within these sectors the mean Q ratio at low levels of D/E was higher than at high levels of D/E.

DY : The minimum average DY of 0.42 and maximum average of 41.42 for the full data set indicated a moderate to high dispersion of observations (Table 3(a)). With a standard deviation from the mean of 4.448 the variance in values recorded was considered moderate. The mean (median) for the full sample over five years was 4.888 (4.163). When Table 3(b) was compared to Table 3(c), the relationship was consistent. The mean Q ratio at low levels of DY was lower than at high levels of DY, with the exception of consumer goods sector.

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B-BBEE S/H : The dispersion of observations based on standard deviations from mean was 14.187 for the full data set (Table 3(a)) This indicated a moderate to high dispersion and was supported by the minimum value of 0 and the maximum of 55.92. The mean B-BBEE S/H over five years for the full data set was 16.353. The minimum of 0% B-BBEE S/H indicated that not all companies had implemented empowerment policies. When Table 3(b) was compared to Table 3(c), the relationship was consistent within consumer goods and consumer services sectors. Within these sectors the mean Q ratio at low levels of B-BBEE S/H was higher than at high levels of B-BBEE S/H.

5.4 Phase 2 - testing differences between the mean Q ratio scores for the different levels of the independent variables - hypotheses analyses

To test the differences between the mean Q ratio scores for the different levels (high and low) of the independent variables (D/E; DY and B-BBEE S/H) hypotheses tests were conducted. Two-sample (independent groups) two-tailed t-tests were conducted with each of the three independent variables at high and low levels against the dependent variable. The following was performed with regard to each hypothesis test, and the results are presented for each of the three hypotheses below.

i.   Description of the count, mean and confidence levels.

ii.   Verification for violation of assumptions in terms of sample size and normality (equal variances). It was concluded that the data was not normally distributed due to unequal

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variances. For this reason Wilcoxon / Kruskal-Wallis tests were utilised (due to the categories created).

iii.   The significance level was assumed based on the probability values (p values) of ≤ 0.05. The assumption was the smaller the p value (≤ 0.05) the greater the evidence in favour of the alternate hypotheses.

iv.   A 95 percent confidence level was utilised.

5.4.1   **Hypothesis 1 :** The null hypotheses states that the mean growth for organisations with Low debt levels (LDL) is **equal to** the mean growth for organisations with High debt levels(HDL). The alternative hypothesis therefore states that the mean growth for organisations with Low debt levels (LDL) is **not equal to** the mean growth for organisations with High debt levels (HDL).

$$H1_o : \mu_L = \mu_H$$

$$H1_1 : \mu_L \neq \mu_H$$

Table 4(a) : Results of t-test for high and low debt levels and Q ratio

Debt Level	N	Q ratio Mean	Lower 95%	Upper 95%	P value
Low	81	0.659	0.499	0.818	0.062
High	81	0.873	0.713	1.032	

At lower levels of D/E the average Q ratio was lower (0.659) when compared to higher levels of D/E with Q ratio of 0.873. Q ratio was 21.4% percent lower at low levels of debt. At the indicated

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95 percent confidence level the p value of 0.062 was greater than the stated ≤ 0.05. For this reason the evidence was considered weak and the null hypothesis was not rejected.

5.4.2   Hypothesis 2 : The null hypothesis states that the mean growth for organisations with Low dividend yields (LDY) is **equal to** the mean growth for organisations with High dividend yields (HDY). The alternative hypothesis therefore states that the mean growth for organisations with Low dividend yield (LDY) is **not equal to** the mean growth for organisations with High debt levels (HDY).

$$H2_o: \mu_L = \mu_H$$

$$H2_1: \mu_L \neq \mu_H$$

Table 4(b) : Results of t-test for high and low dividend yields and Q ratio

Dividend Yield Level	N	Q ratio Mean	Lower 95%	Upper 95%	P value
Low	63	0.779	0.615	0.942	0.423
High	64	0.872	0.710	1.035	

At lower levels of DY the Q ratio was lower (0.779) when compared to high levels of DY (0.872). The difference in Q ratio was insignificant at 9.3 percent. At the indicated 95 percent confidence level the p value of 0.423 was far greater than the stated ≤ 0.05. The evidence was considered weak and the null hypothesis was not rejected.

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5.4.3 Hypothesis 3 : The null hypothesis states that the mean growth for organisations with Low B-BBEE levels (LBEE) is **equal to** the mean growth for organisations with High B-BBEE levels (HBEE). The alternative hypothesis therefore states that the mean growth for organisations with Low B-BBEE levels (LBEE) is **not equal to** the mean growth for organisations with High B-BBEE levels (HBEE).

$$H3_o : \mu_L = \mu_H$$

$$H3_1 : \mu_L \neq \mu_H$$

Table 4(c) : Results of t-test for high and low B-BBEE S/H and Q ratio

B-BBEE S/H Level	N	Q ratio Mean	Lower 95%	Upper 95%	P value
Low	81	0.659	0.499	0.818	0.063
High	81	0.873	0.714	1.032	

At lower levels of B-BBEE S/H the mean Q ratio 0.659 was lower than at higher levels of B-BBEE S/H (0.873). However the difference was insignificant 21.4 percent. At the indicated 95 percent confidence level the p value of 0.063 was greater than the stated ≤ 0.05. The evidence was considered weak and the null hypothesis was not rejected.

Type I and type II errors : In all three instances the null hypotheses was not rejected. The significance level was assumed at p value ≤ 0.05. The assumption was the smaller the p value the greater the evidence in favour of the alternate hypotheses. It was noted that that within hypothesis one where the test between growth opportunity and debt levels was conducted the p value was 0.062. Within hypothesis three where the test between growth opportunity and B-

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BBEE S/H was conducted the p value was 0.063. Although these p values were in excess of the predetermined significance level of ≤ 0.05, the difference was not substantial.

However by not rejecting the null hypotheses a type II error may have been occurred, where due to error there was failure to reject the null hypotheses when the alternate hypotheses was true (Zikmund, 2003). However to combat this, a sample size of 172 was utilised, which was considered large. However due to the inverse nature of type I and type II errors, there would have been the probability of increasing type I errors, which was an error caused by rejecting the null hypotheses when it was true.

5.4.4 Summary of the differences between the mean Q-ratio scores for the different levels of the independent variables - hypotheses analyses

The purpose of the t-tests was to explore the relationship between the mean Q ratio and independent variables at high and low levels. The results reflected a p value for the hypothesis relating to D/E as 0.062; for DY as 0.423 and B-BBEE S/H as 0.063. The null hypothesis for the relationship between each independent variable and Q ratio was not rejected due to weak evidence in favour of the alternate hypotheses or high p values.

The relationship between the independent and dependent variables was described as the mean growth for organisations with low D/E or DY or B-BBEE S/H levels as equal to the mean growth for organisations with high D/E or DY or B-BBEE S/H levels. Alternatively, that there was no discernable difference in growth opportunity when D/E or DY or B-BBEE S/H levels were high or low. The results of the hypotheses tests although provided guidance to the potential nature of the

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relationships between the variables, it was concluded that the outcome did not yield any significant associations between the variables.

5.5 Phase 3 - assessing the relationship between the Q ratio and the independent variables - correlation and regression analyses

Phase three included correlation and regression testing. Both tests assessed the nature of the relationship between the independent and dependent variables. The t-tests did not yield any significant results and for this reason additional exploratory correlations were conducted to assess the association between the variables.

5.5.1 Correlation

To statistically measure the covariation between each independent variable and the dependent variable correlation analyses were conducted. The correlation coefficient (r) ranging from +1.0 to -1.0 was utilised to determine the magnitude and direction of the relationship. To recapitulate the correlation structure included the variables over a five year period (1 January 2006 to 31 December 2010) for the full data set without split. The purpose of this sample approach was an attempt to refine findings. Table 5(a) demonstrates correlations of average ratios for a five year period (1 January 2006 to 31 December 2010) for the full data set.

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Table 5(a) : Correlation matrix for period 1 January 2006 to 31 December 2010

Multivariate Correlations	Average Q ratio	P value
Log Q ratio	1.0	
Log D/E	0.292	0.0004*
Log DY	-0.053	0.523
Log B-BBEE S/H	-0.326	0.0108*

*denotes p value ≤ 0.05

The correlation revealed that there was a strong positive relation between D/E and the Q ratio (0.292) at p value of 0.004. The tests further revealed a strong negative relationship between B-BBEE S/H and the Q ratio (-0.326) at p value of 0.0108; and low negative correlation between DY and the Q ratio (-0.053) at p value of 0.523. Based on the p values the results were strong and significant for D/E and B-BBEE S/H.

5.5.2 Summary of correlation

In assessing the relationship between the Q ratio and the independent variables (D/E; DY and B-BBEE S/H) two significant observations were revealed. This included the strong positive relationship between debt levels and growth opportunity; and the strong negative relationship between B-BBEE shareholding and growth opportunity.

