BROAD-BASED BLACK ECONOMIC EMPOWERMENT: THE HOLY GRAIL FOR FINANCIAL HEALTH? A STUDY OF COMPANIES LISTED ON THE JOHANNESBURG STOCK EXCHANGE

by

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ABSTRACT

Broad-Based Black Economic Empowerment (B-BBEE) is a contentious mechanism that has been introduced to redress the imbalances caused by the apartheid regime by empowering previously disadvantaged individuals. Several scholars have argued that, whilst it is important to empower black individuals, B-BBEE is not necessarily the best method available. Long after the democratisation of South Africa and the introduction of B-BBEE legislation, the imbalance between the income of black and white South Africans is still evident, providing support for those claiming that B-BBEE needs to be reformed. B-BBEE compliance is a requirement for companies conducting business with government institutions, but voluntary for other organisations. The introduction of the 2013 Codes of Good Practice brought about stricter requirements for B-BBEE than those initially drafted in 2004.

Corporate leaders might question whether the benefits related to B-BBEE outweigh the associated costs. Previous research yielded inconclusive results on the relationship between the total B-BBEE scores of listed companies and financial performance. Most of these studies were based on small samples and employed a limited number of financial performance measures. These gaps have been addressed in the current study. Not only was a large sample investigated over a longer time period in comparison to previous studies, but a wide range of financial health measures were used. The individual elements of the B-BBEE scorecard were investigated in addition to the total B-BBEE scores provided by Empowerdex. Financial health, the dependent variable, was used as a collective term for accounting-based, market-based, value-based and risk-based measures. The author controlled for company size. The financial health and size data were sourced from the Bloomberg database.

Four accounting-based measures, five market-based measures, one value-based measure and one risk-based measure were employed in this study. Descriptive statistical analyses were conducted to investigate trends in the data. Mixed-model analysis of variance and Fisher's Least Significant Difference tests were used to assess the significance of the observed trends over time. Panel regression models were employed to investigate the relationships between B-BBEE scores (in total and per element) and each of the considered financial health measures. In total, 1 767 observations from 379 unique companies were analysed over the 12-year study period (2004-2015).

A statistically significant positive relationship was noted between total B-BBEE score and cost of equity. In contrast, a statistically significant negative association was observed between total B-BBEE score and the Price/ Earnings (P/E) ratio. Significant increases in B-BBEE scores (in

total and per element) were observed over the research period. The mean socio-economic development B-BBEE element scores reflected the largest increase over time. The panel regression analysis revealed a significant positive association between this element and the P/E ratio. A significant negative association was also reported between the management control element and cost of equity.

Based on the empirical findings, recommendations are offered to a range of stakeholders. Directors should carefully consider their B-BBEE strategies by giving more attention to management control and socio-economic development, given the significant associations reported between these elements and financial health. The BEE commission should also critically evaluate the appropriateness of the individual B-BBEE elements and their weightings in the current economic climate. More focus could be placed on education and skills development to grow the talent pool in the country. Companies and government should thoughtfully consider the optimal manner to empower previously disadvantaged individuals.

Keywords: Broad-Based Black Economic Empowerment, accounting-based financial performance, market-based financial performance, value-based financial performance, default risk probability

OPSOMMING

Breë-Basis Swart Ekonomiese Bemagtiging (B-BBEE) is 'n omstrede meganisme wat in werking gestel is om die wanbalanse wat deur die apartheid regering veroorsaak is, reg te stel deur voorheen benadeelde persone te bemagtig. Menige outeurs is van mening dat, alhoewel dit belangrik is om swart individue te bemagtig, B-BBEE nie noodwendig die mees geskikte metode is nie. Lank na die demokratisering van Suid-Afrika en die bekendstelling van B-BBEE wetgewing, is die wanbalans tussen swart en wit inkomste steeds duidelik, wat steun verleen aan diegene wat redeneer dat B-BBEE hervorm moet word. Voldoening aan B-BBEE wetgewing word vereis van maatskappye wat handel met regeringsinstellings wil dryf, maar is nie verpligtend vir ander organisasies nie. Die bekendstelling van die 2013 Kodes van Goeie Praktyk bevat strenger vereistes vir B-BBEE as wat oorspronklik in 2004 daargestel is.

Besigheidsleiers kan vra of die voordele van B-BBEE die meegaande koste oorskry. Vorige navorsing het onbesliste resultate oor die verhouding tussen die totale B-BBEE tellings van genoteerde maatskappye en finansiële prestasie opgelewer. Meeste van hierdie studies is op klein steekproewe en 'n beperkte aantal finansiële prestasie maatstawwe gegrond. Hierdie gapings is in hierdie studie aangespreek. Nie net is 'n groter steekproef oor 'n langer tydperk as vorige studies ondersoek nie, maar 'n wye reeks finansiële gesondheidsmaatstawwe is gebruik. Die individuele elemente van die B-BBEE telkaart is, addisioneel tot die totale B-BBEE tellings deur Empowerdex verskaf, ondersoek. Finansiële gesondheid, die afhanklike veranderlike, is as 'n versamelnaam vir rekeningkundig-gebaseerde, mark-gebaseerde, waarde-gebaseerde en risiko-gebaseerde maatstawwe gebruik. Die outeur het vir maatskappy-grootte gekontroleer. Die finansiële gesondheid en grootte data is vanaf Bloomberg verkry.

Vier rekeningkundig-gebaseerde maatstawwe, vyf mark-gebaseerde maatstawwe, een waarde-gebaseerde maatstaf en een risiko-gebaseerde maatstaf is in hierdie studie gebruik. Beskrywende statistiese analise is gedoen om die tendense in die data te ondersoek. Gemengde-model analise van variansie (ANOVA) en Fisher se minste beduidende verskille (LSD) toetse is gebruik om die beduidendheid van die tendense oor tyd vas te stel. Paneel regressie modelle is toegepas om die verhoudings tussen B-BBEE tellings (in totaal en per element) en elk van die oorweegde finansiële gesondheidsmaatstawwe te ondersoek. In totaal is 1767 waarnemings van 379 unieke maatskappye oor 'n 12-jaar studieperiode (2004-2015) ondersoek.

'n Statisties beduidende positiewe verwantskap is waargeneem tussen totale B-BBEE telling en koste van ekwiteit. In teenstelling, is 'n beduidende negatiewe verwantskap waargeneem tussen totale B-BBEE telling en die Prys/Verdienste verhouding. Beduidende toenames in B-BBEE

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tellings (in totaal en per element) is oor die navorsingsperiode waargeneem. Die gemiddelde sosio-ekonomiese ontwikkeling B-BBEE element tellings het die grootste toename oor tyd getoon. Die paneel regressie analise het 'n beduidende positiewe verhouding tussen hierdie element en die Prys/Verdienste verhouding getoon. 'n Beduidende negatiewe verband is ook tussen die bestuursbeheer element en koste van ekwiteit gerapporteer.

Gebaseer op die empiriese bevindinge word voorstelle aan verskeie belanghebbendes gemaak. Direkteure moet hul B-BBEE strategieë noukeurig oorweeg deur meer aandag aan bestuursbeheer en sosio-ekonomiese ontwikkeling te gee, gegewe die beduidende verwantskappe tussen hierdie elemente en finansiële gesondheid. Die BEE kommissie moet ook die toepaslikheid en die gewigte van die individuele B-BBEE elemente in die huidige ekonomiese klimaat krities evalueer. Groter fokus kan op onderrig en vaardigheidsontwikkeling geplaas word om die talentpoel in die land te vergroot. Maatskappye en die regering moet die optimale metode, waardeur voorheen benadeelde individue bemagtig kan word, deurdink.

Sleutelwoorde: Breë-Basis Swart Ekonomiese Bemagtiging, rekeningkundige-gebaseerde finansiële prestasie, mark-gebaseerde finansiële prestasie, waarde-gebaseerde finansiële prestasie, risiko van wanbetaling

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LIST OF ACRONYMS AND ABBREVIATIONS

AEE	Afrikaner Economic Empowerment
AltX	Alternative Exchange
ANC	African National Congress
ANOVA	Analysis of Variance
B-BBEE	Broad-Based Black Economic Empowerment
BEE	Black Economic Empowerment
CAGR	Compound Annual Growth Rate
CAPM	Capital Asset Pricing Model
CAR	Cumulative Abnormal Returns
CFA	Chartered Financial Analyst
DTI	Department of Trade and Industry
EBIT	Earnings Before Interest and Taxation
EBITDA	Earnings Before Interest, Taxation, Depreciation and Amortisation
EPS	Earnings per Share
EVA	Economic Value Added
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution
IRR	Institute for Race Relations
JSE	Johannesburg Stock Exchange
LSD	Least Significant Differences
MTBV	Market-to-book value
NOPAT	Net Operating Profit After Tax
OLS	Ordinary Least Squares
P/E	Price/Earnings
QSE	Qualifying Small Enterprise
RDP	Reconstruction and Development Program
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
ROS	Return on Sales
SANAS	South African National Accreditation System
US	United States of America

VIF	Variance Inflation Factors
WACC	Weighted Average Cost of Capital
ZIP	Zimbabwe Indigenisation Programme

CHAPTER ONE
INTRODUCTION TO THE STUDY

1.1   INTRODUCTION

A new era was dawning in 1994 as apartheid in South Africa was demolished and 'freedom for all' seemed possible. Amidst the changing political landscape in the early 1990s, a world icon of peace, Nelson Mandela (1918-2013) pleaded reconciliation among all South Africans after being released from prison. Late president Mandela and the ruling African National Congress (ANC) party envisaged that 'physical' freedom was not sufficient, and that 'true' economic freedom had to be cultivated for all citizens, especially the victims of apartheid (Tangri & Southall, 2008; Ponte, Roberts & Van Sittert, 2007). This sentiment was echoed by Jeffrey (2014) and Acemoglu, Gelb and Robinson (2007) who claimed that Broad-Based Black Economic Empowerment (B-BBEE) was essential to achieve economic freedom for South Africans post-1994. The new South African government introduced legislation to address economic inequality. Since B-BBEE legislation was promulgated in 2003, B-BBEE compliance targets have become stricter (De Wet, 2016; Empowerdex, 2016). The question is increasingly being raised whether there is a financial motivation for publicly listed companies to achieve a higher level of compliance with this legislation (De Wet, 2016; Kleynhans & Kruger, 2014).

A background discussion on B-BBEE in South Africa will be presented next, followed by an overview of pertinent research on the financial motives to enhance B-BBEE compliance. The research design and methodology will then be outlined, followed by the contribution and layout of the study.

1.2   BACKGROUND TO THE STUDY

In this section, attention will firstly be given to the need for B-BBEE in South Africa. Secondly, an overview of the B-BBEE codes will be presented. Thirdly, the motives of complying with the Broad-Based Economic Empowerment Act (No 53 of 2003) (henceforth referred to as the 2003 Act) will be highlighted.

1.2.1 The need for B-BBEE in South Africa

Following the transition from the pre-1994 apartheid government to a democratic government in 1994, the ruling ANC party believed that political equality would not be sufficient to rectify the social and economic inequalities permeating the South African society (Acemoglu *et al.*, 2007). In line with the ANC's belief that policy was vital to affect economic transformation, the 2003 Act was promulgated, and revised by the B-BBEE Act (No 46 of 2013). This 2003 Act compelled all companies with a turnover of more than R10 million per year to comply with a set of requirements to promote equality and increase broad-based and effective participation of black people in the local economy. Black people is referred to as Africans, Indians and Coloureds in the 2003 Act (Department of Trade and Industry (DTI), 2003). A subsequent court ruling also included Chinese individuals in the definition of black people for the purpose of B-BBEE (Mail & Guardian, 2008). In sub-section 9(1)(a) of the 2003 Act, it is stated that the DTI would issue Codes of Good Practice to "promote the purposes of the Act" (DTI, 2003:2). A brief overview of these Codes will be presented in the following section.

1.2.2 The Codes of Good Practice

The first draft of the Codes of Good Practice (hereafter referred to as the Codes) was circulated in 2004 (DTI, 2004). The objectives of the 2004 Codes were to further interpret and define B-BBEE and the different categories of black employment entities (DTI, 2003). The 2004 draft Codes focussed on seven elements of economic empowerment, namely ownership, management, employment equity, skills development, preferential procurement, enterprise development and other elements (collated as the residual element) (DTI, 2004). These elements provide a common base for measuring compliance with the 2003 Act (*ibid*).

Companies were measured against the seven elements to provide an entity with an overall compliance score based on the 2004 Codes (*ibid*). In contrast, the 2007 Codes (DTI, 2007) and 2013 Codes (DTI, 2013) categorised a company's overall compliance score into eight levels. The 2004 Codes, however, classified companies' B-BBEE compliance as excellent, good, satisfactory and limited based on their B-BBEE score (>80, 65-79.9, 40-64.9 and <40 respectively, out of 100 available points) (DTI, 2004).

The 2004 Codes were adjusted twice in the year that followed to promote companies' level of participation in B-BBEE activities (Patel & Graham, 2012). The latest Codes were issued in 2013 (DTI, 2013) and came into effect on 1 May 2015 (Empowerdex, 2016). The 2013 amendments changed the weightings and requirements of the compliance levels (DTI, 2013;

2007; 2004). According to Empowerdex (2016), one of South Africa's leading empowerment rating agencies, the 2013 Codes are likely to have a negative impact on the B-BBEE ratings of businesses, as the requirements have become stricter (Empowerdex, 2016). The compilation of a company's B-BBEE score based on the respective codes is illustrated in Table 1.1. The difference in elements and weighting are shown for the respective elements.

Table 1.1: **Elements and weightings under the respective B-BBEE Codes (2004, 2007 and 2013)**

Element	Weighting (points)		
	2004	2007	2013
Ownership	20	20	25
Management control	10	10	15
Employment equity	10	15	n/a
Skills development	20	15	20
Preferential procurement	20	20	n/a
Enterprise development	10	15	n/a
Residual element	10	n/a	n/a
Enterprise and supplier development	n/a	n/a	40
Socio-economic development	n/a	5	5
Total	**100**	**100[a]**	**105[a]**
a) Bonus points are available, as shown in Table 2.4			

Sources: DTI (2013; 2007; 2004)

Perusal of Table 1.1 reveals that there has been limited change in the weightings of the elements in the 2004 and 2007 Codes. There were only slight changes in employment equity and skills development weightings, with the former being regarded as more important in the 2007 Codes. The 2004 Codes also made provision for a residual element, which entailed a company's corporate social investment activities. In the 2007 Codes, this residual element was renamed socio-economic development initiatives.

A number of changes occurred in the 2013 Codes. The entire weighting for employment equity was distributed to ownership, management control and skills development in equal proportions. Emphasis is now (under the 2013 Codes) placed not only on a representative workforce, but also on empowering black owners and managers. Preferential procurement and enterprise development were consolidated into enterprise and supplier development in the 2013 Codes. The aim is to assist and accelerate the development of small to medium enterprises owned by black people (DTI, 2013).

According to De Wet (2016), local companies needed to implement black equity ownership transactions to comply with the 2013 Codes. Equity ownership transactions refer to transfer of shares from white to black individuals. The alternative is that a company could receive a 'non-compliant contributor' certificate. De Wet (2016) expressed the view that companies will have

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to critically decide whether these stricter B-BBEE requirements are worthwhile to comply with. A comparison between the scores required to qualify for various compliance levels under the 2007 and 2013 Codes is provided in Table 1.2.

Table 1.2:   B-BBEE compliance levels (2007 versus 2013)

B-BBEE Status	2007 Codes	2013 Codes
Level one contributor	>= 100 points	>= 100 points
Level two contributor	>= 85, but <100 points	>= 95, but <100 points
Level three contributor	>= 75, but <85 points	>= 90, but <95 points
Level four contributor	>= 65, but <75 points	>= 80, but <90 points
Level five contributor	>= 55, but <65 points	>= 75, but <80 points
Level six contributor	>= 45, but <55 points	>= 70, but <75 points
Level seven contributor	>= 40, but <45 points	>= 55, but <70 points
Level eight contributor	>= 30, but <40 points	>= 40, but <55 points
Non-compliant contributor	<30 points	<40 points

Sources: DTI (2013; 2007)

It is evident that companies that gave insufficient attention to their B-BBEE endeavours would have experienced a decrease in their compliance levels with the implementation of the 2013 Codes. This observation is supported by De Wet (2016) and the rating agency Empowerdex (2016) who expressed the view that companies were likely to drop two compliance levels if they have not increased their compliance efforts since the release of the 2013 Codes. In the following section, the benefits of complying with the 2003 Act will be discussed. It is important to note that compliance is encouraged for all companies, but is currently only compulsory for government institutions (DTI, 2013). There are still no penalties payable for non-compliance, but, certain sectors may require B-BBEE compliance to renew trade licenses (such as mining or banking licenses).

1.2.3   Reasons for and benefits of complying with the B-BBEE Act

Research (Sartorius & Botha, 2008; BusinessMap, 2005) suggests that compliance with empowerment legislation is primarily driven by the view that B-BBEE is a necessary and important step in rebuilding the South African economy. Sartorius and Botha (2008) furthermore remarked that companies regard B-BBEE as a way of growing their business and market share. Krüger (2011), however, stated that the perceived influence of B-BBEE on company performance is mainly negative.

At the time when the most recent (2013) Codes came into effect (in May 2015) (Empowerdex, 2016), Statistics South Africa (2015) announced that the real gross domestic product (GDP) decreased by 1.3 per cent quarter-on-quarter (seasonally adjusted and annualised). As a result of the struggling economy, B-BBEE arguably had to make economic and business sense for

companies to embrace it. According to De Wet (2016:2), "the decision to proceed with B-BBEE (post-2013) should primarily be a commercial one. There should be reasonable certainty that improved empowerment will lead to revenue growth".

The question hence arises whether or not it makes commercial sense for companies to engage in B-BBEE activities. Several authors have investigated this question. They specifically investigated the nature of the association between a company's B-BBEE score and financial performance. An overview of the most prominent studies in this regard is presented next.

1.3 PRIOR STUDIES ON THE FINANCIAL MOTIVES FOR ENGAGING IN B-BBEE ACTIVITIES

A number of researchers have been quite critical of the 2003 Act, as they felt that it only benefits a few elite citizens in the country (Patel & Graham, 2012; Tangri & Southall, 2008; Hoffman, 2008). Some researchers cautioned that B-BBEE creates very little wealth for the disadvantaged majority in the country (Krüger, 2011; Andrews, 2008). Extensive literature reviews have been published on the topic. Tangri and Southall (2008) investigated the beneficiaries of B-BBEE share transfer transactions, and concurred that there are a few elite individuals who gain more benefit than other black people. Andrews (2008) and Patel and Graham (2012) paid attention to the real beneficiaries of B-BBEE transactions and found that, even though a few elite individuals gain from B-BBEE, there are more black people than just those that have benefitted from B-BBEE. Other researchers performed event studies to compute cumulative abnormal returns (CAR) of companies before and after B-BBEE equity deal announcements. The results of these event studies are displayed in Table 1.3.

Table 1.3:   Summary of event studies

Author	Research period	Sample size	Impact on CAR
Jackson, Allesandri & Black (2005)	1996-1998	20	Insignificant impact
Wolmarans & Sartorius (2009)	2002-2006	125	Insignificant impact
Strydom, Christison & Matias (2009)	1996-2006	254	Insignificant impact
Ward & Muller (2010)	2000-2008	175	Insignificant impact
Chipeta & Vokwana (2011)	1999-2009	57	Insignificant impact
Mehta & Ward (2017)	2009-2015	410	Significant positive short-term impact and significant negative long-term impact

Source: Researcher's compilation based on the cited references

As shown in Table 1.3, previous researchers who conducted event studies reported inconclusive and contradicting results. Despite the fact that the majority of researchers found insignificant impacts, the results were also contradicting, as certain researchers found an insignificant positive impact on CAR, and others an insignificant negative impact on the same variable. More details on these event studies will be discussed in Section 3.3. The South African market appears 'indecisive' towards the impact of B-BBEE deals and announcements. It is debatable whether a change in share price could be attributed to a single factor (such as a B-BBEE deal announcement) as there are many factors influencing a share's price.

In contrast to qualitative and event study methodologies, a number of local researchers have considered the relationship between total B-BBEE scores and several financial performance measures. Only two researchers, Morris (2018) and Van der Merwe and Ferreira (2014), included all the individual elements of the B-BBEE score. Researchers mainly used accounting-based and/or market-based financial performance measures. Verbeke and Merchant (2012) explained that accounting-based measures reflect a company's past performance and market-based financial performance measures indicate the market's expectation of future value creation. No researcher has yet employed a combination of accounting-based, market-based and risk-based measures in their B-BBEE studies. This study thus contributes to the body of knowledge by utilising different based financial performance measures. As such, in this study the term financial health is used as a collective noun for accounting-based, market-based, value-based and risk-based measures.

A summary of previous local and international studies on the relationship between B-BBEE (local context) or ethnic diversity (international context) and financial performance are presented in Table 1.4.

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Table 1.4:   Summary of previous studies

Author	Research period	Sample size	Independent variable(s)	Dependent variable(s)	Results
South African studies on the relationship between B-BBEE scores and financial performance measures					
Acemoglu *et al.* (2007)	2004-2007	159	Total B-BBEE and ownership scores	Return on sales (ROS); investment; productivity (sales value per employee)	No significant relationships
Mathura (2009)	2004-2009	209	Total B-BBEE and ownership scores	Compound annual growth rate (CAGR); Tobin's Q; price/earnings ratio (P/E ratio)	No significant relationships
De Villiers & Ferreira (2011)	2005-2008	200	Total B-BBEE score	Short-term share returns	Significant negative relationship
Van der Merwe & Ferreira (2014)	2005-2011	905	Total B-BBEE and element scores	Short-term share returns	Significant negative relationship with total B-BBEE score, ownership and preferential procurement. Positive relationship with management control
Kleynhans & Kruger (2014)	2009-2011	26	Total B-BBEE scores	Operating profit; turnover	No significant relationships
Morris (2018)	2010-2015	47	Total B-BBEE and element scores	Unlevered beta	No significant relationships
Global studies on the relationship between diversity measures and financial performance measures					
Richard (2000)	1995-1996	574	% minorities in workforce	Productivity; return on equity (ROE)	No significant relationships
Erhardt, Werbel & Shrader (2003)	1997-1998	112	% females and % minorities on board	Return on assets (ROA); return on investment (ROI)	Significant positive relationship between ethnic diversity and ROI
Richard, Barnett, Dwyer & Chadwick (2004)	1998	153	% females and % minorities in management	ROE	No significant relationships
Marimuthu (2008)	2000-2005	100	% minorities on board	ROA	Significant positive relationship
Marimuthu & Kolandaisamy (2009)	2000-2006	100	% minorities and % females in management	ROA, ROE	No significant relationships
Carter, D'Souza, Simkins & Simpson (2010)	1998-2002	641	% minorities and % females on board and board committees	ROA, Tobin's Q	Significant positive relationship between ethnic diversity and ROA
Shukeri, Shin & Shaari (2012)	2011	300	% minorities and % females on board	ROE	Significant positive relationship with ethnic diversity

Source: Researcher's own construction based on the cited references

Care should be taken when interpreting some of the results indicated in Table 1.4 given the small sample sizes. Kleynhans and Kruger (2014) rightfully suggested that a longer term study should be conducted to draw valid conclusions on the relationship between profitability and B-BBEE. As indicated in Table 1.4, international studies typically measured ethnic diversity in terms of the percentage of minority directors serving on boards. These studies normally yielded positive results between board diversity and financial performance measures. Marimuthu (2008) explained that, if representatives of all spheres of society is present on the board, the board could channel their offering to suit the entire population. In the local context, Mans-Kemp and Viviers (2014) found a negative relationship between percentage black people on board and total share returns. The positive association observed in the international context may thus not be applicable to local companies.

1.4   PROBLEM STATEMENT

B-BBEE legislation was formally introduced in 2003 as a way of empowering black individuals. The DTI requires local companies to assist the government to empower previously disadvantaged individuals and to redress the imbalances created by the apartheid regime. Companies are incentivised to comply with B-BBEE requirements as stipulated in the Codes of Good Practice. The draft 2004 Codes were formalised in the 2007 Codes. The latest Codes were released in 2013 and is effective since 2015.

Directors will arguably be encouraged to implement B-BBEE strategies if increased compliance is associated with improved financial results. Contradictory results were, however, reported on the relationship between B-BBEE scores and financial performance. Prior authors utilised small samples, limited performance measures and mainly focused on the total B-BBEE score.

There are thus a number of gaps in the literature. Inconclusive evidence has been reported on the relationship between B-BBEE and different financial performance measures. The exception being board diversity (the management control element) in the international context which appears to have a positive relationship with financial performance. Only one study established a significant relationship between management control and financial performance for a small sample of listed South African companies, over a short period (2005-2011) and only short-term share returns were used.

In this study, a comprehensive analysis was conducted by including B-BBEE scores in total and for the respective elements. Financial health was investigated by incorporating a range of

accounting-based, market-based and value-based measures as well as default risk probability. A longer study period and larger sample were considered than those considered by previous authors. All companies that had Empowerdex compliance scores for the 12-year period under review were included in the sample.

The aim of this study was hence to investigate the relationship between B-BBEE scores (in total and per element) and the financial health of a sample of JSE-listed companies over the period 2004 to 2015.

1.5   RESEARCH QUESTIONS

In this study, the question of whether it is financially beneficial for a JSE-listed company to engage in B-BBEE activities (as reflected by the B-BBEE scorecard) to increase their total B-BBEE score is addressed. The researcher also set out to answer the following research questions:

- What has been the trend in B-BBEE compliance amongst the most empowered JSE-listed companies since the 2003 Act came into effect?
- Which element(s) did companies focus on to increase total B-BBEE score?
- Which other elements showed increased B-BBEE element scores over the research period?
- What is the nature of the relationship between the considered companies' B-BBEE scores (in total and per element) and financial health measures?

1.6   RESEARCH OBJECTIVES AND HYPOTHESES

The primary objective was to investigate the nature and significance of the relationship between B-BBEE scores (in total and per element) and a number of financial health measures. The secondary objective was to investigate trends in the respective variables over time.

The following hypotheses were formulated based on the stated research objectives:

H_{01}:   There was no relationship between total B-BBEE score and the financial health of selected JSE-listed companies over the research period.

H_{a1}:   There was a relationship between total B-BBEE score and the financial health of selected JSE-listed companies over the research period.

H_{02}:   There was no relationship between ownership score and the financial health of selected JSE-listed companies over the research period.

H_{a2}:   There was a relationship between ownership score and the financial health of selected JSE-listed companies over the research period.

H_{03}:   There was no relationship between management control score and the financial health of selected JSE-listed companies over the research period.

H_{a3}:   There was a relationship between management control score and the financial health of selected JSE-listed companies over the research period.

H_{04}:   There was no relationship between employment equity score and the financial health of selected JSE-listed companies over the research period.

H_{a4}:   There was a relationship between employment equity score and the financial health of selected JSE-listed companies over the research period.

H_{05}:   There was no relationship between preferential procurement score and the financial health of selected JSE-listed companies over the research period.

H_{a5}:   There was a relationship between preferential procurement score and the financial health of selected JSE-listed companies over the research period.

H_{06}:   There was no relationship between enterprise development score and the financial health of selected JSE-listed companies over the research period.

H_{a6}:   There was a relationship between enterprise development score and the financial health of selected JSE-listed companies over the research period.

H_{07}:   There was no relationship between skills development score and the financial health of selected JSE-listed companies over the research period.

H_{a7}:   There was a relationship between skills development score and the financial health of selected JSE-listed companies over the research period.

H_{08}:   There was no relationship between socio-economic development score and the financial health of selected JSE-listed companies over the research period.

H_{a8}:   There was a relationship between socio-economic development score and the financial health of selected JSE-listed companies over the research period.

H_{09}:   There was no change in the B-BBEE scores (in total and per element) of selected JSE-listed companies over the research period.

H_{a9}:   There was a change in the B-BBEE scores (in total and per element) of selected JSE-listed companies over the research period.

1.7   RESEARCH DESIGN AND METHODOLOGY

Zikmund, Babin, Carr and Griffin (2010) defined business research as finding solutions to business problems by applying a scientific method. The paradigm in which the research will be performed should be established to select a suitable research approach.

1.7.1   Research paradigm

According to Babbie (2012), there are various research paradigms that researchers can consider. Positivistic and phenomenological paradigms are commonly used in social sciences. A positivistic paradigm entails that a researcher focuses on quantitative data, whereas phenomenological research centres on qualitative data (*ibid*).

The study centred on gaining a deeper understanding of the relationship between JSE-listed companies' B-BBEE scores and their financial health, using a range of financial health indicators. As the data collected for the study were quantitative in nature, a positivistic approach was used.

1.7.2   Research design

Mouton (2001) stated that a research design is the plan of how the researcher intends to conduct the research. Zikmund *et al.* (2010) explained that there are three main types of business research, namely exploratory, descriptive and causal. Should the researcher be the first to conduct research on a topic, the study would entail exploratory research. If a field has already been researched and the researcher aims to contribute further to the body of knowledge by describing new developments pertaining to a phenomenon, descriptive research would be applied. Alternatively, cause-and-effect relationships between variables can be examined by performing causal research (Zikmund *et al.*, 2010). The relationship between B-BBEE scores and certain financial performance measures were investigated by previous researchers. The gaps in the literature that has been addressed by this study were set out in Section 1.4. This study was hence descriptive in nature.

1.7.3   Collection of secondary data

There are two main sources of data when conducting business research, namely primary and secondary (Babbie, 2012; Zikmund *et al.*, 2010; Mouton, 2001). Primary data are generated by a researcher for the purpose of a specific study, typically by conducting interviews or distributing self-administered questionnaires. Secondary data are readily available (Mouton, 2001), such as Empowerdex's list of most compliant companies.

Two sets of secondary data were collected and analysed, namely financial health measures and B-BBEE scores. Financial health data were downloaded from the Bloomberg database, whereas B-BBEE scores were sourced from Empowerdex's lists of most empowered companies from 2004 to 2015, measured on the 2007 Codes. Details on the financial health measures that were used in this study are provided in Table 1.5, which expands on the measures employed by prior researchers.

Table 1.5: **Financial health measures used in this study**

Type of measure	Measure	Previous researchers that used this measure
Accounting-based	ROS (Net operating profit after tax (NOPAT) divided by sales); %	Acemoglu *et al.* (2007); Kleynhans & Kruger (2014)
Accounting-based	ROE (Net profit divided by average equity); %	Richard (2000); Richard *et al.* (2004); Marimuthu & Kolandaisamy (2009); Shukeri *et al.* (2012)
Accounting-based	ROA (NOPAT divided by average total assets); %	Erhardt *et al.* (2003); Marimuthu (2008); Marimuthu & Kolandaisamy (2009); Carter *et al.* (2010)
Accounting-based	Annual percentage change in turnover; %	Kleynhans & Kruger (2014)
Market-based	Market-to-book value (MTBV) (Share price divided by book value per share); ratio	Mathura (2009)
Market-based	P/E ratio (Share price divided by earnings per share); ratio	Mathura (2009)
Market-based	Annual share price growth (Share price at financial year-end divided by share price at previous financial year-end); %	Mathura (2009)
Market-based	Cost of equity (required return based on capital asset pricing model (CAPM)); %	n/a
Market-based	Excess return (annual share price growth minus cost of equity); %	n/a
Value-based	Economic value added (EVA) (NOPAT minus product of weighted average cost of capital (WACC) and total assets); Rand	n/a
Risk-based	Default risk probability (as calculated by Bloomberg); probability (0-1)	n/a

Quantitative data can be nominal, ordinal, interval or ratio in nature (Babbie, 2012). With the exception of default risk probability, all the considered financial health measures indicated in Table 1.5 were interval data. Default risk probability and the B-BBEE scores are ratio data as they have absolute zeros. Control variables were included to improve robustness of results, namely market capitalisation, total assets and total revenue to account for the effect of company size on financial health.

1.7.4 Population and sample

Since the study focussed on the financial health of companies listed on the JSE, the total number of companies listed on the JSE comprised the population (see Table 1.6). The sample included all companies that formed part of Empowerdex's list of most empowered (or compliant) companies (i.e. the listed companies for which Empowerdex provided B-BBEE scores) from

2004 to 2015 for which financial data were available. It should be noted that the B-BBEE endeavours of a company in year t, are audited at the end of year t and the company's B-BBEE score is then released in year $t + 1$. The possible benefits of increased B-BBEE compliance manifest when the company receives its B-BBEE score (or certificate). As such, the financial results of year t were used in conjunction with the B-BBEE score released in year $t + 1$ for each sample company.

The study period ended in 2015, since the 2013 Codes were implemented in 2015. The B-BBEE scores of 2016 and onwards are based on the 2013 Codes, which is incomparable to the 2004 and 2007 Codes. The Empowerdex lists are populated based on voluntary participation by companies. Empowerdex ranks these companies based on their total B-BBEE scores and releases the B-BBEE scores of the most empowered companies. These lists are publicly obtainable via the Mail & Guardian's website.

Table 1.6:   Details of the population and sample

Year	Population[a]	Empowerdex sample
2004	389	198
2005	373	184
2006	389	200
2007	411	199
2008	411	188
2009	398	200
2010	397	100[b]
2011	395	110[c]
2012	387	99
2013	375	82
2014	380	99
2015	382	108

(a) Data sourced from the World Federation of Exchanges (2016)
(b) Empowerdex changed the list from the Top 200 most empowered to the Top 100 most empowered companies
(c) In subsequent years, the number of companies did not always equal 100, due to the number of companies participating and the exclusion of private companies from this study. In some years, Empowerdex used their discretion to release the scores of all the participating companies, if the number of companies approximated 100.

A considerable number of the total JSE-listed companies were hence included in this comprehensive study. A total of 1 767 company years were included for 379 companies.

1.7.5   Data analysis

Descriptive statistics were used to summarise the collected data. Mixed-model analysis of variance (ANOVA) analyses were conducted to determine the significance of the change in B-BBEE scores over the research period, whilst Fisher least significant difference (LSD) analyses were used to determine the significance of the changes over time. Fixed, random and pooled

ordinary least square (OLS) panel regression analyses were conducted to determine the nature of the relationship between the dependent, independent and control variables. In line with previous research, the financial health measures were the dependent variables and the B-BBEE score (in total and per element) were the independent variables.

1.8   CONTRIBUTION OF THE STUDY

Prior studies conducted on B-BBEE typically employed a short time frame and used small samples, as was shown in Table 1.4. In line with Mathura's (2009) suggestion that a longer time frame should be used, this study was conducted over 12 years (1 January 2004 to 31 December 2015). This time period was specifically chosen as the 2013 Codes were implemented in 2015. The B-BBEE scores released after 2015 were thus based on the 2013 Codes, which were considered to be materially different from the 2007 Codes. While several authors only focused on market-based or accounting-based financial performance measures, a broad range of financial health measures were used for the purpose of this study (refer to Table 1.5). With the exception of Morris (2018) and Van der Merwe and Ferreira (2014) who included the elements, previous authors mainly considered the total B-BBEE scores. In this study, the elements of the B-BBEE scorecard were included in addition to the total scores.

This study is especially relevant at a time when B-BBEE compliance is becoming stricter (Empowerdex, 2016; De Wet, 2016). Directors need to reflect on if and how the moral imperative for engaging in B-BBEE activities can be integrated in their strategies to create value.

1.9   STRUCTURE OF THE THESIS

This thesis consists of seven chapters. A brief outline of each chapter is presented.

Chapter One: **Introduction to the study**

Chapter One encompasses an overview of the study, including a background discussion and summary of prior research on the topic. The problem statement, research objectives, research questions and hypotheses are then presented. The research design and methodology are followed by the contribution of the study.

Chapter Two: **Broad-Based Black Economic Empowerment: History, application and lessons learnt**

In Chapter Two, details on the origin of B-BBEE are provided, including an explanation of what it entails, its requirements and the verification of compliance scores. Empowerment initiatives in other countries are explored to highlight lessons that can be learned in the local context.

Chapter Three: **Overview and application of financial health measures in the South African context**

In this chapter, several financial health measures are discussed. Details are provided on the calculation of selected accounting-based, market-based, value-based and risk-based measures (collectively called financial health in this study). The rationale for including these measures is explained.

Chapter Four: **Research design and methodology**

In Chapter Four, the adopted research paradigm and design are discussed. Details on the population and sample are followed by explanations on the methods used to collect and analyse panel data. Reliability, validity and ethical considerations are also discussed in this chapter.

Chapter Five: **Descriptive results**

The trends of the B-BBEE scores (in total and per element), financial health measures and control variables are presented and discussed.

Chapter Six: **Inferential findings**

The result of the mixed-model ANOVA and Fisher LSD tests are presented to reflect on the significance of the observed trends. Thereafter, the panel regression results are presented and discussed.

Chapter Seven: **Summary, conclusions and recommendations**

The final chapter comprises a summary of the study. Based on the conclusions, recommendations to directors, the media, shareholders, educators and accountants are provided. A reconciliation of the research objectives is presented. Suggestions for future research, based on the limitations of this study are included, followed by some concluding remarks.

CHAPTER TWO

BROAD-BASED BLACK ECONOMIC EMPOWERMENT: HISTORY, APPLICATION AND LESSONS LEARNT

2.1   INTRODUCTION

Chapter One gave a brief overview of the study, including a summarised background to B-BBEE. A more comprehensive discussion on B-BBEE is provided in Chapter Two to offer context to the study. The emergence of and rationale for B-BBEE in South Africa will be explained. A more encompassing definition of B-BBEE will be provided. The Codes of Good Practice and the requirements for auditing the compliance with the Codes will then be discussed. An overview of the main sector charters is also presented. In the final section of this chapter, an overview of empowerment initiatives in other countries will be included, to determine lessons applicable to B-BBEE as applied in the local context.

2.2   THEORETICAL FRAMEWORK AND BACKGROUND

As B-BBEE is aimed at rectifying the injustices of the past, Pike, Puchert and Chinyamurindi (2018) argued that B-BBEE should be studied through the lens of social justice theory. This theory is based on the principles of equality and fairness (Rawls, 1999). Governments should aim to provide economic systems that promote these principles.

Compliance with B-BBEE can furthermore be motivated by organisational legitimacy theory. As explained by Dowling and Pfeffer (1975), organisational legitimacy is the combination of the values and objectives of a company, and the values and objectives of the broader environment of which they form part. In the context of B-BBEE, attention should be given to economic upliftment and corrective action to amend past injustices. Masito (2007) indicated that during apartheid there were large corporate companies that have benefited from the injustices of the apartheid regime. If such companies engage in B-BBEE, they could possibly rectify the undue benefits they received and hence gain organisational legitimacy. Preston and O'Bannon (1997) argued that companies that have organisational legitimacy through the involvement in social upliftment (such as B-BBEE) will experience increased financial

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performance. This increased financial performance is due to the social impact hypothesis which states that companies ultimately benefit financially from social impact activities.

Preston and O'Bannon (1997) also highlighted that if there are additional costs involved in obtaining the social impact (as is the case in B-BBEE), the companies can forfeit some of its financial performance. This theory is called the trade-off hypothesis. The trade-off hypothesis states that if capital and other resources are required for the social impact activities, it may reduce the funds available for profitable investments, hindering the company's financial performance (*ibid*). The available funds hypothesis or managerial opportunism hypothesis could be explored if the author believed that increased B-BBEE compliance is the dependent variable, and financial health the independent variable (i.e. if the author believed that an increase in total B-BBEE score follows an increase in financial health). In this study the objective was not to ascertain whether companies invested in B-BBEE when their resources allowed it, but rather to investigate the relationship an increased B-BBEE score (in total and per element) had with the sampled companies' financial health.

Jackson *et al*. (2005) and Wolmarans and Sartorius (2009) argued that B-BBEE could be seen as part of a company's corporate social responsibility. These researchers investigated the business case of B-BBEE compliance through the lens of corporate social responsibility. Neither of these researchers found a clear business case for B-BBEE.

In South Africa, economic exploitation is well known and well documented (Masito, 2007). It could be argued that economic exploitation contributed to the uprising against apartheid, the birth of the democracy and ultimately to B-BBEE to rectify the economic exploitation. In the following section, the researcher will highlight economic inequality and economic exploitation in South Africa.

2.2.1   Economic exploitation in South Africa

Habib and Padayachee (2000) argued that the economic objective of the apartheid government was promoting wealth of white individuals, whilst excluding black people from economic opportunities. Masito (2007:51) showed that 80 per cent of black business owners felt that their "foundation" was weak at the end of apartheid, and that they could not compete fairly with white individuals. The economic exploitation of black people should, however, not only be attributed to apartheid, as the latter only came into existence in 1948 (Masito, 2007). Before that, under the British colonialisation, a similar gap between the income of white and black members of society existed.

Jackson *et al.* (2005) stated that, although the majority of the South African population were black people, only three per cent of managerial positions were occupied by black individuals in 1990. Furthermore, only one per cent of the shares of locally JSE-listed companies were owned by black people in 1995 (*ibid*). A black person's income was 13 per cent of the average white person's income in 1994 (Engdahl & Hauki, 2001). Details on the per capita income of African, Coloured and Indian people (as a percentage of white income) are shown in Table 2.1.

