



**UNIVERSITY OF
KWAZULU-NATAL**

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**The effect of ownership structure on the value of JSE
listed firms**

By

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This Dissertation is submitted in fulfilment of the requirements of the
Master of Commerce in Finance

**College of Law and Management Studies
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June 2018

Declaration

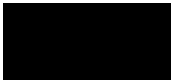
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Dedication

This study is dedicated to God. I return all glory to God and to God alone be the glory.

Acknowledgements

This study would not have been completed without the grace of God and the support, assistance and encouragement of many people.

I would like to express my gratitude and appreciation to my supervisor, Dr Farai Kwenda who provided valuable comments and advice.

I acknowledge the Microeconomics Working Group (MWG) members at the University of KwaZulu-Natal for their valuable comments and advice.

Above all, I sincerely appreciate my family and friends, especially, Mr and Mrs Iyiola for their support and encouragement during this study.

Abstract

While numerous studies have drawn attention to the effects of different ownership structures on firm value, previous investigations focused on managerial, state, family and institutional ownership as well as ownership concentration. Few empirical studies have been conducted on the influence of domestic and foreign ownership on firm value. This study adds to the body of knowledge by examining the effect of ownership structure (ownership concentration and the identity of owners) on the firm value of JSE listed companies in South Africa. It also investigates the effect of managerial ownership convergence-of-interest (suboptimal level) and the entrenchment effect (optimal level) on the firm value of JSE listed companies.

These objectives were investigated with 187 firms on the JSE from 2004-2016 in static model using Ordinary Least Square, Random Effects and Fixed Effects estimations method and a dynamic model using Generalised Method of Moments estimation method for data analysis. After spotting on corporate governance practices and Black Economic Empowerment in South Africa, we find that managerial ownership and domestic ownership have a positive effect on firm value, and ownership concentration and foreign ownership have a negative influence on firm value. In addition, suboptimal level of managerial ownership has a positive effect on firm value and optimal level have a negative effect on firm value as expected on convergence of interest and entrenchment level. These findings hold after capturing for anomalies of heteroskedastic, unobserved individual effect, simultaneity and all the endogeneity issues, inherent in ownership structure which mark dynamic model in consideration.

Our finding is contrary to agency theory and property right theory on the role of large shareholder and foreign investors to half free-riding problem of management that arises from separation of ownership and control. The results obtained suggest that local shareholders in the host country and management shareholding could help to strengthened firm monitoring and corporate governance practices to improve firm value. Local investors and director shareholding could help to reduce agency costs and to ease efficient loss that arise from separation of ownership and control irrespective of diverse institutional framework of the corporate environment.

Furthermore, the finding managerial ownership on convergence of interest and entrenchment level findings show that an increase in management shareholding provides efficient monitoring at the low level and a high level of managerial ownership improves firm value while at the intermediate level it reduces firm value. The results obtained show that interaction of manager

shareholding reduces agency cost at the low level and higher of managerial ownership and increase monitoring cost at intermediate level.

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Acronyms

BBBEE	Board Based Black Economic Empowerment
BEE	Black Economic Empowerment
BF	BEE Firm-ratings
BR	Board Remuneration
BS	Board Size
DO	Domestic Ownership
DTI	Department of Trade and Industry
FE	Fixed Effects
FO	Foreign Ownership
FS	Firm Size
FV	Firm Value
GEAR	Growth Employment and Redistribution
GMM	Generalized Method of Moments
IoDSA	Institute of Directors South Africa
JSE	Johannesburg Stock Exchange
LQ	Liquidity
LV	Leverage
MO	Managerial Ownership
NEF	National Empowerment Fund
OC	Ownership Concentration
OLS	Ordinary Least Square
OWN	Ownership
PR	Profitability

RE	Random Effects
ROA	Return on Assets
RDP	Reconstruction and Development Programme
TOQ	Tobin's Q