5.5.3 Regression analyses

The correlation and t-tests were exploratory and introduced or provided guidance to the relationships between the means of the Q ratio and independent variables. However the variables required determination of best fit due to effects on each other. This warranted additional

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assessment of the relationship of the variables. Two broad sets of regression tests were conducted. The first consisted of assessing the relationship between the Q ratio and all three independent variables; D/E and B-BBEE S/H were revealed as significant predictors. The full data set for the period 1 January 2006 and 31 December 2010 (five years) was utilised.

The second regression test consisted of the assessment of the relationship between Q ratio and all three independent variables (D/E; DY and B-BBEE S/H) split by sector for the period of five years. The purpose of conducting the regression tests by sector was to improve results generated and to progress the determination of the relationship. Once again D/E and B-BBEE S/H were revealed as significant predictors and additional regression analyses were conducted to determine the final regression models or equations.

The interpretation of the models were based firstly, on the adjusted coefficient of multiple determination (R^2) which indicated the percentage of variation in Q ratio explained by the variation in the independent variables. Secondly, the significance or confidence levels relied on were p values of <0.01 and ≤ 0.10 for each variable and for the full model. The variable estimates and model intercepts were also reported. Final equations are presented on the outcome of the additional regressions. The results of the regression tests are presented in Tables 6(a) to 6(c) below.

i.   Multivariate linear regression tests

The regression analyses for the full data set for the period of five years between the Q ratio and independent variables revealed D/E and B-BBEE S/H as having significant relationships. Due to

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these findings additional regression tests were conducted with D/E and B-BBEE S/H specifically. The results are presented in Table 6(a).

Table 6(a) : Regression results to assess the relationship between Q ratio; D/E and B-BBEE S/H - full data set with no sector splits

Variables	p-values	Estimate slope coefficient	Y Intercept	1.016
D/E	0.0014*	0.182	**p-value for model**	0.0009*
B-BBEE S/H	0.0307*	-0.110	**Adjusted R²**	0.122

*denotes p value ≤ 0.05

The p value for the model of was 0.0009 which was ≤0.05. This implied a statistically significant fit of this regression model at 95 percent confidence level. However the indicated percentage of variation in the Q ratio explained by the variation in the independent variables (adjusted R^2) was 12.2 percent. This was considered low.

An inspection of individual predictors revealed that B-BBEE S/H (Beta =-0.110, p < 0.0307) and D/E (Beta = 0.182, p = 0.0014) were significant predictors of Q ratio. Higher levels of the Q ratio were associated with higher levels of D/E and lower levels of B-BBEE S/H. This can be interpreted as, if B-BBEE S/H and DY changed by one percent then Q ratio will tend to increase by 0.072 percent (caused by increase of 0.182 percent (D/E) and decrease of -0.110 percent (B-BBEE S/H)). The estimated coefficients reflected a positive relationship between Q ratio and D/E; and a negative relationship between Q ratio and B-BBEE S/H at Y intercept of 1.1016.

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Table 6(b) : Regression results to assess the relationship between Q ratio and all three variables (D/E and B-BBEE S/H) - split by sector

Sector	Variable	P value	Estimate slope coefficient	Y Intercept	P value for model	Adjusted R²
Consumer Goods	D/E	0.097	0.321	-0.0302	0.185	0.199
	DY	0.277	0.680			
	B-BBEE S/H	0.467	-0.120			
Consumer Services	D/E	0.644	0.037	1.324	0.233	0.084
	DY	0.683	0.050			
	B-BBEE S/H	0.050*	-0.138			
Industrial	D/E	0.059	0.264	0.241	0.115	0.109
	DY	0.330	0.161			
	B-BBEE S/H	0.651	0.060			
Technology & Telecom	D/E	0.932	0.010	1.266	0.910	-0.235
	DY	0.532	-0.142			
	B-BBEE S/H	0.795	-0.046			
Other	D/E	0.650	0.182	1.182	0.761	-0.346
	DY	0.626	-0.213			
	B-BBEE S/H	0.674	-0.100			

*denotes p value ≤ 0.05

The estimated coefficients reflected a consistently positive relationship between D/E and the Q ratio; and a generally consistently negative relationship between B-BBEE S/H and the Q ratio among all sectors. The relationship between the Q ratio and DY varied. The estimated coefficients reflected positive relationships between DY and the Q ratio in the consumer goods (0.680); consumer services (0.037) and industrial (0.161) sectors. However in the technology and telecommunication (-0.142); and other sectors (-0.213) the relationship was negative.

The most significant p values among the variables were observed in the consumer goods; consumer services and industrial sectors. D/E reflected a p value of 0.097 in the consumer goods

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sector and p value of 0.059 in the industrial sectors. B-BBEE S/H reflected a p value of 0.05 in the consumer services sector. Adjusted R^2 within the consumer goods sector was moderate at 19.9 percent, although adjusted R^2 was low in the consumer services sector (8.4 percent) and industrial sector (10.9 percent). It was concluded that although low, these were the most noteworthy relationships among the sectors and variables. Technology and telecommunication; and other sectors reflected extremely low and inconclusive adjusted R^2 values.

When compared to Table 6(a) consisting of an assessment of the relationships with no sector splits the general trend in relationships was consistent, and the adjusted R^2 improved within the consumer goods sector. It also became clearer within which sectors the significant and insignificant relationships between the independent variables and growth opportunity were positioned.

ii.   Additional multivariate linear regression tests

The results in Table 6(b) reflected the most significant p values within the consumer goods; consumer services and industrial sectors. D/E reflected a p value of 0.097 in the consumer goods sector and p value of 0.059 in the industrial sector. B-BBEE S/H reflected a p value of 0.05 in the consumer services sector. It was concluded that these were the most significant relationships among the sectors and variables, and based on this additional regression tests were performed. This included the evaluation of the relationship between D/E and the Q ratio in the consumer goods sector and industrial sector; and B-BBEE S/H and the Q ratio in the consumer services sector. The results of these tests are presented in Table 6(c).

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Table 6(c) – Additional regression results to assess the relationship between Q ratio and two variables (D/E and B-BBEE S/H) within three sectors

Sector	Variables	P value	Estimate slope coefficient	Y Intercept	P value for model	Adjusted R²
Consumer Goods	D/E	0.475	0.130	0.565	0.475	-0.022
Consumer Services	B-BBEE S/H	0.0086*	-0.209	1.536	0.0086*	0.263
Industrial	D/E	0.064	0.143	0.587	0.064	0.042

*denotes p value ≤ 0.05

The most noteworthy relationship observed was B-BBEE S/H and the Q ratio in the consumer sector. The relationship was negative with estimated coefficient of -0.209 with p value of 0.0086. The R² value was 26.3 percent which was considered to be a significant fit. The relationship between D/E and Q ratio within consumer goods sector reflected an insignificant and inconclusive relationship due to high p value (0.475) and extremely low adjusted R² (-2.2 percent). The relationship between D/E and Q ratio within industrial sector was similar, however p value was 0.064 and adjusted R² was 4.2 percent. The relationship was positive with estimated coefficient of 0.143. The equations reflecting these relationships can be demonstrated as follows.

a. **Consumer services sector**

The best fit variable in the consumer services sector was B-BBEE S/H. The p value for the model was 0.0086 at 95 percent confidence level. Adjusted R² was 23.3 percent. The equation based on Y intercept of 1.536 and estimated slope coefficient of -0.209 is presented as follows.

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$$\boldsymbol{Equation\ 10}:\ Q\ ratio\ =\ 1.536\ -0.209\ *BBBEE+e$$

b.   Industrial sector

The best fit variable in the industrial sector was D/E. The p value for the model was 0.064 at 95 percent confidence level. Adjusted R^2 was 4.2 percent. The equation based on Y intercept of 0.587 and estimated slope coefficient of 0.143 is as follows.

$$\boldsymbol{Equation\ 11}:\ Q\ ratio\ =\ 0.587+0.143*\frac{D}{E}\ +e$$

iii.   Summary of regression analyses

The following describes the relationship between the Q ration and independent variables established in the regression tests.

Debt levels : The relationship between D/E and Q ratio was positive. This was consistent in the overall data set with no sector splits in Table(6(a) with estimate coefficient of 0.182 and among the sectors reflecting all positive slopes. Considerable relations were observed in the overall data; consumer goods and industrial sectors. D/E exhibited low p values of 0.0014 in the overall data with no sector splits (Table 6(a)); 0.097 in the consumer goods sector; and 0.059 in the industrial sector (Table 6(b)). The additional regression test in Table (c) revealed a moderate p value of 0.064 and confirmed the positive relationship between D/E and Q ratio with estimated coefficient of 0.143.

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Dividend yields : DY was systematically excluded from the overall data regression test (Table 6(a)) due to low p values. The relationship between DY and the Q ratio varied among the sectors without any significant trends in direction or strength of relationships. The estimated coefficient values in consumer goods (0.680); consumer services (0.005) and industrial sectors (0.161) revealed positive relationships.