Table 2.1:   **Per capita income of African, Coloured and Indian people (as percentage of white income) from 1917 to 1993**

Year	African (as % of white income)	Coloured (as % of white income)	Indian (as % of white income)
1917	9.1	22.0	22.1
1936	7.6	15.6	23.1
1956	8.6	16.9	21.9
1970	6.8	17.3	20.2
1980	8.5	19.1	25.5
1993	10.9	19.3	42.0

Source: Institute of Race Relations (IRR, 2009)

Based on the statistics shown in Table 2.1, it can be deduced that there was a large disparity between white and black income from 1917 to 1993. Between 1994 and 2000, the situation slightly improved (IRR, 2009). Black income was 15.9 per cent relative to white income in 2000, which still represented a large discrepancy. Since the implementation of B-BBEE in 2004, the situation has not changed considerably. Black income stabilised at around 13 per cent of white income post-2004 (IRR, 2017). When reflecting on the change in the income of Indian people shown in Table 2.1, which is also regarded as black individuals according to the 2003 Act, an interesting observation is made. Indian income as a percentage of white income rose from 22.1 per cent in 1917 to 42 per cent in 1993, and ultimately to 52 per cent in 2015 (IRR, 2017).

A Gini-coefficient measures the equality of distribution of income in a country. In an equal world, with perfect income distribution, the Gini-coefficient would be 0. A Gini-coefficient of one would imply that one person has the entire population's income, and zero that all people have an equal amount of income (Miller, 2015). Under these conditions, income per race would also be equally distributed, and black income would thus be 100 per cent of white income. The South African income distribution has, however, never been equal, neither during nor after apartheid. South Africa has one of the highest Gini coefficients in the world (The World Bank, 2019). The country's Gini coefficient increased from 0.61 in 1996 to 0.63 in 2015 (*ibid*). The

disparity between these figures could also be interpreted as that there are still many people living in poverty.

After President Mandela was released from prison in 1993, he remarked that economic power vested in a few white individuals. He expressed the view that the concentration of economic power had to change, and that this power should be deracialised, and power should be vested in all people (Acemoglu *et al.*, 2007). The process of transforming the economy in South Africa will be discussed in the following section.

2.2.2   Transforming the economy in South Africa

Economic transformation started before the end of apartheid (Ponte *et al.*, 2007). In the 1980s, some businesses rearranged their ownership structures to create a black middle class with interest in the local economy (*ibid*). The restructuring was driven by the political instability between black and white citizens. Businesses hoped that by creating a black middle class, it would bring economic and political stability (Engdahl & Hauki, 2001). President Thabo Mbeki also referred to economic transformation in his speech on 29 May 1998 (the so-called 'Two Nations' speech). In this speech, he highlighted that reconciliation and national unity were unachievable dreams if economic transformation did not occur (Ponte *et al.*, 2007).

The ANC promoted the empowerment of black people since the mid-1950s (Ponte *et al.*, 2007). This economic policy manifested in the ANC's so-called Reconstruction and Development Program (RDP) and became part of their election manifesto in 1994 (Habib & Padayachee, 2000). The RDP was a socio-economic policy framework which had five interrelated sections. The sections dealt with meeting social needs, developing nationwide human resources, building the economy, democratising the society and state, and implementing the RDP (Habib & Padayachee, 2000).

The goals of the RDP were reconstruction and development, as is evident from the program's name. The RDP was, however, criticised by South African academics as it did not boost business confidence or encourage foreign investments (Ponte *et al*., 2007; Habib & Padayachee, 2000). In practice, the RDP was focused on the transfer of shares from white people to black people. Tshetu (2014) stated that the first transfer of ownership, in terms of black economic empowerment, occurred in 1993. According to Acemoglu *et al.* (2007), 231 share transfer deals to black people were effected by 1998. These share transfers took place at a significant discount of between 15 and 40 per cent in the period after apartheid ended in 1994, and before B-BBEE was legislated in 2003.

The ANC altered and formalised the RDP into an economic framework called GEAR – an acronym for Growth, Employment and Redistribution (Ponte *et al.*, 2007). GEAR was formally implemented in 1996, along with the first draft of affirmative action legislation aimed at redressing the demographical representation of employees (Acemoglu *et al.*, 2007). In effect, GEAR led to so-called 'empowerment' deals where large white-owned conglomerates sold shares to black people, even though the majority of the beneficiaries were politically connected individuals (Ntim & Soobaroyen, 2013; Tangri & Southall, 2008).

The end of the millennium signalled the end of the first phase of economic transformation in the country. However, with growing calls for transformation to be more inclusive and to cover more aspects of socio-economic development than just the transfer of ownership, the second phase of economic transformation, called Black Economic Empowerment (BEE) was launched (Ponte *et al.*, 2007). This phase led to the formation of the BEE Commission in September 1998 under leadership of (now president) Cyril Ramaphosa (Acemoglu *et al.*, 2007; Jackson *et al*., 2005).

With the release of the BEE Commission's report in 2001, the government acknowledged the need to broaden the nature of BEE. The broadening of the nature of BEE had to incorporate the requirements of affirmative action, focus on human resource development, enterprise development, preferential procurement, corporate social investment activities, and ownership (Acemoglu *et al.*, 2007; Ponte *et al.*, 2007). It was at this stage that BEE was expanded to Broad-Based Black Economic Empowerment (or B-BBEE) (Acemoglu *et al.*, 2007). These broadened aspects have a direct impact on businesses, as B-BBEE requirements apply to all commercial and government institutions (DTI, 2003). The question could be asked as to whether it is fair to burden commercial entities with economic transformation. The author is of the opinion that there are other avenues, such as education, that could be more effective in correcting the imbalances of the past, which do not require corporate involvement.

The BEE Commission's (2001) report stated that black people were still excluded from economic and financial resources. It was hence suggested that BEE should incorporate comprehensive strategies aimed at improving access to these resources without hindering the productivity thereof (*ibid*). The BEE commission thus set out to ensure that jobs were created, rural development took place, and citizens were appropriately trained and upskilled.

The Broad-Based Black Economic Empowerment Act (No. 53 of 2003) was implemented in 2004 as proposed by the BEE Commission (DTI, 2003). In the following section, an in-depth definition of B-BBEE will be provided.

2.3   DEFINING   BROAD-BASED   BLACK   ECONOMIC EMPOWERMENT

Porter (1991) stated that one of a government's purposes should be to enable and encourage companies to become more profitable and competitive. In the South African context, government should focus on black-owned businesses to redress the inequalities of the past. The BEE Commission (2001) stated that B-BBEE aims to create and promote 'new' opportunities for black people, and their participation in ownership, management and control of economic activities. The BEE Commission (2001:1) advocated that B-BBEE should be a "people-centred strategy" which affects all black people in every sphere of life.

The BEE Commission (2001:12) therefore adopted the following definition of B-BBEE:

"It is an integrated and coherent socio-economic process. It is located within the context of the country's national transformation programme, namely the RDP. It is aimed at redressing the imbalances of the past by seeking to substantially and equitably transfer and confer the ownership, management and control of South Africa's financial and economic resources to the majority of its citizens. It seeks to ensure broader and meaningful participation in the economy by black people to achieve sustainable development and prosperity."

The 2003 Act (DTI, 2003:4) uses the following definition:

"B-BBEE means the empowerment of all black people including women, workers, youth, people with disabilities, and people living in rural areas through diverse but integrated socio-economic strategies that include, but are not limited to increasing the number of black people that manage, own and control enterprises and productive assets; facilitating ownership and management of enterprises and productive assets by communities, workers, cooperatives and other collective enterprises; human resource and skills development; achieving equitable representation in all occupational categories and levels in the workforce; preferential procurement and investment in enterprises that are owned or managed by black people."

Some academics developed their own definitions of B-BBEE. Kleynhans and Kruger (2014:2) stated that it is very difficult to put B-BBEE "in a box", and define it, as it could either be defined too widely, or too narrowly, but concluded that the definition provided by the BEE Commission (2001) is probably the most accurate. Strydom *et al*. (2009) argued that B-BBEE is a broad concept which aims at improving economic activities for all black South Africans. Patel and Graham (2012) stated that B-BBEE intends to provide a solution for the social and developmental disadvantages brought about by the apartheid regime. Chimhandamba (2007)

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defined B-BBEE as a process to redistribute the economic wealth, enhance economic equality, create a black middle-class consensus and to promote sustainable long-term economic growth. This definition is in line with the definition provided by the 2004 Codes (DTI, 2004). In light of the existing definitions, B-BBEE is defined as follows for purposes of this study: a formalised process, led by the South African government, to redress the economic imbalances of the past, to ensure that all South Africans are equally privileged and could compete on the same level in all spheres of life.

An 'expiry date' for B-BBEE is arguably necessary as B-BBEE regulations are seen as a barrier for foreign investment (Gules, 2018). Continuation of B-BBEE after its aim (to redress the imbalances of the past) has been achieved, may thus hinder economic growth. Researchers such as Acemoglu *et al.* (2007) hence predicted that B-BBEE will reach a third phase. Recall that the first phase was unstructured BEE until the end of 1999. The second phase was formalised, structured B-BBEE with the release of the BEE Commission report and the implementation of the 2003 Act, and revised in 2013. The third phase of B-BBEE will arguably occur when the economic imbalances have been corrected and companies and individuals can compete on equal footing (Acemoglu *et al.*, 2007).

2.4   EVOLUTION OF THE CODES OF GOOD PRACTICE

There are two legal documents driving B-BBEE, namely the 2003 Act (and the revised 2013 version) and the Codes of Good Practice. The 2003/ 2013 Act sets out the principles of B-BBEE, whereas specific empowerment practices are explained in the Codes. It is therefore important to consider the Codes in order to understand the practical implications of B-BBEE for companies.

To fully understand the evolutionary process of the Codes, all the role players in controlling B-BBEE should be introduced. As discussed in Section 2.2.2, the BEE Commission initiated the idea of having a formalised plan and national policy related to B-BBEE in 2001. The BEE Commission (2001) recommended that there should be a co-ordinating council to oversee the implementation of B-BBEE. As a result, the B-BBEE Advisory Council was established to implement the 2003 Act and offer advice to the government on B-BBEE-related issues. The B-BBEE Advisory Council is headed by the DTI. This Council is constituted as follows: The chairperson of the B-BBEE Advisory Council is the president of the country. In absence of the president, the minister of the DTI acts as chairperson. The B-BBEE Advisory Council further

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comprises of 19 influential individuals (including the minister of the DTI), encompassing the minister of labour and the minister of women (RSA Presidency, 2015; DTI, 2003).

The B-BBEE Advisory Council (which is still in place) is responsible for determining the strategic direction for B-BBEE which is then translated into the Codes of Good Practice by the minister of trade and industry. The formulated Codes of Good Practice are then reviewed by the B-BBEE Advisory Council before it is issued (RSA Presidency, 2015). The Codes offer guidelines on how B-BBEE should be practically implemented and measured. Should the Codes not achieve their purpose of successfully rectifying the inequalities of the past, government can alter the Codes and circulate to businesses for comment.

2.4.1   The 2004 Codes of Good Practice

The DTI issued the first draft of the Codes of Good Practice in 2004. The draft consisted of ten sub-codes, titled from Code 000 (Black Economic Empowerment Framework), to Codes 100 to 700, dealing with the components of B-BBEE (as discussed below), and practice notes on B-BBEE (Code 800) and Code 900 on Public Private Partnerships (DTI, 2004). A significant adjustment from phase one BEE (as discussed in Section 2.2.2), was that B-BBEE was now truly broad-based. The 2004 Codes aimed to achieve this broad base by using a 'balanced approach', which was measured by using the balanced (or generic) scorecard (DTI, 2004). The 2004 Codes stated that there are three main components of B-BBEE, which encompasses all seven elements of the balanced scorecard (DTI, 2004). The key components and their beneficiaries are depicted in Table 2.2.

Table 2.2:   Key components of B-BBEE and their beneficiaries

Component	Beneficiary
Direct empowerment	Equity holders, executives and other owners, as well as managers of economic resources
Human resource development	Employees and job seekers
Indirect empowerment	Suppliers, communities and other relevant external stakeholders.

Source: DTI (2004)

As part of direct empowerment, the B-BBEE Act (No. 53 of 2003) refers to equity transfers and appointing black people in management positions. Human resource development comprises of employment equity (also called affirmative action) and skills development. Indirect empowerment refers to a company's interaction with the community. Purchases from preferential suppliers (buying from suppliers with a high B-BBEE score), enterprise development (by assisting black entrepreneurs), and corporate social investment activities are required under this component (DTI, 2004).

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The 2004 Codes included seven key elements: Ownership, management control, employment equity, skills development, preferential procurement, enterprise development and a residual factor (DTI, 2004). Ownership refers to the voting rights and economic interests associated with equity holding. Specific classes of shares (such as preference shares without voting rights) will not attract any points under the ownership element. The combination of voting rights and economic interests is essential, as voting rights allow black shareholders to be actively involved in strategic business decisions, whereas economic interests aim that black people accumulate wealth (DTI, 2004).

Management control entails that black employees and members of an organisation have the power to determine policies and provide direction to economic activities and resources. Management control comprises two categories: The percentage of black members on the board of directors (or equivalent), and the number of black people involved in executive positions or senior management (DTI, 2004). Employment equity focusses on the promotion of "equal opportunity and fair treatment in employment" (DTI, 2004:15). Entities should adhere to the requirements of the Employment Equity Act (No. 55 of 1998) to increase the participation of black people in the workforce in the decision-making process of their respective entities (DTI, 2004). The Codes also required entities to invest in the development of their black workers' skills (DTI, 2004).

The three remaining elements form part of indirect empowerment (refer to Table 2.2), namely preferential procurement, enterprise development and a residual factor. Preferential procurement deals with the percentage of purchases made from B-BBEE compliant suppliers. The higher the suppliers' total B-BBEE scores, the higher the score that is ascertained under preferential procurement (DTI, 2004). Preferential procurement thus encourages entities to buy from compliant suppliers. This element arguably warrants that B-BBEE truly becomes broad-based. The effect of this element is illustrated in Figure 2.1.
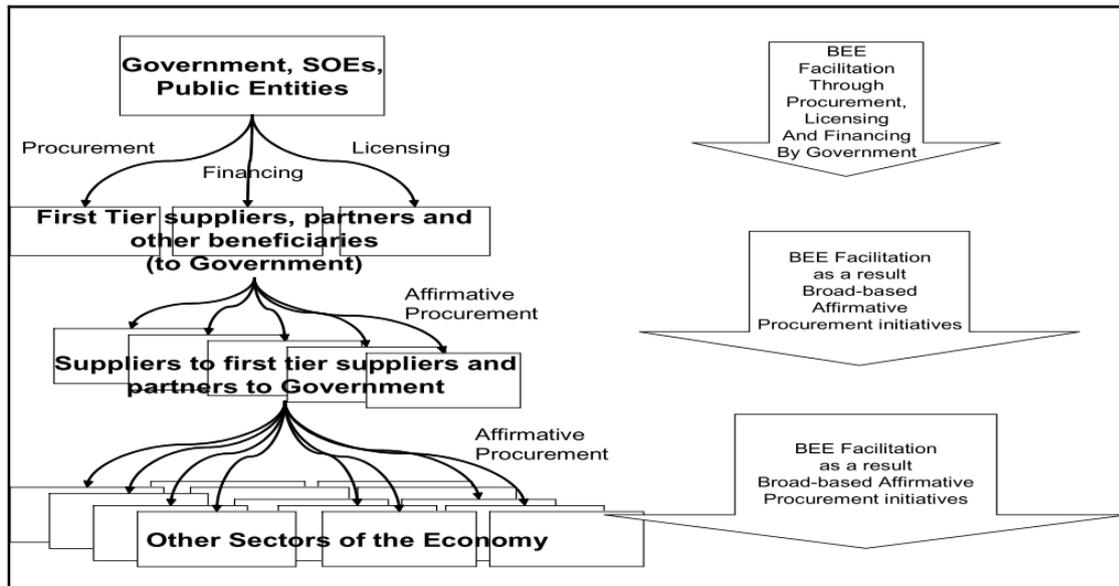
Figure 2.1:   The 'knock-on' effect of B-BBEE scores through preferential procurement

Source: DTI (2004)

As seen in Figure 2.1, the B-BBEE scores of a company's suppliers indirectly influence the B-BBEE score of the company. Companies that aim to do business with government need to be mindful to procure from B-BBEE compliant companies as, otherwise, they will fall short on their preferential procurement score. The sixth element of the balanced scorecard centres on enterprise development. This element refers to assisting start-up businesses by specifically funding and/or supporting black entrepreneurs. The compliance measures range from finances that have been made available to such enterprises, to non-financial assistance to these small to medium enterprises (DTI, 2004).

The final element of the 2004 balanced scorecard was called the residual factor. This factor included activities that are relevant to the entity's specific environment (business environment or sector and geographical environment). Examples of activities that could earn B-BBEE credentials included investing in the housing, transport and health care needs of previously disadvantaged employees, providing infrastructure support to black entities, utilising labour intensive methods to create jobs and any other activity that might benefit the environment in which the entity operates (DTI, 2004).

The DTI (2004) suggested that weightings should be applied to the seven elements, as was indicated in Table 1.1. Should a total annual score of less than 40 points out of the available 100 points be achieved, the entity could call itself a "Limited contributor to B-BBEE", a total score of between 40 points and 64.9 points would equate to "Satisfactory contributor" status. A

total B-BBEE score between 65 points and 79.9 points would be regarded as a "Good contributor", and to achieve status as an "Excellent contributor", a score of above 80 points or higher was required (DTI, 2004:51).

Subsequent to the issuing of the 2004 Codes, a substantial increase was seen in B-BBEE deals, specifically share transfers to black people (BusinessMap, 2005). A value of R62 billion of B-BBEE share transfers took place in 2004, compared to only R40 billion in 2003 (*ibid*). The 2004 Codes thus provided guidance on the practical measures of B-BBEE and each of the seven elements. The 2004 Codes also distinguished between the different levels of contribution (limited, satisfactory, good or excellent). The B-BBEE Advisory Council, however, determined that the Codes had to be refined and clarified to fulfil the goals they set for B-BBEE (Tangri & Southall, 2008). As a result, a clarified set of Codes of Good Practice was released and gazetted in 2007.

2.4.2 The 2007 Codes of Good Practice

The nature of the 2007 Codes entails a clarification of the 2004 Codes. The 2007 Codes were implemented on 9 February 2007 (DTI, 2007). The essence of the 2004 and 2007 Codes remained largely the same. A major clarification dealt with how smaller enterprises should be evaluated. Section 4.1 of the 2007 Codes stated that, should an enterprise have a turnover of less than R5 million, it would be exempt from applying B-BBEE and is awarded a contributor status of a level four contributor (DTI, 2007). Should the enterprise have a turnover of between R5 million and R35 million, they will be a "Qualifying Small Enterprise" (QSE). These QSEs only needed to focus on any four of the seven elements, each awarding the QSE 25 points (a total of 100 points is available) (DTI, 2007:9). A QSE could choose which of the seven elements it wanted to comply with.

A further development in terms of the 2007 Codes was the clarification of the individual elements, specifically the residual factor. The seventh element (residual element) under the 2004 Codes essentially focused on corporate social initiatives and was now termed "Socio economic development and sector specific contributions element" (DTI, 2007:10). Despite the name change, the essence of this element remained the same. The element still measured the efforts made by the company to improve its local socio-economic status or to promote sector specific initiatives that would provide access for black people to the economy and to the sector (DTI, 2007). The weightings for the seven elements remained largely the same, as was shown in Table 1.1. Minimal changes to the weightings of certain elements (employment equity, skills development, employment equity and socio-economic development) were made.

The most significant clarification related to the redefining of the different levels of contributors. The 2007 Codes made provision for nine levels (level one to eight contributors plus a level for non-compliant contributor status) (DTI, 2007) in comparison with the four compliance levels suggested in the 2004 Codes. A summary of the levels and respective scores was provided in Table 1.2. It should be noted that companies could achieve a score of more than 100 points based on the application of the 2007 Codes. This is possible due to the fact that the 2007 Codes and sector charters (see Section 2.6) make provision for bonus points. These bonus points were available if, for example, black people that did not previously own shares in a company were awarded shares, or if shares are issued as part of an employee share scheme (DTI, 2007). In total, there were seven bonus points available (Werksmans, 2014). The measurement targets under the 2007 Codes are displayed in Table 2.3.

Table 2.3:   Compliance targets for B-BBEE scores based on the 2007 Codes

Element	Target	Measured element
Ownership	25%+ 1 vote	Total ordinary shares
Management control	40% – 50%	Top management and directors
Employment equity	43% – 68%	Junior to senior management
Skills development	3%	Total payroll spend
Preferential procurement	50% – 70%	Total expenditure
Enterprise development	3%	Net profit after tax
Socio-economic development	1%	Net profit after tax

Source: DTI (2007)

The 2007 Codes' targets, presented in Table 2.3, are an indication of the expenditure and other requirements to achieve a score of 100. The targets summarise the objectives of the 2003 Act. The alterations of sector charters to the generic codes are discussed in Section 2.6. It is important to note that three of the elements require additional expenditure, one element (preferential procurement) prescribed the nature of the suppliers, and the remaining three elements required strategic interventions (to obtain more black shareholders, and to appoint more black managers). Companies needed to manage their B-BBEE compliance actively, as mere expenditure on traditional corporate social responsibility initiatives would not have resulted in obtaining a high B-BBEE score. In the following sections, the 2013 Codes will be discussed and the reasons for the changes encompassed in these Codes explored.

2.4.3   The 2013 Codes of Good Practice

The percentage of black income in comparison with white income did not change considerably since the implementation of B-BBEE in 2003 (IRR, 2009). The B-BBEE Commission therefore adjusted the Codes to urge businesses to become more compliant. As a result, companies could drop two levels if they did not increase their B-BBEE score in line with the revised Codes that

were released in October 2013 (Empowerdex, 2016). The effective implementation date was May 2015. Companies hence effectively had a year and a half to revise their B-BBEE strategies to remain compliant. As explained in Section 1.2.2, the elements prescribed in the 2007 Codes differed from those indicated in the 2013 Codes. These changes will briefly be explained in the following sections.

A comparison of the 2013 Codes relative to the 2007 Codes shows that certain B-BBEE elements had been grouped together, and the weightings have changed slightly. In Table 2.4, it is shown how the 2007 Codes have been effectively 'absorbed' into the 2013 Codes. As mentioned in Section 2.4.2, companies were able to achieve bonus points that would allow them to achieve a score of more than 105 points (2013 Codes) or 100 points (2007 Codes). Bonus points could be acquired for achieving specific targets within the element, as shown below in Table 2.4.

Table 2.4:   Comparison of the 2013 and 2007 Codes

Element	Weighting points (2013)	Weighting points (2007)
Ownership	25	20 plus 3 bonus points
Management control	15 plus 4 bonus points	Management control – 10 plus 1 bonus point Employment equity – 15 plus 3 bonus points
Skills development	20 plus 5 bonus points	15
Supplier development	40 plus 4 bonus points	Preferential procurement – 20 Enterprise development – 15
Socio-economic development	5	5
Total available	118	107

Source: Werksmans (2014)

As shown in Table 2.4, a company could theoretically achieve a score of 118 under the 2013 Codes, as opposed to 107 under the 2007 Codes when accounting for bonus points. There are more bonus points available under the 2013 Codes than were available under the 2007 Codes. The 2013 Codes also count out of 105, as opposed to 100 under the 2007 Codes. The bonus points could reduce the compliance pressure, should a company meet certain criteria. The targets for the respective elements can be considered stringent. None of the targets have been lowered since 2007. The targets for the 2013 Codes are shown in Table 2.5.

Table 2.5:   Compliance targets for B-BBEE scores under the 2013 Codes

Element	Target	Measured element
Ownership	25%+ 1 vote	Total shares
Management control	50% – 88%	Management and staff demographic composition
Skills development	6%	Total payroll spend
Supplier development	Preferential procurement: 80% Supplier development: 2% Enterprise development: 1%	Total measured procurement spend Net profit after tax Net profit after tax
Socio-economic development	5%	Net profit after tax

Source: DTI (2013)

In terms of ownership, companies were encouraged to aim that at least 25 per cent of voting rights belonged to black individuals. Twenty-five per cent of the economic interest should also be vested in black individuals (DTI, 2013). Management control requires companies to have a targeted 50 per cent black executive directors, 60 per cent senior management, 75 per cent middle management and 88 per cent junior management (DTI, 2013). A major challenge, however, is that limited black people have post matric qualifications (IRR, 2017). In 2015 only 5.7 per cent of all black people had tertiary qualifications (*ibid*). The assumption can be made that tertiary education is required for managerial positions. It is hence questionable whether the management control target is achievable unless skills development is enhanced. Education as a priority has been highlighted by, amongst others, the IRR (2012) in stating that upliftment in education should precede economic empowerment.

Pertaining to skills development, at least six per cent of total payroll spend should be allocated to learning programmes for black people. Supplier development is divided into preferential procurement, supplier development and enterprise development. At least 80 per cent of the entity's annual procurement spend should be B-BBEE-related. To calculate B-BBEE procurement spend, the actual spend is multiplied by the B-BBEE percentage as per the supplier's B-BBEE level. At least two per cent of net profit after tax should be spent on supplier development and one per cent of net profit after tax should be contributed to sector specific programmes (DTI, 2013). A target of five per cent of net profit after tax should be spent on socio-economic development initiatives (DTI, 2013).

The 2013 Codes specify that there are three priority elements for which sub-minimum requirements apply, namely ownership, skills development and enterprise and supplier development. At least 40 per cent of the target (see Table 2.5) should be obtained by all large companies (with a turnover of more than R50 million) for each of the three priority elements (DTI, 2013). Should a company not achieve 40 per cent of the targets for the respective priority

elements, the company will be awarded a non-compliant status (DTI, 2013). In the following section, the allocation and auditing of the B-BBEE scores will be explained.

2.5   THE ALLOCATION AND VERIFICATION OF B-BBEE SCORES

The 2007 Codes encouraged companies to have their compliance verified by independent verification agents (DTI, 2007). The DTI issued further guidelines on the verification process in 2008. In October 2015, the DTI (2015a) issued the latest version of the verification manual. Only verification agents registered with the South African National Accreditation System (SANAS) are allowed to issue valid B-BBEE certificates (DTI, 2015a). Verification is done to ensure that the information shown on the certificate is valid and accurate. The verification, however, do not mention the completeness assertion, i.e. to ensure that all B-BBEE activities are reflected in the B-BBEE certificate.

The B-BBEE verification manual (DTI, 2015a) determines that to become a verification agent, the applicant should have certain traits, including impartiality, competence, responsibility, openness and confidentiality. These traits contribute to a verification process that is transparent, objective and professional. B-BBEE verification agencies also need to comply with SANAS R47 legislation (SANAS, 2013). This legislation stipulates the requirements that should be met by a B-BBEE verification agency. As of September 2019, there were 77 officially accredited B-BBEE verification agents in the country (SANAS, 2019). The 2003 Act allows for certain sectors to tailor the generic codes to their needs. These tailored codes are based on Section 9(1) and Section 12 of the 2003 Act, and are referred to as sector charters (DTI, 2013). More details will be provided on sector charters in the next section.

2.6   SECTOR CHARTERS

Following the implementation of the 2007 Codes, several sectors decided to design and implement sector charters. Most of these sector charters are based on the generic scorecard, but are altered to make them more relevant to their specific sectors. As of September 2019, there were nine approved, active sector charters (DTI, 2019), as shown in Table 2.6.

Table 2.6:   Summary of sector charters

Name	Implementation date	Summary of charter
Forestry and paper	June 2009	This charter allocates bonus points for those entities that achieve the target of 30 per cent black ownership, as set out in the generic 2007 Codes. To ensure the workforce is also transformed, the forest and paper sector formulated a sector skills plan that will be implemented to teach black individuals the necessary skills required in this sector (DTI, 2009a).
Transport sector	August 2009	This charter consists of eight sub-charters, each responsible for a subdivision of the transport industry. Each sub-charter is a tailored version of the generic 2007 Codes. The DTI specified that the focus and purpose of the transport charter was to speed up the implementation of fast and efficient transport and logistics. This objective is set in addition to the B-BBEE objectives. The bus commuter code further proposes a 35 per cent ownership target, instead of the 25 per cent ownership target (2007 Codes) to intensify transformation in this sector (DTI, 2009b).
Chartered accountancy sector	May 2011	The focus of this charter is to promote a shift in the demographics of the chartered accountancy profession, specifically regarding skills development and employment equity (DTI, 2011). This sector charter, based on the generic 2007 Codes, increases the weighting of employment equity and skills development, whilst preferential procurement had a lower weighting (DTI, 2011).
Property sector	June 2012	The following major challenges are applicable to the property sector: Ownership of land and representation of the workforce, with specific focus on gender equality in the workforce (DTI, 2012a:1). As a result, the property sector charter attaches more weight to the ownership and employment equity elements of the generic 2007 Codes' scorecard. An additional element, called "economic development" was introduced. Entities complying with this sector charter are encouraged to invest at least 10 per cent of their total investment spend in under-resourced areas, such as those identified by the Financial Sector charter, and to transfer ownership of a targeted 35 per cent of property to black-owned companies over a period of five years (*ibid*).
Financial sector	November 2012	Under the financial sector charter, two new elements (additional to the seven 2007 Codes' elements) specific to the financial sector were introduced (DTI, 2012b). The two elements are called Empowerment Financing and Access to Financial Services. The objectives of these two elements are to promote financing facilities to young black entrepreneurs, make housing affordable and service black people that did not have access to banking and financing before (DTI, 2012b).
Agricultural sector	December 2012	Land ownership is added as an element to the scorecard (DTI, 2012c). Landowners should provide a targeted 30 per cent of their land for reformation (DTI, 2012c).
Tourism sector	November 2015	No sector specific elements are proposed by the tourism charter, more weighting has been given to ownership and employment equity (DTI, 2015b).
Media and communication sector	April 2016	This charter provides for a sixth element, called "Responsible social marketing and communications". This element requires entities to invest one per cent of net profit after tax on projects that encourage society to increase mutual respect, coherency and embrace differences. This charter also increases the weighting of management control to 27 points (15 points under the generic 2013 Codes). The ownership target is increased from 25 per cent per the generic 2013 Codes, to 40 per cent at implementation date and 45 per cent in 2018 (DTI, 2016a).
Information and communication technology sector	November 2016	The revised five elements of the 2013 Codes' scorecard were retained. The weightings were, however, changed to reflect a larger emphasis on management control, preferential procurement and socio-economic development initiatives (DTI, 2016b).

Source: Author's compilation based on the indicated sources

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It is disconcerting that only three of the nine sector charters indicated in Table 2.6 are based on the 2013 Codes, whilst the rest still refer to the 2007 Codes. Table 2.6 shows that the majority of sectors place considerable emphasis on ownership, which could be comforting. An increased ownership requirement may, however, not be welcomed by investors. The current minister of trade and industry, Ebrahim Patel, also said that focussing on shareholding is perhaps not sufficient (Phakathi, 2019). Patel suggests that the companies' B-BBEE efforts should centre on empowering workers (*ibid*).

An attempt was made to revise the mining charter to align it with the 2013 Codes, but is still not gazetted yet (Donnelly, 2019; DTI, 2017). The revised mining sector charter has already caused some controversy in the media (Donnelly, 2019; Cliffe Dekker Hofmeyr, 2017). The latest version was released in December 2018, but its implementation date has been suspended due to the debate. The dispute is about the fact that all mining companies are expected to have at least 30 per cent black ownership, or risk having their mining rights not renewed upon expiry. Non-compliance with the ownership requirements, and having a B-BBEE status of between levels six and eight, can result in the cancellation of the mining license of the company (Biznews, 2019). Should mining companies' licenses be revoked, this could be disastrous for such a company, and could pose a serious threat to their employees' job security.

Attempts have been made in other countries like Malaysia, Zimbabwe and, to a lesser extent, the United States of America (US) to empower economically underprivileged individuals. Masito (2007) argued that South Africa already had an empowerment initiative under the apartheid regime. In the following section this previous South African empowerment initiative and economic empowerment attempts in other countries will be discussed. An overview of prior academic research on the successes of these attempts will also be provided.

2.7   OTHER ECONOMIC EMPOWERMENT INITIATIVES

In this section, four other economic empowerment initiatives will be presented.

2.7.1 Volkskapitalisme (South Africa)

During the apartheid regime, the reigning National Party implemented a programme called *volkskapitalisme* to uplift the Afrikaner people living in poverty (Masito, 2007). This programme was unofficially called Afrikaner Economic Empowerment (AEE). It is important to give attention to the lessons that could be learnt from AEE, as it could be argued that AEE indirectly lead to B-BBEE. The author's view is that B-BBEE can be seen as a correction of

the inequalities caused by AEE. Masito (2007) believed that the AEE was driven by the apartheid laws and regulations, whilst the National Party executed the programme.

The controlling British originally impoverished the Afrikaners to control mineral resources (Masito, 2007). AEE was thus created in an attempt to ensure that the ethnic culture and identity of the Afrikaners could be sustained. Even though there was no definitive AEE legislation, other acts such as the Land Act (No. 27 of 1913) and the Wage Act (No. 27 of 1925) were promulgated to advance the economic interests of white people (*ibid*). The apartheid regulations also ensured that certain jobs were reserved for Afrikaners, similar to the Employment Equity Act (No. 55 of 1998) introduced by the ANC.

The National Party built several Afrikaans medium schools and universities. By 1958, 62 per cent of all schools used Afrikaans as a medium of education (Masito, 2007). Another vehicle of AEE was the creation of non-profit companies for the purpose of job creation of impoverished Afrikaners. Examples of these non-profit semi-state institutions included Sasol, Eskom, and Iskor (Masito, 2007). Family-owned businesses were also typically linked to empowering Afrikaners (Marazanye, 2016).

2.7.2 New Economic Plan (Malaysia)

Malaysia's economic transformation is often cited as a comparison to B-BBEE (Marazanye, 2016; Uppal, 2014; Mathura, 2009). The New Economic Plan (NEP) of 1970 from Malaysia had the intent of empowering the native Bumiputera people who constituted roughly 50 per cent of the population of Malaysia in 1970. The other 50 per cent of the population were mostly from India and China (Marazanye, 2016). Bumiputerans were deprived, especially in terms of tertiary education. Despite being the majority, only one Bumiputeran for every 20 Chinese received a BSc degree over the period 1959 to 1970 (Abdullah, 1997 in Marazanye, 2016). Sartorius and Botha (2008) added that 65 per cent of all Bumiputerans were living in poverty before the introduction of the NEP in 1970. The Malaysian government thus implemented the NEP to uplift this ethnic group. The target was that Bumiputerans should own at least 30 per cent of ordinary shares of Malaysian companies by 1990 (Uppal, 2014).

The NEP entailed very similar requirements to the B-BBEE principles, such as ownership and employment equity (Sartorius & Botha, 2008). Similar to AEE, Marazanye (2016) added that the education sector was also identified as a main pillar of the NEP. The Malaysian government improved education by investing in schools for children, granting bursaries to deserving students, and sponsoring promising students to receive tertiary education abroad. Quotas in

local universities were also used to ensure that sufficient numbers of Bumiputerans were granted access to the local universities (Marazanye, 2016).

Ownership by Bumiputeranian people in companies were achieved by means of state intervention. The government appointed different agencies that would purchase the shares on behalf of Bumiputerans and distribute it amongst qualifying individuals (Marazanye, 2016). By 1990, the Malaysian government managed to increase corporate equity to 27 per cent Bumiputeran representation.

The Malaysian government also aimed to restructure the Malaysian workforce to include Bumiputerans in professional occupations. These individuals were traditionally 'side-lined' to work as unskilled labourers in industries like farming and fishing. Quotas in higher education were introduced to ensure that Bumiputeran people were qualified for the positions earmarked for them (Marazanye, 2016). Companies were encouraged by the government to participate in the NEP initiatives by awarding government contracts and operating licenses, similar to B-BBEE. Since the NEP had an expiry date of 1990, the NEP was replaced by the National Development Programme (NDP) in 1991, with similar policies and objectives (Uppal, 2014).

Even though it could be claimed that Malaysia's transformation initiatives were partly successful (Marazanye, 2016; Uppal, 2014), Mathura (2009) highlighted that there were some significant shortcomings of the NEP and the NDP. The largest failure entails that the Bumiputera people felt entitled to access to education and, indirectly, enrichment. Some foreign investors were disgruntled and hence divested from Malaysia (Sartorius & Botha, 2008). As a result, the quality of education deteriorated, and economic growth was hindered. There were also a few elite individuals who benefited from this programme, as opposed to the masses it was supposed to uplift (Sartorius & Botha, 2008). A considerable advantage for Malaysia was the fact that their empowerment programme was introduced during a time of extreme economic growth, which seemed to have diluted the negative impacts of the NEP. The economic growth was, however, not as a result of the NEP, but rather the consequence of a high savings percentage by domestic households and growth in exports (Sartorius & Botha, 2008).

2.7.3 African-American reformation (United States of America)

In the US, African-American individuals have historically been economically marginalised (Mtima, 1999). The end of slavery meant that these individuals were economically dispositioned. The majority of African-Americans have not yet escaped poverty (Nembhard, 2004). Several political leaders in the US, including Booker Washington (1856 – 1915) and William du Bois (1868 – 1963) attempted to find solutions for the poverty problem (Mtima,

1999). Washington believed that poverty would be eradicated by focussing on skills development and education, while Du Bois advocated the formation of black companies to advance the economic position of African-American people (Nembhard, 2004). Du Bois advocated "full legal equality for all Americans in every aspect of life" (Mtima, 1999:3). Du Bois, however, did not advocate transfer of ownership in particular, but rather suggested that employment opportunities should be created for black people, by black people. This strategy correlates with Andrews (2008) who stated that new black-owned companies should be formed, with B-BBEE giving those companies a competitive advantage. Creating black industrialists are referred to as stage three B-BBEE by DTI Minister Ebrahim Patel (Phakathi, 2019).

The author ponders whether skills development in terms of B-BBEE should not be of greater importance. Over and above the funds required for skills development and education, the department of basic education should also invest in the training of teachers to improve the quality of education. In line with Andrews (2008), the author furthermore postulates that the focus of B-BBEE should perhaps change from transfer of ownership and workforce to the creation of new black-owned companies.

Nembhard (2004:5) pointed out that there have been several formal attempts to generate black wealth in the US, including the so-called "Buy Black" campaign and the "Black Panther" programmes. These campaigns urged citizens to transact with black-owned businesses. None of these programmes seems to have been successful or sustainable, as African-Americans are still impoverished, and none of these programs is in place any longer (Nembhard, 2004). A formalised economic empowerment plan, such as B-BBEE legislation in South Africa or the NEP in Malaysia, was not implemented in the US.

2.7.4 Zimbabwe Indigenisation Programme

A country which was marred by controversial land grabs, is South Africa's neighbouring country Zimbabwe. A policy similar to South Africa's B-BBEE legislation was implemented in Zimbabwe. The Zimbabwe Indigenisation Programme (also called 'ZIP') was promulgated in 2007, titled "Chapter 14:33 Indigenisation and Economic Empowerment Act 14/2007" (Zimbabwe Ministry of Youth, Indigenisation & Economic Empowerment, 2007:1). The purpose of ZIP is to ensure that all Zimbabwean companies are at least 51 per cent owned by indigenous Zimbabweans. Compliance to ZIP is driven by the fact that companies can lose their operating licenses should they fail to comply with the 51 per cent ownership target. Equity deals are also prohibited if the result is not at least a 51 per cent shareholding by indigenous Zimbabweans. Furthermore, at least 51 per cent of all procurement should be from companies

which have a majority shareholding by indigenous Zimbabweans (Zimbabwe Ministry of Youth, Indigenisation & Economic Empowerment, 2007).

The requirements for ZIP seem to be stricter than B-BBEE. The ownership target for B-BBEE is 25 per cent, as opposed to 51 per cent for ZIP. Whilst compliance with the B-BBEE Act (No. 53 of 2003) is voluntary, failure to comply with ZIP can result in a company losing its operating license (Zimbabwe Ministry of Youth, Indigenisation & Economic Empowerment, 2007). Mathura (2009) suggested a similar approach for South Africa, based on the argument that a reward-based approach might not yield the same effect than a punishment-based approach. Such a suggestion should, however, be treated with caution, given the economic situation in Zimbabwe following the implementation of ZIP.

Uppal (2014) pointed out that an economic reformative policy such as ZIP can only succeed in an environment with strong economic growth and requirements that are not as strict as ZIP, as it would otherwise hamper economic growth. The effect of the strict, punishment-based policy on the Zimbabwean economy could rightfully be questioned. Since Zimbabwe has not prospered in the 10 years since promulgating ZIP, there is arguably no compelling evidence that ZIP contributed towards economic growth in Zimbabwe. The opposite seems to be true.