Chapter One

Introduction

1.1 Introduction

Through the equity market, shareholders contribute substantial financial resources that advance the growth and development of the corporate world. However, the separation of ownership and control that characterises the corporate sector today, means that they are concerned about the management of these resources to protect their interests (Berle and Means, 1932). The agency theory, property rights theory and stakeholder theory emerged in response to shareholders' need to ensure adequate monitoring of corporate assets and improve firm value (Berle and Means, 1932, Jensen and Meckling, 1976, Grossman and Hart, 1986, Donaldson and Preston, 1995). This prompted interest in identifying the most appropriate ownership structure to address the divergent interests between shareholders and managers and to ease efficient loss that arise from separation of ownership and control (De Miguel et al., 2004).

Several studies have been conducted on ownership structure and firm value in developed and developing economies. This study contributes to this debate by analyzing the effects of ownership structure on the firm value of JSE-listed companies in South Africa and examining the impact of the nature of the firm on monitoring and control that enhances corporate performance. More specifically, it investigates the effect of ownership concentration and the identity of owners (managerial, foreign, and domestic) on the firm value of JSE listed companies. Finally, the study explores the effects of the suboptimal level and optimal level of managerial ownership on firm value to test convergence-of-interest hypothesis and entrenchment hypothesis among these firms.

1.2 Background to the study

Ownership plays a significant role in corporate governance practice that aims to mitigate corporate risk and maximize shareholder wealth. The ownership structure refers to diverse shareholders that have voting rights to appoint a Board of Directors that oversees the affairs of the firms on their behalf (Thomsen and Conyon, 2012). Berle and Means (1932) noted that, given the separation of ownership and control, the diversity of shareholders is inversely related to firm value. The authors argue that the spread of shareholders dilutes their influence and that corporate resources are often used to satisfy managers' self-interest rather to maximize shareholders' value. Berle and Means (1932) thus recommended concentration of ownership

in order to adequately monitor the use of corporate assets, minimize corporate risk and improve management for higher firm value.

However, Demsetz and Lehn (1985); Shleifer and Vishny (1986) and Porta et al. (1999) contended that the shareholder structure of the modern corporation in most developed nations is concentrated and not as widely spread as claimed by Berle and Means (1932). Shleifer and Vishny (1997) demonstrated that the shareholding in equity markets in different countries is spread among managers, and majority and minority shareholders. Porta et al. (1999) noted that, while large shareholders ensure adequate monitoring of management that minimizes divergence of interests, there is a risk that controlling shareholders that oversee the Board could use their influence to benefit themselves.

The agency theory developed by Jensen and Meckling (1976) postulated that conflicts of interest between the principals (shareholders) and agents (managers/directors) that are hired on behalf of shareholders to protect corporate resources will result in an agency problem. Unethical business practices in the form of expropriation (value diversion) by managers (directors) result in an agency cost that reduces firm value. Managers' propensity to increase firm value thus depends *ceteris paribus* on the ownership structure. As managers, directors are expected to manage the firm in the collective best interests of the shareholders. Jensen and Meckling (1976) suggested an incentive alignment strategy to address conflicts of interest between shareholders and managers.

Separation of ownership and control has the potential to minimize risk-taking and the personal benefits that managers may gain when involved in other activities that might reduce firm value (Thomsen and Pedersen, 2000). While, as suggested by Berle and Means (1932), large shareholders might have sufficient power to positively influence firm value, given separation of ownership and control, their decisions could negatively impact on minority shareholders' wealth (Shleifer and Vishny, 1997, Porta et al., 1999, De Miguel et al., 2004).

Corporate governance mechanisms were developed to mitigate the conflict of interests resulting from the separation of ownership and control and avoid corporate failure (Jensen and Meckling, 1976, Shleifer and Vishny, 1997). A number of studies have shown importance of ownership structure as the major aspects of the corporate governance system that alleviates agency costs and improves monitoring of corporate assets and thus enhances firm value (Jensen and Meckling, 1976, Shleifer and Vishny, 1997, De Miguel et al., 2004). It is the primary

mechanism that ensures that managers as directors adhere to good governance and thus improve stakeholders' wealth (Ongore, 2011).