However estimated coefficient values in technology and telecommunication (-0.142); and other (-0.100) sectors revealed a negative relationship. P values were in excess of 0.277 (consumer goods sector) but no more than 0.683 (consumer services sector). Due to the varied and weak evidence presented the results were considered inconclusive and relationship between DY and Q ratio was considered insignificant. For this reason DY was systematically eliminated from the additional tests presented in Table 6(c) which only included the best fit models.

B-BBEE shareholding : The relationship between B-BBEE S/H and Q ratio was negative. This was consistent in the overall data set with no sector splits in Table 6(a) with estimate coefficient of -0.110 and among the sectors reflecting negative coefficient slopes (except for industrial sector with 0.060). A significant relationship was observed in the overall dataset in Table 6(a) and the consumer services sector in Table 6(b). B-BBEE S/H exhibited low p values of 0.0307 in the overall data with no sector splits (Table 6(a)) and 0.050 in the consumer services sector (Table 6(b)). For this reason B-BBEE S/H was identified in the additional regression test in Table 6(c). This test revealed a significant relationship between B-BBEE S/H and Q ratio. P value was 0.0086 with adjusted R^2 of 26.3 percent.

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5.6   Summary of findings

The results of the tests conducted in this study as stated above is presented in Table 7 as follows.

Table 7 : Summary of findings

i.	Hypotheses testing	
Hypotheses 1	$H1_o$: GO|LDL $\geq$ GO|HDL $H1_a$: GO|LDL $<$ $GO\|HD$L	Do not reject null hypotheses – p value of 0.062
Hypotheses 2	$H2_o$: GO|LDY $\geq$ GO|HDY $H2_a$: GO|LDY $<$ $GO\|HD$Y	Do not reject null hypotheses – p value of 0.423
Hypotheses 3	$H3_o$: NGO|LBEE $\leq$ NGO|HBEE $H3_a$: NGO|LBEE $>$ NGO|HBEE	Do not reject null hypotheses – p value of 0.063
ii.	Correlation testing	
Q ratio an D/E	Strong positive relationship – r of 0.292	
Q ratio an DY	Low negative relationship – r of -0.053	
Q ratio an B-BBEE S/H	Strong positive relationship – r of -0.326	
iii.	Regression testing	
Q ratio an D/E	Significant positive relationship within full data set (p value of 0.0014)	Significant relationships in consumer goods (p value of 0.09) and industrial sectors (p value of 0.059)
Q ratio an D/E	Systematically excluded due to low p values	No significant relationships within sectors
Q ratio an B-BBEE S/H	Significant negative relationship within full data set (p value of 0.0307)	Significant relationship in consumer services sector (p value of 0.05)
iv.	Regression equations	
Best fit model between B-BBEE S/H and Q ratio in consumer services sector – adjusted R^2 of 26.3 percent; model p value of 0.0086 Best fit model between D/E and Q ratio in industrial sector - adjusted R^2 of 4.2 percent; model p value of 0.064		

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Chapter 6 - Discussion of Results

6.1   Introduction

This chapter presents a discussion of results reported in Chapter Five. This section sets out details of the sample analysed followed by a discussion of results for each hypotheses, correlation and regression tests. Fundamental similarities and differences of previous studies were noted and where applicable reference was made to appropriate theory referred to in Chapter Two. This section was concluded by discussing overall results observed pertaining to the identified variables and sectors with implications for future growth of companies and the economy.

6.2   Sample generation and characteristics

Sample generation : The sample consisted of companies listed on the JSE for the period 1 January 2006 to 31 December 2010. Through a process of elimination certain sectors and companies were removed. Statistical tests were conducted at company-level and industry-level. The total number of companies observed was 172 (attached hereto and marked as Annexure 1). The sectors included consumer goods (27); consumer services (37); industrials (67); technology and telecommunication (20) and other sectors (21) comprising of basic materials (nine); healthcare (eight); and oil and gas (four). J.J. Gaver and Gaver (1993) and Smith and Watts (1992) conducted an analysis of the IOS and policy decisions at industry-level to reduce measurement error and present more powerful results.

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In addition the sample was split at the median of each independent variable to create low and high categories. This permitted assessment of the differences in means and nature of relationship between the Q ratio and independent variables at high and low levels. To conduct statistical analyses the sample was treated as cross-sectional, therefore the means of the variables for this period was utilised.

The sample was described based on the distribution of means (Table 3(a)); distribution of mean Q ratio at high and low levels of independent variables (Table 3(b)); and distribution of mean Q ratio at high and low levels of independent variables within sectors (Table 3(b)).

Distribution of means : The distribution of means for the full sample for five years revealed that the mean (median) Q ratio was 2.746 (3.137); D/E was 1.341 (1.192); DY was 4.888 (4.163) and B-BBEE S/H was 16.353 (13.90). The differences in mean and median were insignificant and therefore immaterial. However concerns over dispersions, outliers and non-normality were raised by the moderate to high standard deviations from the mean. At the outset three large outliers were re-coded as missing values to reduce variance from the mean.

In general the range for each variable was moderate to high indicating a moderate to high dispersion of observations and non-normality of sample. This was confirmed by moderate to high standard deviations from the mean. The standard deviations were recorded at 2.893 for Q ratio; 7.852 for D/E; 4.448 for DY and 14.187 for B-BBEE S/H. Kallapur and Trombley (1999) found the mean (median) growth opportunity by using the Q ratio as 0.919 (0.890) with a standard deviation of 0.466; the mean (median) debt level by using D/E of 1.705 (1.004) with a standard deviation of 3.234; and the mean (median) dividend payout ratio of 0.269 (0.104) with a standard deviation of

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0.759. Compared to the results of Kallapur and Trombley, the standard deviations from the means within this study were much higher. This was as a result of the varied values among variables.

When comparing the results, debt levels for this study were similar to the findings of Kallapur and Trombley (1999). However the mean results of this study for Q ratio and dividend yield were significantly greater than Kallapur and Trombley. However Kallapur and Trombley eliminated outliers that exceeded more than five standard deviations from the sample mean although it only comprised of one percent of observations. Within this study three large outliers were removed to combat larger variations and comprised less than two percent of the sample. This included Dorbyl with dividend yield of 200.61 percent; Control with dividend yield of 286.12 percent and Afro C with Q ratio of 589.96. The following sets out the two data conversion processes employed.

As noted Q ratios observed were high when compared to Kallapur and Trombley (1999). According to McGregor BFA, if the Q ratio was larger than one the organisation had successfully added value to its operations, and if it the Q ratio was less than one the organisation had destroyed value (2011). The higher the Q ratio the more value was created. To recapitulate the Q ratio included book debt, interest bearing debt and market value of equity as numerators; and replacement value of assets as the denominator. Any increase in debt or equity, or decrease in assets would improve the Q ratio and improve value of the organisation. The mean (median) Q ratio for five years was 2.746 (3.137) which indicated that in general companies were in considerable positive value creation positions.

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Distribution of mean Q ratio at high and low independent variables : When the sample was spilt by the median split technique to describe the mean Q ratio at low and high levels of independent variables the following was revealed. At low levels of D/E the Q ratio was slightly higher (2.85) than at high (2.34) levels of D/E. At low levels of DY the Q ratio was lower (2.59) than at high (3.05) levels of DY. At low levels of B-BBEE S/H the Q ratio was slightly higher (2.76) than at high (2.73) levels B-BBEE S/H. When the sample was further split at high and low independent variables; and by sectors the means varied with only a few trends emerging (Table 3(b)). To recapitulate the sectors included consumer goods; consumer services; industrial; technology and telecommunication; and other sectors.

J.J. Gaver and Gaver (1993) measured levels of D/E and DY against high growth and low growth companies. Although within this study, growth opportunity was not split into high and low levels (independent variables were split at high and low levels), the general relationship can be compared. J.J. Gaver and Gaver found that the means at low levels of D/E and DY growth opportunity was higher than at higher levels of D/E and DY. The findings of the means of this study were similar to J.J. Gaver and Gaver in terms D/E but contrary to the findings in terms of DY.

At low levels of D/E the Q ratio was higher than at high levels of D/E in the consumer goods and consumer services sectors. However within industrial; technology and telecommunication; and other sectors at low levels of D/E the Q ratio was lower than at high levels of D/E. At low levels of DY the Q ratio was lower than at high levels of DY in all sectors other than consumer goods. This was generally consistent with the findings for the overall sample with no sector split.

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The relationship between Q ratio and B-BBEE S/H also varied. For low levels of B-BBEE S/H the Q ratio was lower than at high levels of B-BBEE S/H in the industrial; and technology and telecommunication sectors. However within consumer goods; consumer services and other sectors at low levels of B-BBEE S/H the Q ratio was higher than at lower levels in the consumer goods and consumer services sectors.