ZIP is a very radical empowerment programme. A reformative policy can, however, never be at the forefront of economic activity, but should rather be a by-product of the economic policy, with the main focus on growing the economy (Magure, 2012). By growing the economy, previously disadvantaged citizens can be uplifted (*ibid*). Marazanye (2016) added that stakeholder buy-in is critical for the success of any reforming act. Without buy-in from the stakeholders involved, it becomes a legal and financial burden to conduct business and is likely to eventually result in failure. Chidede and Warikandwa (2017) elaborated on Marazanye's (2016) view by stating that foreign direct investment is critical to any economy. As such, a reformative act should be implemented in such a way that foreign direct investors are not deterred from investing in the country.

2.8   SUMMARY AND CONCLUSIONS

In this chapter, the history and application of B-BBEE were explained. This discussion included the generic Codes, the specific sector charters and the auditing of B-BBEE scores. There was a large disparity in income between black and white individuals in South Africa prior to 1994, which ultimately gave rise to B-BBEE legislation. This disparity in income still exists. Several

legal and academic definitions for B-BBEE have been constructed. The author considered these definitions and defined B-BBEE as a formalised process, led by the South African government, to redress the economic imbalances of the past, to ensure that all South Africans are equally privileged and could compete on the same level in all spheres of life.

The application of B-BBEE is driven by the Codes. Since the inception of B-BBEE with the 2003 Act, three Codes have been released: the 2004, 2007 and 2013 Codes. This study was mainly based on the 2007 Codes, with the 2004 Codes being considered to be not dissimilar from the 2007 Codes. The elements between the 2007 and 2013 Codes differ, and the compliance requirements became stricter. As such, this study excluded the B-BBEE scores of companies measured under the 2013 Codes.

Economic empowerment initiatives that were introduced in other countries were also discussed. The author regards the following as important lessons for B-BBEE in South Africa, based on the discussed case studies. Education appears to be critical for economic empowerment. Economic empowerment in a time of minimal economic growth is unlikely to be sustainable. Skills development and job creation should be a priority.

The focus of this study is not the effectiveness or appropriateness of B-BBEE as a policy, but rather the relationship between B-BBEE scores and financial health. In this chapter, the calculation of B-BBEE scores based on the respective Codes was clarified. The financial health measures will be discussed in the following chapter.

CHAPTER THREE

OVERVIEW AND APPLICATION OF FINANCIAL HEALTH MEASURES IN THE SOUTH AFRICAN CONTEXT

3.1   INTRODUCTION

As presented in Chapter One Section 1.4, the primary objective of this study was to investigate the nature of the association between the B-BBEE scores (in total and per element) and financial health of a sample of JSE-listed companies over the period 2004 to 2015. In Chapter Two, the requirements and calculations of the total B-BBEE scores were explained. In this chapter, several financial health measures will be discussed. Financial health is the encompassing term used in this study for accounting-based, market-based, value-based and default risk probability measures. The rationale for utilising each of the measures and the pitfalls associated with each metric will be explained.

Doyle (1994) indicated that a company typically has two dominant financial performance objectives. The first is to maximise shareholder wealth, whilst the second is to increase operating profit. Investors who are investing in companies with high total B-BBEE scores are interested in the potential financial benefit from it in addition to the moral gratification of supporting transformation in the country. Financial benefits can be measured by using accounting-based, market-based, value-based and risk-based performance metrics. Accounting-based metrics measure the historic profitability of a company, whilst market-based financial health measures account for the creation of shareholder wealth and expectations pertaining to future profits (Verweire & Van den Berghe, 2004). A third category of measurement interrogates a company's profit relative to the cost of the capital required to generate the profit. This category is called value-based measures. Default risk probability was also added to this study to determine whether companies with an increased B-BBEE score (in total and per element) would be more likely, or less probable, to meet their short-term debt repayments. These categories will be discussed in the following sections. Under each category, the nature and compilation of the measure(s) pertaining to that category will be discussed.

3.2   ACCOUNTING-BASED FINANCIAL HEALTH MEASURES

In this section, the different accounting-based financial health measures will be reviewed. Attention will be given to the associated advantages and disadvantages of each measure and which of these measures have been previously used in the diversity literature. Accounting-based measures typically incorporate accounting data to calculate ratios and trends. In previous studies, researchers have utilised accounting-based measures such as return on equity (ROE), return on assets (ROA) and percentage change in sales. A summary of prior accounting-based studies in the diversity literature is supplied in Table 3.1. Diversity in this table means percentage of ethnic minorities in the workforce, or board, or management team, as indicated.

Table 3.1:   Summary of prior studies that used accounting-based measures

Author(s)	Accounting-based measure(s) utilised	Diversity measure(s)	Nature of relationship
Richard (2000)	ROE	Employee diversity	No significant relationship
Richard *et al.* (2004)	ROE	Managerial diversity	No significant relationship
Acemoglu *et al.* (2007)	Return on sales (ROS)	Total B-BBEE score	No significant relationship
Marimuthu & Kolandaisamy (2009)	ROA, ROE	Managerial diversity	No significant relationship
Kleynhans & Kruger (2014)	Operating profit, Turnover	Total B-BBEE score	No significant relationship with both measures
Erhardt *et al.* (2003)	ROA, Return on Investment (ROI)	Board diversity	Significant positive relationship with ROI
Marimuthu (2008)	ROA	Board diversity	Significant positive relationship
Shukeri *et al.* (2012)	ROE	Board diversity	Significant positive relationship

Source: Author's compilation based on cited references

As indicated in Table 3.1, two B-BBEE studies included accounting-based measures: Acemoglu *et al.* (2007) and Kleynhans and Kruger (2014). Neither found any relationship with the mentioned diversity measures and accounting-based financial health metrics. These authors utilised small samples. In contrast, this study used a large sample and a range of financial health measures. In Sections 3.2.1-3.2.4, a discussion is provided on several of the accounting-based ratios used in previous academic studies.

3.2.1   Annual percentage change in turnover

The annual percentage change in turnover is arguably the simplest accounting-based measure to compute and is widely used in the diversity literature (Dossi & Patelli, 2010). Kleynhans and Kruger (2014) computed the annual percentage change in turnover to measure the growth or deterioration in turnover on a year-on-year basis. This type of analysis, where one year is compared with another (a so-called base year), is called index analysis (Correia, Flynn, Uliana

& Wormald, 2013). The preceding year would be the base year, and the current year's turnover would be expressed as a percentage of the base year, indicating the percentage change from the previous year. The Bloomberg (2018) equation for annual percentage change in turnover, which was adopted in this study is:

$$\Delta_T = \frac{T_1}{T_0} - 1$$ …Equation 3.1

Where:

$\Delta_T =$ Annual percentage change in turnover

$T_1 =$ Turnover for the current financial year

$T_0 =$ Turnover for the preceding financial year

A high, positive annual percentage change in turnover can be associated with better financial health, as management was able to generate a higher turnover than in the preceding year. A negative or small positive annual percentage change in turnover can be indicative of the company not performing optimally. The percentage change in turnover should arguably outperform inflation to provide real growth. A positive correlation between B-BBEE score and annual percentage change in turnover can indicate that B-BBEE contributed to more government contracts being awarded to higher B-BBEE scoring companies than is the case for lower B-BBEE scoring companies. More government contracts could have resulted in more revenue for the higher B-BBEE scoring companies. There are, of course, many other factors that could contribute towards a positive change in turnover, such as superior marketing campaigns.

The annual percentage change in turnover has the benefit of allowing comparison over time, i.e. from one year to another, as opposed to other measures (such as ROA) which only show a measure at a certain point in time (Correia *et al.*, 2013). There are, however, a few pitfalls associated with using annual percentage change in turnover as a financial health measure. The most notable, as indicated by Correia *et al.* (2013), is that some companies might 'drive sales', but the associated costs are not taken into account. To account for this pitfall, the annual percentage change in turnover should be interpreted along with other accounting-based measures such as ROS.

3.2.2   Return on sales (ROS)

Correia *et al.* (2013) stated that in addition to index analysis, so-called 'common size analysis' is also frequently used in practice and academia. Common size analysis refers to an approach in which all other considered items are expressed as a percentage of a specific item (Correia *et al.*, 2013). The ROS and ROA measures are examples of common size analysis. ROS has been used by previous researchers in the B-BBEE field, such as Acemoglu *et al.* (2007). ROS was defined by these authors as operating profit divided by turnover. In line with these researchers, ROS is defined in this study as:

$$ROS = \frac{NOPAT}{T}$$

…Equation 3.2

Where:

ROS =   Return on sales

NOPAT =   Net operating profit after tax

T =   Turnover for the current financial year

ROS hence measures how much NOPAT is generated for each R1 of sales. A high ROS figure is therefore better than a low figure. A positive link between total B-BBEE score and ROS could imply that companies with higher total B-BBEE scores are likely to generate more NOPAT for each R1 of turnover, than companies with lower total B-BBEE scores.

The ROS ratio can be computed on a before or after-tax basis. Correia *et al.* (2013) argued that earnings before interest and taxes (EBIT), divided by turnover or earnings before interest, taxes, depreciation and amortisation (EBITDA), divided by turnover, might be a more suitable measure, as net profit can be influenced by differences in accounting policy regarding depreciation. In this study, NOPAT will be used for consistency, in line with previous B-BBEE research. ROS addresses the criticism of using the annual change in turnover, as the latter does not take operating expenses into account. Since ROS accounts for the operational costs, the NOPAT of a company should be more comparable between industries than the annual change in turnover.

3.2.3   Return on assets (ROA)

The ROA ratio is widely used as a measure of profitability (Sharma, Shebalkov & Yukhanaev, 2016; Waddock & Graves, 1997). This ratio has been used by many previous researchers in the diversity literature, such as Carter *et al.* (2010), Marimuthu and Kolandaisamy (2009), Marimuthu (2008) and Erhardt *et al.* (2003). ROA measures how effective an entity is in generating operating profit from its available assets, before the effects of financing are taken

into account (if ROA is calculated using EBIT or EBITDA) (Damodaran, 2001). As with ROS, ROA can also be computed on a before or after-tax basis. Damodaran (2007) defined ROA as NOPAT divided by total assets. Brealey and Myers (1991), however, argued that average assets should rather be used. In this study, ROA will be defined as follows:

$$\text{ROA} = \frac{\text{NOPAT}}{\frac{A_1 + A_0}{2}} \qquad \text{…Equation 3.3}$$

Where:

ROA =   Return on assets

NOPAT =   Net operating profit after tax

A_1 =   Total assets at the end of the current financial year

A_0 =   Total assets at the end of the previous financial year

Similar to ROS, a high ROA ratio is viewed in a positive light, especially when compared with the industry's ROA figure. When a firm's ROA is compared to the industry average, the information obtained from this ratio becomes very valuable (Brealey & Myers, 1991). In the context of this study, a positive association between ROA and total B-BBEE score could be interpreted as B-BBEE enabling the company to generate more operating profit from its existing assets.

Correia *et al.* (2013) stated that ROA can be regarded as a type of return on investment calculation. Investment is often referred to as investment from shareholders (equity) and from creditors (liabilities) (Correia *et al.*, 2013). In accounting terms, assets should always be equal to equity plus liabilities (Koppeschaar, Rossouw, Deysel, Sturdy, Van Wyk, Gaie-Booysen, Papageorgiou, Smith, Van Der Merwe & Schmulian, 2015). As such, Correia *et al.* (2013) argued that ROA could account for return on investment. Damodaran (2007) disagrees with Correia *et al.* (2013) by stating that investment cannot be defined as total equity plus total liabilities. He argued that entries such as provisions and current liabilities cannot be termed investments, as these items refer to short-term operational needs, rather than long-term investment needs (Damodaran, 2007).

ROA as an accounting-based measure of financial health has some shortcomings. This profitability ratio does not show how efficient a company is in generating net operating profit from each Rand of shareholders' investment. The methods of valuing assets in financial statements could differ, as the international accounting standard for property, plant and equipment (IAS 16) allows a company to show assets at historical cost price or fair value,

whichever is the most applicable (Koppeschaar *et al.*, 2015). This difference gives rise to the problem that, in certain instances, total assets is measured at fair value (market value), whereas in other instances total assets is measured at historical cost (price). Comparing two companies with different methods of valuating assets could complicate the analysis.

3.2.4   Return on equity (ROE)

The ROE ratio was used by international diversity authors Marimuthu and Kolandaisamy (2009) who calculated ROE as follows:

$$\text{ROE} = \frac{\text{Net profit}}{\text{Total equity}} \qquad \qquad \text{…Equation 3.4}$$

Where:

ROE =   Return on equity

Net profit =   Net profit (after accounting for tax) attributable to ordinary shareholders

Total equity = Total shareholders' equity

Collier, McGowan and Muhammad (2010) used the DuPont method of analysis to evaluate financial performance against corporate social performance. The DuPont method is also suggested by Correia *et al.* (2013) as a technique that is frequently used in structured analyses. The Du Pont method states that ROE is the ultimate measure of financial performance. ROE can be broken down in a number of components as indicated in Equation 3.5 (Correia *et al.*, 2013; Collier *et al.*, 2010; Richard, 2000):

$$\text{DuPont (ROE)} = \frac{\text{Net profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Equity}} \qquad \text{…Equation 3.5}$$

The first two sections of the Du Pont analysis (net profit divided by sales, and sales divided by assets) show the net profit margin and sales to assets ratio. The result of the first two sections is thus net profit divided by assets, which is ROA per Correria *et al.*'s (2013) definition. ROE can be calculated using the DuPont method, by taking ROA (Equation 3.3) and multiplying it with the equity multiplier, also called leverage (The CFA Institute, 2016; Collier *et al.*, 2010). The equity multiplier (or leverage) is defined by Collier *et al.* (2010) as total assets divided by total equity.

Damodaran (2007) defined ROE as net income divided by the book value of equity at the beginning of the year. Bloomberg (2018), however, uses the Chartered Financial Analyst (CFA) Institute's (2017) definition: ROE is calculated as net profit divided by average shareholders' equity. This definition was used for the purpose of this study (Equation 3.6).

$$ROE = \frac{\text{Net profit}}{\frac{E_1 + E_0}{2}} \qquad \text{...Equation 3.6}$$

Where:

ROE =   Return on equity

Net profit =   Net profit after tax

E_1 =   Total shareholders' equity at the end of the current financial year

E_0 =   Total shareholders' equity at the end of the previous financial year

The rationale behind using average shareholders' equity is that return, to which shareholders' equity is compared to, accrued over time (one financial year). To divide a number that was derived over time (return) by an indicator that was measured at one point in time (shareholders' equity), is perhaps not ideal. Using the average shareholders' equity is then arguably the most accurate way of calculating ROE, given that an average account for the opening and closing balances of shareholders' equity (Ross, Westerfield & Jaffe, 1996; Brealey & Myers, 1991).

The ROE ratio provides analysts with valuable information on how effective management has been to generate profit with the money invested by the ordinary shareholders. A company with a higher ROE would thus be a more attractive investment (Correia *et al.*, 2013). If a company has operated at a loss, ROE can be negative. In instances where equity has been reduced by a negative retained earnings figure, the reduced equity amount would inflate the ROE.

Financial risk is furthermore not accounted for by the ROE ratio. Leverage measures the relationship between debt and equity. Debt is a less expensive capital source compared to equity (The CFA Institute, 2016). Should a company thus employ more debt, ROE could increase. An increase in the debt to equity ratio, however, also increases financial risk. The reason being that the company has an obligation to pay the interest related to the debt, but do not have an obligation to pay dividends to ordinary shareholders (Correia *et al.*, 2013). Since ROE does not take financial risk into account, a company with a higher ROE (but higher risk) might seem more attractive than a company with a lower ROE (and lower risk). Investors need to account for risk and return when making investment decisions.

To combat the pitfall of ROE and the other accounting-based performance measures not accounting for financial risk, attention was also given to market-based (including risk-based) and value-based measures. In the following sections, an overview will be provided on the application and measurement of selected market-based financial health measures.

3.3   MARKET-BASED FINANCIAL HEALTH MEASURES

Although several previous researchers used accounting-based financial performance measures (Table 3.1), only a few researchers have used market-based measures in the diversity literature. Market-based measures relate to movements in market data, such as a company's share price. A summary of market-based measures used by prior diversity authors is presented in Table 3.2.

Table 3.2:   Market-based measures of financial health used by prior researchers

Author(s)	Measures utilised	Diversity measure	Nature of relationship
Mathura (2009)	CAGR, Tobin's Q and P/E ratio	Total B-BBEE score	No significant relationship with any of the measures
Carter *et al.* (2010)	Tobin's Q, ROA	Board diversity	Significant positive association with ROA
De Villiers & Ferreira (2011)	Annual share price growth	Total B-BBEE score	Significant negative association
Van der Merwe & Ferreira (2014)	Short-term share returns	Total B-BBEE and element scores	Significant negative relationship with total B-BBEE score, ownership and preferential procurement. Significant positive relationship with management control
Morris (2018)	Unlevered beta	Total B-BBEE and element scores	No significant relationships

Source: Author's own compilation based on cited references

As seen in Table 3.2, Mathura (2009) and De Villiers and Ferreira (2011) reported contrasting results with regard to the change in share price. Share price was also used by B-BBEE researchers in event studies, as is indicated in Table 1.3. Perusal of Table 1.3 revealed contrasting results for short-term and long-term share returns. For example, Mehta and Ward (2017) reported contradicting results, as they found positive short-term returns and a negative long-term association with B-BBEE between 2009 and 2015. As such, a further investigation of the change in share price and P/E ratio is warranted.

3.3.1   Annual share price growth

The annual share price growth measure could be used to investigate the change in a company's share price from one period to another. De Villiers and Ferreira (2011) and Mathura (2009) stated that the share price at the end of each financial year for each company under review should be compared to the price of the share at the end of the preceding financial year to calculate annual share price growth. The calculation of De Villiers and Ferreira (2011) and Mathura (2009) are consistent with Bloomberg's (2018) equation, as shown in Equation 3.7.

$$\text{Annual share price growth} = \frac{SP_1}{SP_0} - 1 \qquad \text{…Equation 3.7}$$

Where:

$SP_1 =$ Share price at the end of the current financial year

$SP_0 =$ Share price at the end of the preceding financial year

Both Mathura (2009) and De Villiers and Ferreira (2011) considered the increase in share price over a one-year period following the publication of their sampled companies' total B-BBEE scores. Mathura (2009) termed the annual share price increase CAGR, indicating growth over a period longer than a year, but only calculated growth for one year. De Villiers and Ferreira (2011) deemed a positive annual share price growth a positive financial performance indicator. A positive correlation between annual share price growth and a company's B-BBEE score could possibly be linked to a positive market perception of B-BBEE at the company in question.

Annual share price growth enables researchers to investigate the market's perception of future financial performance (Verweire & Van den Berghe, 2004). Share prices are publicly available. Annual share price growth presents a simple, cost effective manner to measure market performance. There are, however, a number of problems associated with the computation of this measure. The share price of a company can be influenced by market changes, such as the 2008 global financial crisis (Mans-Kemp, 2014). Since this study will include this crisis period, the results of the annual share price growth measure should be interpreted with caution. Share prices can also be influenced by dividend policy (Hussainey, Mgbame & Chijoke-Mgbame, 2011). Dividends could be included in the calculation of total share return. In line with previous B-BBEE researchers, annual share price growth will be used in this study as computed in Equation 3.7. Dividends are not included in this measure.

3.3.2 Market-to-book value (MTBV)

As discussed in Section 3.2.3, the market price of an asset is not always equal to its accounting value. The same holds true for shares, as the book value (accounting value) of a company's share is often not equal to its market price (Brealey & Myers, 1991). The difference could be due to the firm outperforming the market (The CFA Institute, 2016; Correia *et al.*, 2013).

Mathura (2009) calculated MTBV as market capitalisation divided by the book value of shareholders' equity. The CFA Institute (2016) and Correia *et al.* (2013) calculated MTBV as the share price of a company divided by the book value per share. This calculation is consistent with the method utilised by Bloomberg (2018). Book value per share is calculated as total shareholders' equity divided by the total number of ordinary shares issued in a specific year (Correia *et al.*, 2013). The calculation for MTBV is presented in Equation 3.8.

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$$\text{MTBV} = \frac{\text{SP}}{\frac{\text{TSE}}{\text{OS}}} \qquad\qquad \text{...Equation 3.8}$$

Where:

MTBV = Market-to-book value

SP = Share price at the end of the current financial year

TSE = Total shareholders' equity

OS = Number of ordinary shares issued at the end of the current financial year

Mathura (2009) stated that a MTBV of less than one could imply that the company did not create sufficient (or any) value for shareholders. The CFA Institute (2016) likewise stated that a MTBV of less than one could be regarded as a sign that the market does not expect the company to create returns in excess of what the accounting net asset value suggests. These explanations (of a MTBV of less than one) imply that the market expects a company to generate less value than what the book value of the assets represents. Since accounting theory states that the value of an asset should approximate the value of the future economic benefits expected from the asset (Koppeschaar *et al*., 2015), it could be argued that a MTBV of less than one might indicate that assets need to be tested for impairment.

A positive association between MTBV and total B-BBEE score could indicate that the market's perception of the company's B-BBEE strategy and activities is positive, and is partly reflected in a high share price. If the difference between the market value and book value of a share results in a MTBV ratio of greater than one, it could be referred to as market value added or market goodwill (Damodaran, 2007). A significant positive link between total B-BBEE score and MTBV could accordingly be ascribed to B-BBEE giving rise to goodwill that is recognised by the market, but which is not reflected on the financial statements.

Goodwill is only recognised as an asset upon completion of a business combination according to IFRS 3, but is not recognised as an asset of the entity possessing the goodwill, as it does not fulfil the definition of an asset according to the accounting framework (Koppeschaar *et al*., 2015). As goodwill typically gives rise to the entity generating more operating profit from their existing assets, it is regarded as a "hidden asset" (Damodaran, 2007:2). Investors tend to define assets different to accounting standards (*ibid*). The statement of financial position from an investor's point of view is depicted in Figure 3.1.

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Assets			Liabilities	
Assets in place Existing investments generate cash flows today	Investments already made	Debt	Borrowed money	
Growth assets Expected value that will be created by future investments	Investments yet to be made	Equity	Owners' funds	
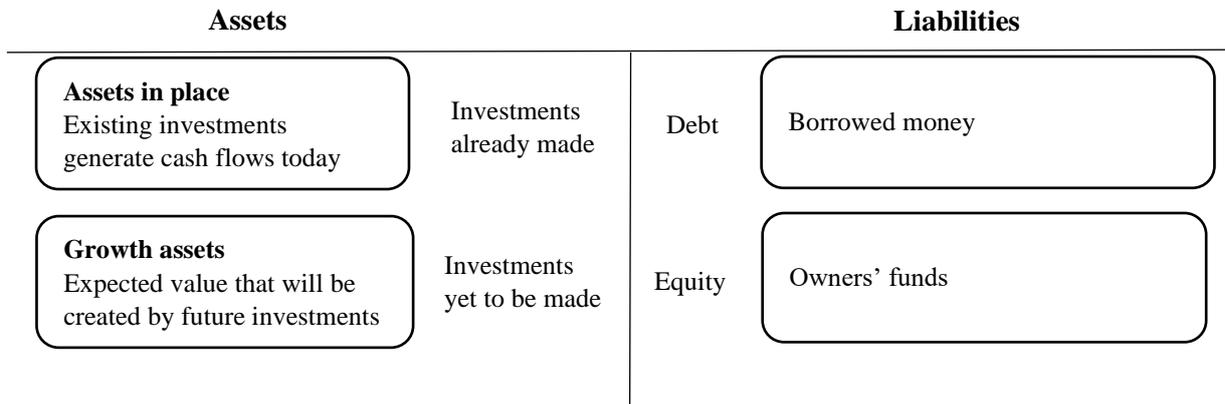
Figure 3.1: **Statement of financial position from an investor's point of view**

Source: Damodaran (2007)

Investors take information into account that is not indicated in the financial statements, such as value that would be created by future investments, as shown in Figure 3.1. Some investors might be willing to pay for assets that are not yet reflected on the financial statements, giving rise to a higher MTBV ratio.

Beaver and Ryan (2000) noted that MTBV is useful in predicting future ROE. Companies that have positive net present value projects will probably have higher MTBV, since the market expects them to perform better than the book value of the assets reflected on their financial statements (Beaver & Ryan, 2000). Correia *et al.* (2013) also remarked that companies that have high growth would have higher MTBV ratios.

Unexpected changes in market conditions can distort MTBV (Beaver & Ryan, 2000). The market tends to integrate changes in the economic environment immediately in the share price, while the same results will only be reflected in the financial statements over a period of time (Beaver & Ryan, 2000). Correia *et al.* (2013) stated that the industry in which a company operates can also play a role in the MTBV of the company. Attention will consequently be given to differences across industries.

MTBV is different from Tobin's Q as used by Carter *et al.* (2010), as the latter measures the market value of the company's assets divided by the replacement value of the assets. Tobin's Q will, however, not be included in this study, due to the fact that MTBV (which can be considered as a proxy for Tobin's Q) is used. A measure that only focusses on the assets of a company and disregards the liabilities was not deemed appropriate for this study.

3.3.3   Price/earnings (P/E) ratio

The P/E ratio is often used in valuations of companies (The CFA Institute, 2016; Correia *et al.*, 2013). The metric reflects the ratio between the share price and the EPS (Correia *et al.*, 2013).

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The CFA Institute (2016) refers to this ratio as the price per share divided by EPS. Since market capitalisation is defined as the price per share multiplied by the number of shares in issue, the P/E ratio can also be expressed as market capitalisation divided by earnings. In this study, the Bloomberg (2018) definition was used as indicated in Equation 3.9.

$$P/E = \frac{SP}{BEPS}$$
…Equation 3.9

Where:

P/E =   Price/earnings ratio

SP =   Share price at the end of the current financial year

BEPS =   Basic earnings per share

The CFA Institute (2016) defines basic EPS as net profit after tax divided by the weighted number of ordinary shares, as indicated in Equation 3.10.

$$BEPS = \frac{NP}{WOS}$$
…Equation 3.10

Where:

BEPS =   Basic earnings per share

NP =   Net profit after tax

WOS =   Weighted number of ordinary shares at the end of the current financial
                       year

The denominator (WOS) is calculated by taking the duration the share was in issue during the year into account. For example, shares that have only been in issue for three months at the end of the financial year, is measured as a quarter of a share, as it was only in issue for a quarter of the year (The CFA Institute, 2016). Companies with high expected future returns and/or low risk are expected to have high P/E ratios (Mathura, 2009; Abdo & Fisher, 2007).

The P/E ratio is a well-known and trusted method of assessing the market value of a company (The CFA Institute, 2016; Correia *et al.*, 2013). According to Correia *et al.* (2013) and Brigham, Gapenski and Ehrhardt (1999), the market will affix a high P/E ratio to a company that is perceived to have high growth in future. A positive association between total B-BBEE scores and P/E ratios could imply that the market view B-BBEE as a contributor to future growth. P/E ratio can also be influenced by the perceived risk of a company. Companies that are more likely to close down in future, will attract a lower valuation from investors, and hence a lower P/E ratio will be ascertained. A negative relationship between total B-BBEE score and P/E ratio

could indicate that companies with a higher total B-BBEE score have a higher perceived risk of failure.

Earnings are, however, susceptible to manipulation (The CFA Institute, 2016). Haberberg and Rieple (2008) stated that EPS is often considered when determining managers' incentives such as bonuses and share options. As such, EPS could be manipulated and even overstated in an attempt to ensure a higher bonus or other incentive. The CFA Institute (2016) stated that short-term losses due to non-recurring items can lead to an overstated P/E ratio, as the market might not decrease the share price in the same ratio as the decrease in net profit after tax (Correia *et al.*, 2013). A negative P/E ratio fails as an indicator of value and is not deemed meaningful.

3.3.4   Excess return and cost of equity

A major shortcoming of the financial health measures discussed in Section 3.2 is the fact that risk is not explicitly taken into account. To overcome this shortcoming, previous researchers such as Hamilton, Jo and Statman (1993), Bello (2005) and Mans-Kemp (2014) included an excess return measure. Excess return can be measured using Jensen's (1968) alpha. This value represents the difference between ex post total return and required return.

Instead of using total return (which includes dividends), Hamilton *et al.* (1993) and Bello (2005) used annual share price growth. The same approach was followed in this study as it is aimed at directors and managers of companies who should decide on the company's B-BBEE strategy and activities. Agency theory suggests that a director's remuneration (especially bonus) is determined by share price, amongst others, and not directly by dividends paid out. As a result, the directors and managers would probably be more concerned about the growth in share price, than the dividends received by ordinary shareholders (Shen, 2005).

The equation for calculating a company's excess return is presented in Equation 3.11.

$$\propto = \text{annual share price growth} - R_e \qquad \text{...Equation 3.11}$$

Where:

$\propto =$ Excess return

$R_e =$ Required return (cost of equity)

Required return can be measured according to a number of asset pricing models. Jensen (1968) used the capital asset pricing model (CAPM) as indicated in Equation 3.12.

$$R_e = R_f + \beta(R_m - R_f) \qquad \text{...Equation 3.12}$$

Where:

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$R_e =$ Realised returns

$\beta =$ Covariance between return of the share and the market return

$R_m =$ Return on the market portfolio

$R_f =$ Risk-free rate

The definition indicated above in Equation 3.12 is consistent with the definition used by Bloomberg (2018) to calculate cost of equity. The cost of equity as calculated by Bloomberg (2018) was used in this study and, as such, cost of equity was calculated as indicated in Equation 3.12. The required return computed by CAPM suggests that the ex post minimum return that any investor requires is the risk-free rate. In addition, an investor wants to be compensated for market risk. The difference between the return on a market index and the risk-free rate $(R_m\text{-}R_f)$ is thus referred to as the market factor. Given substantive criticism against the CAPM (Adrian & Franzoni, 2009; Fama & French, 2004; Carhart, 1997; Roll & Ross, 1994), a number of multi-factor models have seen the light in recent years.

In 1992, Fama and French (1992) introduced a three-factor model which included a size factor and a value factor. Whether a company is viewed as a growth or value asset, is determined by the inverse of its MTBV. As such, a high MTBV would indicate a growth asset, whilst a low MTBV would indicate a value asset. The argument to include a size factor was based on the findings which showed that the smaller the market capitalisation of a company, the higher its required return (Fama & French, 1992). It could be argued that, as larger companies have a lower risk of becoming insolvent, ordinary shareholders require a lower return. Companies with a high MTBV also have a higher required return, compared to companies with a lower MTBV. If a company's market price is less than its book value, the market arguably perceives the company to have a higher risk, resulting in a lower share price and an inflated required return (Correia *et al.*, 2013).

Carhart (1997) argued that momentum should also be included when calculating required return. Momentum explains why share prices continue to increase or decrease if there is an upward or downward trend in the share price (Gregory, Tharyan & Christidis, 2013). In 2004, Fama and French (2004) added two more factors to their three-factor model. The first being investment, and the other being profitability (Fama & French, 2004). Investment refers to the risk companies take when investing. Companies that are willing to invest aggressively may have a higher cost of equity than companies that invest conservatively. Companies that are more profitable are expected to have a lower cost of equity than those with lower levels of profitability.

Despite these criticisms of Fama and French (2004; 1992), Levy and Roll (2012) concluded that, whilst there are many objections against CAPM, the empirical evidence shows that it is a reliable method to calculate the cost of equity. In the South African context, Ward and Muller (2012) have been critical of CAPM. Nel (2011), however, found that CAPM was the most widely used indicator of the cost of equity in the local context at the time. PwC (2016) pointed out that analysts in Africa prefer to use CAPM over other methods. The usage of CAPM was hence deemed applicable for this study.

A positive excess return is obtained if the annual share price growth is more than the cost of equity. This study is the first of its kind (as far as could be established) where B-BBEE (in total and per element) was measured against excess return. Excess return measures whether the realised return was higher than the required return. Another measure, EVA, also measures the excess return a company generated, but by using other assumptions. In the following section, value-based financial health measures will be discussed.

3.4   VALUE-BASED FINANCIAL HEALTH MEASURE

As far as could be established, no previous B-BBEE researchers included value-based financial health measures. According to Damodaran (2007), it is important to understand whether a company's assets are generating returns in excess of what it costs to fund them. By accounting for the cost of capital, value-based financial health measures such as economic value added (EVA), cash flow return on investment and cash value added, emerged. EVA is the most commonly used value-based measure (Milichovský, 2015). In South Africa, EVA is also the most commonly used (Erasmus, 2008). For the purposes of this study, EVA was included as a value-based financial health measure.

EVA is also termed abnormal earnings by Correia *et al.* (2013), as it measures the return generated in excess of the cost of investment. EVA will thus increase through projects that have a positive net present value. The measure was calculated in this study based on Correia *et al.'s* (2013) approach:

$$EVA = NOPAT - WACC \times CAP_{t-1} \qquad \text{…Equation 3.13}$$

Where:

EVA =   Economic value added

NOPAT =   Net operating profit after tax

WACC =   Weighted average cost of capital

$\text{CAP}_{t-1} =$ Invested capital at the beginning of the financial period

Correia *et al.* (2013) and Erasmus (2008) concurred that NOPAT is an acceptable form of return to be used in the calculation of EVA. Invested capital is defined by Correia *et al.* (2013) as the book value of a company's non-current assets, plus its current assets, minus its non-interest-bearing liabilities. Erasmus (2008) summarised invested capital as total equity plus total liabilities minus non-interest-bearing short-term borrowings. In this study, invested capital was defined as total assets minus non-interest-bearing current liabilities, in line with Correia *et al.* (2013) and Erasmus (2008).

Weighted average cost of capital (WACC) is the combination of cost of equity and cost of debt. Cost of debt is typically lower than the cost of equity. WACC takes the debt structure of the company into account, which is why it is called weighted average (Correia *et al.*, 2013). Should a company employ more debt, mathematically their WACC would decrease. Modigliani and Miller (1958), however, argued that the more debt a company employs, the higher the cost of equity becomes. This increase in the cost of equity offsets the saving associated with cheaper debt capital. As a result, they believed it is impossible to lower WACC by increasing debt.

A high EVA could either imply that the firm is creating value, or that the company has a low WACC (Young & O'Byrne, 2001). A positive link between EVA and total B-BBEE score could point to companies with higher levels of B-BBEE being able to generate higher returns for their investors compared to companies with lower total B-BBEE scores. A company should invest in projects with net present values that exceed the cost of capital to maximise EVA, which will ultimately lead to an increase in shareholder value (Young & O'Byrne, 2001). Holler (2009) stated that EVA overcomes the challenge of possible accounting distortions. The CFA Institute (2016) and Correia *et al*. (2013) agreed with Holler (2009) that EVA is a useful measure when valuating companies.

Pitfalls associated with EVA include that certain authors define EVA the same as residual income (Stewart, 1991), which can lead to confusion. The accuracy of the EVA measure is dependent on the calculation of a company's WACC, which is not always readily available in the case of unlisted companies. In the context of this study, the sample only included companies that were listed on the JSE for which WACC was readily available.

3.5 DEFAULT RISK PROBABILITY

It is also important to understand the default risk of a company when evaluating financial health. As far as could be established, no prior researcher in the B-BBEE field has referred to the possibility that a company would default on its financial commitments. The purpose of the default risk probability measure is to calculate the probability that a company would not fulfil its financial commitments and hence default on its payments within the next financial year.

The default risk probability data were downloaded from Bloomberg (2018). The exact equation for calculating default risk probability is not provided by Bloomberg (2018), but the considerations taken into account in calculating this measure are discussed in this section. Bloomberg (2018) is widely regarded as a credible data source. The measure is based on the concepts of liquidity and solvency, as defined by Bloomberg (2018). The liquidity of a company is determined by the cash flow interest coverage ratio. This ratio is outlined in Equation 3.14.

$$IC = \frac{CFO}{IE} \qquad \text{…Equation 3.14}$$

Where:

IC =   Interest coverage ratio

CFO =   Cash flow from operations for the trailing 12 months

IE =   Interest expense for the trailing 12 months

The cash flow from operations used in Equation 3.14 is adjusted by Bloomberg (2018) for taxes and interest expense. The solvency of a company is assessed through the relationship of a company's assets to its debt. The value of the company's assets could be determined by using the Black Scholes model (Scholes & Williams, 1977). The solvency ratio of debt to assets, which Bloomberg defines as the distance to default, is calculated as shown in Equation 3.15.

$$DD = \frac{ln\left(\frac{V_0}{D}\right) + \left(\mu - \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}} \qquad \text{…Equation 3.15}$$

Where:

$DD =$ Distance to default

$V_0 =$ Total assets at time 0 according to Black Scholes model

$D =$ Liabilities

$\mu =$ Asset drift

$\sigma =$ Asset volatility

$T =$ Time to maturity of total liabilities

The distance to default formula is not sufficient to indicate default risk, as it assumes that default can only happen when the liabilities mature. It is for this reason that Bloomberg (2018)

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incorporates the cash flow available to fund interest expenditure. Bloomberg (2018) also makes certain accounting adjustments to achieve a more comparable result across industries. Default risk probability provides the likelihood of default within a time frame of between three months and five years. For purposes of this study, the 12 months probability measure was used, as this is in line with the going concern principle of accounting. A higher default risk probability indicates weaker financial health. A lower default risk probability shows that the company is more likely to continue as a going concern. A positive association between total B-BBEE score and default risk probability could thus indicate that companies with higher total B-BBEE scores are more likely to default on their debt repayments within the next 12 months.

The main advantage of using this measure is that it is the only measure showing a company's risk of default (Bloomberg, 2018). This measure incorporates cash flow from operations (Equation 3.14). If a positive ROE or ROA ratio was reported, but the returns are not translated into cash (due to an increase in debtors balance), the link between total B-BBEE score and ROE, ROA and B-BBEE score and default risk probability, respectively, would yield contrasting results. An increase in debtors balance can lead to a decrease in cash flow from operations and a lower interest coverage ratio. A lower interest coverage ratio will ultimately lead to a higher default risk probability.

3.6   SUMMARY AND CONCLUSIONS

In this chapter, several financial health measures were discussed, as the relationship with B-BBEE and these measures might reveal the business case for B-BBEE compliance. Four accounting-based measures were explained, namely annual percentage change in turnover, ROS, ROA and ROE. In addition, five market-based financial health measures were utilised, namely annual share price growth, MTBV, P/E ratio, excess return and cost of equity. This study was the first to also include EVA as a value-based financial health measure. A default risk probability measure was used to identify the relationship between B-BBEE and default risk of a company, a measure which was not previously utilised in B-BBEE research.

The accounting-based measures give an ex post view of the company's results. Market-based measures, in contrast, provide an ex ante view of the company's expected performance. EVA measures the entity's performance against its cost of capital. Default risk probability tests the likelihood of a company defaulting on debt repayments within the next financial year. To provide a holistic view of the relationships between B-BBEE scores (in total and per element),

a wide spectrum of measures was employed. Measures such as default risk probability, cost of equity and P/E ratio are all related to an increase or decrease in risk (a higher risk will be associated with an increased default risk probability, an inflated cost of equity and a deflated P/E ratio). The accounting-based measures of ROE, ROA and ROS are all measuring different aspects of a company's ability to generate profit from the resources it has. Should a company be expected to continue to be more profitable than other entities, such expectation will be reflected in favourable market-based measures.

In the following chapter, an in-depth discussion of the research design and methodology adopted in this study will be presented.

CHAPTER FOUR
RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

Research is conducted to gain insight into the facts and environment of a specific research question (Wisker, 2001). Zikmund *et al.* (2010:1) added that business research aims to "find the truth" regarding business occurrences. In this study, a uniquely South African business occurrence, namely selected listed companies' compliance with B-BBEE legislation was investigated.

In Chapter Two, a detailed discussion was provided on B-BBEE. As this study addresses the question of whether there is a business case for B-BBEE, Chapter Three contained information on various financial health measures. In this chapter, the research design and methodology adopted to collect and analyse data will be discussed.

Different types of research will be explained next. Thereafter, the chosen research paradigm will be described, followed by the methods used to collect quantitative secondary data. Attention will be given to the population, sample and the operationalisation of the variables. Details on the statistical tests that were performed will be discussed as part of the data analysis section. Lastly, reliability, validity and ethical considerations will be provided.

4.2 TYPES OF RESEARCH

Research can be exploratory, causal or descriptive in nature, or a combination thereof (Zikmund *et al.*, 2010). Babbie (2012) explained that exploratory research usually occurs during the initial phase(s) of research and might not provide all the solutions for the research problem. Prior research had been conducted on the relationship between B-BBEE and financial performance, as discussed in Chapters One to Three. As such, this study was not exploratory. Previous researchers did, however, not utilise all the financial health measures used in this study, and only two investigated the elements of the B-BBEE scorecard. Causal research can be conducted to investigate whether a variable has a predictable effect on another variable (Zikmund *et al.*, 2010).

Descriptive research can define certain properties of businesses, objects or humans (*ibid*). For the purpose of this study, descriptive research was conducted to answer questions about the nature of the investigated relationships. When there are multiple factors that could influence a

relationship, descriptive research is typically performed. Causality can therefore not be proven. In this case, financial health could have been influenced by several factors, not only a company's total B-BBEE score. In the next section, attention will be given to research paradigms and designs.