It follows that the conflicts of interests and agency costs associated with firm value will vary in line with equity owners' ability to ensure adequate monitoring (Porta et al., 1999). Gugler (1998) study of corporate ownership structure in Austria found that both ownership concentration and the identity of shareholders matter with regard to efficient governance of corporations. Similarly, Thomsen and Pedersen (2000) research on the ownership structure of large European companies concluded that the identity of owners is important in enhancing firm value. The fraction of equity held by some shareholders is significant in appointing directors as managers that represent shareholders' interests and ensure that corporate assets are utilised to improve firm value. These shareholders can use their influence to put pressure on managers (directors) to protect shareholders' interests, mitigate corporate risk and optimize firm value (Thomsen and Conyon, 2012). The identity of shareholders thus points to the potential influence that professional managers' decisions will have on investment preferences and the risks attached to shareholder wealth, and thus determine agency costs (Ongore, 2011). Therefore, the identity of owners (foreign and domestic investors and managers) can determine the monitoring power conferred on corporate management to increase shareholder wealth and firm value (Singal and Singal, 2011).

Empirical studies in developed and developing economies have produced mixed results on the impact of shareholders concentration and the identity of shareholders on firm value. Some studies found that ownership structure variables are exogenously determined (Morck et al., 1988, McConnell and Servaes, 1990, Liang et al., 2011) while others concluded that they are endogenously determined (Demsetz and Lehn, 1985, Himmelberg et al., 1999, Holderness et al., 1999, Thomsen and Pedersen, 2000). This debate is unlikely to be resolved given that the effect of the ownership structure on firm value is influenced by the institutional and legal framework of the country where the firm operates (Porta et al., 1999, Thomsen and Pedersen, 2000, Demsetz and Villalonga, 2001). It is against this background that this study investigated the effect of ownership structure on the value of JSE listed companies taking into account ownership concentration and the identity of owners.

Debate on corporate ownership, management, and control in South Africa has been on-going since the demise of the apartheid regime, when the economy was controlled by the white minority (Chabane et al., 2006). The dawn of democracy in 1994 led to the formulation of new

policies and regulations to reform the economy with the aim of redistributing the national wealth and redressing inequalities (Maloka, 2004). The new government adopted a multifaceted approach that embraced several socio-economic development programmes (Esser and Dekker, 2008). These include Black Economic Empowerment (BEE) in 1998 to increase access to economic activities through ownership, management, and control of different sectors (Freund, 2007, Tangri and Southall, 2008, Esser and Dekker, 2008).

This policy was first introduced under competition law. It aimed to address the high concentration of ownership and control of the economy, to create a free market economy and to promote black people's full participation in the economy (Commission, 2001, Roberts, 2004). In terms of the National Empowerment Fund (NEF) Act, funding was made available to purchase shares in private and state-owned enterprises which would thereafter to be sold to historically disadvantaged individuals (Commission, 2001). The promulgation of the Broad-Based Black Economic Empowerment (B-BBEE) Act in 2003 was the result of the failure of the NEF investment fund to acquire such shares and the external shock of the Asian financial crisis in 1998-1999 that caused huge indebtedness among BEE equity vendors (or company) (Sartorius and Botha, 2008, Veloso, 2009). The objective of B-BBEE is to reform the economy through more equitable ownership and management, preferential procurement, skills development, enterprise development, employment equity and corporate social investment (Ponte et al., 2007). Ownership and management control are the most important tools to deracialize the economy and create a free market economy (Sartorius and Botha, 2008, Lynne, 2017). The passing of the B-BBEE Act led to reform of the listing requirements for the JSE, as did the King II Report on corporate governance in 2002 (Esser and Dekker, 2008). The recent King IV Report on corporate governance in 2016 also prompted the amendment of listing requirements for JSE companies to promote racial diversity at board level and annual disclosure of B-BBEE performance in compliance with the amended B-BBEE Act of 2013 (JSE, 2017). The Act requires that directors as managers promote the interests of stakeholders rather than shareholders by giving effect to the triple context corporate governance approach set out in the King Report (Esser and Dekker, 2008). Should they not comply with these requirements, they could be found to breach their fiduciary duties due to the opportunity costs involved (Sartorius and Botha, 2008). This could affect managers and shareholders' interest convergence and thus lead to entrenchment (pursuing self-interests). In addition, the new remuneration policy for directors requires that shareholders of companies be given the opportunity to pass separate non-binding advisory votes on the remuneration policy and the implementation report (IoDSA,