Although Lang et al. (1996) and Smith and Watts (1992) conducted industry-level analyses between D/E; DY and growth opportunity the means were not available to report. Both studies did not rely on the trends within each industry but considered the overall results. The use of industry-level data was to reduce measurement error and present more powerful results, rather than then explaining management behaviour within each sector. In addition, the type of industries varied within each study including this study which made comparative examinations impossible. It can be noted however that by comparing the means of the overall data set to sectors although the general trend in relationships remained intact greater variances emerged within certain sectors. Such as the significant negative relationship among Q ratio when DY was low in the consumer goods sector (at low levels Q ratio was high at (4.62); or the significant positive relationship when DY was low in other sectors Q ratio was lower than at high levels (2.48).

The variations in the means were explained by the cross-sectional variation in corporate policies that were impacted by firm-specific decisions such as employment decisions, or by exogenous variables (Smith & Watts, 1993). However Smith and Watts argued that most companies were exposed to similar variables that only change over time such as labour, capital and product markets. Based on this it can be further argued that the local environment where the organisations operate impact growth opportunity as markets and environments differ, such as an

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emerging market conditions and a developed market conditions. This argument was supported by D'Souza and Saxena (1999) and Mitton (2007).

The findings of this study differ significantly in some aspects from previous studies such as J.J. Gaver and Gaver (1993); Kallapur and Trombley (2001); and Smith and Watts (1992). Specific differences include p values among these studies that were either ≤0.01 or ≤ 0.05. The reasons for the differences were use of control mechanisms, factor analyses and sensitivity analyses or managing outliers within samples which is discussed in further detail below. This study was unable to perform the control mechanisms, factor or sensitivity analyses due to time constraints.

6.3 Testing the differences between the mean growth opportunity for the different levels (high and low) of the independent variables – hypotheses analyses

T-tests were conducted to reject or not to reject each hypotheses. For each of the three hypotheses the null hypotheses was not rejected due to insufficient evidence presented. It was found that there was no discernable difference in growth opportunity when D/E or DY or B-BBEE S/H levels were high or low. The results of the hypotheses tests although provided guidance to the potential nature of the relationships between the variables, it was concluded that the outcome did not yield any significant associations between the variables.

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6.3.1 Hypotheses 1

The null hypothesis stated that the mean growth for organisations with Low debt levels (LDL) was equal to the mean growth for organisations with High debt levels (HDL). The alternative hypothesis therefore stated that the mean growth for organisations with Low debt levels (LDL) was not equal to the mean growth for organisations with High debt levels (HDL).

The initial findings revealed the mean Q ratio for lower debt levels firms was 0.659 compared to the mean of 0.873 for high debt level firms. These initial findings were contrary to the findings of J.J. Gaver and Gaver (1993) and Smith and Watts (1992). Both studies found that high growth organisations (value of firm represented by the IOS rather than assets in place) use less debt in their capital structure.

However at a 95 percent confidence level with a p value of 0.062 the null hypothesis was not rejected. The result can be read as there was no discernable difference in growth opportunity for organisations with low or high debt levels. This finding was contrary to the findings of a deluge of studies that found that there was a significant difference in growth opportunity at high and low levels of debt. Kallapur and Trombley (2001) and Lang et al. (1996) found a negative relation between debt levels and growth opportunity and the IOS.

Similarly, Smith and Watts (1992) and Kallapur and Trombley (2001) relied on shareholder-bondholder conflict within optimal contracting theory. They indicated that when organisations have debt outstanding it was motivated to underinvest in risky projects because debt holders have senior claim from the cash flows of the project reducing new investment options.

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Serrasqueiro and Nunes (2010) found there was a clear difference in growth opportunity at different levels of debt.

6.3.2 Hypotheses 2

The null hypothesis stated that the mean growth for organisations with Low dividend yields (LDY) was equal to the mean growth for organisations with High dividend yields (HDY). The alternative hypothesis therefore stated that the mean growth for organisations with Low dividend yield (LDY) was not equal to the mean growth for organisations with High debt levels (HDY).

The initial findings revealed that when the means were compared mean Q ratio for low dividend yields firms was 0.779 compared to the mean of 0.872 for high dividend yield firms. The null hypothesis with a p value of 0.423 at 95 percent confidence level was not rejected. The result can be read as there was no discernable difference in growth opportunity for organisations with low or high dividend yields levels.

These findings were contrary to the findings of the widespread studies that dividend payouts and investment opportunity were negatively related such as Barclay et al. (1995); J.J. Gaver and Gaver (1993); Kallapur and Trombley (2001); and Smith and Watts (1992). These studies found that high growth organisations have low dividend yields. Most of these studies relied mainly on optimal contracting theory rooted in agency theory. They argued that with a high IOS use of mechanisms such as dividends to impose discipline on manager's use of cash is reduced, as managers are unlikely to use cash in sub-optimal ways when positive net present value projects are available. As a result there is a negative relation between IOS and dividend.

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Easterbrook (1984); Fama and French (2002); Rozeff (1982); and Smith and Watts (1992) linked the IOS to cash flow where the greater the amount of investment results in a smaller dividend payout due to reduced cash flow. The finding of this study was that there was no discernable difference in growth opportunity at high or low dividend yields may be supported by Lintner's model (1956).

According to Linter (1956) organisations offered stable dividends to shareholders based on adjusting existing payout rates rather than setting a new payout ratio, by first considering whether a change from existing rate was necessary. The dividend policy was set first and other policies were then adjusted given the existing dividend policy. This included events of investment opportunities arising and if there were insufficient internal funds external funds would be raised. This implied that if presented with growth opportunities dividends payouts remained unchanged, and that there was no relation between growth opportunity and dividends.

An additional consideration was that organisations within emerging markets are far more sensitive to other variables such as profitability, size or asset mix which may have impacted the results of this test (Clearly, 2003). This implied that growth opportunity may be impacted by variables other than dividend yields.

6.3.3 Hypotheses 3

The null hypothesis stated that the mean growth for organisations with Low B-BBEE levels (LBEE) was equal to the mean growth for organisations with High B-BBEE levels (HBEE). The alternative hypothesis therefore stated that the mean growth for organisations with Low B-BBEE

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levels (LBEE) was not equal to the mean growth for organisations with High B-BBEE levels (HBEE).

The initial findings revealed that when the means were compared, the mean Q ratio for low B-BBEE S/H firms was 0.659 compared to the mean of 0.873 of high dividend yield firms. However at a 95 percent confidence level with a p value of 0.063 the null hypothesis was not rejected. The result can be as read there was no discernable difference in growth opportunity for organisations with low or high B-BBEE shareholding.

The finding of this study implied growth opportunity was unaffected by high or low levels of B-BBEE shareholding as part of ownership structure. This was contrary to the belief that B-BBEE shareholding was affected by nature of B-BBEE S/H transaction structures that imposed capital changes and dividend payout policies on organisations. According to Ernst and Young (2009) and Chabane et al. (2006) early B-BBEE transactions were heavily leveraged. Lucas-Bull (2007) further stated that leveraged transactions were common in empowerment transactions as buyers were unable to access capital on their own.

This may have prevented organisations with low growth opportunity from increasing debt levels to conclude B-BBEE S/H, or encouraged B-BBEE transactions when growth opportunity was high. This implied there was considerable reliance on the transaction type and affected the decision by managers to change ownership structure. This was contrary to findings of this study that was that there was no difference in growth opportunity for companies with low and high levels of B-BBEE shareholding.

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It appeared that the growth opportunity depended on variables other than B-BBEE shareholding. In terms of the exogenous ownership structure, empowerment policies may be considered a limitation and may harm performance as it prevents managers from choosing an optimal structure (Cole & Martin, 1998). This implies that growth opportunity may have been determined based on performance in terms of profitability rather than the introduction of black shareholders.

6.4 Assessing the relationship between the growth opportunity and the independent variables - correlation and regression analyses

The nature and extent of the relationships between growth opportunity and the IOS was tested by utilising correlation and regression analyses.

6.4.1 Correlation

The correlation tests of the means of each variable and growth opportunity for the five year period (1 January 2010 to 31 December 2010) revealed a strong positive relationship between D/E and Q ratio low positive relationship (coefficient of 0.292). The coefficient for B-BBEE shareholding was -0.326 indicating a strong negative relation. DY reflected a very low negative relation to growth opportunity at -0.053. J.J. Gaver and Gaver (1993) conducted correlation tests during regression analyses; Smith and Watts (1992) conducted correlation tests at both company level and industry level; Lang et al. (1996) conducted correlation tests at industry and company levels for leverage and the IOS; Kallapur and Trombley (1999) utlised several IOS proxies including the Q ratio; and Skinner (1993) measured financial leverage but without dividend policies. The correlation results of these studies are presented in Table 8.