4.3   RESEARCH PARADIGMS AND DESIGNS

4.3.1   Research approach

A researcher should define his/her approach to the research, by firstly reflecting on the appropriate research paradigm. Allison, O'Sullivan, Owen, Rice, Rothwell and Saunders (1996) differentiated between positivistic and phenomenological research paradigms. If a positivistic paradigm is adopted, methods are used to measure, explain and/or predict relationships between variables in a numerical manner (Swanson & Holton, 2005). A phenomenological paradigm can be used to investigate perceptions and opinions of human participants (Allison *et al.*, 1996). Their experiences are typically subjective and influenced by their individual circumstances. When applying a positivistic paradigm, the data are therefore usually easier to measure and quantify compared to collecting qualitative data (Dawson, 2013; Wisker, 2001; Allison *et al.*, 1996). This study analysed the relationships between B-BBEE scores (in total and per element) (numerical) and a number of pre-determined financial health measures (also numerical). As these variables are all numerical, a positivistic approach could be adopted.

4.3.2   Panel design

A study that covers more than one company in the same year is referred to as a cross-sectional study. If the same company is investigated for a number of years, a time-series study is conducted. If cross-sectional and time-series data are combined i.e. across companies and years, the data are referred to as panel data (Gujarati, 2004). A balanced panel is used if all the required data are available for all companies for all the years in the study. An unbalanced panel is applied if information is not available for selected companies in certain years (Gujarati, 2004). In this study, B-BBEE scores for some companies were unavailable for specific years, as those companies were not included in the Empowerdex list of most empowered companies for the respective years. As such, an unbalanced panel design was used. In the following section, details are provided on the collection of the quantitative data.

4.4   DATA COLLECTION

Mouton (2001) stated that data can be secondary or primary in nature. Secondary data are already in existence, whilst primary data are collected by the researcher to address a specific research problem. Zikmund *et al.* (2010) further explains that primary data typically arise from distributing questionnaires or conducting interviews, whereas secondary data are generally obtained from existing data sources, such as databases (Babbie, 2012).

Exploratory research often relies on primary data, as the researcher would be the first in the field to conduct research on a topic (Dawson, 2013). Primary data are advantageous to address a novel research problem. The costs involved in gathering primary data may, however, outweigh the benefits thereof. Secondary data are easier and often more cost effective to obtain than primary data. Secondary data may, however, not be tailor-made for the research question at hand and could therefore limit the outcomes of the study (Babbie, 2012).

Previous B-BBEE researchers such as Mathura (2009), Kleynhans and Kruger (2014) and Van der Merwe and Ferreira (2014), utilised secondary data provided by Empowerdex. In line with these researchers, the current study also used secondary Empowerdex data. The key differences between prior studies and the current study include that a larger sample was used which covered a longer timeframe, and a broader spectrum of financial health measures were employed. In the following sections, the population, sample frame, sampling technique, sample and the operationalisation of variables will be discussed.

4.4.1   Population

A population can be defined as the total group of items/individuals that are of interest to the researcher (Zikmund *et* al., 2010; Allison *et al*., 1996). The population in this study consisted of all companies listed on the JSE's main board and Alternative Exchange (AltX) over the research period (2004 to 2015). This time frame was chosen as the first B-BBEE scores were released in 2004 by Empowerdex, whilst the 2013 Codes were implemented in 2015. The 2016 list of most empowered companies are thus based on 2013 Codes and are therefore not comparable to the B-BBEE scores obtained under the 2007 Codes.

The 2007 and 2013 Codes are very different in terms of their weighting, total number of points available and the elements. As a result, only the scores measured according to the 2007 Codes were considered over the period 2007 to 2015. The years prior to 2007 were measured based on the 2004 Codes which were deemed to be comparable to the 2007 Codes. Other B-BBEE

researchers (such as Kleynhans & Kruger, 2014; Mathura, 2009; Acemoglu *et al*., 2007) all used short timeframes (one to three years), whereas the current study spanned over 12 years.

Details on the population considered are presented in Table 4.1. The majority of the companies were listed on the main board of the JSE. Companies that were listed on the AltX were also included in the population as Empowerdex scores were provided for some of these smaller companies. Fama and French (2004) found that company size could have an influence on financial performance. For this reason, this study included larger companies (JSE main board) and smaller companies (AltX).

Table 4.1:   Population: Companies listed on the JSE main board and AltX (2004-2015)

Year	Number of JSE-listed companies
2004	389
2005	373
2006	389
2007	411
2008	411
2009	398
2010	397
2011	395
2012	387
2013	375
2014	380
2015	382

Source: World Federation of Exchanges (2016)

The number of companies listed on the JSE fluctuated between 373 and 411 over the period under review. It is notable that the number of companies declined from 2008 to 2009, as this period coincided with the global financial crisis. This crisis had a considerable impact on South Africa, resulting in job losses and a loss of investments. This downturn in economic activity culminated in a technical recession in the first two quarters of 2009 (Mans-Kemp, 2014).

4.4.2   Sample frame and selection

Greenfield (2002) argued that it is not always possible to collect data for the entire population, due to time and budget constraints. For this reason, only a selection of the population, called the sample is investigated (Zikmund *et al.*, 2010). The sample is typically selected from the sampling frame, namely a partial or complete list of the individual population elements (Zikmund *et al*., 2010; Allison *et al*., 1996). In this study, the sample frame comprised a complete list of all companies that were listed on the local bourse between 2004 and 2015 (see Table 4.1).

4.4.3   Sampling technique

There are two main sampling approaches. According to Zikmund *et al.* (2010), sampling can either be based on probabilities or based on judgment/ convenience. The former is called probability sampling, whilst the latter is referred to as non-probability sampling. Probability sampling entails the random selection of subjects from the sampling frame. Non-probability sampling entails the non-random selection of pre-determined subjects from the sampling frame. In this study, all the companies included in the Empowerdex lists (of most empowered companies) from 2004 to 2015 and for which financial data could be obtained, were used. The companies in these lists voluntarily agreed to make their scores available to Empowerdex for publication purposes. As the inclusion of these companies was not random, a non-probability sampling technique was applied.

Non-probability sampling consists of judgement, quota and convenience sampling (Zikmund *et al.*, 2010). Judgement sampling refers to selecting certain items in a population based on an expert's opinion. Quota sampling is applied if the data can be categorised and a certain number of each category is required (*ibid*). For example, if a researcher specifically wants to focus on a certain number of companies in each JSE industry.

Convenience sampling was used in this study. This sampling technique entails the selection of items based on their availability or ease of access. As explained, companies were chosen based on the availability of their Empowerdex B-BBEE scores for the period 2004 to 2015. Kleynhans and Kruger (2014) also applied convenience sampling in their B-BBEE study. In contrast, Mathura (2009) applied cluster sampling. This non-probability sampling technique splits the population into a number of categories or clusters (for example low, medium and high B-BBEE scores). A number of these clusters are then randomly selected to represent the total population (i.e. if one cluster is selected, either the low, medium or high cluster can be selected to represent the population).

4.4.4   Compilation of the final sample

Empowerdex annually publicly disclosed the B-BBEE scores of approximately 200 JSE-listed companies over the period 2004 to 2009, based on their willing participation and consent. From 2010 onwards Empowerdex annually only disclosed the scores of approximately 100 companies. A few companies had to be excluded from the sample as they were not JSE-listed, and hence had no publicly available financial data. In total, eight observations were excluded from the sample as no financial data were available for these private companies. In Table 4.2, the number of companies included in the final sample is displayed.

Table 4.2:   Number of companies included in the sample

Period	Year	Number of companies in the sample	Percentage of population[b]
Nascent	2004	198	51%
	2005	184	49%
	2006	200	51%
	2007	199	48%
	2008	188	46%
	2009	200[a]	50%
Wider adoption	2010	100[a]	25%
	2011	110	28%
	2012	99	26%
	2013	82	22%
	2014	99	26%
	2015	108	28%
(a) The lists of most empowered companies reduced from approximately 200 to approximately 100			
(b) Based on the figures contained in Table 4.1			

Given the purpose of the study, a large sample size was required. As such, this study used all the data that were available to the author. As there was a limitation on the amount of data available, the author did not limit the data further by considering factors such as significance level, power and effect size. This study used, as far as could be established, the largest sample of companies with publicly available B-BBEE scores to date. In Table 4.2 it is indicated that the period under review was divided into two sub-periods: the nascent period, and the wider-adoption period. The total period was 12 years. Halfway through this study period, 2010, the lists of most empowered companies reduced from approximately 200 to approximately 100. To separate the data at 2010 also made logical sense, as it came three years after the implementation of the 2007 Codes. Companies thus had sufficient time to formalise their B-BBEE strategies. Between 2010 and the end of the study period (2015), this period was called the wider adoption, as companies then had sufficient opportunities to decide on their B-BBEE endeavours. When the data were analysed descriptively, it was also seen that between the end of the nascent period and the start of the wider adoption period, the largest increase in B-BBEE scores (in total and per element) were noted. This observation was also verified by the mixed-model ANOVAs that showed statistical significance regarding the transition between the nascent and wider adoption periods, even after the effect of the reduced sample size was accounted for.

In line with previous researchers such as Mathura (2009), Acemoglu *et al.* (2007), Chipeta and Vokwana (2011) and Kleynhans and Kruger (2014), no industries were intentionally excluded from the sample. To address survivorship bias, delisted and suspended companies were also included in the sample for the period that they were included on Empowerdex's annual lists. In contrast, Mathura (2009) excluded delisted companies from his B-BBEE study. As companies often delist because of poor financial health or bankruptcy, delisted companies were included in this study to account for companies with varying degrees of financial health. The data sourced

from Empowerdex only indicated company names, and not JSE ticker codes. Ticker codes were sourced from the IRESS (2018) database, whilst delisted companies' ticker codes were obtained from the Sharenet (2018) website. In certain instances, stock exchange news service announcements were used to identify ticker codes of delisted companies. In total, 379 unique ticker codes were used in the final analysis, making this study very comprehensive.

Only the total B-BBEE score per company was publicly released, but the scores per element were obtained through enquiry from Empowerdex's research department. It is important to note that these companies were the most empowered companies that voluntarily participated in Empowerdex's lists. It is therefore not necessarily the most empowered companies listed on the JSE, as the data of all the total B-BBEE scores of all the JSE-listed companies were not available. Companies were classified in terms of industry using the Industry Classification Benchmark. All industries were represented, with the exception of utilities, as there were no companies listed in this industry over the duration of the study period. Only one company year from the oil and gas industry were included in the sample. The number of companies per year per industry is shown in Table 4.3.

Table 4.3:   **Number of companies per industry per year**

Industry	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Basic materials	35	28	35	38	43	44	12	15	11	9	11	8
Consumer goods	21	18	19	19	14	17	11	10	8	9	9	8
Consumer services	40	36	37	28	30	29	11	14	12	10	14	17
Financials	44	42	47	54	42	44	21	23	23	19	18	26
Health care	4	4	4	4	4	6	5	5	5	4	4	4
Industrials	34	35	39	37	36	40	26	29	27	21	31	31
Oil and gas	1	0	0	0	0	0	0	0	0	0	0	0
Technology	16	18	16	16	15	16	9	9	10	6	8	11
Telecommunications	3	3	3	3	4	4	5	5	3	4	4	3
Total per year	**198**	**184**	**200**	**199**	**188**	**200**	**100**	**110**	**99**	**82**	**99**	**108**

In Table 4.3 it is seen that the sectors were well represented over the study period.

4.4.5   Operationalisation of variables

The operationalisation of variables refers to how variables are defined (Babbie, 2012). Researchers can use different measurement scales to classify collected data, including nominal, ordinal, interval or ratio scales (Zikmund *et al.*, 2010). If a nominal scale is used, data are organised into categories where no specific order or sequence is implied. According to Babbie (2012), nominal data could be dichotomous, for example when the label '1' is used for yes and '0' for no. Ordinal data can be ranked from first to last or highest to lowest value based on a

value attached to each observation (Zikmund *et al.*, 2010). Interval data can also be ranked, but has no maximum value and can also be infinitely negative. Some of the data used in this study were interval data (such as ROE, ROA and ROS). As ratio data have an absolute zero point, the researcher can compare differences in total B-BBEE scores over time and across industries.

Variables can also be classified as a dependent, independent or control variables (Babbie, 2012). An independent variable is a variable against which the dependent variable is measured (Babbie, 2012; Zikmund *et al.*, 2010). One of the main objectives of this study was to determine the nature of the relationship between B-BBEE scores (in total and per element) and the sampled companies' financial health measures. The B-BBEE scores were regarded as the independent variables, whilst the financial health measures were regarded as the dependent variables. Prior researchers focused on the relationship between B-BBEE scores as the predictor variable and financial health measures as the dependent variable (Morris, 2018; Van der Merwe & Ferreira, 2014; Kleynhans & Kruger, 2014; Mathura, 2009; Acemoglu *et al.*, 2007).

A control variable is a variable that can influence the dependent variable indirectly (Zikmund *et al.*, 2010). Company size, defined as the log of total assets, log of market capitalisation and log of total sales, were included as control variables. For the financials and basic material industries, company size was only defined using the log of total sales and log of market capitalisation. Total assets (and ROA) were not used for these sectors, as financials (notably banks) typically have considerable assets (money from clients), owes the money to the clients, and thus have corresponding liabilities. Basic materials industry includes the mining companies that own very expensive mining equipment and, in the author's opinion, can thus not be compared to retail stores that rent the majority of shops and have less expensive property, plant and equipment. As stated in Section 4.4, all the B-BBEE scores were collected from Empowerdex, while the financial health data were sourced from Bloomberg (2018). In Table 4.4, a description is provided for each of the considered variables.

Table 4.4:   Description of the variables

Variable		Description	Source
Independent (ratio scale)	Total B-BBEE score	Total B-BBEE score is the score on which the level of compliance (one to eight or non-compliant) is based. This score has a maximum value under the 2007 Codes of 100, even though there are bonus points that could give a company a score of more than 100.	Empowerdex
	Ownership score	Score out of 20 based on the percentage black shareholders.	
	Management score	A maximum score of 10 is available for having a certain percentage black directors and managers.	
	Employment equity score	15 points are allocated if a company complies with all the requirements of the Employment Equity Act.	
	Skills development score	Skills development can add 15 points to the total B-BBEE score should a company adequately train workers.	
	Preferential procurement score	20 points could be earned if a company procured from companies with high levels of B-BBEE compliance.	
	Enterprise development score	A maximum of 15 points are available if a company assisted in developing small black-owned enterprises.	
	Socio-economic development score	Corporate social initiatives could earn a company 5 points.	
Dependent (all variables on an interval scale except for default risk probability) (ratio scale)	Annual percentage change in turnover	Change in sales or revenue from continued operations for the trailing twelve months. Calculated as shown in Equation 3.1	Bloomberg
	ROS	Net operating profit after tax, divided by revenue or sales, as defined in Equation 3.2.	
	ROA	Return on assets was defined in Equation 3.3 as net operating profit after tax divided by the average total assets.	
	ROE	Net profit after tax, as disclosed in the statement of comprehensive income, divided by average equity (Equation 3.6).	
	Annual share price growth	Change in share price from the current financial reporting date to the previous financial reporting date (Equation 3.7).	
	MTBV	The ratio between market capitalisation at date of current financial year-end and total equity in the statement of financial position at the same date (Equation 3.8).	
	P/E ratio	Share price at financial year-end, divided by basic EPS as reported at the same date (Equation 3.9).	
	Cost of equity	Return required by ordinary shareholders, based on CAPM (Equation 3.12).	
	Excess return	Excess return was calculated as annual share price growth minus cost of equity (Equation 3.11).	
	EVA	EVA was defined as net operating after tax minus weighted average cost of capital timed by total equity and interest-bearing liabilities at the start of the financial year (Equation 3.13).	
	Default risk probability	Default risk probability measures the likelihood of a company not meeting its financial commitments within the following year.	
Control (ratio scale)	Log (10) of total assets	Decimal logarithm of total assets. Total assets were defined as the total of the statement of financial position assets.	Bloomberg
	Log (10) of market capitalisation	It was defined as total ordinary shares in issue multiplied by share price at date of financial year-end of the respective company. The decimal logarithm thereof was computed.	
	Log (10) of total sales	Total sales were defined as total revenue as reported in the statement of profit or loss of the respective company for the trailing 12 months before reporting date. The decimal logarithm of total sales was used.	

All the B-BBEE scores were ratio data due to the fact that they could not be negative. The same

is applicable to the default risk probability as this measure shows how likely a company is to

default within the next twelve months. A likelihood or probability can only range between 0 and 1. The control variables were also ratio data, since these variables cannot be negative.

All other data were interval data. If return (NOPAT or net profit, depending on the measure) is negative, all of ROS, ROE, ROA and P/E ratio will be negative values. Annual share price growth can also be negative if one year's share price is lower than that of the previous year. MTBV can be negative if the company has negative equity, even though this is improbable. EVA can be negative if the cost of capital employed is more than NOPAT generated by the company. A negative excess return can be obtained if the cost of equity is higher than annual share price growth. The nature of the respective variables influenced the choice of methods used to analyse the data.

4.5 DATA ANALYSIS

A statistical test can be either descriptive or inferential in nature (Babbie, 2012; Zikmund *et al.*, 2010). To define the characteristics of a sample, descriptive statistics are generally used (Babbie, 2012). Inferential statistics are employed to examine whether significant relationships exist between the considered variables.

4.5.1 Descriptive statistics

Descriptive statistics define the location, spread and shape of the collected data. To describe the location of the data, the mean and median of the B-BBEE scores (in total and per element) and financial health indicators were determined. The minimum and maximum values were computed to consider the range of the data, whilst the standard deviation was used to describe the spread of the data. Trends of the means of the dependent, independent and control variables were graphically illustrated and discussed in Chapter Five.

4.5.2 Inferential statistics

Inferential measures are generally classified as *difference* or *associational* statistics (Zikmund *et al*. 2010). Difference statistics are used to determine differences between groups (Morgan, Leech, Gloeckner & Barret, 2011). To determine the difference in B-BBEE scores between industries and over time, mixed-model analysis of variance (ANOVA) and Fisher's least significant differences (LSD) tests were conducted.

Associational statistics, such as regression analysis, can be used to investigate the relationships between variables (Morgan *et al*., 2011). As the primary objective of this study was to determine

the nature of the relationship between B-BBEE scores (in total and per element) and the financial health measures, regression analyses were conducted. As explained in Section 4.3, panel data were collected. The panel regressions will be explained first, and the discussion of the mixed-model ANOVA and Fisher's LSD test will follow thereafter. A panel regression is an amended version of the basic regression model (Pedace, 2013). Equation 4.1 can be used to perform a basic linear regression analysis.

$$y = \beta_0 + \beta_1 x + \in \qquad\qquad \text{… Equation 4.1}$$

where:

y = dependent variable

β_0 = intercept

β_1 = regression coefficient

x = independent variable

$\in$ = error term

This equation is similar to the basic mathematical equation for a straight line, namely y = mx + c. This simple model is built around the ordinary least squares (OLS) technique that fits a straight line through data points based on the least squares. An allowance for error is added in the equation. To keep the error term as low as possible, the following assumptions are made: the chosen regression model generates the dependent variable, the independent variable(s) is not random, the errors are uncorrelated and have a constant variance. Should any of these assumptions not hold true, a specification error will occur (Gujarati, 2004).

4.5.3   Pooled OLS regression model

The basic regression model (Equation 4.1) needs to be altered to account for different companies over different years (Menard, 2008). A pooled OLS regression model assumes that regression coefficients remain constant across years and companies (Gujarati, 2004). The equation for the pooled OLS regression model is as follows (Menard, 2008):

$$y_{it} = \beta_0 + \beta_1 x_{it} + \epsilon_{it} \qquad\qquad \text{… Equation 4.2}$$

where:

y_{it} = dependent variable

β_0 = intercept

β_1 = regression coefficient

x_{it} = independent variable

ϵ_{it} = error term

The *i* and *t* subscripts indicate that there were pooled observations for *i* units over *t* time periods (years). The units represent companies and time represents financial years. A more refined version of the pooled OLS regression model is the fixed effects panel regression, which will be discussed next.

4.5.4   Fixed effects panel regression model

A number of factors could influence financial health, of which total B-BBEE score could possibly be one. Fixed effects panel regression should be applied if the other effects (such as the board of directors) remain constant over time, even though it could vary from one company to another (Pedace, 2013). Equation 4.3 includes a dummy variable for the fixed effect (*ibid*).

$$y_{it} = \beta_{0i} + \delta_t + \beta_1 x_{it} + \epsilon_{it} \hspace{3cm} \text{… Equation 4.3}$$

where:

y_{it} = dependent variable for entity *i* at time *t*

β_{0i} = (*i* = 1…n) is the intercept for each entity (separate intercepts are indicated for each unit)

δ_t = dummy variable for each time period

β_1 = regression coefficient

x_{it} = independent variable for entity *i* at time *t*

ϵ_{it} = error term

The *i* and *t* subscripts indicate that there were observations for *i* units (companies) over *t* time periods (years). If the other effects are not constant over time or units, random effects regression will be used. This technique is discussed next.

4.5.5   Random effects panel regression model

The random effects panel regression model expands on the fixed effects regression model (Pedace, 2013). If other effects are not consistent regarding time and unit, the dummy variable used in the Equation 4.3 needs to be elaborated to account for the variance in time and unit. The random effects regression is indicated in Equation 4.4 (*ibid*).

$$y_{it} = \beta_0 + \beta_1 x_{it} + \mu_i + \omega_t + \epsilon_{it} \hspace{3cm} \text{… Equation 4.4}$$

where:

y_{it} = dependent variable for entity *i* at time *t*

β_0 = intercept

β_1 = regression coefficient

x_{it} = independent variable for entity *i* at time *t*

μ_i and ω_t = separate error terms for entity i and time t

ϵ_{it} = within-entity error

The intercept β_0 in Equation 4.4 differs from β_{0i} in Equation 4.3. There are also separate error terms for time (t) and unit (i). With random effects, the intercept β_0 is expected to be the mean intercept of the sample, with the error terms μ_i representing the difference between the mean intercept and the intercept of the specific company. The difference between the mean intercept and the mean intercept of that specific year is represented by ω_t (Gujarati, 2004).

There could be more terms considered in a *random* effects regression, compared to that of a fixed effects regression, depending on the outcome of the Hausmann test (see Section 4.5.6). The problem of multicollinearity (see Section 4.5.8.3) could, however, exist if some of the error terms have a covariance with the independent variables (represented by x_{it}) (Gujarati, 2004). Fixed effects regression should be used should there be a covariance, as it could otherwise lead to incorrect results (Menard, 2008).

4.5.6 The Hausmann test

The Hausmann test is designed to test whether the random effects regression or fixed effects regression model is more applicable. This test's null hypothesis states that the random effects regression is the preferred model (Gujarati, 2004). If the test statistic shows that the null hypothesis can be rejected (p-value of less than 0.05) it means that the random effects model cannot be used and the fixed effects model should be used instead (Gujarati, 2004). The equation for the Hausmann test is presented next (*ibid*).

$$H = \frac{(\hat{\beta}_{1\,(FE)} - \hat{\beta}_{1\,(RE)})^2}{\sigma^2_{\hat{\beta}1\,(FE)} - \sigma^2_{\hat{\beta}1\,(RE)}} \sim \chi^2_1 \qquad\qquad \dots \text{Equation 4.5}$$

where:

$\hat{\beta}_1$ = estimated coefficient for the independent variable

$\sigma^2_{\hat{\beta}1}$ = estimated variance of the coefficient

FE (fixed effects) = denotes values that were obtained by fixed effects estimation

RE (random effects) = denote values that were obtained by random effects estimation

The Hausmann test has a distribution of the Chi-Square (χ^2) with one degree of freedom (Menard, 2008).

4.5.7 The F-test for fixed effects

Time and unit dummies are sometimes erroneously included when analysing panel data. Before the various panel regressions were performed in this study, an F-test for fixed effects was

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conducted. The purpose was to determine whether the time and unit dummy variables are necessary (Menard, 2008). In Equation 4.6, the calculation for the F-test statistic is presented (*ibid*).

$$F = \frac{MSR}{MSE}$$
       … Equation 4.6

where:

MSR = mean square due to regression $= \frac{SSR}{k}$

SSR = sum of squares due to regression

k = corresponding degrees of freedom

MSE = mean square due to error $= \frac{SSE}{n-k-1}$

SSE = sum of squares due to error

$n-k-1$ = corresponding degrees of freedom

A significant result from the *F*-test would imply that time and unit dummies have to be included in the study (Menard, 2008). Certain specification errors could, however, undermine the outcome of the study. Three specification errors were considered in this study.

4.5.8 Specification errors considered in this study

Three possible specification errors were considered, namely heteroscedasticity, autocorrelation and multicollinearity.

4.5.8.1   Heteroscedasticity

Heteroscedasticity is the opposite of homoscedasticity and determines whether an independent variable can predict the dependent variable accurately (Pedace, 2013). Heteroscedasticity in this study meant that companies with a high total B-BBEE score could have either a high or low level of financial health compared to companies with a low total B-BBEE score. The data were tested for heteroscedasticity by using a test developed by Breusch and Pagan (Gujarati, 2004). This test is called the Breusch-Pagan Lagrange multiplier, and is set out in Equation 4.7 (*ibid*).

$$\text{LM} = \frac{NT}{2\,(T-1)}\left[\frac{\sum_{i=1}^{N}(\sum_{t=1}^{T}\epsilon_{it})^2}{\sum_{i=1}^{N}\sum_{t=1}^{T}\epsilon_{it}^2} - 1\right]^2 \sim \chi_1^2$$
    … Equation 4.7

where:

N = number of cross-sectional units (JSE-listed companies in this case)

T = number of time periods

ϵ_{it} = OLS residuals of the model

The test statistic has a distribution of the Chi Square (χ^2) with one degree of freedom (Pedace, 2013). This equation is specifically designed for a one-way random effects model (excludes time effects), but can be altered for a two-way random effects model (includes time effects), should it be required (Kouassi, Mougoue, Sango, Brou, Amba & Salisu, 2014).

4.5.8.2   Autocorrelation

The data collected in this study were panel data as there were different observations of the various entities over many time periods. A problem of autocorrelation exists when the values of one period correlates with that of a prior period (Menard, 2008). For the purpose of this study, particular attention was thus given to the possibility of this specification error occurring. This specification error was addressed by the panel regression models applied in this study.

4.5.8.3   Multicollinearity

Multicollinearity can arise when there are independent variables that are strongly correlated (Pedace, 2013). For example, a percentage change in turnover can be strongly correlated to ROS. In terms of the independent variables, element scores are highly correlated with the total B-BBEE score, as this variable consists of all the individual elements. Multicollinearity was checked by calculating variance inflation factors (VIF). All VIFs were found to be <10.

4.5.9   Mixed-model ANOVA and Fisher's LSD

4.5.9.1 Mixed-model ANOVA

A mixed-model ANOVA can be utilised to analyse differences between and within groups. A combination of a random effects model variance component and the fixed effects ANOVA model, in which observations do not correlate, forms the mixed-model ANOVA. The fixed effects factor is a between-subjects construct and the random effects factor is a within-subjects variable (Rovai, Baker & Ponton, 2014).

The equation for the linear mixed-model ANOVA (Demidenko, 2013) is:

$$y_i = x_i\beta + z_i\gamma_i + \epsilon_i \qquad\qquad \text{…Equation 4.8}$$

Where:

y_i = dependent variable

β   = vector of parameters associated with the fixed factors

x_i　　= gathers all fixed effects

z_i　　= matrix gathering all the random effects

γ_i　　= vector of parameters associated with the random effects

ϵ_i　　= error term

4.5.9.2　　　Fisher's least significant difference (LSD) test

The null hypothesis of equal averages can be rejected if an ANOVA is performed and the overall *F*-test indicates a significant difference. The Fisher's LSD test can then determine where the differences occurred by making use of pair-wise comparisons between two sample averages (Tavakoli, 2012).

The Fisher's LSD test statistic (*t*) for comparing two sample means (Anderson, Sweeney & Williams, 2011) is:

$$t = \frac{\bar{x}_i - \bar{x}_j}{\sqrt{MSE\left(\frac{1}{n_i} + \frac{1}{n_j}\right)}} \qquad \qquad \text{…Equation 4.9}$$

where:

$\bar{x}_i$　　= historic mean of sample *i*

$\bar{x}_j$　　= historic mean of sample *j*

n_i　　= sample size of group *i*

n_j　　= sample size of group *j*

MSE　= mean square error obtained from the ANOVA test

The null hypothesis should be rejected if the *p*-value is smaller than or equal to the level of significance.

4.6　VALIDITY, RELIABILITY AND ETHICAL CONSIDERATIONS

Validity refers to the accuracy of the results and the extent to which a score truthfully represents a specific variable, whilst reliability refers to replicability of a study (Winter, 2000). Validity in terms of this study would imply that all the financial data were accurate as per the financial statements. It would also imply that all the B-BBEE scores are exactly as per the companies' respective B-BBEE scorecards as provided by Empowerdex.

To ensure the validity of the financial data, two company years per industry were selected for comparison between the data that were published by the companies and the data sourced from

Bloomberg. The accounting data were validated with the actual financial statements. All the accounting-based data on Bloomberg could be traced back to an original source document (in most cases the annual financial statements) that were available on Bloomberg (2018) and the respective companies' websites. Additional checks were conducted in instances where the parameters changed considerably over time, and parameters that were deemed to be very high or low in comparison to the other values. Extreme values were winsorised. For the financials and basic materials industries, ROA and total assets were not taken into account (see Section 4.4.5). Validity also implies that the most applicable measures should be used (Winter, 2000). A comprehensive literature review was performed, and the financial health measures were based on those used by previous researchers. The discussion in the literature and the fact that the measures were clearly defined in this study, further adds to the replicability of this study.

A B-BBEE certification is typically issued after a company's financial year-end, as the preceding year's expenditure on preferential procurement suppliers, skills development and socio-economic development is used. The potential improvement in financial health would thus be seen in the following financial year. As such, the financial results of each of the sample companies were considered for the financial year-end corresponding with the year when the audited B-BBEE scores were released.

Pertaining to the validity of the B-BBEE scores, the sum of the elements of the B-BBEE scorecard were compared to the total B-BBEE score reported. There were 30 cases where there were differences between the total B-BBEE score and the sum of the individual elements. The B-BBEE scorecards for these 30 companies were compared to the actual certificates obtained from the Beagle (2018) database. The Beagle (2018) database contains the B-BBEE certificates for various private and public companies. In the instances where differences were found, the data set were updated to reflect the scores per the actual B-BBEE certificate. The certificates were found by searching for the company's name or value added tax number. For companies whose total B-BBEE scores were available from Bloomberg (2018), those scores were compared to those that were obtained from Empowerdex.

Winter (2000) explained that if a study can be replicated, the study is reliable. When the data were sourced from Bloomberg (2018), the researcher ensured that the reporting currency was set to ZAR, and that information from that year's financial statements were used, using numbers for the trailing 12 months. The conversion from foreign currency to ZAR was performed by Bloomberg (2018). The exchange rate as at the respective financial year-end dates were applied by Bloomberg (2018). In cases where the company in question discontinued operations, the

author only used results for the continued operations. The author ensured that the non-standardised numbers, as reported, were obtained from Bloomberg (2018). Audited B-BBEE scores (in total and per element) were used. The study can hence be reproduced in future by other researchers using a similar methodology.

Ethical clearance was obtained from the departmental ethics screening committee of the Department of Business Management at Stellenbosch University. Only publicly available data were collected and analysed. As no data from human respondents were used, the study was classified as having minimal ethical risks.

4.7   SUMMARY AND CONCLUSIONS

In this chapter, attention was given to the research paradigm adopted, the operationalisation of the variables and the methods used to collect and analyse panel data. The population of this positivistic study consisted of all companies listed on the JSE over the period 2004 to 2015. As all companies' B-BBEE scores were computed and published by Empowerdex, a convenience sample was used. A total of 1 767 firm-year observations from 2004 to 2015 were investigated.

The B-BBEE scores (in total and per element) were categorised as the independent variables, whilst the financial health measures were classified as the dependent variables. Company size was included as a control variable. To ensure that the financial data were reliable and valid, the financial information was compared to the annual financial statements. The total B-BBEE scores were validated against the Beagle (2018) database.

Descriptive and inferential statistics were used to analyse the data. Fixed effects, random effects and pooled OLS regression models were considered whilst accounting for three specification errors namely heteroskedasticity, multicollinearity and autocorrelation. Trends in the B-BBEE scores (in total and per element) were analysed using mixed-model ANOVAs and Fisher's LSD tests. The descriptive statistics are presented in the following chapter.

CHAPTER FIVE

DESCRIPTIVE RESULTS

5.1   INTRODUCTION

"Life is not just a series of calculations and a sum total of statistics, it is about experience, it is about participation, it is something more complex and more interesting than what is obvious" (Libeskind in Cash, Jones & Pennock, 2016:1).

Given the complex nature of B-BBEE, the researcher conducted an in-depth analysis of the phenomenon. Each of its elements is explored and possible reasons for observed trends are provided before exploring the business case in Chapter Six. The literature review on B-BBEE was presented in Chapter Two. Chapter Three dealt with various financial health measures. The research design and methodology adopted in this study was explained in Chapter Four. In this chapter, the descriptive results will be presented. The descriptive statistics of the B-BBEE scores (in total and per element) will be followed by descriptive trends of the financial health measures and the control variables.

5.2   DESCRIPTIVE STATISTICS FOR THE B-BBEE SCORES

B-BBEE scores (in total and per element) were deemed the independent variable. In this section, details on the sampled companies' total B-BBEE scores will be presented followed by a descriptive overview of the elements.

5.2.1   Total B-BBEE scores over the entire research period (2004 to 2015)

In Table 5.1, the annual descriptive statistics for the total B-BBEE score are provided.

Table 5.1:   Descriptive statistics for the total B-BBEE score

Year	Number of observations [a]	Mean	Median	Standard deviation	Minimum value	Maximum value
2004	198	19.717	15.670	13.543	4.470	69.580
2005	184	24.396	19.290	20.311	1.250	80.070
2006	200	25.433	21.270	20.890	0.890	76.440
2007	199	26.849	20.090	21.258	1.830	79.280
2008	188	33.607	31.245	23.042	0.430	81.690
2009	200	33.584	29.755	26.411	1.000	88.711
2010	100	64.106	67.878	13.253	30.740	90.800
2011	110	70.390	72.825	13.147	34.400	92.830
2012	99	76.497	75.780	8.801	59.990	100.000
2013	82	78.293	77.785	7.953	65.230	94.870
2014	99	75.330	76.040	10.379	55.600	95.170
2015	108	77.334	79.590	11.984	45.100	98.390
Total	**1 767**	**42.905**	**44.590**	**29.056**	**0.43**	**100**

(a) Number of observations varied according to the number of companies' total B-BBEE scores released by Empowerdex.

The total B-BBEE scores were widely distributed for the sample companies. The total B-BBEE scores ranged from 0.43 to 100, and have a standard deviation of 29. The mean and median B-BBEE scores were relatively close to each other. The mean and median for the overall period were 42.905 and 44.590. These measures indicate central tendency, i.e. the approximate mid-point of the data set. In this sample, these measures were below 50. The maximum total B-BBEE score is 100.

During 2012, a certain company had a maximum B-BBEE score. This achievement could be partly ascribed to the bonus points available in the 2007 Codes. This specific company managed to comply with some of the additional criteria for bonus points, which enhanced its total B-BBEE score. On its website, the business is described as an investment company specifically focussed on B-BBEE transactions. This firm was thus unambiguously created for B-BBEE transactions.

The mean total B-BBEE score increased from 19.717 in 2004 to 77.334 in 2015. There was hence a considerable improvement in compliance in terms of the total B-BBEE score over time. The significance of this trend was statistically tested. The results are provided in Section 6.2. It should be noted that the number of observations in 2015 (108) was approximately 55 per cent of the number of observations in 2004 (198). The change in the number of observations is due to the fact that Empowerdex released the total B-BBEE scores of approximately the 200 most empowered companies from 2004 to 2009, and only the total B-BBEE scores of approximately the 100 most empowered companies from 2010 to 2015. In 2013, only 82 companies participated in the Empowerdex survey. If a bit more than 100 companies participated,

Empowerdex exercised their discretion to release all the participating companies' scores. In other years, Empowerdex included the results of companies, such as private companies (owned by JSE-listed companies), for which the financial information could not be obtained. Such companies were excluded from the sample.

Based on the mean scores, companies almost doubled their compliance scores from 2009 to 2010. As explained, the 2010 scores were, however, based on approximately the 100 most empowered companies, as opposed to approximately the 200 most empowered companies utilised in the 2009 scores. As such, Empowerdex excluded less empowered companies since 2010. The comparatively higher descriptive statistics since 2010 are hence not unexpected. For the purpose of the mixed-model ANOVA analyses reported in Section 6.2, only the top 100 companies from 2004 to 2009 were taken into account, to be consistent with the period from 2010 and beyond (the wider adoption period during which Empowerdex focused on approximately the 100 most empowered companies). A slight reduction in the mean and median total B-BBEE scores were noted from 2013 to 2014. It should be borne in mind that the 2013 scores were published in 2014. The revised Codes were published in 2013. Companies could arguably have spent more time understanding the newly released 2013 Codes, as opposed to focussing their efforts on compliance with the 2007 Codes.

The trend in the mean total B-BBEE scores is illustrated in Figure 5.1 by accounting for the total sample and the top 100 companies per year. The solid line represents the mean total B-BBEE score of the total companies in the sample per annum, whereas the dotted line indicates the mean total B-BBEE score of the 100 most empowered companies from 2004 to 2009.

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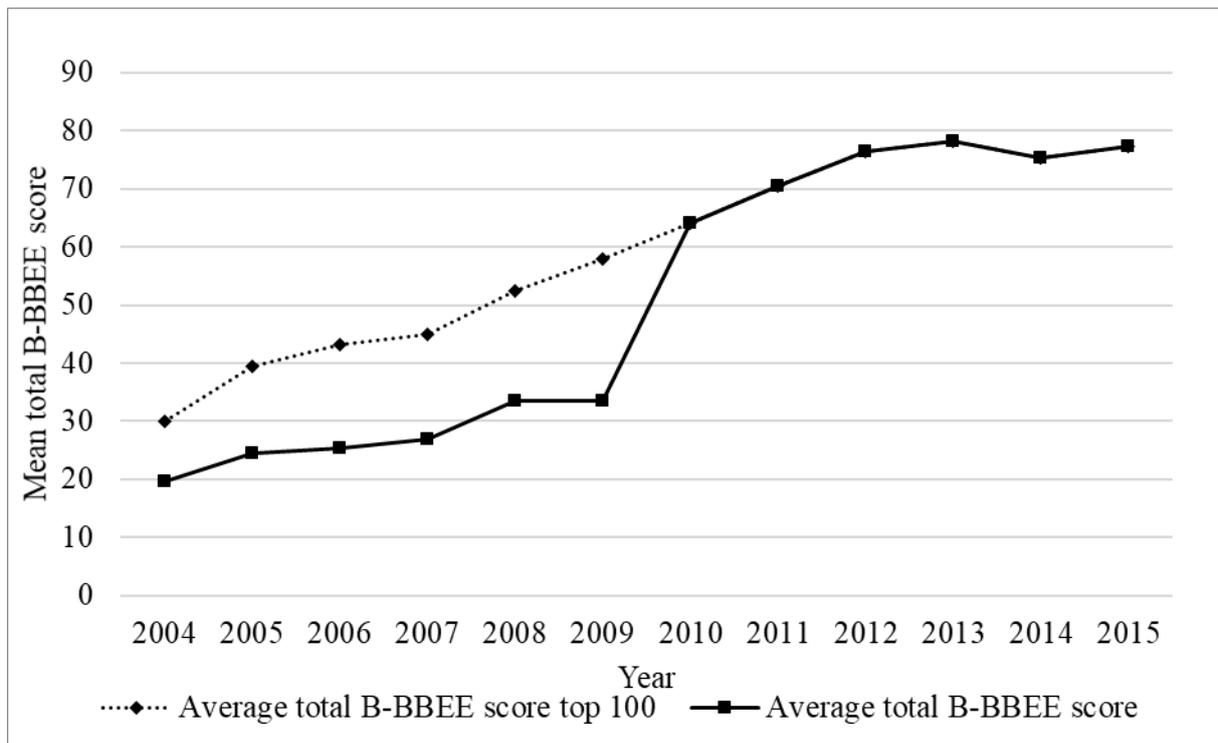
Figure 5.1:   Mean total B-BBEE score per year

A notable increase in the total B-BBEE score is seen over the period 2004 to 2015, and in the two sub-periods of 2004 to 2009 (nascent), and 2010 to 2015 (wider adoption). The significance of the trend over time was empirically tested and the results are reported in Section 6.2. The dotted line (top 100 companies) showed a gradual increase in the total B-BBEE scores over the period. The relatively large increase in the mean total B-BBEE score of the total sample (solid line) from 2009 to 2010 might be partly ascribed to the reduction in number of companies.