2016). This enables shareholders to pass a nonbinding vote against board remuneration and implementation (Planting, 2017).

Prior to the democratic dispensation in South Africa, ownership and control of JSE listed firms was concentrated among certain groups and family-owned conglomerates (Kantor (1998). In compliance with the Code of Good Practice issued in 2007, the B-BBEE programme aimed to achieve 50.1% ownership and control of corporate activities by previously disadvantaged South Africans (DTI, 2003, Dongwana, 2016). This resulted in a significant increase in transactions in the equity market and on-going change in share ownership patterns. Such ownership diffusion runs contrary to Berle and Means (1932) suggestion that shareholder concentration should be promoted in order to ensure adequate monitoring of corporate assets, minimize corporate risk and enhance management.

Inward listing has been permitted on the JSE since 2004, enabling foreign companies to list shares and raise capital in this financial market with the intention of increasing the number of domestic shareholders and thus promoting B-BBEE as well as diversifying corporate risk and return (Phakamisa and Ryk van, 2011, Lynne, 2017). Pressure on companies to commit to B-BBEE led to the creation of over-the-counter BEE share platforms to encourage JSE listed companies to comply with this socio-economic development programme. In 2011, the JSE launched trading in over-the-counter BEE shares, formerly traded off-exchange by listing the share on the regulatory market in accordance with the Code of Good Practices for JSE listed companies (Gene, 2016).

However, the abovementioned policies that aimed to redress apartheid discrimination and increase black ownership and control of JSE listed companies neglected the role of foreign investors that are important determinants of growth and development in emerging markets. Though, Steyn and Stainbank (2013) study on separation of ownership and control in South Africa highlighted that JSE firm shareowners evolve toward domestic expansion. Nevertheless, low levels of domestic savings are a major structural constraint in the country's economy and much higher levels of investment are required to support economic growth and development (Lynne, 2017). The role of foreign investors in this equity market should hence not be underestimated. An increase of 38% foreign direct investment (FDI) recorded in 2016 in South Africa indicates that the domestic market cannot provide the capital required for investment in this transitioning economy (Carin, 2017). As at the end of 2015, foreign ownership of South African companies through FDI amounted to R1,970 billion (Lynne, 2017). The number of

JSE listed firms pursuing a secondary listing in order to raised capital abroad has also grown rapidly, due to the fact that their need for core investment exceeds the capacity of domestic investors (Omarjee et al., 2016). Over the past two years, foreign equity ownership has hovered between 47% and 52% for the top 40 JSE companies (Hilary, 2017).

Cameron (2012) study on ownership concentration and financial performance of listed South African industrial sector firms found that large shareholders were inversely related to performance over a study period of a year. ErikMeyer (2013) investigated the influence board structure on the financial performance of listed South African companies and concluded that managerial ownership is negatively related to corporate performance. The author observed that both non-independent and serving directors have a significant and negative relationship with managerial ownership. Supporting this view, Zondi and Sibanda (2015) study on managerial ownership and firm performance among selected JSE listed companies in the retail sector found that managerial ownership does not impact firm performance in any direction. Steyn and Stainbank (2013) concluded that diffusion of ownership on the JSE towards domestic shareholders and a significant level of de-facto control by directors, point to increased separation of ownership and control in South Africa's transitional economy. However, as noted previously, the 2016 King IV Report on corporate governance prompted the amendment of listing requirements for JSE listed companies to promote racial diversity at board level and annual disclosure of performnace in compliance with the amended 2013 B-BBEE Act (JSE, 2017).