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Table 8 – Comparative correlation results of previous studies

Study	IOS proxies	Level	Findings
This study	Q ratio	Company	Company level D/E – strong positive relation (0.292) DY – low negative relation (-0.053) B-BBEE S/H – strong negative relation (-0.326)
J.J. Gaver & Gaver (1993)	Market to book assets; Market to book equity; Earnings to price ratio; R and D to assets ratio; Variance of the rate of return to the firm; Consensus choices of growth-oriented mutual funds	Company	Based on regression : D/E - negatively related (-2.158) DY – negatively related (-0.022)
Smith & Watts (1992)	Book value of assets to total firm value	Industry	All industries D/E – negatively related (-0.49) DY - negatively correlated (-0.19) Unregulated industries D/E – negatively related (-0.33) DY - positively correlated (0.32)
Lang et al. (1996)	Growth in capital expenditure; employment and Q ratio	Industry	Based on Q ratio and D/E only D/E – negatively related (-0.18)
Kallapur & Trombley (1999)	Percentage change in realised book value (incorporating a series of book and market measures including the Q ratio)	Company	D/E - positively related (0.381) DY - negatively correlated (-0.437)
Skinner (1993)	Asset beta; PPE/value; R&D/sales; Tobin's Q ratio	Company	D/A rather than D/E based on Q ratio only D/A – negatively related (-0.19)

When comparing the results the first observation was the variation in choice of proxy variables.

Choice of proxy variable significantly impacted results such as the use of earnings-to-price ratio

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that reduced significance of results (Kallapur & Trombley, 1999; Smith & Watts, 1992). In addition many studies utilised a combination of proxies in factor or sensitivity analyses or as instrumental-variables approach.

The second observation was the use of company-level and industry-level data. The two studies conducted at industry-level (Smith & Watts, 1992; Lang et al., 1996) produced generally consistently stronger results whereas company-level results varied between strong and weak relations. When compared to this study the strength of the coefficients within industry-level organisations improved only with the relation between dividend yields and growth opportunity.

When compared, the D/E findings of this study was contrary to all the studies reflected in Table 8 other than the results of Kallapur and Trombley (1999) that found a positive relation between debt levels and growth opportunity (0.381). The coefficient of debt and growth opportunity for this study was 0.291. Kallapur and Trombley reasoned that this was due to the debt-to-equity ratio consisting of book value of equity rather than market value of equity. When Kallapur and Trombley utilised debt-to-market value of equity to measure debt levels the coefficient was -0.535. However within this study book debt; interest bearing debt and market value of equity was utilised. The reason for this was the limited availability of financial models relating to growth opportunity.

When considering the findings within emerging markets, Mitton (2007) found that debt levels had increased by 15% with increased growth opportunities in emerging markets such as Africa. This implied a positive relation between debt and growth opportunity. Compared to studies conducted in developed economies such as those reflected in Table 8 and the study conducted by Goyal

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et al. (2002) debt levels had a negative relation with growth opportunity. Serrasqueiro and Nunes (2010) found relationship between debt and growth opportunity to be positive for low and high levels of growth opportunities; and negative for intermediate levels of growth opportunity. Serrasqueiro and Nunes concluded that the relationship was non-linear and cubic, and that the relationship depended on the on the level of the organisation's growth opportunity.

The negative relation between dividend yield and growth opportunity found within this study was similar to the findings in the studies presented in Table 8, although the evidence was weak. Barclay et al. (1995); J.J. Gaver and Gaver (1993); Kallapur and Trombley (2001); and Smith and Watts (1992) found that high growth organisations have low dividend yields. Most of these studies relied mainly on optimal contracting theory rooted in agency theory. They argued that with a high IOS use of mechanisms such as dividends to impose discipline on manager's use of cash is reduced, as managers are unlikely to use cash in sub-optimal ways when positive net present value projects are available. As a result there was a negative relation between IOS and dividend. They asserted that organisations with high investment opportunities are likely to pay low dividends as they have more profitable use of funds, whereas low growth firms use higher dividends to address a potential overinvestment problem.

Easterbrook (1984); Fama and French (2002); Rozeff (1982); and Smith and Watts (1992) linked the IOS to cash flow where the greater the amount of investment results in a smaller dividend payout due to reduced cash flow. This resulted in a positive relation between the assets in place and dividend payouts; and a negative relation between the IOS and dividend payouts. This optimal contracting was extended to include agency costs by providing effective monitoring

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(Easterbrook; Rozeff). Fama and French concurred that dividends are substitutes for controlling the free cash flow agency problem.

Although organisations in emerging markets are expected to exhibit different dividend behaviour from those of developed markets it was found that there was a negative relationship between dividend payouts ratio and growth opportunity (Amidu & Abor, 2006; Arbor & Bokpin, 2010). Arbor and Bokpin confirmed a significantly negative relationship between the IOS and dividend payout policy based on a study of publicly trading firms in 34 emerging market countries including South Africa. D'Souza and Saxena (1999) conducted a study that included dividend policies and the IOS by utilising 349 worldwide companies and found that there was a statistically insignificant relationship. D'Souza and Saxena reasoned that organisations paid dividends irrespective of investment opportunities.

The association between B-BBEE S/H and growth opportunity was found to be negatively related (coefficient of -0.326 for the average of five years). This inverse relation can be interpreted as a resistance to introducing B-BBEE shareholding when growth opportunity was high, or the hope of value creation when through B-BBEE shareholding when growth opportunity was low.

Resistance to B-BBEE shareholding may further be explained by the imposition of exogenous shareholding in the ownership structure that prevented shareholders and managers from choosing an optimal structure and weakening managerial incentives (Cole & Mehran, 1998). The result of weakening management incentives is the use of free cash flow on non-optimal investments such as ill-advised acquisitions or non-positive net present value projects (Jensen, 1986) and increases agency costs (Jensen & Meckling, 1976). Following this argument,

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resistance may result in entrenchment that applies to existing patterns that if remain static will not result in inclusion of previously excluded groups, and economic growth (Andrews, 2008). This would eventually reduce the potential growth catalyst objectives of empowerment for both the organisation and the economy.

6.4.2 Regression analyses

The regression analyses was utilised to assess and predict growth opportunity from the IOS. The initial test was based on the average independent variables (D/E; DY and B-BBEE S/H) for the full sample without sector split. At this stage D/E and B-BBEE were identified as significant predictors. DY was systematically eliminated due to low coefficient and p values. The second regression consisted of the sample split by sector with all three independent variables (D/E; DY and B-BBEE S/H). The final regression tests included only those variables and sectors that were identified as significant predictors. This included D/E in consumer goods (0.097) and industrial (0.059) sectors; and B-BBEE S/H (0.050) in consumer services sector.

The overall adjusted R^2 values were low in comparison to previous studies which indicated low percentage of variation in growth opportunity that was explained by the variables of the IOS. The most significant R^2 value of 19.9 percent was found in the consumer goods sector; and R^2 value of 23.3 percent in the consumer services sector between Q ratio and B-BBEE shareholding. The overall p values were generally high with certain low p values signaling a high significance in either the full model or the relationship with the variable.

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Regression results to assess the relationship between Q ratio; D/E and B-BBEE S/H – full set with no sector split followed by sample split by sectors : The overall results revealed a strong positive relation between debt levels and growth opportunity; a low positive relation between dividend yield and growth opportunity; and a strong negative relation between B-BBEE shareholding and growth opportunity.

To recapitulate the significant results of the regressions were as follows. In the full model without sector splits the adjusted R^2 was 12.2 percent and the p value for the model was 0.0009 For D/E (Table 6(a)). In the sector spilt model (Table 6(b)) the most significant adjusted R^2 was 19.9 percent with p value of 0.097 for D/E in the consumer goods sector; adjusted R^2 of 8.4 percent and p value of 0.050 for B-BBEE S/H in the industrial sector; and adjusted R^2 of 10.9 percent and p value of 0.059 for D/E in the consumer services sector. The additional regression tests revealed p values for D/E in consumer goods was 0.097 and in industrial sector was 0.059 and B-BBEE S/H was 0.050 in consumer services sector.

When comparing the outcome of the results of the regression tests of this study to the results of regression of analyses of previous studies, it was noted that the models of previous studies varied from this study and other studies. This presented difficulties in comparing results. As a comparison of reported results the adjusted R^2 was compared to reveal the extent of the difference in results.

J.J. Gaver and Gaver (1993) reported an adjusted R^2 of 0.153 with p value of ≤ 0.01 for debt levels and growth opportunity; Abor and Bokpin (2010) reported an adjusted R^2 of 10 percent with p value of 0.01 for dividend payouts in emerging markets; Smith and Watts (1992) reported an

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adjusted R² of 79 percent for debt levels and 61 percent for dividend levels with p value of 0.01; Skinner (1993) reported an adjusted R² of 9.1 percent or 8 percent with p values of 0.0000 depending on the model; and Fama and French (2002) reported an adjusted R² of between 25 percent and 39 percent for dividend payouts and between 6 percent and 42 percent for debt levels depending on the models.

The reasons for either high R² values or low p values were the use of control mechanisms, factor analyses or sensitivity analyses or managing outliers within samples. Smith and Watts (1992) referred to measures of the IOS involving substantial measurement error. Smith and Watts overcame this by using by using more than one IOS proxy; by using instrumental-variables approach followed by testing the specification of the relations among the measures (p. 266). Countermeasures to errors featured in all studies stated above. This study was unable to perform such measures due time constraints and the limited IOS proxy variables available.