The change in the mean total B-BBEE scores can also be explained by the change in the individual elements contributing to the total B-BBEE score. The change in the elements will hence be discussed in the following section.

5.2.2   Individual elements of the total B-BBEE score

The analysis of the elements will indicate which elements mainly contributed to the total B-BBEE score. In Table 5.2, the descriptive statistics for the elements of the B-BBEE scorecard is presented for the overall period.

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Table 5.2:   Descriptive statistics for the elements of the total B-BBEE score[b]

Element	Mean	Median	Standard deviation	Minimum value	Maximum value[a]	Points available
Ownership	10.112	9.090	7.915	0	25	20
Management control	4.237	3.670	3.087	0	15	10
Employment equity	4.203	3.870	4.058	0	15	15
Skills development	5.710	5.210	5.454	0	20	15
Preferential procurement	8.276	7.500	7.614	0	25	20
Enterprise development	6.756	4.400	6.779	0	16	15
Socio-economic development	3.372	3.895	3.203	0	12	5
(a) Bonus points are available that could allow a company to score more than the available points						
(b) As provided by Empowerdex, based on the 2007 Codes						

Except for enterprise development, the mean and median for the all the elements of the B-BBEE scorecard were close to each other. The standard deviations indicate considerable variation in the elements' scores. The maximum values typically correspond with the maximum points available as per the B-BBEE scorecard. In some cases, more points than the maximum were achieved due to bonus points available through certain sector charters (Section 2.6), and through the 2007 Codes as shown in Table 2.4.

The mean and median values of the elements observed in Table 5.2 reflect approximately half of the points available. The contributions per element per year towards the total B-BBEE score were also considered. The expectation was that preferential procurement and ownership would be the largest contributors per year, since their available points were the highest (20). The contribution of each element (mean score) towards the mean total B-BBEE score per year is displayed in Figure 5.2.
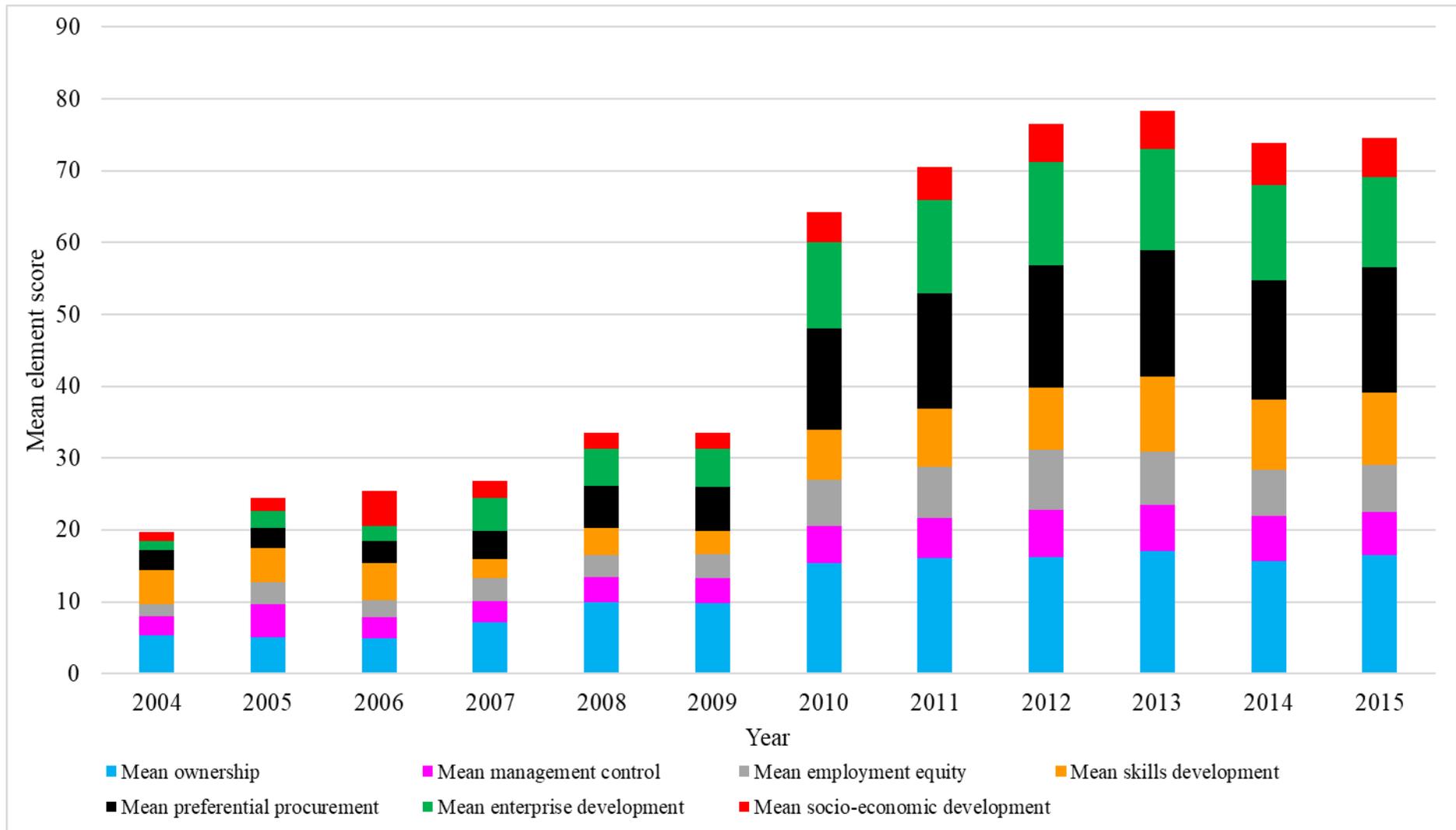
Figure 5.2: Contribution of each element per year to the mean total B-BBEE score[a]

(a) As provided by Empowerdex (non-normalised)

The mean contribution per element per year varied considerably from 2004 to 2007. Since 2008 onwards, the contribution of each element seemed to increase or decrease in line with the total score. The results could possibly indicate that the considered companies struggled to align their B-BBEE practices with the 2004 Codes whilst it was still in draft form. Since the Codes were finalised in 2007, the sampled companies seem to have maintained the elements they considered as important. As mentioned, the increase from 2009 to 2010 is largely ascribed to the reduction in sample size.

The largest increase was for socio-economic development. The 2015 mean score of this element was five times the average of this element's mean score in 2004 (a 400 per cent increase). Ownership, management control and employment equity increased by between 66 and 120 per cent, whilst preferential procurement and enterprise development improved by more than 260 per cent. Each element was analysed per year. The relevant descriptive statistics will be discussed next.

5.2.3 Ownership and preferential procurement elements

Ownership and preferential procurement each contribute 20 points to the total B-BBEE score, indicating their relative importance in promoting transformation in the country (DTI, 2007). These two elements are compared in this section. In Figure 5.3, the changes in the ownership and preferential procurement scores are shown. The average for the 100 most empowered companies from 2004 to 2009 is indicated as dotted (preferential procurement) and dashed (ownership) lines for comparability purposes.
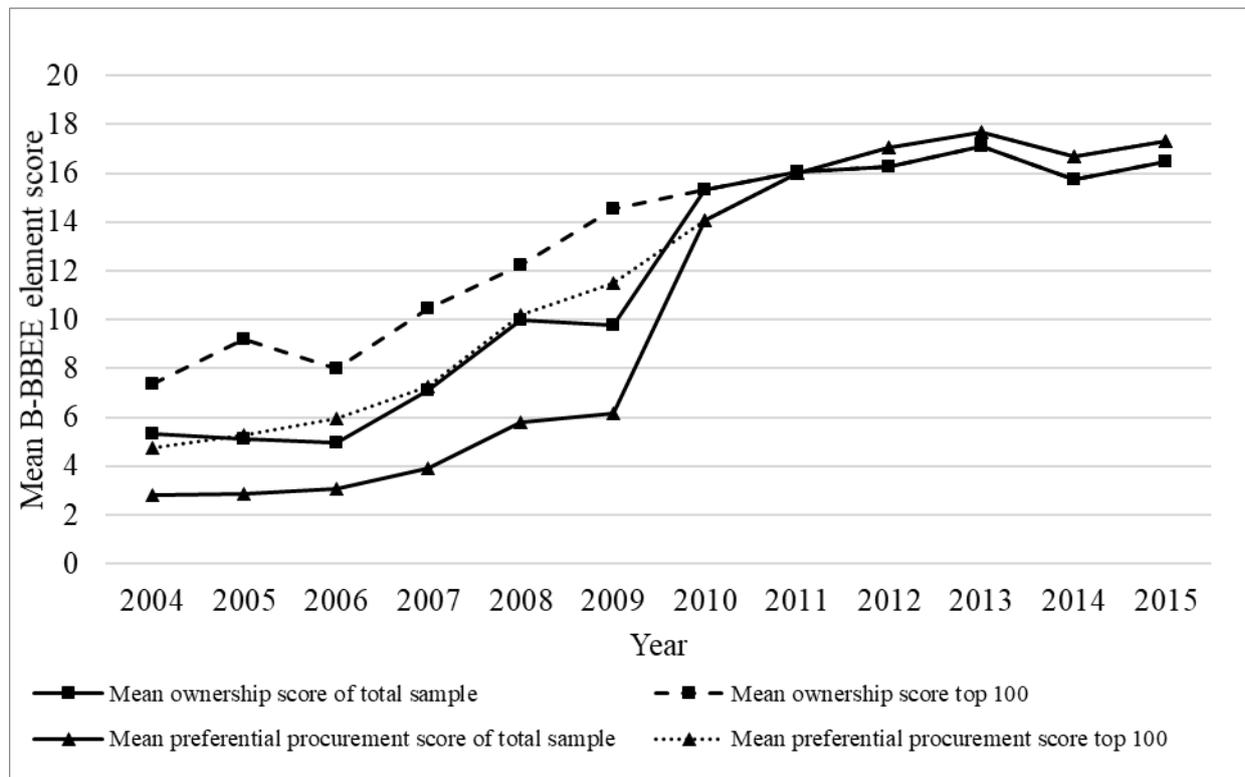
Figure 5.3: **Mean ownership and preferential procurement scores (2004 – 2015)**

The mean ownership and preferential procurement scores (Figure 5.3) seem to follow a similar trend as change in mean total B-BBEE score (Figure 5.1). When graphs of the top 100 companies (indicated by dotted and dashed lines) from 2004 to 2009 are compared with the graphs of 2010 onwards, only a slight rise is seen, as opposed to the considerable increase seen in the mean element scores of the total sample.

The preferential procurement score was lower than that of the ownership score in 2004, but higher in 2015. It hence seems as if more business owners used preferential procurement to improve their total B-BBEE score, as opposed to transferring the ownership to black shareholders. Acemoglu *et al.* (2007) identified that B-BBEE share transfers took place at a discounted share price. As a result, directors will be deterred to engage in share transfer transactions and would be encouraged to focus on an element that does perhaps not dilute shareholder value as much. In this light, the association between B-BBEE scores and cost of equity is of particular interest. This relationship was tested and reported on in Section 6.11.

A preferential procurement score is obtained by purchasing from empowered suppliers (DTI, 2007). If companies increase their total B-BBEE scores, it would imply that the suppliers of these companies also increased their total B-BBEE scores. The more empowered a supplier is, the higher the score obtained under preferential procurement by the customer. The preferential procurement score thus has a 'circle effect': it increases the total B-BBEE score of the supplier

and the procurement recognition level of the supplier consequently rises. A higher procurement recognition level contributes to a higher preferential procurement score and, ultimately, to higher total B-BBEE scores for the companies purchasing from these more empowered suppliers, which in turn has a positive effect on the preferential procurement score of the customers of the company's customers, and so the circle continues. It is thus expected that preferential procurement will follow an exponential increase until maximum preferential procurement scores are attained.

It might be more challenging to increase a company's ownership score than its preferential procurement score, since it requires a shift in the demography of shareholders. Companies could consider share schemes for black employees. Shareholder value might, however, then be diluted. As a result, shareholders might prefer that management pursue other elements of the B-BBEE scorecard, such as preferential procurement or other elements discussed next. The relationship between B-BBEE scores and cost of equity is of particular interest to shareholders. This relationship was empirically tested and reported in Section 6.11.

5.2.4   Employment equity, skills development and enterprise development

The employment equity, skills development and enterprise development elements each accounted for 15 of the 100 available B-BBEE points under the 2007 Codes. Employment equity measures the compliance of a company with the Employment Equity Act (No. 55 of 1998) (Department of Labour, 1998). An increase in the percentage black employees in a company will improve the employment equity score of a company. The skills development score is determined by the percentage of total payroll spend on the development of black employees' skills (DTI, 2007). Enterprise development measures the percentage of net profit after tax that has been spent on developing small black enterprises (*ibid*).

As was indicated in Table 1.1, the weighting of the scores for these three elements changed in the 2007 Codes. Skills development was lowered from 20 points in the 2004 (draft) Codes to 15 points in the 2007 Codes. Employment equity and enterprise development each increased from 10 to 15 points. The annual scores for both elements for 2004 to 2007 were accordingly adjusted/normalised to reflect the 2007 weighting. The normalised scores therefore reflect the actual scores divided by the 2004 Codes' maximum score (20 or 10) and multiplied by 15 (the 2007 Codes' maximum score).

The annual mean employment equity, skills development and enterprise development scores are displayed in Figure 5.4. The dotted and dashed lines represent the normalised trend of the top 100 companies, adjusted for the difference in weighting and the difference in sample size.

83
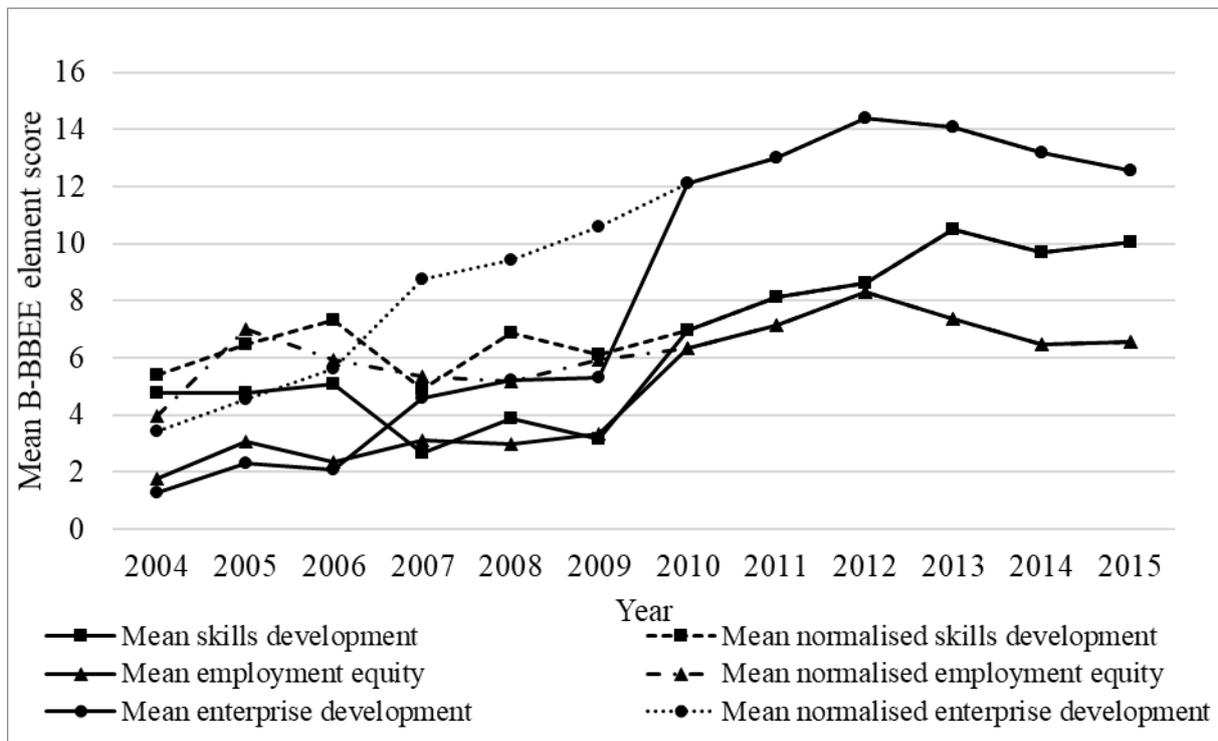
Figure 5.4: **Average skills development, employment equity and enterprise development scores (2004 – 2015)**

If it is assumed that the number of points available is a proxy for relative importance, it was anticipated that the elements' scores would reveal comparable trends, since they all add the same number of points (15). These elements make the second largest contribution to the total B-BBEE score, following ownership and preferential procurement. It could thus be expected that companies would spend considerable time on these three elements to ensure that the maximum amount of points are obtained. This seemed to be the case for skills development and employment equity until 2012. The 2013-2015 scores for skills development show an increase in line with ownership and preferential procurement. Employment equity, however, declined by almost two points (13 per cent of the 15 employment equity points available). This was not statistically significant (see Appendix A, Table 6).

The 2013 Codes do not list employment equity as a separate element, but include it as a sub-element of management control which accounts for 15 points under the 2013 Codes (DTI, 2013). The 10 points (2007 Codes) for management control and 15 points for employment equity (thus 25 points in total) was lowered to only 15 points for management control (*ibid*). Companies could have anticipated this change and might have placed less emphasis on employment equity.

Under the 2013 Codes, the relative importance of skills development rose from 15 to 20 points (*ibid*). Companies might have anticipated this change, resulting in the increase seen from 2012 to 2013. The increase in the number of points allocated to skills development is a welcome development, seen in the light of the skills shortages nationally (Department of Higher Education and Training, 2018). From Section 2.7 it was evident that the success of many reformative programmes hinged on the significance they put on education and skills development.

Enterprise development had a lower average score in 2004 compared to employment equity and skills development, but surpassed both skills development and employment equity. The 2007 Codes stipulated that three per cent of net profit after tax should be spent on the development of black entrepreneurs. This expenditure on enterprise development could, depending on the nature of the business, be less than three per cent of the total payroll spend, as is required for skills development (if net profit after tax is less than payroll expenditure). The considered companies could possibly have invested in enterprise development as a relatively 'easy way' of enhancing their total B-BBEE score. As such, spending does not per se require companies to become directly involved in initiatives, as opposed to employment equity which require a company to actively change their employee demographical representation. In an online newspaper, The South African (2018), the use of enterprise development was promoted as a way of obtaining B-BBEE scores with low cost implications for companies. The DTI reduced the enterprise development target from three per cent of net profit after tax to one per cent of net profit after tax in the 2013 Codes (DTI, 2013). Anticipation of this 'lower benchmark' might have contributed to the decrease in the scores measured under the 2007 Codes since 2012 onwards.

5.2.5   Management control and socio-economic development

Management control accounted for 10 out of the 100 available B-BBEE points, whilst socio-economic development only contributes five points (DTI, 2007). The goal of management control is to ensure that the managers and directors of a company become more racially diverse and that black people are entrusted with the decision making of companies (*ibid*). Socio-economic development strives to uplift communities by investing a percentage of net profit after tax in socio-economic activities, such as corporate social responsibility investments (*ibid*). Socio-economic development was termed the "residual factor" and contributed a score of 10 points under the 2004 Codes. For comparability purposes, these pre-2007 scores were normalised, similar to what was done for the elements illustrated in Figure 5.4. In Figure 5.5,

the average management control and socio-economic activities scores over the research period are shown. The dotted lines refer to the mean top 100 management control score, and the dashes to the normalised mean top 100 socio-economic development score.
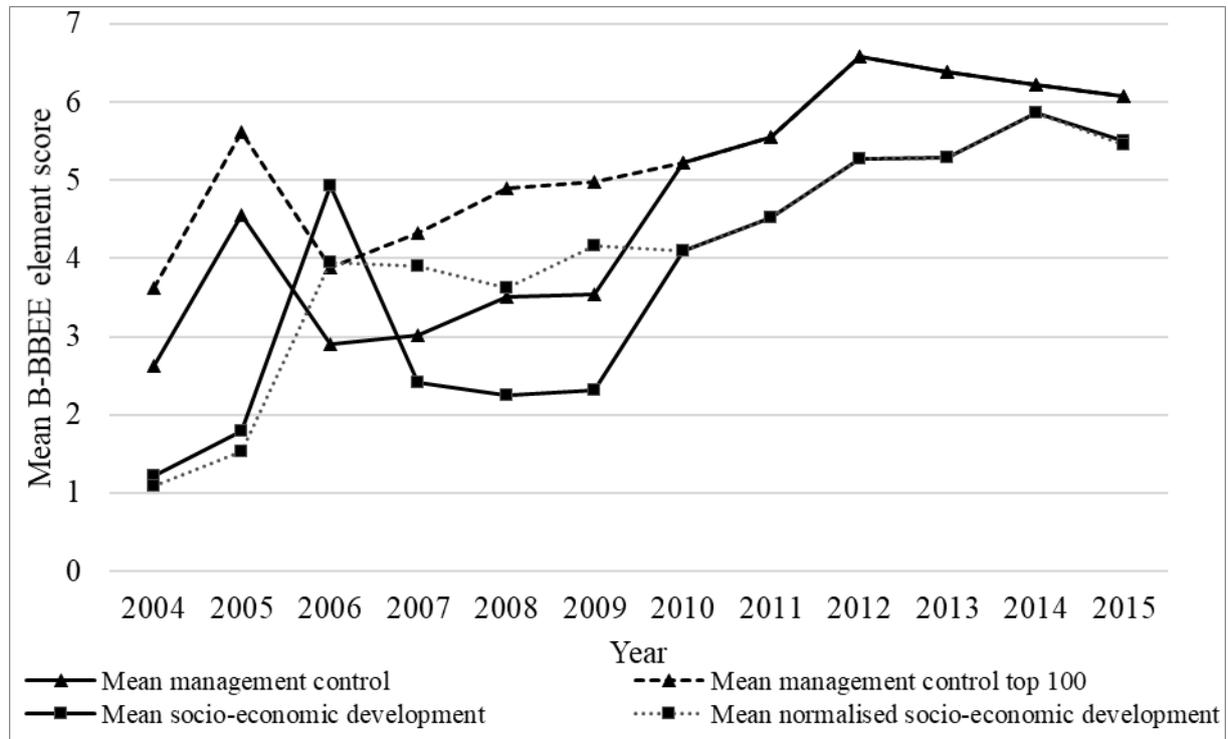
Figure 5.5: **Average management control and socio-economic development scores (2004 – 2015)**

Since management control was worth twice the number of points of socio-economic development, one would expect the average management control score to be twice that of socio-economic development. The trend observed in Figure 5.5, especially in the latter part of the wider adoption period (2012 to 2015), is not in line with this expectation. The management control score, which has a similar goal to that of employment equity, displayed a similar pattern (see Figure 5.4). The average socio-economic development scores increased considerably from 2004 to 2006, after which it stabilised with a steady increase year-on-year. A slight decrease is seen in the socio-economic development score around 2008, which coincides with the global financial crisis.

An economic crisis could arguably cause companies to refrain from any avoidable expenditure. The target for socio-economic development was one per cent of net profit after tax (DTI, 2007). It appears as though companies attempted to maximise socio-economic development scores in the first few years of the nascent period. It should also be borne in mind that socio-economic investment has a moral imperative. If companies can do well (gain B-BBEE points and possible

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financial benefits) by doing good (uplifting communities), it is understandable that this element would receive considerable attention. It should be noted that at least 75 per cent of beneficiaries should be black, and expenditure on socio-economic development may not be tax deductible if the beneficiary does not provide the donor with a Section 18A tax deductible receipt (DTI, 2007).

From 2012 onwards, an average of more than the five allocated points is noted for socio-economic development. This observation can be partly explained by the fact that the ICT sector charter was published in 2012, which awarded a company a maximum of 12 points for socio-economic development initiatives (DTI, 2012). Companies that fall under the ICT sector charter are well represented within the sample. Other sector charters also allowed for a higher socio-economic development score, as discussed in Section 2.5. An overview of the industries represented in the sample was provided in Section 4.4.4. In the following section, the annual mean total B-BBEE score per year per industry will be discussed.

5.2.6 Industry overview

In Figure 5.6, the annual mean total B-BBEE score per industry per year is displayed. In this figure, the actual total B-BBEE scores of the total sample were used.

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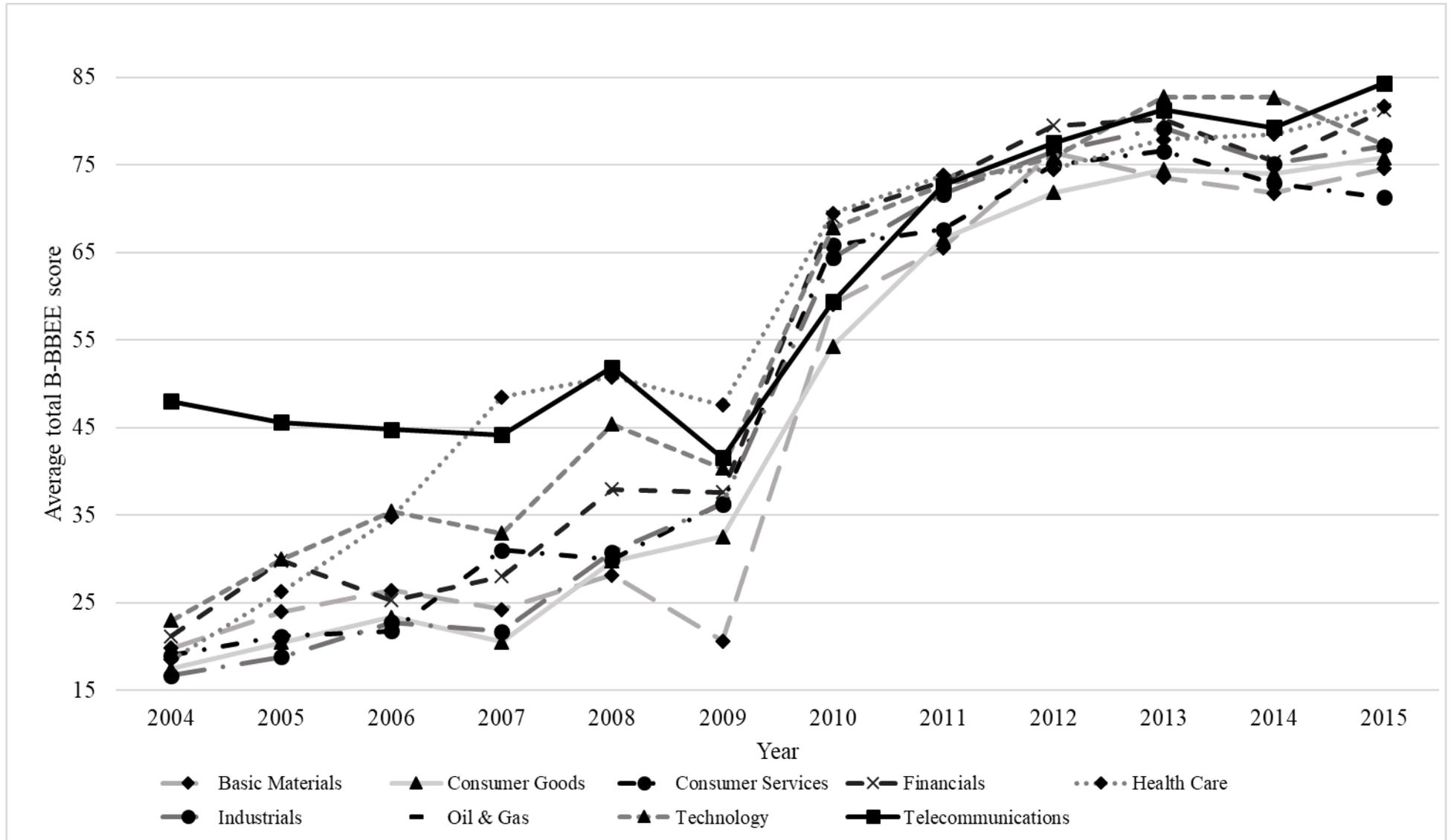
Figure 5.6: **Average total B-BBEE score per industry (2004 – 2015)**

In line with the bonus points available in the ICT sector charter for socio-economic development, telecommunications (represented by the top line in 2004 and 2015) seem to be one of the most empowered sectors. An overall increase in compliance across industries is seen from 2004 to 2015. There is a larger disparity between industries in terms of mean total B-BBEE scores in the nascent period than the wider adoption period (2010-2015). This disparity could be due to companies finalising their B-BBEE strategies during the nascent period. It was noted in Table 4.3 that the number of telecommunication companies did not decrease when the sample size decreased from 2009 to 2010. This is partly due to the small number of telecommunications companies listed on the JSE, compared to other industries, and the fact that a large state-owned telecommunications company formed part of the list of most empowered companies every year.

The annual average total B-BBEE score of basic materials and consumer services did decrease by a larger percentage than the decrease in sample size (from approximately 200 to approximately 100) between 2009 and 2010. There are a few high B-BBEE scoring companies within these two sectors that is not representative of the industries. This is especially evident within the basic materials sector. In 2009, basic materials seemed to be the least empowered sector. When the least empowered companies were removed in 2010, basic materials surpassed consumer goods in terms of mean total B-BBEE scores.

The sector charters were released during the wider adoption period (2010 onwards) enabling companies to formalise their B-BBEE strategies. It should also be noted that the reduction in sample size occurred in 2010. Since only the 100 (approximately) most empowered companies of each industry were included from 2010 onwards, it could be expected that their mean total B-BBEE scores of the industries were closer to each other. The following section will focus on the descriptive statistics of the financial health variables.

5.3   DESCRIPTIVE STATISTICS FOR THE FINANCIAL HEALTH VARIABLES

The financial health variables were regarded as the dependent variables in this study. The descriptive statistics for the various financial health measures are displayed in Table 5.3 for the entire period under review.

Table 5.3: Descriptive statistics for the financial health variables

Variable	Mean	Median	Minimum value	Maximum value	Standard deviation
Change in turnover (%)	14.201	11.740	-43.807	69.983	23.733
ROS (%)	13.637	10.701	-21.059	46.824	14.376
ROA (%)[a]	9.021	8.819	-11.045	29.190	7.817
ROE (%)	19.259	18.641	-27.794	66.177	19.305
Annual share price growth (%)	19.405	15.662	-97.013	145.201	45.925
MTBV	2.442	1.985	0.099	6.451	1.617
P/E ratio	13.224	11.854	0.022	29.963	6.775
EVA (R'm)	70.998	27.051	-1260.972	1402.070	653.720
EVA (log10)	9.398	9.406	9.101	9.594	0.122
Default risk probability	0.001	0.000	0.000	0.003	0.001
Excess return (%)	8.765	5.354	-117.942	136.649	46.641
Cost of equity (%)	10.695	10.286	-11.768	25.525	3.139
(a) ROA was not computed for companies listed in the financials and basic materials industries.					

The relatively large standard deviations, in comparison with the mean and median values of the respective measures, were expected due to the diverse industries represented within the sample and the unstable economic climate during the period under review. The 2004 to 2007 period represented the commodity boom, whilst from 2008 to 2010 the global financial crisis had a detrimental impact on the results of the companies within the sample, as is evident from the discussion of the financial health indicators in Sections 5.3.1 to 5.3.5.

As explained in Table 4.4, the ROS and ROA ratios were calculated using NOPAT. ROS is measured as NOPAT divided by total sales, and ROA is calculated as NOPAT divided by average assets. There is a four per cent difference in the mean values of the ROS and ROA ratios shown in Table 5.3. If ROS is higher than ROA, it implies that the denominator of ROS (sales) is smaller than the denominator of ROA (average assets), given that the numerator (NOPAT) is the same across the two measures. The sampled companies thus generated less than one Rand of sales for every one Rand of average assets. Given the timeframe of this study, many companies could have built up assets during the commodity boom from 2004 to 2007, but may have failed to translate these assets into profit from 2008 onwards, due to the global financial crisis.

The sampled companies generated approximately 19 per cent ROE on average over the duration of the study period, which is in excess of the required return (cost of equity). This difference

between these variables has resulted in an average excess return percentage of almost nine per cent. The sampled firms' mean cost of equity was 10.695 per cent. There were two companies with negative costs of equity. A negative cost of equity, calculated by CAPM, could indicate a negative beta. Morris (2018) also reported negative unlevered betas amongst JSE-listed South African companies. Change in turnover was 14.201 per cent on average for the companies under review. The average inflation rate for the period 2004 to 2015 was five per cent (author's calculation based on Inflation.eu (2019)). Growth in sales was thus nine per cent in real terms for the companies included in the sample.

The market values of shares were, on average, double the book values, which is an indication of a positive market sentiment surrounding these companies (Damodaran, 2007). This positive sentiment is also reflected in the positive EVA mean value reported in Table 5.3 in Rand million. There was also large variation in the EVAs of the sampled companies. This large variation was expected since EVA depends on three variables: NOPAT, total assets and WACC. Companies generated on average R71 million more than the cost of invested capital. This positive mean EVA is testament to the efforts of directors of JSE-listed companies to generate shareholder wealth. The log of EVA values was used for the regression analyses.

According to South African Market Insights (2019), the average P/E ratios of all JSE-listed companies from 2008 to 2019 were between 12.3 (lowest in 2009) and 21.95 (highest in 2016). The average of all the mean P/E ratios from 2008 to 2019 was 16.8 (*ibid*). The mean P/E ratio of companies included in this sample is 13.224 (Table 5.3). The most empowered companies have a smaller P/E ratio than the average of the JSE, as reported by South African Market Insights (2019).

The default risk probability measure computed by Bloomberg (2018) indicates the likelihood of a company not being able to meet its future financial commitments (See Section 3.5). With only a 0.1 per cent average default probability, it thus seems unlikely that the sampled companies would not meet their required payments within the following year. This finding is unsurprising, since the companies in the sample are all large listed companies. These companies should (ideally) have the necessary resources to repay their short-term debt. Trends in each of the financial health measures will be explored in the following sections.

5.3.1 Change in turnover and annual share price growth

Change in turnover measures the increase or decrease in sales on a year-on-year basis. A year-on-year comparison was also performed on share price and was termed annual share price

growth (See Table 4.4). Both these measures compare the current year's result (turnover or share price) to the prior year. As such they were displayed together in Figure 5.7.
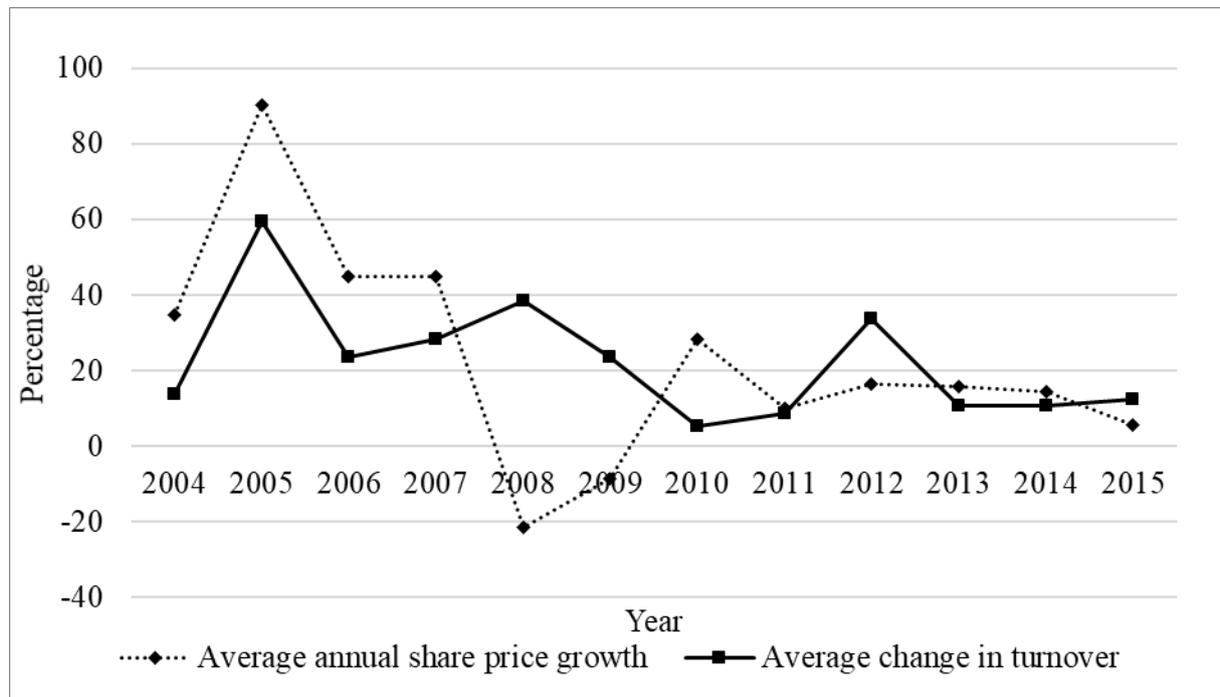
Figure 5.7: **Average change in turnover and annual share price growth (2004 – 2015)**

The average change in turnover and annual share price growth exhibited a similar trend from 2004 to 2007. The positive growth in share prices and sales peaked in 2005. This trend was partly due to the growth in gross domestic product during that period (Statistics South Africa, 2016). The global financial crisis of 2008 visibly impacted the results. The share prices seemed to be more volatile than sales, as the share prices plummeted immediately, but the sales figure gradually decreased. This finding is in line with Aylward and Glen (2000) who found that share prices are the best indicator of future growth or a decline in turnover. The share prices increased between 2009 and 2010, while sales only increased after 2010. Sales growth only recovered to its pre-global financial crisis level in 2012. From 2013 to 2015, both change in turnover and annual share price growth seem to have stabilised.

5.3.2 Return on sales, return on assets and return on equity

The ROS, ROA and ROE ratios are similar in nature, due to ROS and ROA both being measured using NOPAT, and ROE which is based on net profit. These three accounting-based ratios are thus all profit-based measures, with profit used as the numerator. In Figure 5.8, the average ROS, ROA and ROE are displayed from 2004 to 2015.

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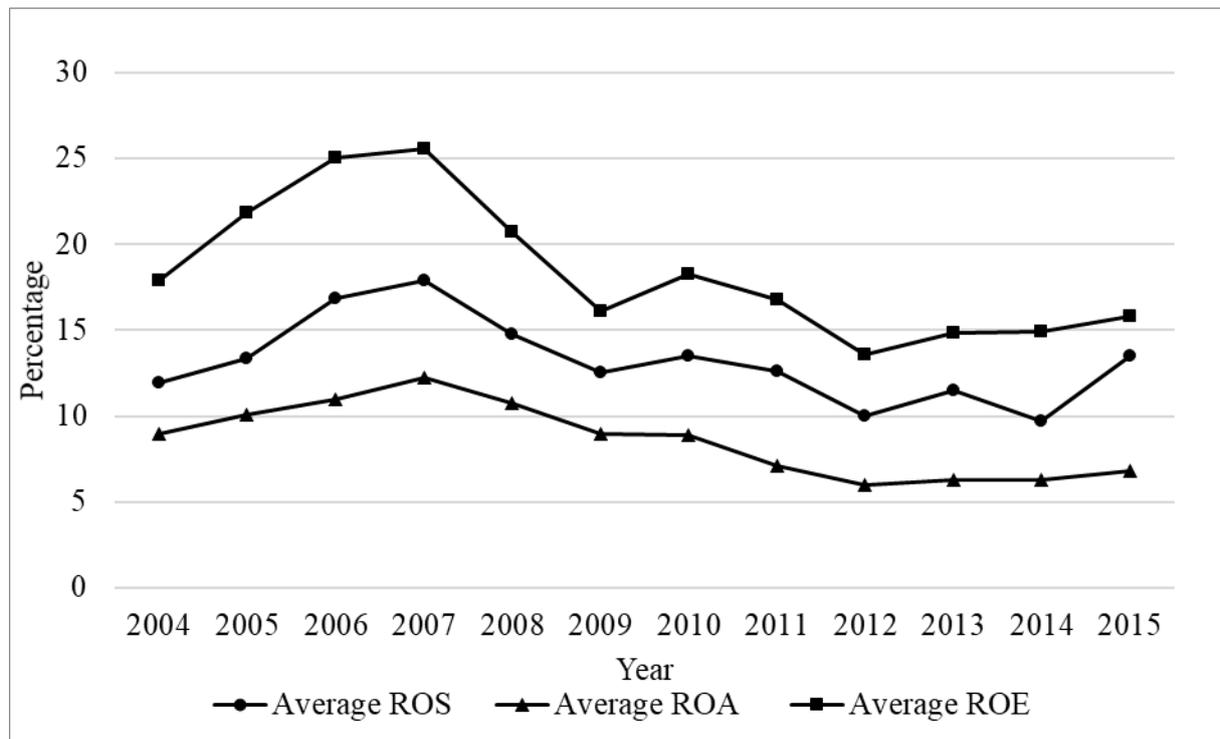
Figure 5.8: **Average ROS, ROA and ROE values (2004 – 2015)**

The average ROS, ROA and ROE values followed a similar downward trend over the research period. These ratios measure how efficiently companies can convert sales, assets or equity into profit (Correia *et al*, 2013). In prosperous economic times, it would be easier for companies to convert their sales, assets and equity into profit. The fact that the economy has struggled to recover since the economic crisis (Statistics South Africa, 2016) has hindered companies from attaining similar profit margins to those achieved during the economic growth period of 2004 to 2007.

5.3.3 Price/earnings ratio and market-to-book value

The P/E ratio and MTBV are two market-based financial health measures that are both influenced by share price. MTBV is calculated as share price divided by book value per share (see Section 3.3.2). In contrast, the P/E ratio uses earnings as the denominator (see Section 3.3.3). Both these measures compare a market value (share price) to an accounting-based value. As such these two measures are presented together. The MTBV and P/E ratio values were winsorised for purposes of the regression analysis. The average winsorised MTBV and P/E ratio from 2004 to 2015 are displayed in Figure 5.9.
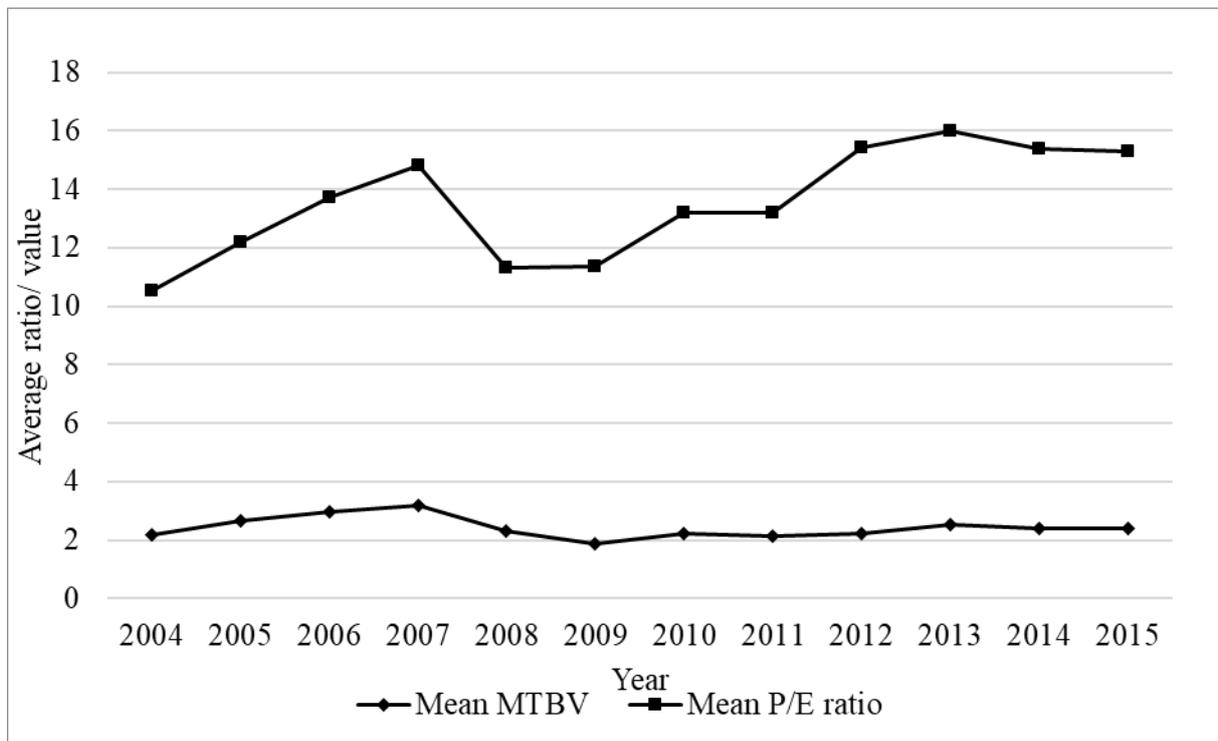
Figure 5.9:   Average MTBV and P/E ratio (2004 – 2015)

The P/E ratio seems to have had larger fluctuations than MTBV. As indicated in Figure 5.9, the latter ratio fluctuates between 2 and 2.8 (almost a 40 per cent change). The P/E ratio fluctuated from approximately 10 in 2004 to 14 in 2007 (also a 40 per cent increase). The economic upturn from 2004 to 2007 (Statistics South Africa, 2016) is also reflected in the P/E ratio and the MTBV. The decrease in share prices (as reflected in the negative annual share price growth seen in Figure 5.7) also played a role in these two measures' decrease in the latter stage of this study.

The P/E ratio and MTBV both represent a multiplication factor reflecting what investors are willing to pay for a share. The P/E ratio measures the multiplication factor between EPS and share price, and MTBV evaluates the multiplication factor between book value per share and share price. Should investors expect higher future returns than what is reflected in the current EPS or book value per share, the P/E ratio or MTBV would increase. The expectation of generating future returns for shareholders are also related to ROS, ROA and ROE. The higher these profitability measures, the better the company's ability to create returns. A similar pattern is also reflected for ROS, ROA and ROE in Figure 5.8.

5.3.4   Excess return and cost of equity

Excess return was defined in Section 3.3.4 as annual share price growth minus cost of equity. In this section, focus will be placed on excess return and the cost of equity, while annual share

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price growth will be incorporated to explain the trends. Cost of equity can be negative if the beta of the company is negative, as was reported by Morris (2018). The average cost of equity, excess return and annual share price growth are depicted in Figure 5.10.
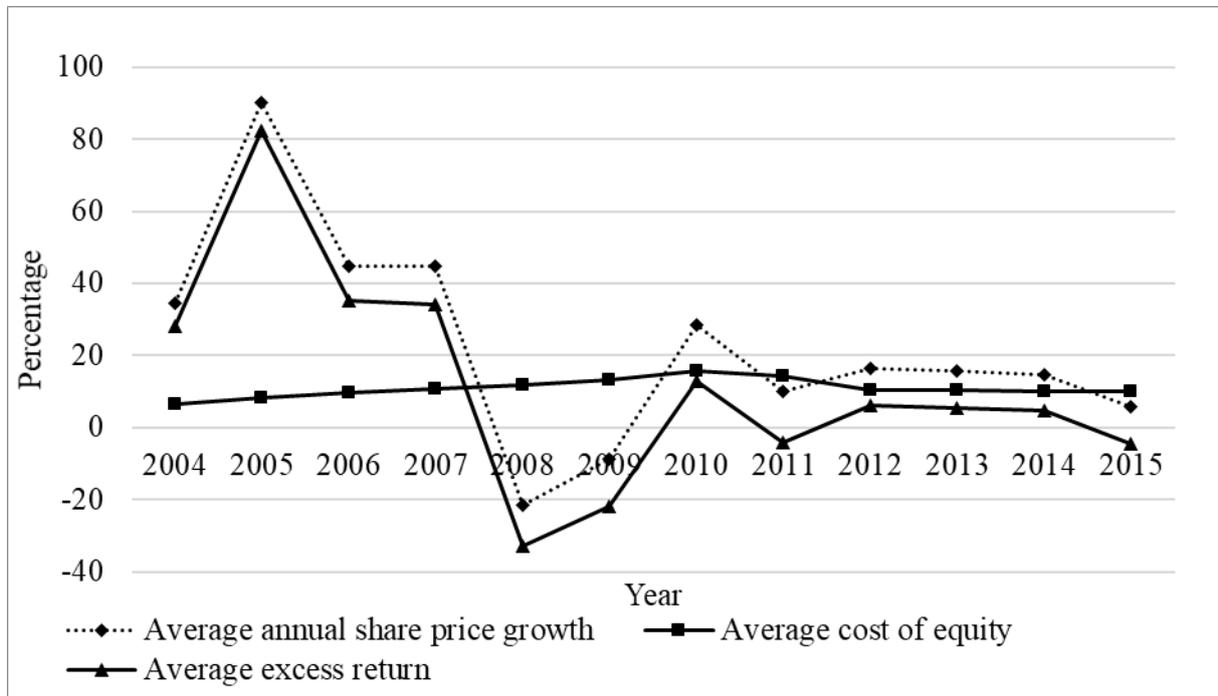
Figure 5.10:   Average excess return and cost of equity (2004 – 2015)

If annual share price growth remains constant, excess return is expected to decrease as cost of equity increases. This inverse trend is evident in the years 2004 to 2007 where a decrease is seen in excess return, and an increase in cost of equity. The global financial crisis of 2008 had an impact on cost of equity and excess return (cost of equity increased between 2008 and 2010) and, as a result, excess return decreased. This observation was anticipated, since cost of equity reflects the return shareholders require for the level of risk that they take. When a company goes bankrupt, shareholders assume the highest risk of all capital providers (Correia *et al*., 2013). It is therefore expected that shareholders would require higher return for their higher risk. Cost of equity peaked in 2010 – two years after the economic crisis of 2008. From 2012 to 2015, the mirror image effect of the increase in cost of equity is seen in the decrease of excess return. As anticipated, excess return followed the same trend as annual share price growth, but decreases more than annual share price growth if cost of equity increases.

5.3.5   Default risk probability

The default risk probability is likely to exhibit an inverse curve to annual share price growth (market-based financial health indicator). This expectation is ascribed to the fact that the worse a company performs financially, the higher the risk of the company defaulting on its debt

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obligations. Depicted in Figure 5.11 is the average default risk probability and annual share price growth.
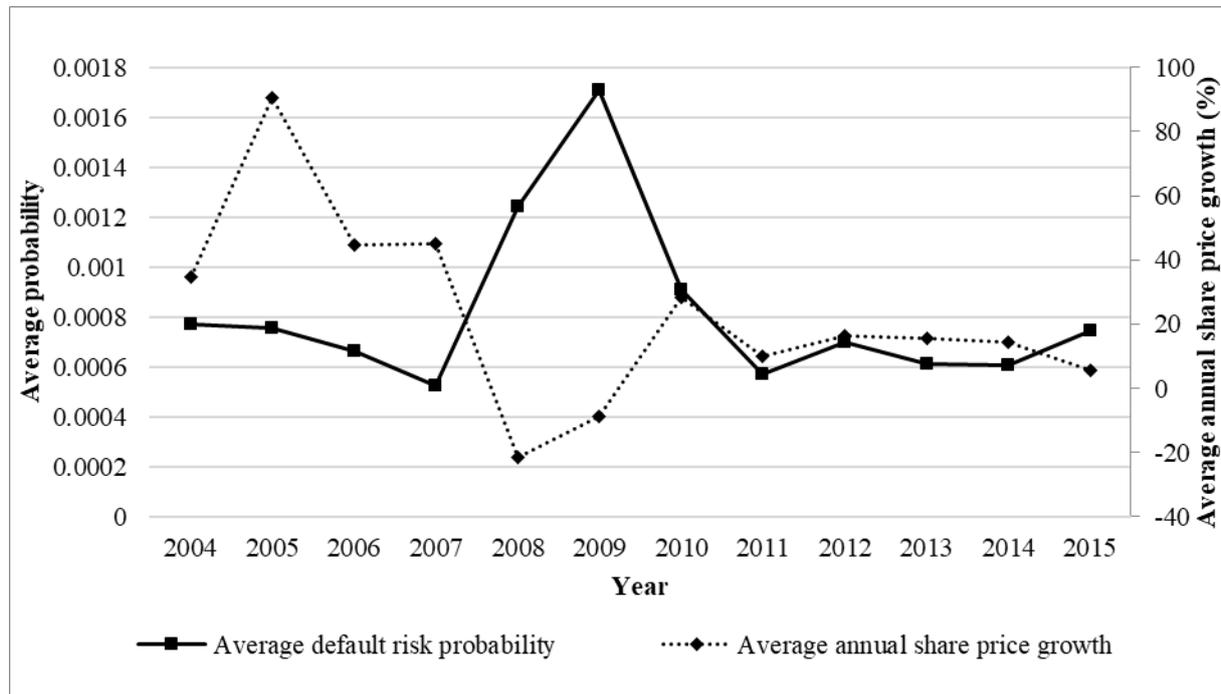
Figure 5.11:   Average default risk probability (2004 – 2015)

The default risk probability line reflects the inverse of annual share price growth. For the purpose of this discussion, the author assumed that a lower default risk probability indicates better financial health, since a company is more likely to pay its debt as it becomes due. When the global financial crisis occurred in 2008, the sampled companies' financial health decreased notably (depicted by an increase in default risk probability). A recovery is noted from 2010 to 2014. The descriptive statistics of the control variables are discussed next.

5.4   DESCRIPTIVE STATISTICS FOR THE CONTROL VARIABLES

As shown in Table 4.4, three control variables for company size were taken into account, namely total assets, total revenue and market capitalisation. The movement in average total revenue can be partly explained by the mean change in turnover, and the change in average market capitalisation is related to the change in mean annual share price growth. If the number of shares remained the same, annual share price growth could also be seen as the change in market capitalisation, as the change in market capitalisation could then only be attributed to the change in share price. The average total revenue, average total assets and average market capitalisation per year are displayed in Figure 5.12.
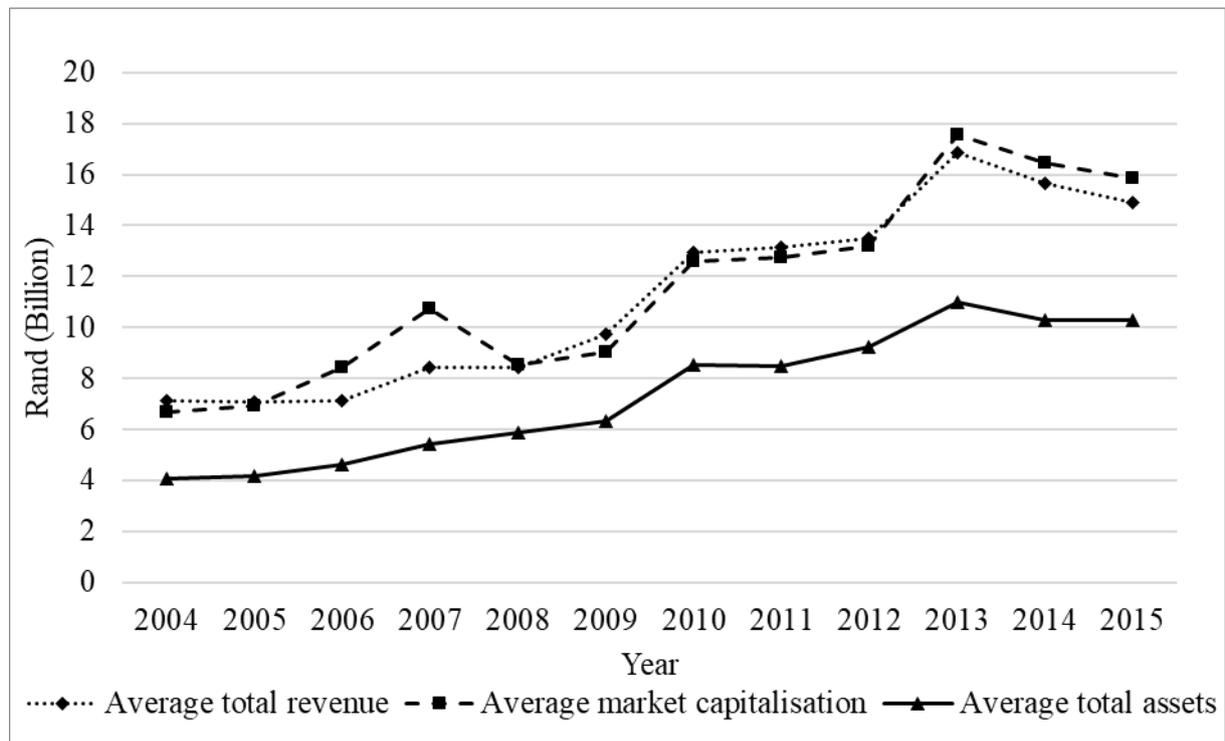
Figure 5.12: **Average size control variables (2004 – 2015)**

A noticeable upward trend is seen in Figure 5.12 for all the size measures. Total assets were constantly lower than total sales and market capitalisation. As expected, the change in turnover and annual share price growth also followed similar paths (Figure 5.7). The value of a company represents the current value of expected future cash flows of the company (Correia *et al*., 2013). If revenue fluctuated, the anticipated cash flows derived from the sales is assumed to fluctuate in the same ratio, affecting the market value of a company (*ibid*). The corroboration between market capitalisation and revenue was thus expected. From 2013 to 2015, a decrease in total sales is observed. This decrease is indicative of a struggling economy. The downswing in the economy culminated in a technical recession (Fin24, 2018).

5.5   SUMMARY AND CONCLUSIONS

There was a notable increase in the mean total B-BBEE score and means of the individual elements between 2004 and 2015. This increase was noted even after adjustments were made for the reduction in sample size in 2010. Several companies within the sample made a considerable effort to enhance their B-BBEE practices. Whether they increased their B-BBEE scores to benefit financially will be investigated in the following chapter. The largest increase in the scores of the elements, percentage wise, was noted in socio-economic development.

Ownership, an element that is traditionally associated with B-BBEE, showed a smaller percentage increase than the other elements. The increase in mean B-BBEE scores (in total and per element) appeared to be smaller at the start of the nascent period and the end of the wider adoption period. These two periods of reduction in growth falls concurrently with the release and implementation of the 2007 and 2013 Codes. The industries were well represented in the sample, with telecommunications the industry with the highest mean total B-BBEE score. This industry includes a large state-owned telecommunications enterprise that was consistently one of the most empowered companies.

The financial health measures were impacted by two major events, namely the commodity boom of 2004 to 2007 and the global financial crisis of 2008. The companies evaluated in this study were not able to reach the same level of financial health that they had prior to the global financial crisis by the end of the research period (December 2015). In the following chapter, the statistical significance of the increases in B-BBEE scores (in total and per element) noted will be tested. The question on whether the increase in B-BBEE compliance could have been driven by any financial health measure will also be addressed.

CHAPTER SIX
INFERENTIAL FINDINGS

6.1   INTRODUCTION

The existence of a business case for B-BBEE is a lingering question that has been attempted by previous scholars (Van der Merwe & Ferreira, 2014; Kleynhans & Kruger, 2014; Mathura, 2009; Acemoglu *et al*., 2007). Their findings were, however, inconclusive and contradicting. As such, this study set out to investigate this research question in the most comprehensive way that could be established thus far. In the previous chapter, the results of the descriptive statistics were presented. To ascertain whether the changes in the mean B-BBEE scores (in total and per element) were significant, mixed-model ANOVA and Fisher's LSD tests were performed. The results of these tests will be presented first. The trends in B-BBEE scores (in total and per element) were analysed using the 100 most empowered companies from 2004 to 2009, and the full sample size from 2010 onwards. Next, the results of the panel regressions performed (on the full sample) with B-BBEE total score and each element of the B-BBEE scorecard as the independent variable, and all measures of financial health as the dependent variables, will be discussed.

6.2   MIXED-MODEL ANALYSIS OF VARIANCE AND FISHER'S LEAST SIGNIFICANT DIFFERENCES RESULTS

Based on the descriptive statistics reported in Section 5.2 the mean total B-BBEE scores of the sample companies increased over the study period. A mixed-model ANOVA was therefore used to determine the significance of the observed trend. The mixed-model ANOVA included both fixed effects (between subjects) and random effects (within subjects) factors (Dowdy, Wearden & Chilko, 2004). For the purpose of this study, the considered fixed effects factor was year. The random effects factor was JSE ticker code. The sample size was larger during the nascent period than the wider adoption period (Empowerdex reduced the number of companies from approximately 200 to approximately 100 most empowered companies). As such, the sample size of the nascent period (2004 to 2009) was reduced to include only 100 companies per year, consistent with the sample size of the wider adoption period (2010 to 2015). A restricted

maximum likelihood solution with type III decomposition was performed to estimate the variance components of the random effects in the model.

The results of the mixed-model ANOVA conducted on the mean total B-BBEE scores are shown in Table 6.1. The Fisher's LSD test was used to determine whether the mean total B-BBEE scores differed significantly on an annual basis. The results are shown in Table 6.2.

Table 6.1: **Results of the mixed-model ANOVA conducted on the mean total B-BBEE scores**

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	11	1007	**254.666****	0.000

** Significant at the 1% level

Table 6.2: **Fisher's LSD test for the mean total B-BBEE score per annum**

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2004		0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2005			0.013*	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2006				0.135	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2007					0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2008						0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2009							0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2010								0.000**	0.000**	0.000**	0.000**	0.000**
2011									0.013*	0.001**	0.017*	0.000**
2012										0.305	0.938	0.002**
2013											0.265	0.052
2014												0.001**
2015												

** Significant at the 1% level   * Significant at the 5% level

The mean total B-BBEE scores of the considered companies differed significantly over the research period (Table 6.1). Perusal of Table 6.2 shows that all the annual increases in the mean total B-BBEE scores were statistically significant, except for the annual increase from 2006 to 2007. Four changes in mean total B-BBEE score in the wider adoption period were also not significant. The insignificant result during the nascent period could be due to the release and implementation of the 2007 Codes. Companies may have postponed their B-BBEE efforts until the details of the 2007 Codes became clear. The release of the 2013 Codes and the implementation thereof in 2015 could have impacted the insignificant results between 2013 and 2015.

As the total B-BBEE score comprises of seven elements, mixed-model ANOVA and Fisher's LSD tests were also conducted for each element. The results for the elements are provided in Appendix A. Similar trends are observed in the elements with statistically significant increases

noted for all years, except for the years surrounding the release and implementation of the 2007 and the 2013 Codes. The significant increases in compliance scores are encouraging.

Other results for the insignificant increases noted since 2013 (Table 6.2 and Appendix A) could also be attributed to poor economic growth focussing management's attention on financial survival. As a result, spending on social initiatives such as B-BBEE could have decreased. Companies could have become 'comfortable' with their B-BBEE compliance level and hence did not make active attempts to increase their scores. Management might be reluctant to invest in initiatives to increase the company's B-BBEE score if its compliance level is not linked to a significant improvement in financial health. As such, this study investigated the relationships between B-BBEE scores and financial health. The results of the panel regression analyses will be presented next.

6.3   CHANGE IN TURNOVER AS THE DEPENDENT VARIABLE

Panel regression analyses, with change in turnover as the dependent variable were performed to determine the nature of the relationship between this variable and the sampled companies' total B-BBEE scores, as well as the respective elements of the total score. The multiple regression results for the total B-BBEE score are shown in Table 6.3, while the results reflecting the respective elements are reported in Table 6.4. The Breusch-Pagan test was conducted to test for heteroskedasticity. Where applicable, the results were adjusted for heteroskedasticity. Focus will be placed on the results adjusted for heteroskedasticity.

Table 6.3:   Regression analysis results for change in turnover and total B-BBEE score

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way fixed effects (**6.71****)	**2.07****	**40.06****	**16.81** (4,700)**

Regression coefficients	Standard error	t-value	Pr > |t|
Total B-BBEE score	0.032	0.046	0.437	0.662
Total revenue	0.161	26.064	1.215	0.225
Market capitalisation	0.916	3.566	**5.777****	0.000
Total assets	0.116	5.433	0.548	0.584

Breusch-Pagan test for heteroskedasticity (BP)		Adjusted t-value	p-value
Total B-BBEE score		0.377	0.707
Total revenue	**429.08****	0.890	0.374
Market capitalisation		**3.903****	0.000
Total assets		0.378	0.705

** Significant at the 1% level
R-squared = 0.09
The quality of fit of the preferred fixed effects regression model was significant.

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Table 6.4:   Regression analysis results for change in turnover and B-BBEE elements

Model summary			
Preferred model (F)	**Test for fixed effects (*F*)**	**Hausman test for random effects (*F*)**	**Fit of the model *F* (*df*)**
Two-way fixed effects (**6.11****)	**1.94****	**39.12****	**7.01** (10,694)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Ownership	0.076	0.134	1.245	0.213
Management control	-0.066	0.363	-1.092	0.275
Employment equity	-0.044	0.315	-0.717	0.474
Skills development	0.006	0.180	0.120	0.904
Preferential procurement	0.002	0.183	0.022	0.983
Enterprise development	0.049	0.162	0.823	0.411
Socio-economic development	-0.016	0.294	-0.325	0.745
Total revenue	0.148	26.556	1.092	0.275
Market capitalisation	0.908	3.586	**5.692****	0.000
Total assets	0.119	5.482	0.557	0.578

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Ownership		1.082	0.280
Management control		-0.913	0.362
Employment equity		-0.692	0.489
Skills development		0.101	0.920
Preferential procurement	**458.89****	0.021	0.984
Enterprise development		0.868	0.386
Socio-economic development		-0.277	0.782
Total revenue		0.809	0.419
Market capitalisation		**3.874****	0.000
Total assets		0.392	0.695

** Significant at the 1% level
R-squared = 0.09
The quality of fit of the preferred fixed effects regression model was significant.

Except for market capitalisation, the regression coefficients adjusted for heteroskedasticity reported in Tables 6.3 and 6.4 were insignificant. The positive association between change in turnover and market capitalisation confirms the assumption that larger companies have higher sales growth than their smaller counterparts (Ionascu, Ionascu, Sacarin & Minu, 2018; McWilliams & Siegel, 2000). This finding could be partly ascribed to large companies having more resources available to invest in extensive sales and marketing campaigns that could improve their turnover.

The insignificant positive coefficient for the total B-BBEE score in Table 6.3 suggests that the sampled companies with higher total B-BBEE scores did not have significantly lower growth in sales than companies with lower B-BBEE scores. Based on these results, B-BBEE does not seem to be 'detrimental' to the change in turnover of companies. This finding is consistent with those reported by Mathura (2009) and Kleynhans and Kruger (2014). The author also investigated whether B-BBEE scores had an association with profit margins. ROS was used as

the dependent variable in the following analysis, followed by ROA and ROE in Section 6.5 and 6.6.

6.4   RETURN ON SALES AS THE DEPENDENT VARIABLE

In Table 6.5, the regression results with ROS as the dependent variable and total B-BBEE score as the independent variable are displayed. The results for ROS and the respective elements of the B-BBEE scorecard are tabulated in Table 6.6.

Table 6.5:   Regression analysis results for ROS and total B-BBEE score

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way fixed effects (**7.63****)	**15.4****	**27.28****	**32.89** (4,707)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Total B-BBEE score	0.041	0.013	1.082	0.280
Total revenue	-0.052	7.426	-0.765	0.445
Market capitalisation	0.833	1.019	**10.136****	0.000
Total assets	-0.184	1.548	-1.687	0.092

Breusch-Pagan test for heteroskedasticity (*BP*)		**Adjusted *t*-value**	***p*-value**
Total B-BBEE score		0.877	0.381
Total revenue	**1829.38****	-0.692	0.489
Market capitalisation		**7.586****	0.000
Total assets		-1.504	0.133

** Significant at the 1% level
R-squared = 0.16
The quality of fit of the preferred fixed effects regression model was significant.

Table 6.6:   Regression analysis results for ROS and B-BBEE elements

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way fixed effects (**7.10****)	**14.8****	**30.41****	**13.86** (10,701)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Ownership	0.045	0.038	1.457	0.146
Management control	-0.008	0.103	-0.264	0.792
Employment equity	0.034	0.089	1.071	0.285
Skills development	0.000	0.051	0.001	0.999
Preferential procurement	0.053	0.052	1.312	0.190
Enterprise development	-0.027	0.046	-0.889	0.374
Socio-economic development	-0.035	0.084	-1.397	0.163
Total revenue	-0.071	7.541	-1.030	0.303
Market capitalisation	0.824	1.021	**10.011****	0.000
Total assets	-0.181	1.557	-1.647	0.100

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Ownership		1.331	0.184
Management control		-0.218	0.827
Employment equity		0.754	0.451
Skills development	1824.09**	0.001	0.999
Preferential procurement		1.424	0.155
Enterprise development		-0.670	0.503
Socio-economic development		-1.279	0.201
Total revenue		-0.937	0.349
Market capitalisation		**7.848****	0.000
Total assets		-1.480	0.139

** Significant at the 1% level
R-squared = 0.17
The quality of fit of the preferred fixed effects regression model was significant.

In line with the regression results for the change in turnover (reported in Tables 6.3 and 6.4), the only significant relationship observed in Tables 6.5 and 6.6 is for ROS and market capitalisation. No significant relationship was observed between ROS and total B-BBEE score or any of the individual elements. This finding corresponds with those of Kleynhans and Kruger (2014) who also concluded that the total B-BBEE score was unrelated to ROS. Attention was furthermore given to whether the companies with higher B-BBEE scores also had higher levels of profit per Rand invested in assets.

6.5   RETURN ON ASSETS AS THE DEPENDENT VARIABLE

The results of ROA as the dependent variable and total B-BBEE score as the independent variable are shown in Table 6.7, while the results for the B-BBEE elements are displayed in Table 6.8.

Table 6.7:   Regression analysis results for ROA and total B-BBEE score

Model summary			
Preferred model (F)	Test for fixed effects (*F*)	Hausman test for random effects (*F*)	Fit of the model *F* (*df*)
Two-way fixed effects (**5.06****)	**3.15****	**15.03****	**65.77** (4,702)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Total B-BBEE score	0.004	0.012	0.085	0.932
Total revenue	-0.005	7.111	-0.052	0.959
Market capitalisation	1.677	0.969	**16.054****	0.000
Total assets	-1.320	1.447	**-9.713****	0.000

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Total B-BBEE score		0.061	0.951
Total revenue	458.85**	-0.037	0.971
Market capitalisation		13.478**	0.000
Total assets		-6.843**	0.000

** Significant at the 1% level
R-squared = 0.27
The quality of fit of the preferred fixed effects regression model was significant.

Table 6.8:   Regression analysis results for ROA and B-BBEE elements

Model summary			
Preferred model (F)	**Test for fixed effects (*F*)**	**Hausman test for random effects (*F*)**	**Fit of the model *F* (*df*)**
Two-way fixed effects (**5.44****)	**3.08****	**20.23****	**26.90** (10,696)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Ownership	-0.018	0.036	-0.443	0.658
Management control	0.017	0.098	0.420	0.675
Employment equity	0.013	0.086	0.309	0.758
Skills development	0.008	0.049	0.232	0.816
Preferential procurement	0.089	0.050	1.734	0.083
Enterprise development	-0.039	0.044	-0.993	0.321
Socio-economic development	-0.045	0.080	-1.378	0.169
Total revenue	-0.017	7.229	-0.196	0.845
Market capitalisation	1.671	0.972	**15.949****	0.000
Total assets	-1.306	1.457	**-9.552****	0.000

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Ownership		-0.312	0.755
Management control		0.428	0.669
Employment equity		0.310	0.757
Skills development		0.200	0.841
Preferential procurement	479.42**	1.746	0.081
Enterprise development		-1.008	0.314
Socio-economic development		-1.753	0.080
Total revenue		-0.143	0.886
Market capitalisation		**13.804****	0.000
Total assets		**-7.097****	0.000

** Significant at the 1% level
R-squared = 0.28
The quality of fit of the preferred fixed effects regression model was significant.

The significant positive relationship reported between ROA and company size (as measured by market capitalisation) was anticipated. McWilliams and Siegel (2000) and Ionascu *et al*. (2018) reported similar findings for market capitalisation. The results reported in Table 6.7 confirm that companies with higher market capitalisation showed higher profitability over the research period. A negative relationship, however, existed between total assets (another measure of company size) and ROA. As such, companies with more assets in this sample had lower profitability. This result could be partly explained by the insignificant relationship observed between total assets and change in turnover (refer to Table 6.4). The implication is that if a

company's assets increased, its revenue did not increase proportionally. If it is presumed that constant revenue leads to a constant return, the claim could be made that return remained fairly unchanged if total assets increased. If NOPAT remained constant, and total assets increased, return (NOPAT) divided by total assets would become smaller, resulting in the observed negative relationship between total assets and ROA.

Given that no significant relationships were detected between ROA and B-BBEE (in total and per element directly), it could be argued that the decision to invest in B-BBEE activities is arguably not linked to ROA. The B-BBEE regression results related to ROE are reported in the next section.

6.6 RETURN ON EQUITY AS THE DEPENDENT VARIABLE

The author expected that the ROE results might differ from the ROA results, as ROE removes compensation to debt holders and provides an indication of the accounting return to shareholders (Correia *et al*., 2013). As share ownership forms part of the requirements of B-BBEE, this is an important measure to investigate in the context of this study. The results of the panel regression, with total B-BBEE score as the independent variable, are displayed in Table 6.9, and the results of the panel regression analysis conducted for the B-BBEE elements in Table 6.10.

Table 6.9:   Regression analysis results for ROE and total B-BBEE score

Model summary			
Preferred model (F)	**Test for fixed effects (*F*)**	**Hausman test for random effects (*F*)**	**Fit of the model *F* (*df*)**
Two-way fixed effects (**6.04****)	**4.48****	**15.94****	**33.85** (4,701)**

Regression coefficients		**Standard error**	***t*-value**	**Pr > |*t*|**
Total B-BBEE score	0.025	0.034	0.469	0.639
Total revenue	0.001	19.139	0.011	0.991
Market capitalisation	1.350	2.608	**11.439****	0.000
Total assets	-0.872	3.892	**-5.687****	0.000

Breusch-Pagan test for heteroskedasticity (*BP*)		**Adjusted *t*-value**	***p*-value**
Total B-BBEE score		0.369	0.712
Total revenue	**514.50****	0.009	0.993
Market capitalisation		**8.575****	0.000
Total assets		**-5.426****	0.000

** Significant at the 1% level
R-squared = 0.16
The quality of fit of the preferred fixed effects regression model was significant.

Van der Merwe and Ferreira (2014) also reported a positive association between management control and short-term share returns.

No significant relationship was reported between the B-BBEE scores (in total or per element) and the employed accounting-based measures in Sections 6.3 to 6.6. In the following section, the focus shifts to market-based financial health measures. The first market-based financial health measure reflects the change in share price from the previous financial year-end to the current share price, and is called annual share price growth.

6.7   ANNUAL SHARE PRICE GROWTH AS DEPENDENT VARIABLE

The results for annual share price growth as the dependent variable and total B-BBEE score are tabulated in Table 6.11, whereas the results for the elements are shown in Table 6.12.

Table 6.11:   Regression analysis results for annual share price growth and total B-BBEE score

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way fixed effects (**27.5****)	**2.26****	**12.75****	**53.66** (4,693)**

Regression coefficients		**Standard error**	**t-value**	**Pr > |t|**
Total B-BBEE score	-0.022	0.001	-0.366	0.715
Total revenue	-0.269	0.502	**-2.532***	0.012
Market capitalisation	1.845	0.069	**14.569****	0.000
Total assets	-1.219	0.103	**-7.330****	0.000

Breusch-Pagan test for heteroskedasticity (BP)		**Adjusted t-value**	**p-value**
Total B-BBEE score		-0.398	0.691
Total revenue	**262.15****	**-2.129***	0.034
Market capitalisation		**13.317****	0.000
Total assets		**-5.643****	0.000

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.24
The quality of fit of the preferred fixed effects regression model was significant.

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Table 6.12: **Regression analysis results for annual share price growth and B-BBEE elements**

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way random effects (**26.39****)	**2.26****	10.73	**19.17** (10,805)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Intercept	0.016	8.148	0.197	0.844
Ownership	0.012	0.007	0.093	0.926
Management control	0.066	0.017	0.549	0.583
Employment equity	-0.076	0.015	-0.608	0.543
Skills development	-0.019	0.010	-0.152	0.880
Preferential procurement	-0.073	0.010	-0.415	0.678
Enterprise development	-0.002	0.009	-0.013	0.990
Socio-economic development	0.030	0.017	0.259	0.796
Total revenue	-0.026	0.833	-0.147	0.883
Market capitalisation	1.001	0.139	**3.917****	0.000
Total assets	-0.883	0.176	**-3.108****	0.002

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Intercept		0.618	0.537
Ownership		0.250	0.802
Management control		1.345	0.179
Employment equity		-1.528	0.127
Skills development		-0.370	0.712
Preferential procurement	**285.85****	-1.087	0.277
Enterprise development		-0.036	0.971
Socio-economic development		0.633	0.527
Total revenue		-0.453	0.651
Market capitalisation		**9.477****	0.000
Total assets		**-7.971****	0.000

** Significant at the 1% level
R-squared = 0.19
The quality of fit of the preferred random effects regression model was significant.

No significant associations are reported in Table 6.11 between annual share price growth and total B-BBEE score or the elements (Table 6.12). The signs of the significant size regression coefficients (positive for market capitalisation and negative for total assets) are comparable to the size regression coefficients reported in Sections 6.3 to 6.6 for the accounting-based performance measures.

6.8   MARKET-TO-BOOK VALUE AS THE DEPENDENT VARIABLE

MTBV is utilised to indicate the relationship between the market value of a company's shares and the book value thereof. The value could also be determined by dividing the market capitalisation by shareholders' equity as reported in a company's statement of financial position (Correia *et al*., 2013). A higher MTBV would thus indicate that investors are willing to pay

more for each Rand of net asset value per share. Panel regressions were performed to establish the relationship between MTBV and B-BBEE scores (in total and per element). The results of these analyses are shown in Tables 6.13 and 6.14 respectively.

Table 6.13:   Regression analysis results for MTBV and total B-BBEE score

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way fixed effects (**4.33****)	**12.16****	**14.28****	**95.75** (4,710)**

Regression coefficients	Standard error	*t*-value	Pr > |*t*|
Total B-BBEE score	0.007	0.002	0.193	0.847
Total revenue	0.026	1.192	0.404	0.686
Market capitalisation	1.490	0.163	**19.091****	0.000
Total assets	-1.383	0.244	**-13.567****	0.000

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Total B-BBEE score		0.161	0.872
Total revenue	**901.91****	0.248	0.804
Market capitalisation		**11.445****	0.000
Total assets		**-6.212****	0.000

** Significant at the 1% level
R-squared = 0.35
The quality of fit of the preferred fixed effects regression model was significant.

Table 6.14:   Regression analysis results for MTBV and B-BBEE elements

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way random effects (**3.91****)	**11.39****	3.85	**93.05** (10,824)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Intercept	-0.018	13.473	-1.142	0.254
Ownership	-0.030	0.008	-0.801	0.423
Management control	0.029	0.021	0.786	0.432
Employment equity	0.050	0.018	1.316	0.189
Skills development	-0.017	0.011	-0.533	0.594
Preferential procurement	-0.078	0.010	-1.753	0.080
Enterprise development	0.033	0.009	0.887	0.375
Socio-economic development	0.035	0.016	1.209	0.227
Total revenue	0.085	1.355	1.151	0.250
Market capitalisation	1.653	0.186	**18.526****	0.000
Total assets	-1.383	0.251	**-13.188****	0.000

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Intercept		-0.686	0.493
Ownership		-0.473	0.636
Management control		0.519	0.604
Employment equity		0.795	0.427
Skills development		-0.419	0.676
Preferential procurement	**931.86****	-1.142	0.254
Enterprise development		0.604	0.546
Socio-economic development		0.989	0.323
Total revenue		0.687	0.492
Market capitalisation		**14.425****	0.000
Total assets		**-10.843****	0.000

** Significant at the 1% level
R-squared = 0.53
The quality of fit of the preferred random effects regression model was significant.

Albeit insignificant, a positive association is noted between MTBV and the total B-BBEE score (Table 6.13) and the majority of the B-BBEE elements (Table 6.14) of the sampled companies. Significant relationships were only reported for the control variables market capitalisation and total assets. The latter had a negative relationship with the dependent variable, whereas the former had a positive relationship. The results of another market-based financial health measure, namely the P/E ratio are reported in the next section.

6.9   PRICE/EARNINGS RATIO AS THE DEPENDENT VARIABLE

The panel regression results for total B-BBEE score as the independent variable and the P/E ratio as the dependent variable are shown in Table 6.15. In Table 6.16 the results for the B-BBEE elements are provided.

Table 6.15:   Regression analysis results for the P/E ratio and total B-BBEE score

Model summary			
Preferred model (F)	**Test for fixed effects (*F*)**	**Hausman test for random effects (*F*)**	**Fit of the model *F* (*df*)**
Two-way fixed effects (**7.72****)	**2.91****	**20.02****	**7.23** (4,658)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Total B-BBEE score	-0.154	0.014	**-2.340***	0.020
Total revenue	0.112	7.833	0.928	0.354
Market capitalisation	0.699	1.197	**4.478****	0.000
Total assets	-0.329	1.687	-1.682	0.093

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Total B-BBEE score		**-2.220***	0.027
Total revenue	**579.26****	0.669	0.504
Market capitalisation		**2.875****	0.004
Total assets		-1.080	0.280

** Significant at the 1% level   * Significant at the 5% level

R-squared = 0.04

The quality of fit of the preferred fixed effects regression model was significant.