The estimated coefficients were consistently positive for debt levels and growth opportunity. This finding was contrary to the findings of Kallapur and Trombley (2001) and Lang et al. (1996). Both studies found a negative relation between debt levels and growth opportunity and the IOS. They dismissed both agency costs and shareholder-bondholder conflict within optimal contracting theory. They stated that within organisations with high IOS the use of debt as a discipline for cash by managers when positive net present value projects were available was reduced.

The finding of this study was also contrary to Smith and Watts (1992) and Kallapur and Trombley (2001) who relied on shareholder-bondholder conflict within optimal contracting theory. They indicated that when organisations have debt outstanding it was motivated to underinvest in risky

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projects because debt holders have senior claim from the cash flows of the project reducing new investment options. Controlling this underinvestment and loss of value is to finance growth with equity rather than debt.

The finding of this study was contrary to the findings of Serrasqueiro and Nunes (2010) where it was found that there was a clear difference in growth opportunity at different levels. In terms of agency costs the relationship between high (low) growth companies and high (low) debt levels depends on whether the costs were caused by underinvestment or overinvestment (Serrasqueiro & Nunes). Similarly, cost of debt was a factor that influenced levels of debt in high and low growth companies in terms of the tradeoff theory.

In terms of the tradeoff theory managers weigh the benefits of costs and benefits of debt, and only choose higher debt when growth opportunity was high (Fama & French, 2002; Jennsen, 1986; Ovtchinnikov, 2010). Likewise the pecking order theory and asymmetrical information may cause managers to rely on internal funds such as retained earnings and cash flows first rather than debt (Fama & French; Myers, 1976; Ovtchinnikov; Serrasqueiro & Nunes). However Fama and French (2002, p. 22) found a positive relation between the proxy for the Q ratio and book debt, however the market value of debt was negatively related to growth opportunity. Fama and French reasoned that debt capacity depends on the market value of assets, and based on the simple pecking order theory that there was a positive marginal relation between leverage and investment opportunity.

The relationship between B-BBEE shareholding and growth opportunity was negative. This can be interpreted that when growth opportunity was high managers resist B-BBEE transactions as

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they may not see value in amending ownership structure to include B-BBEE shareholders. It can also be inferred that at this stage relevance, value creation and commitment to economic and societal reform was resisted (Andrews, 2008). However at the stage when growth opportunity was low B-BBEE shareholding was high. This can be interpreted as acceptance of relevance and value creation of B-BBEE shareholding within ownership structure as well as an indication of commitment to transformation policies relevant to South Africa.

The final regression model consisted of a single but most significant relationship based on the highest adjusted R² value in this study of 26.3 percent. The variables consisted of B-BBEE S/H and the Q ratio. The equation based on Y intercept of 1.536 and estimated slope coefficient of -0.209 was $Q\ ratio = 1.536 - 0.209 * BBBEE + e$. In terms of this finding B-BBEE S/H was a significant predictor of Q ratio in the consumer sector (Beta =-0.209, p < 0.0086) and was interpreted as if B-BBEE S/H changed by one percent then Q ratio will tend to decreased by -0.209 percent. Higher levels of Q ratio were associated with low levels of B-BBEE S/H. There was no evidence or theory available to support this equation. This result was as a consequence of the consistent negative relationship between B-BBEE shareholding and growth opportunity in the correlation and regression tests supported by low p values.

The results of the regression tests can be summarised as follows. There was a strong positive relationship between debt levels and growth opportunity. There was a strong negative relationship between B-BBEE shareholding and growth opportunity. There was a general low positive relationship between dividend yields and growth opportunity, although the evidence inconsistent and was weak. When considering the sectors, within the consumer goods sector and industrial sectors there was a positive relation between debt levels and growth opportunity. Within

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the consumer services sector there was a significant negative relation between B-BBEE S/H and growth opportunity.

6.5   Summary of discussion of results

The hypotheses testing were exploratory to test the difference between the mean growth opportunity at high and low levels of debt; dividend and B-BBEE shareholding. The results found that there was no discernable difference in growth opportunity at high and low levels of debt or dividend or B-BBEE shareholding. It was concluded that all three hypotheses tests failed to yield significant results. For this reason the correlation and regression tests were relied upon. The correlation and regression tests assessed the relationship between growth opportunity and debt; dividend payout and B-BBEE shareholding. The findings for debt levels and B-BBEE shareholding in the correlation tests were consistent with the findings in the regression tests.

Debt levels were positively related to growth opportunity. This was contrary to mainstream studies that found a negative relation between debt and growth opportunity (J.J. Gaver and Gaver, 1993); Kallapur & Trombley, 1999; Lang et al., 1996; Skinner, 1993; Smith & Watts, 1992). However these studies were conducted in developed economies. Within emerging markets it was found that there was a positive relation between debt and growth opportunity (Mitton, 2007; Serrasqueiro & Nunes, 2010).

B-BBEE shareholding was found to be negatively related to growth opportunity. This was explained by managers placing value on B-BBEE shareholding when growth opportunity was low but resisted ownership structure change when growth opportunity was high. The reasons for this

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were several. It included the nature of B-BBEE transactions that included amended capital structure or dividend payout obligations or contractual covenants (Chabane et al., 2006; Lucas-Bull 2007). An alternate reason was the imposition of external shareholding in the ownership structure that prevented shareholders and managers from choosing an optimal structure, weakening managerial incentives and impeding company performance (Cole & Mehran, 1998).

Dividend yields were found to be negatively associated to growth opportunity. However the evidence in support of this was weak and inconsistent. However there was overwhelming support in favour of the negative relation between dividend yield and growth opportunity such as Barclay et al. (1995); Easterbrook (1984); Fama and French (2002); J.J. Gaver and Gaver (1993); Kallapur and Trombley (2001); Rozeff (1982); and Smith and Watts (1992). It was also found that this was consistent with companies within emerging market (Amidu & Abor, 2006; Arbor & Bokpin, 2010).

The best fit regression model was observed in the consumer services sector with a strong negative relationship between B-BBEE S/H and growth opportunity. The final equation was represented as $Q\ ratio = 1.536 - 0.209 * BBBEE + e$. It was noted that there was a lack of previous studies for comparison purposes. .

It was apparent that the findings of this study differed significantly in strength or direction of relationships from previous studies. In certain instances the results reflected high p values and low R^2 values rendering the evidence as weak or inconclusive. The results further reflected variations in the means which were explained by the cross-sectional variation in corporate

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policies that were impacted by firm-specific decisions such as employment decisions, or by exogenous variables.

6.6 Limitations

Limitations of this study were identified that may improve the quality of results stated above. The first observation was that the IOS was affected by several factors outside the scope of this study that may have been controlled for. This included firm size. J.J. Gaver and Gaver (1993) found that there was a significant difference in results pertaining to dividend yield but not applicable to debt levels when organisation size was controlled.

It was also noted that company performance either in the form of profitability, sales and growth affected the IOS and could have been controlled. Fama and French (2002) included taxes while Smith and Watts (1992) also controlled for regulation. Although the variables that make-up policy decisions affecting the IOS are numerous, the leading variables controlled-for by seminal studies could have been controlled. The control mechanisms were not utilised in this study due to time limitation.

The second limitation observed was the choice of the IOS proxy variables. It was noted that the IOS proxies contained substantial measurement error (Kallapur and Trombley, 1999; Smith and Watts, 1992). Jones and Sharma (2001) found that their choice of IOS proxies yielded insignificant results when low growth companies were tested. Jones and Sharma further noted that proxies applicable to organisations based in the United States of America differed significantly to Australian companies.

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To overcome this, a multiple proxy analysis could have been utilised such as factor analysis and by testing the correlation between the various proxy variables upfront (J.J. Gaver & Gaver, 1993). In addition a sensitivity analysis could have been undertaken by testing the results of the Q ratio against the results of other IOS proxy variables. Additional proxy variables were not utilised in this study as the financial models making-up the IOS proxies were not consistently reported by all companies listed on the JSE, in other words there were limited proxy variables available.

A third limitation was the treatment of the sample. The large data base presented various outliers which weakened results. This could have been mitigated by coding outliers as missing variables if they were more than five standard deviations away from the sample mean without affecting a large percentage of observations (Kallapur & Trombley, 1999). The sample could further have included additional tests based on year-on-year analyses rather than panel tests to improve the robustness of results and reduce variation and standard error (Fama & French, 2002).

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Chapter 7 - Conclusion

7.1   Introduction

This study investigated the relationship between the IOS and policy decisions. The IOS represented growth opportunity. The policy decisions elected were debt policies, dividend payout policies and ownership structure in the form of B-BBEE. The independent variables (D/E; DY and B-BBEE S/H) were measured against the dependant variable (Q ratio) and each other.