Table 6.16:   Regression analysis results for the P/E ratio and the B-BBEE elements

Model summary			
Preferred model (F)	**Test for fixed effects (*F*)**	**Hausman test for random effects (*F*)**	**Fit of the model *F* (*df*)**
Two-way random effects (**6.65****)	**3.00****	17.94	**19.08** (10,764)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Intercept	0.022	10.356	**-6.373****	0.000
Ownership	-0.095	0.007	**-9.506****	0.000
Management control	0.021	0.020	**2.187***	0.029
Employment equity	0.079	0.017	**7.839****	0.000
Skills development	-0.089	0.011	**-9.491****	0.000
Preferential procurement	0.129	0.010	**10.253****	0.000
Enterprise development	0.040	0.010	**3.763****	0.000
Socio-economic development	0.091	0.017	**10.930****	0.000
Total revenue	0.090	1.054	**5.555****	0.000
Market capitalisation	0.735	0.178	**31.729****	0.000
Total assets	-0.469	0.221	**-18.330****	0.000

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Intercept		-1.210	0.227
Ownership		-1.661	0.097
Management control		0.370	0.712
Employment equity		1.404	0.161
Skills development		**-1.961***	0.050
Preferential procurement	**590.17****	1.944	0.052
Enterprise development		0.638	0.524
Socio-economic development		**2.164***	0.031
Total revenue		1.047	0.295
Market capitalisation		**5.234****	0.000
Total assets		**-3.859****	0.000

** Significant at the 1% level   * Significant at the 5% level

R-squared = 0.20

The quality of fit of the preferred random effects regression model was significant.

In Table 6.15, a significant negative relationship is observed between the sampled companies' P/E ratios and their total B-BBEE scores (before and after adjusting for heteroskedasticity). After adjusting for heteroskedasticity, a negative relationship was detected between P/E ratio and skills development, but a significant positive relationship was observed with socio-economic development (Table 6.16). In line with the results reported for the accounting-based and other market-based measures (Section 6.8), a significant positive regression coefficient was

reported for market capitalisation and a negative significant regression coefficient for total assets.

The negative relationship between total B-BBEE score and P/E ratio could indicate that investors were not *per se* willing to pay more for the shares of companies with high B-BBEE scores. No previous researchers have used the P/E ratio to assess the link between market-based financial health and B-BBEE. This negative relationship might be partly ascribed to the negative sentiment surrounding B-BBEE as indicated by Krüger (2011) and suggested by Van der Merwe and Ferreira (2014). A negative relationship between total B-BBEE score and short-term share returns were found by Van der Merwe and Ferreira (2014).

Given the significant negative relationship between skills development and the P/E ratio for the sampled companies, investors could arguably regard skills development as a financial burden. This observation is especially true in certain sectors in South Africa, like the information technology sector, where the retention of employees is seen as a major challenge (Mohlala, Goldman & Goosen, 2012). It is, however, encouraging that a positive relationship existed between market-based performance and socio-economic development over the duration of the study period. Investors seemed to regard socio-economic development in a positive light.

Companies that have a risk of going bankrupt in the near future often reflect a lower P/E ratio, whilst companies that have longevity, typically have a higher P/E ratio (Correia *et al*., 2013). To further investigate whether the observed negative relationship between the total B-BBEE score and the P/E ratio could possibly be partly attributed to risk, the author investigated the nature of the relationship between B-BBEE scores and default risk probability.

6.10 DEFAULT RISK PROBABILITY AS THE DEPENDENT VARIABLE

As explained in Section 3.5, Bloomberg's (2018) default risk probability measures the likelihood of a company not being able to meet its financial commitments in the next year. Companies should thus strive to attain a low default risk probability score. The results for default risk probability and the total B-BBEE score and the B-BBEE elements are reported in Tables 6.17 and 6.18 respectively.

Table 6.17: **Regression analysis results for default risk probability and total B-BBEE score**

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way random effects (**10.38****)	**5.16****	0.00	**167.9** (4,697)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Intercept	-0.020	12.513	-0.001	0.999
Total B-BBEE score	0.069	0.003	0.001	0.999
Total revenue	0.183	1.267	0.002	0.999
Market capitalisation	-1.465	0.196	-0.011	0.991
Total assets	0.803	0.263	0.005	0.996

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Intercept		**-2.144***	0.032
Total B-BBEE score		1.849	0.065
Total revenue	**370.62****	**2.780****	0.006
Market capitalisation		**-13.349****	0.000
Total assets		**6.092****	0.000

** Significant at the 1% level   * Significant at the 5% level

R-squared = 0.49

The quality of fit of the preferred random effects regression model was significant.

Table 6.18: **Regression analysis results for default risk probability and B-BBEE elements**

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way random effects (**9.44****)	**5.17****	0.00	**67.88** (10,691)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Intercept	-0.016	12.697	-0.001	0.999
Ownership	0.036	0.008	0.001	1.000
Management control	-0.032	0.023	-0.001	1.000
Employment equity	0.036	0.020	0.001	1.000
Skills development	-0.041	0.012	-0.001	0.999
Preferential procurement	0.068	0.011	0.001	0.999
Enterprise development	0.016	0.011	0.000	1.000
Socio-economic development	-0.015	0.019	0.000	1.000
Total revenue	0.184	1.287	0.002	0.999
Market capitalisation	-1.485	0.195	-0.011	0.991
Total assets	0.840	0.262	0.005	0.996

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Intercept		**-2.223***	0.027
Ownership		0.717	0.474
Management control		-0.656	0.512
Employment equity		0.739	0.460
Skills development		-0.874	0.383
Preferential procurement	**375.49****	1.054	0.292
Enterprise development		0.307	0.759
Socio-economic development		-0.467	0.640
Total revenue		**2.836****	0.005
Market capitalisation		**-13.172****	0.000
Total assets		**6.416****	0.000

** Significant at the 1% level * Significant at the 5% level
R-squared = 0.50
The quality of fit of the preferred random effects regression model was significant.

In Table 6.17, the two-way random effects panel regression revealed significant relationships with all three the control variables, after adjusting for heteroskedasticity. Before adjusting for heteroskedasticity, the relationships were all highly insignificant. This change in significance highlights the importance of adjusting for heteroskedasticity. This specification error can invalidate statistical significance tests, as it implies that the standard error terms do not all have the same variance (see Section 4.5.8.1) (Gujarati, 2004).

After adjusting for heteroskedasticity, a positive relationship was noted between the total B-BBEE score and default risk probability (Table 6.17). The result was, however, only significant at the 10 per cent level (p-value: 0.065). The positive coefficient could imply that higher default risk is related to higher B-BBEE scores. This result could partly explain the lower P/E ratio (as reported in Table 6.15), as companies with higher risk of default would be likely to have a lower valuation (Correia *et al*., 2013). No significant relationship between the B-BBEE elements and default risk probability were noted in Table 6.18. Additional analysis was performed to investigate whether this perceived higher risk is also reflected in a higher cost of equity.

6.11   COST OF EQUITY AS THE DEPENDENT VARIABLE

The cost of equity of a company indicates the return that ordinary shareholders require on their investment. If a company has higher risk, it would most likely result in a higher cost of equity (Correia *et al*., 2013). Different models could be used to calculate the cost of equity. The model that is mostly used in South Africa, despite some shortcomings, is the traditional CAPM (PwC, 2016; Nel, 2011). Table 5.3 indicated that there were two negative cost of equity observations. To ensure rigour, the panel regression between B-BBEE scores (in total and per element) were

reperformed where the five smallest cost of equity cases were removed from the sample. The findings did not differ between the sample including the negative costs of equity, and the sample excluding the five smallest costs of equity. As suggested by Basiewicz and Auret (2010), company size was controlled for. Total revenue, market capitalisation and total assets were included in the panel regressions. The results of the analyses for cost of equity and the total B-BBEE score and B-BBEE elements are shown in Tables 6.19 and 6.20 respectively.

Table 6.19:   Regression analysis results for cost of equity and total B-BBEE score

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Pooled ordinary least squares	1.13	N/A	**35.24** (4,817)**

Regression coefficients		Standard error	t-value	Pr > |t|
Intercept	0.000	16.916	-0.485	0.628
Total B-BBEE score	0.231	0.003	**6.732****	0.000
Total revenue	0.027	1.736	0.494	0.621
Market capitalisation	-0.104	0.300	-1.267	0.206
Total assets	0.310	0.383	**3.361****	0.001

Breusch-Pagan test for heteroskedasticity (BP)		Adjusted t-value	p-value
Intercept		-0.497	0.620
Total B-BBEE score		**7.569****	0.000
Total revenue	**438.55****	0.493	0.622
Market capitalisation		-1.372	0.170
Total assets		**3.378****	0.001

** Significant at the 1% level
R-squared = 0.15
The quality of fit of the pooled ordinary least squares regression model was significant.

Table 6.20:   Regression analysis results for cost of equity and B-BBEE elements

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Pooled ordinary least squares	1.12	N/A	**25.40** (10,811)**

Regression coefficients		Standard error	t-value	Pr > |t|
Intercept	0.000	16.519	-0.898	0.370
Ownership	0.138	0.015	**3.290****	0.001
Management control	-0.094	0.038	**-2.417***	0.016
Employment equity	0.128	0.034	**3.061****	0.002
Skills development	-0.299	0.024	**-7.038****	0.000
Preferential procurement	0.172	0.021	**3.137****	0.002
Enterprise development	0.175	0.020	**3.715****	0.000
Socio-economic development	0.005	0.036	0.143	0.887
Total revenue	0.046	1.698	0.859	0.391
Market capitalization	-0.014	0.297	-0.175	0.861
Total assets	0.244	0.380	**2.669****	0.008

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Intercept		-0.921	0.357
Ownership		**3.380****	0.001
Management control		**-2.246***	0.025
Employment equity		**3.139****	0.002
Skills development		**-6.640****	0.000
Preferential procurement	**475.20****	**3.355****	0.001
Enterprise development		**3.382****	0.001
Socio-economic development		0.194	0.846
Total revenue		0.862	0.389
Market capitalisation		-0.153	0.878
Total assets		**2.229***	0.026

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.24
The quality of fit of the pooled ordinary least squares regression model was significant.

A number of significant relationships are reported in Tables 6.19 and 6.20 after adjusting for heteroskedasticity. The significant positive relationship between the cost of equity and total assets implies that a larger investment in assets is related to a higher cost of equity. An increase in assets in an uncertain economic climate may concern shareholders, as the company's cash is invested in an asset while it is uncertain whether the future cash flows associated with that asset would be generated. As such, a company's risk of failure increases, resulting in a higher required return.

A highly significant positive relationship is noted between the total B-BBEE score and cost of equity in Table 6.19. This finding corroborates with the significant negative regression coefficient reported for the P/E ratio (Table 6.15) and significant positive regression coefficient for default risk probability (Table 6.17 at the 10 per cent level of significance). An increase in default risk probability (especially in emerging economies) often results in higher cost of equity and a lower P/E ratio (Moretti, 2016). The empirical evidence seems to suggest that ordinary shareholders regarded the sampled companies with higher total B-BBEE scores as having more risk, resulting in higher cost of equity. Some shareholders could be of the opinion that B-BBEE is unsustainable over the long run, as indicated by Ngwenya (2019). Such perceptions could result in higher cost of equity in comparison with companies with lower total B-BBEE scores (i.e. the return required by investors).

Significant positive relationships are also reported between the cost of equity and ownership, employment equity, preferential procurement and enterprise development, respectively, as indicated in Table 6.20. The significant positive relationship between cost of equity and ownership could be expected in light of the ownership requirement of B-BBEE, and is consistent with the findings of Van der Merwe and Ferreira (2014). If shares are issued at a

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discounted price to meet the requirement of the ownership element, some of the existing shareholders might argue that their share value has been diluted. Shareholders whose voting power is diluted due to a share issue often deem a share issue in a negative light (Larrain & Urzua, 2013). B-BBEE shares are often issued at less than market price (Acemoglu *et al*., 2007), thus diluting market value per share. The recipients of these B-BBEE scheme shares are not the existing shareholders (as the purpose of the share issue is to change the racial demographics of shareholders). This dilution of value could contribute to negative perceptions of B-BBEE.

The significant positive relationship between cost of equity and employment equity is reported in Table 6.20. Ordinary shareholders might be concerned about the challenges related to finding candidates that fit the suitable racial profile, given the limited local talent pool (Department of Higher Education and Training, 2018). In 2014, only 15 per cent of black people were considered to be skilled, as opposed to 61 per cent of white people (Statistics South Africa, 2014). Skilled black people thus seem to be in short supply.

A significant positive relationship with preferential procurement could possibly be ascribed to a concern that suppliers are chosen based on their B-BBEE compliance levels and not on the price of the goods or service supplied by them, which may not be sustainable over an extended period of time. Jeffery (2018) stated that corruption, inflated prices and under-delivery are associated with preferential procurement.

The relationship (significantly positive) between cost of equity and enterprise development was noted (Table 6.20). Shareholders might require a higher return on their investment (increased cost of equity) if they feel that their company provides resources that benefit other companies, but offers no financial benefit to the capital providers (shareholders).

A racially diverse management team was associated with a lower cost of equity for the sampled companies during the period under review (reflected by the negative regression coefficient for management control in Table 6.20). A racially diverse board has been associated with higher profitability (Marimuthu, 2008). If top leadership is representative of a country's demographics, they can help align the company's product or service strategy with the needs of diverse citizens (*ibid*). A more racially diverse management team, and presumably a more diverse board, could be expected to have a positive influence on future financial health. Van der Merwe and Ferreira (2014) reported a significant positive relationship between management control and short-term share returns indicating that shareholders might benefit over the short run if a competent, diverse management team enhances share returns. Share owners could then require a lower return, given this expectation.

A highly significant negative relationship is also noted between cost of equity and skills development (Table 6.20). This relationship might be partly attributed to ordinary shareholders deeming development of skills of a company's employees in a positive light. A significant negative relationship between the P/E ratio and skills development was, however, observed in Table 6.16. There are more factors involved in the determination of a company's P/E ratio and cost of equity than skills development and other transformation activities. As such, these relationships should be interpreted with caution. In this study, several dependent variables were used to measure financial health to allow the author to compare the findings of the dependent variables with one another. In the following section, details are provided on the relationship between B-BBEE and excess return (annual share price growth minus cost of equity).

6.12   EXCESS RETURN AS THE DEPENDENT VARIABLE

If it is assumed that cost of equity is influenced by risk (Modigliani & Miller, 1958), excess return represents the risk-adjusted growth in share price. A higher excess return would thus imply that ordinary shareholders receive more return in the form of growth in share price than what is required. The results of excess return as the dependent variable and the total B-BBEE score and B-BBEE elements are presented in Tables 6.21 and 6.22 respectively.

Table 6.21:   Regression analysis results for excess return and total B-BBEE score

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way fixed effects (**30.40****)	**2.23****	**55.57****	**54.07** (4,693)**

Regression coefficients		Standard error	t-value	Pr > $|t|$
Total B-BBEE score	-0.021	0.089	-0.357	0.721
Total revenue	-0.278	50.243	**-2.661****	0.008
Market capitalisation	1.821	6.876	**14.623****	0.000
Total assets	-1.208	10.321	**-7.386****	0.000

Breusch-Pagan test for heteroskedasticity (BP)		Adjusted t-value	p-value
Total B-BBEE score		-0.383	0.702
Total revenue	**242.67****	**-2.257***	0.024
Market capitalisation		**13.390****	0.000
Total assets		**-5.688****	0.000

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.24
The quality of fit of the preferred fixed effects regression model was significant.

Table 6.22:   Regression analysis results for excess return and B-BBEE elements

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way fixed effects (**28.70****)	**2.25****	**53.71****	**22.22** (10,687)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Ownership	-0.024	0.260	-0.490	0.624
Management control	0.089	0.716	1.849	0.065
Employment equity	-0.064	0.603	-1.325	0.186
Skills development	0.010	0.347	0.243	0.808
Preferential procurement	-0.042	0.354	-0.677	0.499
Enterprise development	0.006	0.313	0.132	0.895
Socio-economic development	0.022	0.567	0.573	0.567
Total revenue	-0.285	51.121	**-2.683****	0.007
Market capitalisation	1.842	6.897	**14.745****	0.000
Total assets	-1.206	10.388	**-7.326****	0.000

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Ownership		-0.465	0.642
Management control		1.744	0.082
Employment equity		-1.109	0.268
Skills development		0.230	0.818
Preferential procurement	**269.85****	-0.774	0.439
Enterprise development		0.125	0.900
Socio-economic development		0.450	0.653
Total revenue		**-2.249***	0.025
Market capitalisation		**13.795****	0.000
Total assets		**-5.579****	0.000

 ** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.24
The quality of fit of the preferred fixed effects regression model was significant.

Perusal of the results reported in Tables 6.21 and 6.22 reveal a significant negative relationship between excess return and total revenue and total assets, but a significant positive link with market capitalisation. These relationships between excess return and the control variables are comparable with those reported for annual share price growth (Section 6.7). No statistically significant association is noted between excess return and the total B-BBEE score (Table 6.21) or any of the B-BBEE elements (Table 6.22). A hybrid financial health measure was used for the final round of analysis, namely EVA.

6.13   ECONOMIC VALUE ADDED AS THE DEPENDENT VARIABLE

The EVA measure reflects the return generated from assets, minus the cost involved to finance such assets (Erasmus, 2008). EVA could be regarded as a hybrid instrument, as it accounts for accounting-based financial health (operating profit) and market-based financial health

(WACC). The results of the panel regressions for EVA are tabulated in Table 6.23 (total B-BBEE score) and Table 6.24 (B-BBEE elements).

Table 6.23:   Regression analysis results for EVA and total B-BBEE score

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way random effects (**3.73****)	**4.27****	0.09	**14.07** (4,817)**

Regression coefficients		Standard error	t-value	Pr > |t|
Intercept	0.001	10.808	0.907	0.365
Total B-BBEE score	-0.045	0.002	-0.072	0.942
Total revenue	-0.038	1.095	-0.036	0.971
Market capitalisation	0.739	0.172	0.515	0.607
Total assets	-0.609	0.220	-0.377	0.706

Breusch-Pagan test for heteroskedasticity (BP)		Adjusted t-value	p-value
Intercept		**6.818****	0.000
Total B-BBEE score		-1.238	0.216
Total revenue	**1940.47****	-0.273	0.785
Market capitalisation		**5.473****	0.000
Total assets		**-3.982****	0.000

** Significant at the 1% level
R-squared = 0.07
The quality of fit of the preferred random effects regression model was significant.

Table 6.24:   Regression analysis results for EVA and B-BBEE elements

Model summary			
Preferred model (F)	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Two-way random effects (**3.03****)	**3.95****	0.12	**8.98** (10,811)**

Regression coefficients		Standard error	t-value	Pr > |t|
Intercept	0.003	10.669	0.925	0.355
Ownership	-0.027	0.007	-0.043	0.965
Management control	0.042	0.020	0.068	0.946
Employment equity	0.120	0.017	0.187	0.851
Skills development	0.048	0.011	0.080	0.936
Preferential procurement	-0.112	0.010	-0.137	0.891
Enterprise development	-0.055	0.009	-0.083	0.934
Socio-economic development	-0.022	0.017	-0.041	0.967
Total revenue	-0.046	1.083	-0.044	0.965
Market capitalisation	0.695	0.171	0.486	0.627
Total assets	-0.570	0.219	-0.355	0.722

Breusch-Pagan test for heteroskedasticity (*BP*)		Adjusted *t*-value	*p*-value
Intercept		7.464**	0.000
Ownership		-0.375	0.708
Management control		0.691	0.490
Employment equity		1.444	0.149
Skills development		0.778	0.437
Preferential procurement	1853.36**	-1.306	0.192
Enterprise development		-0.769	0.442
Socio-economic development		-0.684	0.494
Total revenue		-0.355	0.722
Market capitalisation		5.188**	0.000
Total assets		-4.269**	0.000

** Significant at the 1% level
R-squared = 0.10
The quality of fit of the preferred random effects regression model was significant.

No significant relationship was reported between EVA and B-BBEE in terms of the total score (Table 6.23) or any of the individual scorecard elements (Table 6.24). It should be noted that a negative total B-BBEE score regression coefficient is reported in Table 6.23. Higher cost of equity was associated with a significantly higher total B-BBEE score (Table 6.19). Based on the EVA equation used in this study (Equation 3.13 in Section 3.6), WACC is multiplied by the invested capital and subtracted from NOPAT. WACC includes the cost of both debt and equity. As such, the negative relationship between total B-BBEE score and EVA could be partly ascribed to the higher cost of equity associated with a higher total B-BBEE score.

6.14   SUMMARY AND CONCLUSIONS

In this chapter, the results from the inferential analyses were presented. A statistically significant increase was seen in the total B-BBEE score and all the elements over the research period. Significant relationships were reported between the financial health measures and the control variables, especially market capitalisation and total assets. Market capitalisation seemed to have a positive relationship with financial health, while total assets frequently had a negative relationship with financial health.

No significant relationship was noted between the total B-BBEE scores, or any of the respective B-BBEE elements, and any of the considered accounting-based financial health measures. There is hence not a significant accounting-based business case for B-BBEE compliance based on the reported findings in this study. In contrast, the market-based financial health measures reflected significant associations with B-BBEE (total score and selected elements).

A significant negative relationship was observed between P/E ratio and total B-BBEE score, while a significant positive relationship was noted for the cost of equity. This negative association between total B-BBEE score and financial health (referring specifically to P/E ratio and cost of equity) might indicate a negative perception of shareholders towards B-BBEE. Companies with high B-BBEE scores may also be perceived to have more risk, as is deducted by the positive link with default risk probability. These findings were in line with those of previous researchers. In this chapter, the relevant hypotheses formulated in Section 1.6 were addressed. In Table 6.25, a summary of these hypotheses and the relevant responses thereto is presented.

Table 6.25:   Reconciliation of hypotheses with findings

Ref	Description	Rejected or not	Where rejected
H_{01}	There was no relationship between total B-BBEE score and the financial health of selected JSE-listed companies over the research period.	Rejected	A significant negative relationship between total B-BBEE score and P/E ratio was observed in Section 6.9 and a significant positive relationship with cost of equity was seen in Section 6.11
H_{02}	There was no relationship between ownership score and the financial health of selected JSE-listed companies over the research period.	Rejected	A significant positive relationship with cost of equity was observed in Section 6.11.
H_{03}	There was no relationship between management control score and the financial health of selected JSE-listed companies over the research period.	Rejected	A significant negative relationship with cost of equity was observed in Section 6.11.
H_{04}	There was no relationship between employment equity score and the financial health of selected JSE-listed companies over the research period.	Rejected	A significant positive relationship with cost of equity was noted in Section 6.11.
H_{05}	There was no relationship between preferential procurement score and the financial health of selected JSE-listed companies over the research period.	Rejected	A significant positive relationship with cost of equity was noted in Section 6.11.
H_{06}	There was no relationship between enterprise development score and the financial health of selected JSE-listed companies over the research period.	Rejected	A significant positive relationship with cost of equity was noted in Section 6.11.
H_{07}	There was no relationship between skills development score and the financial health of selected JSE-listed companies over the research period.	Rejected	A significant negative relationship with P/E ratio was noted in Section 6.9. A significant negative relationship with cost of equity was also observed in Section 6.11.
H_{08}	There was no relationship between socio-economic development score and the financial health of selected JSE-listed companies over the research period.	Rejected	A significant positive relationship with P/E ratio was seen in Section 6.9.
H_{09}	There was no change in the B-BBEE scores (in total and per element) of selected JSE-listed companies over the research period.	Rejected	A significant change in B-BBEE score (in total and per element) was noted in Section 6.2.

All the null hypotheses set in Section 1.6 were rejected in this chapter. In the following chapter conclusions will be drawn. Recommendations will be offered to a range of stakeholders and future researchers, based on the identified limitations.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1   INTRODUCTION

Since the introduction of B-BBEE legislation in 2003, the question is increasingly being raised whether there is a financial motivation for companies to achieve a higher level of compliance (De Wet, 2016; Kleynhans & Kruger, 2014). In the preceding chapter, the results of panel regression analyses conducted on B-BBEE scores (in total and per elements), and a range of financial health measures, were reported. In this chapter, an overview of the purpose of the study, research objectives and research design and methodology will be presented. Thereafter, a summary of the main findings from the literature review and the empirical investigation will be provided. Recommendations will be offered per stakeholder group, based on the identified limitations. Lastly, concluding remarks will be presented.

7.2   OVERVIEW OF THE STUDY

The term B-BBEE was formally introduced in the legislative framework of South Africa in 2003 with the implementation of the Broad-Based Black Economic Empowerment Act (No. 53 of 2003). Prior to 2003, reference was predominantly made to BEE. This Act was followed by the release of the Codes of Good Practice in 2004 and 2007 and, later, a revised B-BBEE Act in 2013 accompanied by revised Codes of Good Practice. The purpose of the 2003 Act and its revisions was the redistribution of wealth to those disadvantaged by the apartheid regime.

Whilst some researchers are critical about the true beneficiaries of B-BBEE (Patel & Graham, 2012; Hoffman, 2008), the moral imperative of uplifting the poor cannot be debated. Some commentators are of the opinion that B-BBEE is not ideal in its design and that it should be replaced by another intervention that would better reach the goal of uplifting previously disadvantaged South Africans (Ngwenya, 2019; IRR, 2017; Hoffman, 2008; Andrews, 2008). This sentiment is also echoed by the current minister of trade and industry in South Africa (Phakathi, 2019). B-BBEE in its current form seems to be regarded by some stakeholders as a barrier for foreign investment, as the relaxation thereof has been requested by the European Union (Gules, 2018). The purpose of this study was, however, not to debate the validity of B-

BBEE, but rather to investigate the possible relationships thereof with financial health measures among a sample of listed companies.

7.2.1 Purpose of the research

This study centred around two main constructs, namely B-BBEE and financial health. From a legal point of view, companies that do not comply with the 2003 Act are not liable for penalties. Government tenders do, however, require B-BBEE compliance. All companies, be it local or foreign, wanting to enter into business transactions with the South African government should be B-BBEE compliant. The trickle-down effect of preferential procurement means that the suppliers of these companies should also be B-BBEE compliant. By doing so, government has incentivised companies to adhere to the stated B-BBEE requirements. The logical expectation was that companies that have higher compliance levels of B-BBEE should have access to more government contracts. Such empowered companies should have a competitive advantage, as other companies doing business with them would increase their total B-BBEE score (preferential procurement is an element of the B-BBEE scorecard). Previous researchers (Morris, 2018; Van der Merwe & Ferreira, 2014; Kleynhans & Kruger, 2014; Mathura, 2009; Acemoglu *et al.*, 2007) only gave attention to limited accounting-based and market-based financial health measures, whilst only one researcher (Morris, 2018) attended to a risk measure. Only two researchers (Morris, 2018; Van der Merwe & Ferreira, 2014) investigated all the elements of the B-BBEE scorecard, but used a small sample. All research conducted on B-BBEE have also been performed over a relatively short time period.

In light of the research gap, the author investigated the relationship between the B-BBEE scores (in total and per element) and a range of financial health measures of a sample of JSE-listed companies over the period 2004 to 2015. The sample consisted of all the JSE-listed companies for which Empowerdex have made compliance scores available for the period under review. This study thus represented a larger sample, and a longer time frame than has been investigated before. By using each element of the B-BBEE scorecard, elements that are linked to improved financial health could be identified.

The primary objective was to investigate the nature and significance of the relationship between B-BBEE scores (in total and per element) and a number of financial health measures. The secondary objective was to investigate trends in the respective variables over time. To address these research objectives, the research questions and hypotheses were developed and answered. A summary thereof and the results of the studies were presented in Table 6.25. An overview of how these research questions and hypotheses were addressed, is presented next.

7.2.2   Research design and methodology

A descriptive research design was elected, which called for the collection and analysis of quantitative data. A panel design was adopted, as the sample covered different companies over consecutive time periods. As the same companies were not studied for all the years, an unbalanced panel was used.

The population consisted of all companies that were listed on the main and AltX boards of the JSE from 2004 to 2015. This time frame was selected as the Codes of Good Practice were largely unchanged during that period (the 2004 draft Codes and the 2007 Codes were very similar). The 2013 Codes were implemented in 2015, and all scores reflected in 2016 were measured according to the 2013 Codes. The 2013 Codes was considered incomparable to the 2007 Codes. Delisted companies were included in the sample to address survivorship bias. In total, 1 767 company years from 379 unique companies were analysed.

Total B-BBEE scores were obtained from Empowerdex's annual lists of most empowered companies. The individual elements were obtained from Empowerdex's research department upon enquiry. The financial health data (accounting-based, market-based, default risk and value-based measures) and company size data were downloaded from the Bloomberg (2018) database. Outliers were winsorised, whilst B-BBEE scores were confirmed against the B-BBEE certificates, and financial health data against financial statements.

Descriptive analyses were utilised to describe the data set. A mixed-model ANOVA and Fisher's LSD test were used to analyse the significance of the observed changes in the mean B-BBEE scores (in total and per element) over the research period per annum. Regression models (fixed effects, random effects and pooled OLS) were then utilised to investigate the nature and significance of the relationship between B-BBEE scores (in total and per element) and a range of financial health measures. For purposes of the mixed-model ANOVA and Fisher's LSD test, the sample size was reduced to only the 100 most empowered companies per year during the nascent period, to be comparable to the wider adoption period. The panel regressions were performed on the full sample. The accounting-based measures of change in turnover, ROA, ROE and ROS were used to evaluate historical performance. Market-based financial health measures (annual share price growth, MTBV, P/E ratio, cost of equity and excess return) were employed to investigate the future financial health expectations of the sampled companies. Each company's EVA and default risk probability were also investigated in relation to B-BBEE.

The panel regression results were adjusted for heteroskedasticity, autocorrelation and multicollinearity. The cost of equity included two negative observations, and hence these

negative costs of equity were removed, and cost of equity reanalysed. No difference in results was noted. In the following section, the main findings from the literature review will be presented, followed by the findings from the empirical investigations.

7.3   MAIN FINDINGS FROM THE LITERATURE REVIEW

The main findings from the B-BBEE literature will be highlighted in the following two sections.

7.3.1   The rationale for and measurement of B-BBEE

B-BBEE legislation was implemented in 2003 in an attempt to redress the inequalities remnant of the apartheid government. The goal was to eradicate poverty, specifically among black people. The B-BBEE Act (No. 53 of 2003) was revised and the B-BBEE Act (No. 46 of 2013) allows for the amendments to the Codes of Good Practice accompanying the 2013 Codes.

The 2003 Act did not provide guidelines on the measurement of B-BBEE, but rather specified that the Codes of Good Practice should stipulate how B-BBEE would be measured. A draft of these Codes was circulated in 2004, detailing seven elements of B-BBEE, namely ownership, management control, employment equity, preferential procurement, enterprise development, skills development and a residual element. The residual element was clarified under the 2007 Codes as socio-economic development. The weighting of each element was indicated in Section 2.4.2, and tabulated in Tables 1.1 and 5.2. Ownership and preferential procurement carried the largest portion of the total B-BBEE score, as each element accounted for 20 of the 100 points. Employment equity, skills development and enterprise development each added 15 points toward the total score, whilst management control and socio-economic development contributed ten and five points respectively (DTI, 2007).

All the elements making up the total B-BBEE score need to be verified by a registered B-BBEE auditor which then provides the company with an official B-BBEE certificate. This certificate could be used for government tenders and to obtain new clients. The B-BBEE certification is typically issued after the company's financial year-end, as the preceding year's expenditure on preferential procurement suppliers, skills development and socio-economic development are considered. The possible benefit of the increased B-BBEE compliance should thus be noted in the year following the B-BBEE efforts. Given that the effect of increased B-BBEE compliance is expected to be noticeable in the year when the audited scores are released, the financial results

of each of the sample companies were considered for the financial year-end corresponding with the year when the audited B-BBEE scores were released.

7.3.2   Lessons learnt from other reformative policies

Similar reformative policies to B-BBEE were implemented in other countries. The most studied policy is the New Economic Plan or the National Development Plan of Malaysia (the latter plan replaced the former). The economic reformation plan of Malaysia was widely regarded as successful (Marazanye, 2016; Uppal, 2014). The success of this plan could be ascribed to the focus on education in addition to ownership and employment equity (*ibid*). Criticism was also raised as some indigenous people expressed a feeling of entitlement to tertiary education, despite not meeting the entry criteria of universities (Mathura, 2009).

The Malaysian programme was followed during a time of a commodity boom, which benefitted Malaysia. This boom was similar to the commodity boom seen in 2004 to 2007, which positively affected South African firms. The Malaysian reformative plan changed with the economic conditions to prevent transformation from hindering economic growth. South Africa can thus learn from the Malaysian government to focus on education as a primary source of economic upliftment. Transformation programmes can also be followed in a time when there is sufficient economic growth, as was seen from 2004 to 2007. The BEE Commission could consider realigning the requirements of B-BBEE with the current economic conditions.

In South Africa, the apartheid regime also followed an economic upliftment program called *volkskapitalisme*. This program was aimed specifically at educating poor white people and job creation. The *volkskapitalisme* program ensured high quality education (all levels of education) in Afrikaans. State-owned enterprises, such as Eskom and Transnet, provided employment to poor Afrikaans people as a means of economic empowerment. This study was regarded as successful by Masito (2007). The post-apartheid government can thus also learn some lessons from the *volkskapitalisme* programme. Firstly, education should be prioritised and if possible, education in children's home language. Secondly, state-owned enterprises can be a suitable job creator for the unemployed and could provide designated groups with income and dignity.

The Zimbabwe Indigenisation Programme (ZIP) was implemented in 2007. ZIP has a more strenuous ownership requirement than B-BBEE, namely that 51 per cent of shareholders should be black citizens (Zimbabwe Ministry of Youth, Indigenisation & Economic Empowerment, 2007). Since the implementation of ZIP, the economy of Zimbabwe has not prospered and, as such, the author is of the opinion that ZIP has not led to economic growth, but may rather have impeded investment and economic growth. Gules (2018) also noted that foreign companies

want a relaxation of, specifically, the ownership requirement before investing in South Africa. As such, the South African government should be wary to set a stringent ownership requirement, as this may hinder companies' financial health and, by doing so, hinder economic growth.

In the US, several informal programmes were launched to empower the previously enslaved African-American individuals (Mtima, 1999). Upliftment was achieved through education, skills development and creating new companies by black people for the employment of black people (*ibid*). This approach followed in the US is different to South Africa as the US interventions were made by the state itself, instead of the state requiring companies to fulfil their transformation strategies. The South African government can broaden their upliftment strategies to enhance education and skills development, and to create favourable conditions for black entrepreneurs to start their own companies.

The possible positive effects of B-BBEE on poverty upliftment have not been translated into greater income equality in South Africa (IRR, 2016). The opposite is true, in that the inequality (measured by the Gini-coefficient) increased during the period covered by this study (The World Bank, 2019). Prior researchers have not reported conclusive results on the wealth that companies can create through B-BBEE. There was thus no clear business case for compliance with B-BBEE legislation thus far. The author, therefore, investigated the relationship between B-BBEE scores (in total and per element) and a range of financial health measures. The main findings from the empirical investigation will be discussed next.

7.4   MAIN FINDINGS FROM THE EMPIRICAL INVESTIGATION

A summary of the hypotheses and the empirical responses thereto, were provided in Table 6.25. All hypotheses were rejected, as a significant relationship with total B-BBEE score and each of the B-BBEE elements were observed with at least one measure of financial health. Significant increases in B-BBEE scores (in total and per element) were also noted during the research period. These findings will be discussed in greater detail in the following two sections.

7.4.1   Compliance trends amongst the most empowered companies

The average total B-BBEE score increased from 19.717 in 2004 to 77.334 in 2015 (as seen in Table 5.1). This suggests that the average most empowered company in 2004 was seen as non-compliant, whereas the average most empowered company in 2015 achieved a level three B-

BBEE score. The overall average score of all the considered companies over the entire research period was 42.905, which equates to level seven B-BBEE compliance. The sampled companies gradually became more compliant during the wider adoption period. In 2012, one company, which describes itself as a B-BBEE investment company, has achieved a score of 100 points (the maximum score).

The averages of the B-BBEE element scores are between 28 per cent and 67 per cent of the points available. Employment equity had the lowest average score (4.203 out of a potential 15 points). Socio-economic development had the best average score (3.372 out of 5).

Following the observable increases in the total B-BBEE score and each element over the study period, mixed-model ANOVAs and Fisher LSD tests were performed to investigate the significance of the observed trend over the research period. A significant increase was noted for the total B-BBEE score and each element over the study period. The most empowered companies have become significantly more empowered. This observation is encouraging, as it shows that the sampled companies embraced the moral imperative of compliance with B-BBEE. The Fisher LSD analyses showed that the majority of the annual changes were significant, except for the years surrounding the release of revised Codes.

The telecommunications, technology and health care sectors were the most empowered sectors. The telecommunications sector's average total B-BBEE score was partly attributable to a large state-owned telecommunications company. To ascertain whether there were significant relationships between B-BBEE scores and financial health measures, panel regressions were performed. The results thereof are presented next.

7.4.2   Relationships between B-BBEE scores and financial health measures

Panel regressions were performed with the B-BBEE scores (in total and per element) and the financial health measures as the dependent variable. The author controlled for market capitalisation, total revenue and total assets. No significant associations between B-BBEE scores (in total or per element) and the accounting-based measures of financial health were identified. Other researchers, such as Mathura (2009) and Kleynhans and Kruger (2014), found no significant relationships with ROS or change in turnover, which is in line with the findings of this study.

Significant positive relationships were observed between total B-BBEE score (in total and certain elements) and cost of equity. A positive relationship (significant at the 10 per cent level) between total B-BBEE score and default risk probability were observed. A significant negative

association was reported between total B-BBEE score and P/E ratio, as summarised in Table 6.25. These findings are comparable since both a higher cost of equity and default risk probability, and a lower P/E ratio is seen as a negative financial health indicator. These findings are in line with those reported by Mehta and Ward (2017), Van der Merwe and Ferreira (2014) and De Villiers and Ferreira (2011) who all found a significant negative relationship between total B-BBEE score and market-based measures. Market capitalisation had a positive relationship with financial health, and total assets a negative association in the majority of the analyses.

These relationships between B-BBEE scores (in total and certain elements) and the market-based measures can be related to the higher risk associated with a higher B-BBEE score. A higher risk of default can be associated with a higher cost of equity and a lower valuation (P/E ratio) (Moretti, 2016). The relationship between the financial health measures and the individual elements of the B-BBEE scorecard were also investigated. A significant negative relationship was identified between skills development and the P/E ratio, whereas a significant positive relationship was detected between socio-economic development and P/E ratio. The positive relationship implies that a higher valuation is associated with a higher B-BBEE element score. More socio-economic development spend is thus related with a higher valuation (P/E ratio), whilst a lower valuation was observed for increased skills development. These observations could imply that shareholders are sceptical of the long-term benefits of skills development. Expenditure on skills development might offer financial benefits in the short-term as limited job opportunities exist for the beneficiaries of skills development. A negative sentiment towards skills development could partly explain the negative relationship between skills development score and P/E ratio for the considered companies during the study period.

In contrast, a significant negative association existed between skills development and cost of equity. This finding implies that a lower cost of equity was associated with an increase in skills development score, which could be seen in a positive light. This contradiction may indicate that skills development and the relationships thereof with different financial health measures, is a complex phenomenon. There could be positive and negative implications for a company to comply with skills development.

Management control was also negatively related with cost of equity. Shareholders might hence view more diverse management in a positive light. Ownership, employment equity, preferential procurement and enterprise development were positively associated with cost of equity. An

increase in these element scores were thus related with an increase in cost of equity, and is thus a negative indication of financial health.

The different associations with the B-BBEE elements could provide an indication to management of which elements they should concentrate on when developing their B-BBEE strategy. Management control and socio-economic development seem to be the two elements which shareholders view positively. The findings on the most likely perception of stakeholders on the elements are summarised in Table 7.1.

Table 7.1: **Summary of the most likely perception of stakeholders on the B-BBEE elements**

Element	Positive or negative
Ownership	Negative
Management control	Positive
Employment equity	Negative
Skills development	Positive and negative
Preferential procurement	Negative
Enterprise development	Negative
Socio-economic development	Positive

In the light of the significant relationships found, recommendations will be provided next.

7.5   RECOMMENDATIONS

Based on the reported findings, recommendations are offered to a range of stakeholders, including directors, policy makers, shareholders, the media, educators and accountants.

7.5.1   Recommendations for directors

Directors who are responsible for developing and implementing empowerment strategies, play an integral role in the sustainable future of B-BBEE. B-BBEE compliance in this study is linked to higher cost of equity and lower P/E ratio. No significant relationships with any of the other financial health indicators could be found. Directors should thus not view B-BBEE as a policy with a proven business case. The results of this study seem to indicate that B-BBEE is not the holy grail for financial health. The moral imperative of correcting the injustices of the past should, however, be taken into account. B-BBEE is aimed specifically at empowering black people. Directors and managers should explore alternative methods of empowering black people and addressing poverty in general. As education is an effective way to reduce poverty, directors could contemplate redirecting the expenditure on B-BBEE compliance towards bursaries for students from disadvantaged communities.