Growth opportunity was established in the literature review as contributing to the value of a business. The value of an organisation comprises of assets in place (actual assets on the balance sheet) and future investment options (discretionary investments in positive net present value projects) Myers (1977). These future investment options are unobservable growth opportunities or options that are higher when assets in place are lower; and the higher the growth option the better the performance of the firm. The component of the organisation's value resulting from this option to make future investment was referred to as the investment opportunity set (IOS) (J.J. Gaver & Gaver, 1993).

The literature review revealed that the IOS included discretionary expenditures necessary for the future performance of an organisation. It was noted that virtually any discretionary expenditure can be viewed as a growth option, and the factors influencing the IOS included any firm-specific factors such as human capital in place or capital structure; industry-specific and macro-economic factors. The result was that there were several policy decisions relating to growth opportunity that may impact the IOS such as organisation size; profitability; revenue growth; political,

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environmental, social, technological or legal issues; capital market issues or internal company matters such capabilities and resources. It was not possible to consider the full extent of these confounding factors and for this reason this study was exploratory. The selection of debt and dividend policies were based on past empirical studies on the IOS, and ownership structure in the form of B-BBEE was based on relevance to South Africa.

7.2   Methodology and analyses process

This study was conducted over a five year period (1 January 2006 to 31 December 2011) at company-level and industry-level. At both levels tests employed included the mean for the five year period or high and low independent variables based on the median split technique or sector splits. T-tests were conducted to test the hypotheses set out in Chapter Three to determine the relationship between debt policies and growth opportunity; dividend policies and growth opportunity; and B-BBEE shareholding and growth opportunity. Correlation and regression tests were conducted to assess the nature and extent of the relationships.

7.3   The overall results

The findings of the t-test revealed that the mean growth opportunity for organisations with low debt levels or low dividend yields or low B-BBEE shareholding was equal to the mean growth opportunity for organisations with high debt levels or high dividend yields or high B-BBEE shareholding. Alternatively, that there was no discernable difference in growth opportunity for organisations with low or high debt levels or high dividend yields or high B-BBEE shareholding.

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As a result of this it was concluded that the t-test failed to yield significant results, and contributed to this study only as an exploratory measure.

The findings for debt levels and B-BBEE shareholding in the correlation tests were consistent with the findings in the regression tests. Debt levels were positively related to growth opportunity; and B-BBEE shareholding was found to be negatively related to growth opportunity. Dividend yields were found to be negatively associated to growth opportunity. However the evidence in support of this was weak and varied. The best fit regression model was observed in the consumer services sector with a strong negative relationship between B-BBEE shareholding and growth opportunity The R² value of 26.3 percent was similar to previous studies relating to growth opportunity, and the final equation was represented as $Q\ ratio = 1.536 - 0.209 * BBBEE.$

i.   Debt policies and the IOS

The results for debt policies and the IOS indicated that debt levels were positively related to growth opportunity. This was interpreted as growth opportunity increased with debt levels. This was contrary to main stream studies from developed countries. However, within emerging markets the finding of this study was supported by Mittion (2007) and Serrasqueiro and Nunes (2010) who found that the relationship between debt and growth opportunity positive or that the relationship the relationship depended on the level of growth opportunity and economic conditions of the emerging market. This non-linear or cubic relation referred to by Serrasqueiro and Nunes was not tested in this study.

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It appeared from the literature review that managers are influenced by the costs of debt where the benefits of debt only outweighed the costs of debt when growth opportunity was high (tradeoff theory); or managers prefer to utilise internal rather than external funds such as cash flows or retained earnings (pecking order theory) or are influenced by asymmetrical information or level of profitability. This meant increasing debt levels only when growth opportunity was high. Bearing in mind that the IOS represents the value of the company by investment options rather than assets in place, managers increase debt levels when there was confidence in the net present value of future investment projects after considering costs, internal sources of funds and information available. It is most likely that debt is spent on assets in place first before future investment options.

ii.   Dividend policies and the IOS

The results for dividend yields and the IOS indicated that dividend yields were negatively related to growth opportunity. This was interpreted as fewer dividends were paid out when growth opportunity was high. However this result was found to be weak with a low coefficient. The result varied extensively with the regression analysis within sectors where the association was positive with very high p values. The correlation of the overall mean for five years, although weak, was similar in terms of direction of the relation to the overwhelming empirical findings that growth opportunity and dividends payouts were inversely related, and this included studies from emerging markets.

It is possible that based on optimal contracting theory rooted in agency theory dividend payouts were not used by managers to impose discipline on manager's use of cash when growth

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opportunity was high. It is further speculated that managers are unlikely to use cash in sub-optimal ways when positive net present value projects are available (Kallapur & Trombley, 2001; Smith & Watts, 1992). In addition managers of organisations with high investment opportunities are likely to pay low dividends as they have more profitable use of funds, whereas low growth firms use higher dividends to address a potential overinvestment problem. Based on this, a manager may be faced with reduced cash flow when growth opportunity was high and therefore unable to pay dividends. This outcome was a positive association between the assets in place and dividend payouts; and a negative association between the IOS and dividend payouts.

The variation in results in the sector analyses can be explained by managers who deviate from dividend policies due to factors and variables outside the scope of this study, however it was speculated to include any of the various company-specific, industry-specific and economic-specific factors. Managers chose to increase dividend payouts when growth opportunity was high as they have no better use of cash flows, which is a lack of opportunity to invest in positive net present value projects rather than relying on value of assets in place. It was however noted, that any explanations or speculations were treated with caution due to the weak and near-inconclusive results realting to dividend policies.

iii.   B-BBEE shareholding and the IOS

The results for B-BBEE policies and the IOS indicated B-BBEE shareholding was found to be negatively related to growth opportunity. This was interpreted as B-BBEE shareholding was introduced to the ownership structure when growth opportunity was low but was opposed when growth opportunity was high. B-BBEE transactions were considered as discretionary

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expenditures by managers which was part of the IOS. It was possible that managers had better use of cash flows when growth opportunity was high. At high growth opportunity levels managers did not see value in committing to societal and economic reform through transformation, nor did managers expect future investment opportunities from this ownership structure within the organisation. However when growth opportunity was low managers considered B-BBEE shareholding as part of ownership structure to be an investment in a positive net present value project that would improve value of the organisation.

However based on the carried correlation results within sectors there were some sectors where the relationship between B-BBEE and growth opportunity was positive. It was inferred from this that managers deviated from the abovementioned trend on a transitory and short term basis. This positive relationship implied that when growth opportunity was low managers resisted both the need to commit to transformation and value creation through future investment options by amending ownership structure to include B-BBEE. In addition costs due to the leveraged and contractual obligations of B-BBEE transactions were in excess of available cash flow when growth opportunity was low. When growth opportunity was high managers were able to bear the costs of B-BBEE transactions due to increased cash flows and opted to improve investment options rather than relying on assets in place to create value.

iv. The overall results and implications

The overall results revealed the policy decisions of managers in creating value for organisations by considering future investment options rather than assets in place. It was better understood when managers would increase or decrease debt levels or dividend payouts or whether to include

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B-BBEE shareholding in response to value creation in terms of future growth opportunity. Managers elected to increase debt levels when growth opportunity was high; or increase dividend payouts when growth opportunity was low; or introduce B-BBEE shareholding to ownership structure when growth opportunity was low. By improving this understanding enhances the possibility of improving or creating value for the organisation. The objective of managers was to influence the manner in which the organisation was viewed not only by managers but by owners, investors and creditors. Value creation within orgainsations was identified as a key objective for managers.

However value creation was a consideration only after costs; availability of cash flow and the actual performance or actual growth of the organisation were considered. In other words policy decisions were more strongly linked to assets in place. It was evident that manager's elected to underinvest in projects such as B-BBEE shareholding to preserve or improve assets in place rather than growth opportunity.

Apart from creating value in the organisation the IOS further impacted value in the economy. Policy decisions drives growth opportunity in an organisation which in turn drives value of all goods and services produced, which comprises GDP. This is highly relevant for improving GDP and to accelerate growth rate as a mechanism to address unemployment among other national objectives. This is particularly relevant to emerging markets where there is balance required between volatility; excessive risk taking through high debt levels and low dividend payouts; and growth rate.

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7.4 Recommendations for further research

For future research pertaining to the IOS and policy decisions the main consideration is improving the quality of the results. The low R^2 values and high p values which delivered weak results within this study can be improved by considering the recommendations set out as follows.

The first recommendation is to improve the treatment of the sample. This can be achieved by increasing the period observed from five years to a longer period. An alternate method is to conduct a year-on-year analyses to improve the strength of the results, to reduce error and to consider short term variations in policy decisions. The financial models and ratios were retrieved from secondary data sources. This included financial information that was incomplete or lacking. To countermeasure this ratios can be retrieved directly from company's financial statements. The large data set also presented outliers which weakened results. This can be mitigated by coding outliers as missing variables if they were more than five standard deviations away from the sample mean without affecting a large percentage of observations

A fundamental observation was that the IOS was affected by several factors outside the scope of this study. Although the variables that make-up policy decisions affecting the IOS are numerous, the leading variables controlled for by seminal studies can be controlled. This may include but not limited to firm size; company performance either in the form of profitability, sales and growth; taxes; bankruptcy costs; retained earnings; lifecycle of organisations such as young or mature firms and market volatility.

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An additional recommendation is the treatment and selection of the IOS proxy variables. Since the IOS proxies contained substantial measurement error a multiple proxy approach can be utilised such as factor analysis or sensitivity analysis by testing the results of one proxy variable against another. Alternate or factor analyses proxies recommended are MBA (market-to-book assets ratio) or; MBE (market-to-book equity ratio); EP (earnings-price ratio) or CAPEX/PPE (capital expenditures). It is recommended that the correlations between multiple proxies are determined prior to application of statistical tests.

A final recommendation is that the weak results indicate that the explanatory variables utilised in this study are not the only determinants of the IOS and policy decisions. Other aspects are responsible and need to be considered in future research. Recommended variables include company-level factors such as performance related variables (such as profitability and sales growth) or compensation policies. Specific emerging market factors may also be included such as industry dynamics (regulation; concentration or competition) or corporate social investments.

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9.   Appendices

Appendix 1 – Total companies observed for periods 1 January 2006 to 31 December 2010

No.	Company Name	Sector
1	A E C I (December)	Basic Materials
2	AFROX (December)	Basic Materials
3	DELTA (December)	Basic Materials
4	Mondiltd (December)	Basic Materials
5	Mondplc (December)	Basic Materials
6	OMNIA (March)	Basic Materials
7	SAPPI (September)	Basic Materials
8	SPANJAARD (February)	Basic Materials
9	YORK (June)	Basic Materials
10	A V I (June)	Consumer Goods
11	AFGRI (June)	Consumer Goods
12	AMAPS (June)	Consumer Goods
13	ASTRAL (September)	Consumer Goods
14	AWETHU (June)	Consumer Goods
15	BATS (December)	Consumer Goods
16	CAPEVIN (June)	Consumer Goods
17	CBH (June)	Consumer Goods
18	CLOVER (June)	Consumer Goods
19	CROOKES (March)	Consumer Goods
20	DISTELL (June)	Consumer Goods
21	DORBYL (March)	Consumer Goods
22	ILLOVO (March)	Consumer Goods
23	INTRADING (February)	Consumer Goods
24	METAIR (December)	Consumer Goods
25	NUWORLD (August)	Consumer Goods
26	OCEANA1 (September)	Consumer Goods
27	PNR FOODS (September)	Consumer Goods
28	RAINBOW (June)	Consumer Goods
29	RICHEMONT (March)	Consumer Goods

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30	SAB (March)	Consumer Goods
31	SEARDEL CP (March)	Consumer Goods
32	SOVFOOD (February)	Consumer Goods
33	STEINHOFF (June)	Consumer Goods
34	TIGBRANDS (September)	Consumer Goods
35	TONGAAT (March)	Consumer Goods
36	WBHOLD (June)	Consumer Goods
37	1TIME (December)	Consumer Services
38	ADVTECH2 (December)	Consumer Services
39	AF & OVR (June)	Consumer Services
40	AME (March)	Consumer Services
41	AVUSA (March)	Consumer Services
42	CASHBIL (June)	Consumer Services
43	CAXTON PUBLISHERS AN (JUNE)	Consumer Services
44	CAXTON2 (June)	Consumer Services
45	CITYLDG (June)	Consumer Services
46	CLICKS (August)	Consumer Services
47	CMH (February)	Consumer Services
48	COMAIR (June)	Consumer Services
49	CULINAN (September)	Consumer Services
50	DON (June)	Consumer Services
51	FAMBRANDS (February)	Consumer Services
52	GOLDREEF (March)	Consumer Services
53	IFA (December)	Consumer Services
54	ITLTILE (June)	Consumer Services
55	JDGROUP (August)	Consumer Services
56	KGMEDIA (June)	Consumer Services
57	LEWIS (March)	Consumer Services
58	MASSMART (June)	Consumer Services
59	MR PRICE (March)	Consumer Services
60	NAIL (June)	Consumer Services
61	NASPERS (March)	Consumer Services
62	NICTUS (March)	Consumer Services
63	PHUMELELA (July)	Consumer Services
64	PICKNPAY (February)	Consumer Services

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65	PIKWIK (February)	Consumer Services
66	SHOPRIT2 (June)	Consumer Services
67	SPURCORP (June)	Consumer Services
68	SUN INTERNATIONAL (S (JUNE)	Consumer Services
69	SUNINT (June)	Consumer Services
70	TASTE (February)	Consumer Services
71	TRUWTHS (June)	Consumer Services
72	VERIMARK (February)	Consumer Services
73	WOOLIES (June)	Consumer Services
74	LITHA (December)	Healthcare
75	MEDCLIN (March)	Healthcare
76	NETCARE (September)	Healthcare
77	ADCOCK (September)	Healthcare
78	AFRO-C (June)	Healthcare
79	ASPEN (June)	Healthcare
80	CIPLAMED (December)	Healthcare
81	LIFEHC (September)	Healthcare
82	ADCORP (February)	Industrials
83	AFRIMAT (February)	Industrials
84	AGI (June)	Industrials
85	ALTRON (February)	Industrials
86	AMECOR (March)	Industrials
87	ARB (June)	Industrials
88	ARGENT (March)	Industrials
89	ASTRAPAK (February)	Industrials
90	AUSTRO (August)	Industrials
91	AVENG (June)	Industrials
92	BARWORLD (September)	Industrials
93	BASREAD (December)	Industrials
94	BELL (December)	Industrials
95	BOWCALF (June)	Industrials
96	BUILDMAX (February)	Industrials
97	CAFCA (December)	Industrials
98	CALGRO M3 (February)	Industrials
99	CARGO (February)	Industrials

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100	CERAMIC (July)	Industrials
101	CIL (August)	Industrials
102	COMMAND (December)	Industrials
103	CONTROL (December)	Industrials
104	DAWN (June)	Industrials
105	DIGICOR (June)	Industrials
106	ELLIES (April)	Industrials
107	EQSTRA (June)	Industrials
108	GRINDROD (December)	Industrials
109	GROUP 5 (June)	Industrials
110	HOWDEN (December)	Industrials
111	HUDACO (November)	Industrials
112	ILIAD (December)	Industrials
113	IMPERIAL2 (June)	Industrials
114	INVICTA (March)	Industrials
115	JASCO (June)	Industrials
116	KAIROS (February)	Industrials
117	KAP (June)	Industrials
118	KAYDAV (December)	Industrials
119	KELLY (September)	Industrials
120	M&R HLD (June)	Industrials
121	MARSHALL ()	Industrials
122	MARSHALL (September)	Industrials
123	MASNITE (December)	Industrials
124	MAZOR (February)	Industrials
125	METROFILE (June)	Industrials
126	MIXTEL (March)	Industrials
127	MMG (December)	Industrials
128	MOBILE (December)	Industrials
129	MORVEST (May)	Industrials
130	MVELASV (June)	Industrials
131	NAMPAK (September)	Industrials
132	NET1UEPS (June)	Industrials
133	PPC (September)	Industrials
134	PRIMESERV (December)	Industrials

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135	PROTECH (February)	Industrials
136	RAUBEX (February)	Industrials
137	REMGRO2 (June)	Industrials
138	S.OCEAN (December)	Industrials
139	SANYATI (February)	Industrials
140	SEAKAY (June)	Industrials
141	STEFSTOCK (February)	Industrials
142	SUPRGRP (June)	Industrials
143	TRENCOR (December)	Industrials
144	UNIVERSAL (December)	Industrials
145	VALUE (February)	Industrials
146	WBHO (June)	Industrials
147	WINHOLD (September)	Industrials
148	Wearne (February)	Industrials
149	OANDO (December)	Oil & Gas
150	SACOIL (February)	Oil & Gas
151	SASOL (June)	Oil & Gas
152	ZENITH CONCESSIONS L (JUNE)	Oil & Gas
153	ADAPTIT (June)	Technology
154	BCX (August)	Technology
155	COMPCLEAR (June)	Technology
156	CONVERGE (August)	Technology
157	DATATEC (February)	Technology
158	DCENTRIX (February)	Technology
159	EOH (July)	Technology
160	FARITEC (June)	Technology
161	GIJIMA (June)	Technology
162	MUSTEK (June)	Technology
163	PARACON (September)	Technology
164	PBT (August)	Technology
165	PINNACLE (June)	Technology
166	SECDATA (July)	Technology
167	SQONE (December)	Technology
168	ALTECH (February)	Telecommunication

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169	BLUETEL (May)	Telecommunication
170	MTN GROUP (December)	Telecommunication
171	TELKOM (March)	Telecommunication
172	VODACOM (March)	Telecommunication

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