Directors could focus on the elements of the B-BBEE scorecard that are viewed as positive by shareholders, namely management control, socio-economic development and, to a lesser extent, skills development. Based on the findings of this study, a more diverse management team should be pursued, and a greater emphasis should be placed on socio-economic development and skills development. Directors should caution against overemphasising the importance of ownership, given that shareholders seem to view this element in a negative light, based on the link with cost of equity. In order to obtain organisational legitimacy, companies can develop skills of workers and of the community in the provision of clean energy.

7.5.2 Recommendations for policy makers

Policy makers should critically reflect on whether or not B-BBEE has achieved its goal of redressing the imbalances of the past, as the South African minister of trade and industry has suggested (Phakathi, 2019). From the literature review, it was evident that the common trait among successful empowerment state interventions was investment in basic and higher education. The current structure of economic empowerment should thus be reconsidered by policy makers and a greater emphasis should be placed on education. Policy makers should investigate other options than preferential procurement to incentivise companies to comply with B-BBEE. For example, tax rebates can be introduced where companies with higher total B-BBEE scores pay less tax. An alternative to the current format of B-BBEE should ideally be investigated by policy makers. More emphasis could be placed on education and the elements that are perceived positively by shareholders, namely management control, socio-economic development and skills development. The departments of basic and higher education can provide additional funding to address skills shortages.

7.5.3 Recommendations for shareholders

Capital provided by shareholders is key to the sustainable future of any company. Shareholders should request an explanation from companies on the moral and other imperatives of B-BBEE initiatives. Meaningful engagement between shareholders and management of companies could lead to enhanced B-BBEE practices. The importance of B-BBEE compliance could also be stressed at the company's annual general meeting, during which shareholders should be encouraged to engage with management and discuss the concerns they have with regard to B-BBEE.

7.5.4 Recommendations for the media

The media can considerably influence the views of the public on specific topics, including B-BBEE. Whilst the media can play an active role in educating the public on B-BBEE, negative publicity about B-BBEE could cause a negative sentiment. The media should provide a balanced perspective on B-BBEE and remind the public of the continued need to uplift previously disadvantaged individuals.

7.5.5 Recommendations for educators

Educators, who have a significant influence on the future generations of directors and shareholders, should create awareness of the need for economic transformation. Entrepreneurial skills and social justice should be explained to students by involving them in community upliftment projects. Investment management modules should include the non-financial moral imperatives of investing to ensure that future decision makers account for financial and social considerations when making investment decisions.

7.5.6 Recommendations for accountants

Accountants should understand that a business case is not always necessary for something that is considered a moral imperative. The changes in cost of equity and P/E ratio should be monitored by accountants on a continuous basis if management decides to increase their company's B-BBEE compliance level. Accountants should advise management on which elements (suggestions based on this study's findings include management control and socio-economic development) they should focus. The limitations and recommendations for future research will be discussed next.

7.6 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study made use of secondary data obtained from Empowerdex's lists of most empowered companies. The compliance trends identified are applicable to the most empowered companies and are not applicable to all JSE-listed companies. A random sample of companies on the JSE could be used to repeat this study in future. Attention could then be paid to their reporting on B-BBEE. A future author can compile a B-BBEE index based on corporate reporting.

Only JSE-listed companies were used in this study. The findings for these companies may not be applicable to small companies that are not listed on the JSE. The reliability and availability of data for unlisted companies remains challenging, and hence only JSE-listed companies were used. A study involving unlisted companies may provide a better understanding of the business case for B-BBEE in small entities.

The B-BBEE scores of all companies included in this study were measured using the 2007 Codes. The elements included in the 2007 Codes changed in the 2013 Codes. The trends of B-BBEE scores measured under the 2013 Codes is an area of future research. The business case for B-BBEE can further be explored based on the 2013 Codes.

Future researchers can investigate B-BBEE from a qualitative perspective by conducting interviews with investors. The aim of such a study can be to obtain a better understanding of the link between B-BBEE scores, cost of equity and the P/E ratio. More research is also required to reflect on factors contributing to the negative link between skills development and P/E ratio, and cost of equity, respectively. In Section 2.5 it was also mentioned that further study on the auditing of B-BBEE scores is necessary. The focus of such study should, specifically, be on the absence of the completeness assertion in the B-BBEE verification manual.

7.7   CONCLUDING REMARKS

The moral imperative of complying with B-BBEE cannot be disputed. It is not always necessary to gain financially from doing the right thing. The results of this study revealed several instances where B-BBEE efforts were not significantly related to an increase in a company's financial health. This observation does not, however, imply that companies should or could disregard B-BBEE, specifically in the light of regulation in this regard. Companies have the freedom to select mechanisms that they perceive as being the most appropriate to contribute to the upliftment of the previously disadvantaged.

The King IV Report on corporate governance (IoDSA, 2016) states that companies are regarded as corporate citizens and form an integral part of society. Companies thus have a moral imperative to uplift the community in which they operate, as they depend on the community, and the community depends on them. Compliance with B-BBEE can be seen as one of the ways in which companies can be good corporate citizens. It is, however, not the only way in which companies can contribute to sustainable development. As not all companies necessarily agree with all the elements of B-BBEE, they might explore alternative ways in which they can

contribute to society. B-BBEE does not appear to be the holy grail for financial health. As such, corporate leaders are encouraged to reflect on how they can truly contribute to a more empowered South African society.

REFERENCES

Abdo, A. & Fisher, G. 2007. The impact of reported corporate governance disclosure on the financial performance of companies listed on the JSE. *Investment Analysts Journal*, 36(66):43-56.

Abdullah, F. 1997. Affirmative action policy in Malaysia: To restructure society, to eradicate poverty. *Ethnics Studies Report*, 15(2):1-10.

Acemoglu, D., Gelb, S. & Robinson, J.A. 2007. *Black Economic Empowerment and economic performance in South Africa.* [Online]. Available: http://www.treasury.gov.za/publications/other/growth/06-Procurement%20and%20bee/02-black%20economic%20empowerment%20and%20economic%20performance%20in%20so.pdf [2016, February 26].

Adrian, T. & Franzoni, F. 2009. Learning about beta: Time-varying factor loadings, expected returns, and the conditional CAPM. *Journal of Empirical Finance*, 16(1):537-556.

Allison, B., O'Sullivan, T., Owen, A., Rice, J., Rothwell, A. & Saunders, C. 1996. *Research skills for students*. Leicester: Kogan Page.

Anderson, D.R., Sweeney, D.J. & Williams, T.A. 2011. *Statistics for business and economics*. Eleventh edition. Mason, OH: South-Western Cengage Learning.

Andrews, M. 2008. Is Black Economic Empowerment a South African growth catalyst? (Or could it be…). *HKS Faculty Research Working Paper Series*, 1-105. [Online]. Available: http://ssrn.com/abstract=1266797 [2016, August 7].

Aylward, A. & Glen, J. 2000. Some international evidence on stock prices as leading indicators of economic activity. *Applied Financial Economics*, 10(1):1-14.

Babbie, E. 2012. *The practice of social research*. Thirteenth Edition. Orange, CA: Cengage.

Basiewicz, P.G. & Auret, C.J. 2010. Feasibility of the Fama and French three factor model in explaining returns on the JSE. *Investment Analysts Journal,* 39(71):13-25.

Beagle. 2018. *Beagle scorecard database*. [Online]. Available: https://www.beagledatabase.co.za/search/new [2018, July 10].

Beaver, W.H. & Ryan, S.G. 2000. Biases and lags in book value and their effects on the ability of the book-to-market ratio to predict book return on equity. *Journal of Accounting Research*, 38(1):127-148.

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BEE Commission. 2001. *BEE Commission report of 2001*. [Online]. Available: https://www.westerncape.gov.za/text/2004/5/beecomreport.pdf [2016, October 4].

Bello, Z.Y. 2005. Socially responsible investing and portfolio diversification. *The Journal of Financial Research*, 28(1):41-57.

Biznews. 2019. *Mining Charter III: Certainty, but at a cost*. [Online]. Available: https://www.biznews.com/briefs/2019/03/12/mining-charter-peter-leon [2019, April 9].

Bloomberg, L.P. 2018. *Research domain. Software and database*. New York.

Brealey, R.A. & Myers, S.C. 1991. *Principles of corporate finance*. New York City, NY: McGraw-Hill.

Brigham, E.F., Gapenski, L.C. & Ehrhardt, M.C. 1999. *Financial management theory and practice*. Florida, FL: Dryden Press.

BusinessMap. 2005. *BEE 2005: Behind the deals*. [Online]. Available: https://www.researchgate.net/publication/273136130 [2016, April 4].

Carhart, M.M. 1997. On persistence in mutual fund performance. *The Journal of Finance*, 52(1):57-82.

Carter, D., D'Souza, F., Simkins, B. & Simpson, G. 2010. The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review*, 18(5):396-414.

Cash, J.C., Jones, R.D. & Pennock, M.J. 2016. *Confronting complexity: x-events, resilience and human progress*. The X-Press: ebook.

Chidede, T. & Warikwanda, T.V. 2017. Foreign direct investment and Zimbabwe's indigenisation and economic empowerment act: Friends or foes? *Midlands State University Law Review*, 3(1):2-22.

Chimhandamba, D.A. 2007. *Black Economic Empowerment and firm competitiveness.* Master's thesis, Gordon Institute of Business Science, University of Pretoria, Pretoria.

Chipeta, C. & Vokwana, T.C.Z. 2011. The impact of Black Economic Empowerment transactions on shareholder wealth and firm profitability: Evidence from the JSE. *African Finance Journal*, 13:71-91.

Cliffe Dekker Hofmeyr. 2017. *Mining charter 3 – Ultimate blast to already shaken industry?*.

[Online]. Available: https://www.cliffedekkerhofmeyr.com/export/sites/cdh/en/news/ publications/2017/corporate/downloads/Mining-and-Minerals-Alert-15-June-2017.pdf [2017, September 23].

Collier, H.W., McGowan, C.B. & Muhammad, J. 2010. Evaluating the impact of a rapidly changing economic environment on bank financial performance using the Dupont system of financial analysis. *Asia Pacific Journal of Finance and Banking Research*, 4(4): 25-35.

Correia, C., Flynn, D., Uliana, E. & Wormald, E. 2013. *Financial Management*. Cape Town: Juta.

Damodaran, A. 2001. *Corporate finance: Theory and practice*. New York City, NY: Wiley.

Damodaran, A. 2007. *Return on capital (ROC), return on invested capital (ROIC) and return on equity (ROE): Measurement and implications*. [Online]. Available: http://ssrn.com/abstract=1105499 [2018, February 17].

Dawson, L. 2013. *Introduction to research methods*. Fourth Edition. Oxford: Howtobooks.

De Villiers, C. & Ferreira, P. 2011. The association between South African listed companies' BEE scores and market performance: An introductory study. *Meditari Accountancy Research*, 19(1/2):22-38.

De Wet, A. 2016. To BEE, or Not to BEE? A vital question. *Accountancy SA*, 1(4):20.

Demidenko, E. 2013. *Mixed models: Theory and applications with R*. Second edition. Hoboken, NJ: Wiley.

Department of Higher Education and Training. 2018. *National list of occupations in high demand: 2018*. [Online]. Available: http://www.dhet.gov.za/Information%20Systems%20 Coordination/GAZETTE.pdf [2019, September 12].

Department of Labour. 1998. *Employment Equity Act No.55 of 1998*. [Online]. Available: http://www.labour.gov.za/DOL/downloads/legislation/acts/employment-equity/eegazette2015.pdf [2019, May 30].

Department of Trade and Industry. 2003. *Broad-Based Black Economic Empowerment Act 53 of 2003. Vol. 1.* [Online]. Available: https://www.thedti.gov.za/ economic_empowerment/BEEAct-2003-2004.pdf [2016, February 15].

Department of Trade and Industry. 2004. *Codes of Good Practice*. [Online]. Available: https://www.thedti.gov.za/economic_empowerment/docs/bee_archive_docs/CodeofGoodP ractice.pdf [2016, July 3].

Department of Trade and Industry. 2007. *Codes of Good Practice*. [Online]. Available: https://www.thedti.gov.za/economic_empowerment/docs/Inside.pdf [2016, April 4].

Department of Trade and Industry. 2009a. *Forest sector code.* [Online]. Available: http://www.thedti.gov.za/economic_empowerment/docs/bee-sector_charters/forestry/ forestry_1.pdf [2017, September 10].

Department of Trade and Industry. 2009b. *Integrated transport sector code*. [Online]. Available: http://www.thedti.gov.za/economic_empowerment/trans_sector_charter.jsp [2017, September 11].

Department of Trade and Industry. 2011. *Chartered accountancy sector code.* [Online]. Available: http://www.thedti.gov.za/economic_empowerment/docs/bee-sector_charters/ charterd_acc/gazette34267_part1.pdf [2017, September 11].

Department of Trade and Industry. 2012a. *Property sector code*. [Online]. Available: http://www.thedti.gov.za/economic_empowerment/docs/bee-sector_charters/property-sector.pdf [2017, September 11].

Department of Trade and Industry. 2012b. *Financial sector code.* [Online]. Available: http://www.thedti.gov.za/economic_empowerment/docs/beecharters/Financial_sector_code .pdf [2017, September 11].

Department of Trade and Industry. 2012c. *Agri-BEE charter*. [Online]. Available: http://www.thedti.gov.za/economic_empowerment/docs/beecharters/Agribee.pdf [2017, September 11].

Department of Trade and Industry. 2013. *Codes of Good Practice*. [Online]. Available: https://www.thedti.gov.za/business_regulation/acts/BEE-Amendment_ACT2013.pdf [2016, April 4].

Department of Trade and Industry. 2015a. *B-BBEE procurement, transformation and verification.* [Online]. Available: http://www.dti.gov.za/economic_empowerment/bee_ veri.jsp [2017, June 13].

Department of Trade and Industry. 2015b. *Tourism sector code.* [Online]. Available: http://www.thedti.gov.za/economic_empowerment/docs/bee-sector_charters/39430-4.pdf

[2017, September 11].

Department of Trade and Industry. 2016a. *Marketing, advertising and communication sector code*. [Online]. Available: http://www.thedti.gov.za/economic_empowerment/docs/bee-sector_charters/39887.pdf [2017, September 11].

Department of Trade and Industry. 2016b. *Information and communication technology charter.* [Online]. Available: http://www.thedti.gov.za/economic_empowerment/docs/bee-sector_charters/40407.pdf [2017, September 11].

Department of Trade and Industry. 2017. *Broad-Based Black socio-economic empowerment charter for the South African mining and minerals industry.* [Online]. Available: http://www.dmr.gov.za/gazetted-mining-charter-2016.html [2017, September 24].

Department of Trade and Industry. 2019. *B-BBEE sector charters*. [Online]. Available: https://www.thedti.gov.za/economic_empowerment/bee_sector_charters.jsp [2019, September 10].

Donnelly, L. 2019. *Untenable mining charter compounds policy fears*. Mail & Guardian, 29 March. [Online]. Available: https://mg.co.za/article/2019-03-29-00-untenable-mining-charter-compounds-policy-fears [2019, April 9].

Dossi, A. & Patelli, L. 2010. You learn from what you measure: Financial and non-financial performance measures in multinational companies. *Long Range Planning*, 43(1):498-526.

Dowdy, S., Wearden, S. & Chilko, D. 2004. *Statistics for research*. Hoboken, NJ: John Wiley & Sons.

Dowling, J. & Pfeffer, J. 1975. Organisational legitimacy: Social values and organizational behaviour. *Pacific Sociological Review*, 18(1):122-136.

Doyle, P. 1994. Setting business objectives and measuring performance. *European Management Journal*, 12(2):123-132.

Empowerdex. 2016. *Implication of B-BBEE codes of good practice*. [Online]. Available: http://www.empowerdex.com/~empowerdex/bee-legislation/b-bbee-codes-of-good-practice [2016, September 6].

Engdahl, C. & Hauki, H. 2001. *Black Economic Empowerment: An introduction for non-South African businesses*. [Online]. Available: http://reference.sabinet.co.za/document/ EJC118417\nwww.journals.co.za/ej/ejour_ws_sabg.html [2017, May 4].

142

Erasmus, P.D. 2008. *Evaluating value-based financial performance measures*. PhD thesis, Stellenbosch: Stellenbosch University.

Erhardt, N., Werbel, J. & Shrader, C. 2003. Board of director diversity and firm financial performance. *Corporate Governance: An International Review*, 11(2):102-111.

Fama, E.F. & French, K.R. 1992. The cross-section of expected stock returns. *The Journal of Finance*, 47(2):427-465.

Fama, E.F. & French, K.R. 2004. The capital asset pricing model: Theory and evidence. *Journal of Economic Perspective*, 18(3):25-46.

Fin24. 2018. *SA in technical recession as second quarter GDP falls, 4 September*. [Online]. Available: https://www.fin24.com/Economy/sa-in-technical-recession-as-second-quarter-gdp-falls-20180904 [2019, July 10].

Greenfield, T. 2002. *Research methods for postgraduates.* London: Arnold.

Gregory, A., Tharyan, R. & Christidis, A. 2013. Constructing and testing alternative versions of the Fama-French and Carhart models in the UK. *Journal of Business Finance & Accounting*, 40(1):172-214.

Gujarati, D.M. 2004. *Basic econometrics.* Fourth edition. New Delhi: McGraw-Hill.

Gules, N. 2018. *EU wants relaxation of BEE rules before investing in SA, 20 November*. [Online]. Available: https://city-press.news24.com/Business/eu-wants-relaxation-of-bee-rules-before-investing-in-sa-20181120 [2019, May 28].

Haberberg, A. & Rieple, A. 2008. *Strategic management: Theory and application*. Oxford: Oxford University Press.

Habib, A. & Padayachee, V. 2000. Economic policy and power relations in South Africa's transition to democracy. *World Development*, 28(2):245-263.

Hamilton, S., Jo, H. & Statman, M. 1993. Doing well while doing good? The investment performance of socially responsible mutual funds. *Financial Analysts Journal*, 49(6):62-66.

Hoffman, E. 2008. A wolf in sheep's clothing. *Syracuse Journal of International Law and Commerce*, 36(87):87-115.

Holler, A. 2009. *New metrics for value-based management*. Wiesbaden: Gabler.

143

Hussainey, K., Mgbame, C.O. & Chijoke-Mgbame, A. 2011. Dividend policy and share price volatility: UK evidence. *The Journal of Risk Finance*, 12(1):57-68.

Inflation.eu. 2019. *Historic inflation South Africa – CPI inflation*. [Online]. Available: https://www.inflation.eu/inflation-rates/south-africa/historic-inflation/cpi-inflation-south-africa.aspx [2019, January 30].

Institute of Directors in Southern Africa (IoDSA). 2016. *King IV Report on Corporate Governance for South Africa.* [Online]. Available: https://c.ymcdn.com/sites/iodsa.site-ym.com/resource/collection/684B68A7-B768-465C-8214-E3A007F15A5A/IoDSA_King_IV_Report_-_WebVersion.pdf [2019, June 19].

Institute of Race Relations (IRR). 2009. *South Africa Survey 2009/2010*. [Online]. Available: http://irr.org.za/reports-and-publications/south-africa-survey/south-africa-survey-online-2009-2010 [2017, May 5].

Institute of Race Relations (IRR). 2012. *BEE should be scrapped, not reformed.* [Online], Available: http://irr.org.za/reports-and-publications/submissions-on-proposed-legislation/policy-submission-bee-should-be-scrapped-not-reformed-4th-december-2012 [2017, March 7].

Institute of Race Relations (IRR). 2017. *South African Survey: Education.* [Online]. Available: http://irr.org.za/reports-and-publications/south-africa-survey/south-africa-survey-2017 [2017, September 2].

Ionascu, M., Ionascu, I., Sacarin, M. & Minu, M. 2018. Women on boards and financial performance: Evidence from a European emerging market. *Sustainability*, 10(5):16-44.

IRESS. 2018. *InetBFA Expert*. [Online]. Available: https://expert.inetbfa.com/# [2018, April 3].

Jackson, W., Alessandri, T. & Black, S. 2005. The price of corporate social responsibility: The case of Black Economic Empowerment transactions in South Africa. *Working Paper Series Federal Reserve Bank of Atlanta*. [Online]. Available: http://ssrn.com/abstract=2482419 [2016, March 3].

Jeffrey, A. 2014. *BEE: Helping or hurting*? Cape Town: Tafelberg.

Jeffery, A. 2018. *The BEE sting that kills*. Biznews (6 June 2018). [Online]. Available. https://www.biznews.com/thought-leaders/2018/06/06/bee-analysis-policy-gone-horribly-wrong [2019, May 31].

Jensen, M.C. 1968. The performance of mutual funds in the period 1945-1964. *The Journal of Finance*, 23(2):389-416.

Kleynhans, E.P.J. & Kruger, M.C. 2014. Effect of Black Economic Empowerment on profit and competitiveness of firms in South Africa. *Acta Commercii*, 14(1):1-10.

Koppeschaar, Z.R., Rossouw, J., Deysel, D.J., Sturdy, J., Van Wyk, H.A., Gaie-Booysen, F.F., Papageorgiou, K., Smith, C., Van der Merwe, C.M. & Schmulian, A. 2015. *Descriptive accounting: IFRS Focus.* Nineteenth Edition. Pretoria: Lexis Nexis.

Kouassi, E., Mougoue, M., Sango, J., Brou, J.M., Amba, M.C.O. & Salisu, A. 2014. Testing for heteroskedasticity and spatial correlation in a two-way random effects model. *Computational Statistics & Data analysis*, 70(1):153-171.

Krüger, L.P. 2011. The impact of Black Economic Empowerment (BEE) on South African businesses: Focusing on ten dimensions of business performance. *Southern African Business Review*, 15(3):207-233.

Larrain, B. & Urzua, F. 2013. Controlling shareholders and market timing in share issuance. *Journal of Financial Economics*, 109(1):661-681.

Levy, M. & Roll, R. 2012. A new perspective on the validity of the CAPM: Still alive and well. *Journal of Investment Management*, 2012(3):1-12.

Magure, B. 2012. Foreign investment, Black Economic Empowerment and militarised patronage politics in Zimbabwe. *Journal of Contempory African Studies*, 30(1):67-82.

Mail & Guardian. 2008. *Chinese South Africans qualify for BEE, court rules*. 18 June. [Online]. Available: https://mg.co.za/article/2008-06-18-chinese-south-africans-qualify-for-bee-court-rules [2019, July 25].

Mans-Kemp, N. 2014. *Corporate governance and the financial performance of selected Johannesburg Stock Exchange industries*. PhD, Stellenbosch: Stellenbosch University.

Mans-Kemp, N. & Viviers, S. 2014. Investigating board diversity in South Africa. *Journal of Economic and Financial Sciences*, 8(2):392-414.

Marazanye, K. 2016. *An analysis of indigenisation and economic empowerment in Zimbabwe.* Master's thesis, Gordon Institute of Business Science, University of Pretoria, Pretoria.

Marimuthu, M. 2008. Ethnic and gender diversity in boards of directors and their relevance to financial performance of Malaysian companies. *Journal of Sustainable Development*, 2(3):139-148.

Marimuthu, M. & Kolandaisamy, I. 2009. Can demographic diversity in top management team contribute for greater financial performance? An Empirical Discussion. *The Journal of International Social Research*, 2(8):273-286.

Masito, M. 2007. *Afrikaner Economic Empowerment (1890-1990) and lessons for Black Economic Empowerment*. Master's thesis, Gordon Institute of Business Science, University of Pretoria, Pretoria.

Mathura, A. 2009. *The impact of Broad Based Black Economic Empowerment on the financial performance of companies listed on the JSE*. Master's thesis, Gordon Institute of Business Science, University of Pretoria, Pretoria.

McWilliams, A. & Siegel, D. 2000. Corporate social responsibility and financial performance: correlation or misspecification. *Strategic Management Journal*, 21(1):603-609.

Mehta, U. & Ward, M. 2017. The relationship between a Black Economic Empowerment score and shareholder returns in Johannesburg Stock Exchange-listed companies. *South African Business Review*, 21(1):85-97.

Menard, S. 2008. *Handbook of longitudinal research: Design, measurement, and analysis*. Amsterdam: Academic Press.

Milichovský, F. 2015. Financial key performance indicators in engineering companies. *Periodica Polytechnica Social and Management Sciences*, 23(1): 60-67.

Miller, R. L. 2015. *Economics today: The macro view*. Texas, TX: Pearson.

Modigliani, F. & Miller, M.H. 1958. The cost of capital, corporate finance and the theory of investment. *The American Economic Review*, 48(3):261-297.

Mohlala, J., Goldman, G.A. & Goosen, X. 2012. Employee retention within the information technology division of a South African bank. *SA Journal of Human Resource Management*, 10(2):1-11.

Moretti, M. 2016. *Determinants of the P/E ratio*. [Online]. Available: https://www.linkedin.com/pulse/determinants-pe-ratio-riccardo-m-moretti/ [2019, September 12].

Morgan, G.A., Leech, N.L., Gloeckner, G.W. & Barrett, K.C. 2011. *IBM SPSS for Introductory Statistics: Use and interpretation*. Fourth edition. New York City, NY: Routledge.

Morris, C. 2018. The impact of Black Economic Empowerment on business risk – evidence from the South African industrial sector. *African Journal of Business and Economic Research*, 13(2):99-120.

Mouton, J. 2001. *How to succeed in your master's and doctoral studies: A South African guide and resource book*. Pretoria: Van Schaik.

Mtima, L. 1999. African American economic empowerment strategies for the new millennium – revisiting the Washington-Du Bois dialectic. *Howard Law Journal*, 42(3):391-429.

Nel, S.W. 2011. The application of the Capital Asset Pricing Model (CAPM): A South African perspective. *African Journal of Business Management*, 5(13):5336-5347.

Nembhard, J.G. 2004. Cooperative ownership in the struggle for African-American economic empowerment. *Humanity and Society*, 28(3):298-321.

Ngwenya, N.X. 2019. *Time for a new wave of B-BBEE*. Fin24, 25 February. [Online]. Available https://www.fin24.com/Opinion/time-for-a-new-wave-of-bee-20190225 [May 30, 2019].

Ntim, C.G. & Soobaroyen, T. 2013. Black Economic Empowerment disclosures by South African listed corporations: The influence of ownership and board characteristics. *Journal of Business Ethics*, 116(1):121-138.

Patel, L. & Graham, L. 2012. How broad-based is Broad-Based Black Economic Empowerment? *Development Southern Africa*, 29(2):193-207.

Pedace, R. 2013. *Econometrics for dummies*. Hoboken, NJ: Wiley.

Phakathi, B. 2019. *Time to rethink B-BBEE: Ebrahim Patel*. [Online]. Available: https://www.businesslive.co.za/bd/national/2019-07-04-time-to-rethink-bee-ebrahim-patel/ [2019, July 3].

Pike, A., Puchert, J. & Chinyamurindi, W.T. 2018. Analysing the future of Broad-Based Black Economic Empowerment through the lens of small and medium enterprises. *Acta Commercii*, 18(1):1-10.

Ponte, S., Roberts, S. & Van Sittert, L. 2007. Black Economic Empowerment, business and the state in South Africa. *Development and Change*, 38(5):933-955.

Porter, M.E. 1991. Towards a dynamic theory of strategy. *Strategic Management Journal*, 12(1):95-117.

Preston, L.E. & O'Bannon, D.P. 1997. The corporate social-financial performance relationship. *Business and Society*, 36(4):419-429.

PwC. 2016. *Closing the value gap 2016/2017*. [Online]. Available: https://www.pwc.co.za/en/assets/pdf/closing-the-value-gap-2016-2017.pdf [2018, August 7].

Rawls, J. 1999. *A theory of justice*. Revised edition. Oxford: Oxford University Press.

Richard, O. 2000. Racial diversity, business strategy, and firm performance: A resource-based view. *The Academy of Management Journal*, 43(2):164-177.

Richard, O., Barnett, T., Dwyer, S. & Chadwick, K. 2004. Cultural diversity in management, firm performance, and the moderating role of entrepreneurial orientation dimensions. *The Academy of Management Journal,* 47(2):255-266.

Roll, R. & Ross, S.A. 1994. On the cross-sectional relation between expected returns and betas. *The Journal of Finance,* 49(1):101-121.

Ross, S.A., Westerfield, R.W. & Jaffe, J. 1996. *Corporate finance*. Yale: McGraw-Hill.

Rovai, A.P., Baker, J.D. & Ponton, M.K. 2014. *Social science research design and statistics: A practitioner's guide to research methods and IBM SPSS analysis*. Chesapeake: Watertree Press.

RSA Presidency. 2015. *President Zuma to convene BEE Advisory Council*. [Online]. Available: http://www.thepresidency.gov.za/pebble.asp?relid=19111 [2016, July 26].

Sartorius, K. & Botha, G. 2008. Black Economic Empowerment ownership initiatives: A Johannesburg Stock Exchange perspective. *Development Southern Africa*, 25(4):437-453.

Scholes, M. & Williams, J. 1977. Estimating betas from nonsynchronous data. *Journal of Financial Economics*, 5(1):309-327.

Sharenet. 2018. *Lookup by name or sector*. [Online]. Available: https://www.sharenet.co.za/v3/q_sharelookup.php [2018, April 3].

Sharma, S., Shebalkov, M. & Yukhanaev, A. 2016. Evaluating banks' performance using key financial indicators – a quantitative modelling of Russian banks. *The Journal of Developing Areas*, 50(1): 425-453.

Shen, W. 2005. Improve board effectiveness: the need for incentives. *British Journal of Management*, 16(1):81-89.

Shukeri, S., Shin, O. & Shaari, M. 2012. Does board of director's characteristics affect firm performance? Evidence from Malaysian Public Listed Companies. *International Business Research,* 5(9):120-127.

South African Market Insights. 2019. *JSE all share P/E ratio over time up to February 2019*. [Online]. Available: https://www.southafricanmi.com/jse-allshare-pe-ratio-14mar2019.html [2019, July 9].

South African National Accreditation System. 2013. *Accreditation of BEE verification agencies.* [Online]. Available: http://www.sanas.co.za/manuals/manuals_list.php?s_doc_id=R+47&s_doc_title=Accreditation+of+BEE+Verification+Agencies [2017, September 23].

South African National Accreditation System. 2019. *B-BBEE verification agencies.* [Online]. Available: https://www.saqa.org.za/docs/procurement/bbbee_veri_agencies.pdf. [2019, September 10].

Statistics South Africa. 2014. Employment, unemployment, skills and economic growth. [Online]. Available. https://www.statssa.gov.za/presentation/Stats%20SA%20presentation%20on%20skills%20and%20unemployment_16%20September.pdf [2019, May 30].

Statistics South Africa. 2015. *Statistical release: Gross Domestic Product, Second Quarter 2015*. [Online]. Available: http://www.statssa.gov.za/publications/P0441/P04412ndQuarter2015.pdf [2016, May 5].

Statistics South Africa. 2016. *The ups and downs of gross domestic product*. [Online]. Available: http://www.statssa.gov.za/?p=9181 [2019, March 29].

Stewart, G.B. 1991. *The quest for value: The EVA management guide*. New York, NY: Harper Business.

Strydom, B., Christison, A. & Matias, J. 2009. An empirical investigation of the effect of Black Economic Empowerment transactions on share prices: 1996 To 2006. *African Journal of Accounting, Economics, Finance & Banking Research*, 5(5):67-76.

Swanson, R.A. & Holton, E.F. 2005. *Research in organisations: Foundations and methods of inquiry*. San Francisco, CA: Berrett-Koehler Publishers.

Tangri, R. & Southall, R. 2008. The Politics of Black Economic Empowerment in South Africa. *Journal of Southern African Studies*, 34(3):699-716.

Tavakoli, H. 2012. *A dictionary of research methodology and statistics in applied linguistics*. Tehran: Rahnama Press.

The CFA Institute. 2016. *CFA Program Curriculum 2017 Level 1 Volumes 1-6*. CFA Institute: Wiley.

The South African. 2018. *B-BBEE Basics: Ten transformation tips to improve your planning and performance.* [Online]. Available: https://www.thesouthafrican.com/b-bbee-basics-ten-transformation-tips-to-improve-your-planning-and-performance/ [2019, March 28].

The World Bank. 2019. *World development indicators*. [Online]. Available: https://databank.worldbank.org/data/reports.aspx?source=2&series=SI.POV.GINI&country=# [2019, June 13].

Tshetu, T. N. 2014. *An analysis of BEE owned companies' success stories*. Master's thesis, Gordon Institute of Business Science, University of Pretoria, Pretoria.

Uppal, V. 2014. *Global experience of Black Economic Empowerment and indigenisation policies.* [Online], Available: https://assets.publishing.service.gov.uk/media/57a089dfe5274a31e00002e2/Helpdesk_Response-Global_Experience_of_Black_Economic_Empowerment_and_Indigenisation_Policies.pdf [2017, September 26].

Van der Merwe, C.M., & Ferreira, P. 2014. The association of the seven elements of the Black Economic Empowerment score and market performance. *South African Journal of Economic and Management Sciences*, 17(5):544-556.

Verbeke, A. & Merchant, H. 2012. *Handbook of research on international strategic management*. Northampton, MA: Edward Elgar Publishing.

Verweire, K. & Van den Berghe, L. 2004. *Integrated performance management: A guide to strategy implementation*. London: SAGE Publications.

Waddock, S. & Graves, S. 1997. The corporate social performance – financial performance link. *Strategic Management Journal*, 18(4):303-319.

Ward, M. & Muller, C. 2010. The long-term share price reaction to Black Economic Empowerment announcements on the JSE. *Investment Analysts Journal*, 39(71):27-36.

Ward, M. & Muller, C. 2012. Empirical testing of the CAPM on the JSE. *Investments Analysts Journal*, 41(76):1-12.

Werksmans. 2014. *Amendments to the B-BBEE Act and the Codes explained*. [Online]. Available: http://www.werksmans.com/wp-content/uploads/2014/02/040002WERKSMANS-bbbee-booklet.pdf [2017, June 23].

Winter, G. 2000. A comparative discussion of the notion of validity in qualitative and quantitative research. *The Qualitative Report*, 4(3):1-14.

Wisker, G. 2001. *The postgraduate research handbook*. Cambridge: Palgrave.

Wolmarans, H. & Sartorius, K. 2009. Corporate social responsibility: The financial impact of Black Economic Empowerment transactions in South Africa. *South African Journal of Economic and Management Sciences*, 12(2):180-193.

World Federation of Exchanges. 2016. *Monthly reports tool*. [Online]. Available: http://www.world-exchanges.org/home/index.php/statistics/monthly-reports [2016, September 6].

Young, S.D., & O'Byrne, S.F. 2001. *EVA and value-based management: A practical guide to implementation.* New York, NY: McGraw Hill.

Zikmund, W.G., Babin, B.J., Carr, J.C. & Griffin, M. 2010. *Business research methods*. Eighth Edition. Oklahoma, OK: Cengage.

Zimbabwe Ministry of Youth, Indigenisation & Economic Empowerment. 2007. *Chapter 14:33 Indigenisation and economic empowerment act*. [Online]. Available: http://www.eisourcebook.org/cms/January%202016/Zimbabwe%20Indigenisation%20and%20Economic%20Empowerment%20Act.pdf [2017, September 25].

APPENDIX A

RESULTS OF THE MIXED-MODEL ANOVAS AND FISHER'S LSD TESTS CONDUCTED ON THE ELEMENTS OF THE B-BBEE SCORECARD

Table 1: Results of the mixed-model ANOVA conducted on the mean ownership score

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	11	989	**52.180****	0.000

** Significant at the 1% level

Table 2: Fisher's LSD test for the mean ownership score per annum

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2004		0.112	0.150	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2005			0.896	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2006				**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2007					**0.014***	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2008						**0.002****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2009							0.176	**0.001****	**0.003****	**0.000****	**0.004****	**0.000****
2010								**0.034***	0.086	**0.006****	0.115	**0.000****
2011									0.724	0.437	0.620	0.083
2012										0.272	0.887	**0.038***
2013											0.210	0.374
2014												**0.025***
2015												

** Significant at the 1% level   * Significant at the 5% level

Table 3: Results of the mixed-model ANOVA conducted on the mean management control score

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	11	966	**35.712****	0.000

** Significant at the 1% level

Table 4: Fisher's LSD test for the mean management control score per annum

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2004		**0.000****	0.253	**0.002****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2005			**0.000****	**0.000****	0.238	0.544	0.333	**0.010***	**0.000****	**0.000****	**0.000****	**0.000****
2006				**0.036***	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2007					**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2008						0.554	**0.026***	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2009							0.097	**0.001****	**0.000****	**0.000****	**0.000****	**0.000****
2010								0.089	**0.000****	**0.000****	**0.000****	**0.000****
2011									**0.008****	**0.024***	**0.021***	**0.002****
2012										0.776	0.746	0.682
2013											0.979	0.497
2014												0.456
2015												

** Significant at the 1% level   * Significant at the 5% level

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Table 5: **Results of the mixed-model ANOVA conducted on the mean employment equity score**

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	11	1017	**25.912****	0.000

** Significant at the 1% level

Table 6: **Fisher's LSD test for the mean employment equity score per annum**

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2004		**0.000****	**0.006****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2005			**0.013***	0.182	0.387	**0.007****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2006				**0.000****	**0.001****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2007					0.635	0.164	**0.003****	**0.000****	**0.000****	**0.000****	**0.005****	**0.000****
2008						0.059	**0.001****	**0.000****	**0.000****	**0.000****	**0.001****	**0.000****
2009							0.110	**0.000****	**0.000****	**0.002****	0.142	**0.004****
2010								0.052	**0.000****	0.111	0.924	0.170
2011									**0.031***	0.824	**0.046***	0.604
2012										**0.024***	**0.000****	**0.008****
2013											0.091	0.783
2014												0.138
2015												

** Significant at the 1% level   * Significant at the 5% level

Table 7: **Results of the mixed-model ANOVA conducted on the mean skills development score**

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	11	1035	**17.241****	0.000

** Significant at the 1% level

Table 8: **Fisher's LSD test for the mean skills development score per annum**

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2004		**0.006****	**0.000****	**0.000****	0.286	0.063	0.679	0.062	**0.021***	**0.000****	**0.000****	**0.000****
2005			0.161	**0.000****	**0.000****	**0.000****	**0.002****	0.391	0.702	0.084	0.327	**0.005****
2006				**0.000****	**0.000****	**0.000****	**0.000****	**0.024***	0.077	0.672	0.694	0.139
2007					**0.001****	**0.018***	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2008						0.408	0.508	**0.003****	**0.001****	**0.000****	**0.000****	**0.000****
2009							0.135	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
2010								**0.017***	**0.005****	**0.000****	**0.000****	**0.000****
2011									0.630	**0.009****	0.060	**0.000****
2012										**0.032***	0.164	**0.001****
2013											0.412	0.317
2014												0.056
2015												

** Significant at the 1% level   * Significant at the 5% level

Table 9: **Results of the mixed-model ANOVA conducted on the mean preferential procurement score**

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	11	1037	152.595**	0.000

** Significant at the 1% level

Table 10: **Fisher's LSD test for the mean preferential procurement score per annum**

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2004		0.429	0.049*	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2005			0.230	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2006				0.013*	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2007					0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2008						0.004**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2009							0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2010								0.000**	0.000**	0.000**	0.000**	0.000**
2011									0.271	0.054	0.611	0.046*
2012										0.385	0.559	0.366
2013											0.150	0.995
2014												0.133
2015												

** Significant at the 1% level   * Significant at the 5% level

Table 11: **Results of the mixed-model ANOVA conducted on the mean enterprise development score**

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	11	1056	97.011**	0.000

** Significant at the 1% level

Table 12: **Fisher's LSD test for the mean enterprise development score per annum**

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2004		0.247	0.029*	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2005			0.296	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2006				0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2007					0.358	0.003**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2008						0.042*	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2009							0.013*	0.000**	0.000**	0.000**	0.000**	0.001**
2010								0.016*	0.000**	0.001**	0.046*	0.404
2011									0.170	0.261	0.708	0.126
2012										0.854	0.083	0.004**
2013											0.138	0.010**
2014												0.244
2015												

** Significant at the 1% level   * Significant at the 5% level

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Table 13: **Results of the mixed-model ANOVA conducted on the mean socio-economic development score**

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	11	1038	**38.637****	0.000

** Significant at the 1% level

Table 14: **Fisher's LSD test for the mean socio-economic development score per annum**

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2004		0.003**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2005			0.000**	0.043*	0.339	0.013*	0.016*	0.000**	0.000**	0.000**	0.000**	0.000**
2006				0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
2007					0.282	0.618	0.670	0.019*	0.000**	0.000**	0.000**	0.000**
2008						0.113	0.133	0.001**	0.000**	0.000**	0.000**	0.000**
2009							0.944	0.062	0.001**	0.002**	0.000**	0.000**
2010								0.050*	0.001**	0.001**	0.000**	0.000**
2011									0.162	0.149	0.001**	0.010*
2012										0.912	0.057	0.238
2013											0.084	0.308
2014												0.464
2015												

** Significant at the 1% level   * Significant at the 5% level

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