Do concentration and the identity of those who own, manage, and control JSE listed companies really matter when it comes to firms' financial performance? This is a pertinent question in South Africa that seeks to attract foreign investors, expand domestic shareholding and promote change at board level. It is against this background that this study investigated the effect of the ownership structure on the value of JSE listed firms since the adoption of corporate governance by these firms. More specifically, it examined the effect of ownership concentration and the identity of shareholders including foreign, domestic, and managerial, on the firm value of JSE listed companies. Finally, the study also analysed the extent to which managerial shareholding on firm value converged managers interest and entrenched interest on the JSE listed companies in South Africa.

1.3 Problem statement

Despite numerous reforms on ownership and management control in South Africa, little is still very known about ownership structure including ownership concentration, foreign ownership, domestic ownership and managerial ownership on corporate performance of the JSE listed companies in South Africa. This study examines the effect of ownership structure on the value of JSE listed firms with a focus on ownership concentration and identity of owners including foreign, domestic and managerial ownership since adoption of corporate governance practices in relation to B-BBEE on the JSE. It also investigates the convergence of interest level and entrenchment level of managerial ownership on the value of JSE listed firms.

1.4 Research questions

This study sought to answer the following questions:

1. What relationship exists between ownership concentration and the firm value of JSE listed companies?
2. What relationship exists between domestic ownership and the firm value of JSE listed companies?
3. What relationship exists between foreign ownership and the firm value of JSE listed companies?
4. What relationship exists between managerial ownership and the firm value of JSE listed companies?
5. At what level does managerial ownership converge with shareholder interests and at what level does managerial ownership entrench shareholders' interests among JSE listed companies?

1.5 Research objectives

The broad aim of this study is to investigate the effect of ownership structure on the value of JSE listed firms. The specific objectives are to:

1. Determine the effect of ownership structure (ownership concentration and identity of shareholders such as domestic, foreign and managerial ownership) on the firm value of JSE listed companies.

2. Established the convergence-of-interest and entrenchment levels of managerial ownership on the firm value of JSE listed companies.

1.6 Research hypotheses

The following hypotheses are postulated in order to arrive at sound answers to the research questions and achieve the study's objectives:

Hypotheses

H_1 : There is a positive relationship between ownership concentration and firm value.

H_2 : There is a positive relationship between managerial ownership and firm value.

H_3 : There is a positive relationship between foreign ownership and firm value.

H_4 : There is a positive relationship between domestic ownership and firm value.

H_5 : A suboptimal level of managerial ownership is positively related to firm value (convergence-of-interest) and an optimal level of managerial ownership is negatively related to firm value (entrenchment effect).

1.7 Significance of the study

Based on its contribution to economic growth and development imperatives, the JSE equity market plays an important role in the South Africa economy. JSE listed companies have recently witnessed changes in share ownership and management control through expansion of domestic investors and attraction of foreign investors (Esser and Dekker, 2008, Steyn and Stainbank, 2013, Lynne, 2017).

The equity ownership structure plays a significant role in firms' financial performance and corporate governance to ensure adequate monitoring, minimize corporate risk and maximize shareholders' value (Shleifer and Vishny, 1997, De Miguel et al., 2004). This study analyses monitoring by shareholders in order to improve the financial performance of JSE listed companies by investigating the effect of ownership structure on the value of JSE listed firms since the adoption of corporate governance in relation to the B-BBEE Act. Shareholders that contribute resources are always concerned about monitoring firms in order to protect their interests and maximize their value. The King Report on corporate governance in South Africa that focuses on the triple context of the economy, society, and the environment to improve

corporate performance prompted changes to the listing requirements for the firm on the JSE changes to the listing requirement for firms on the JSE to support the B-BBEE Act (Esser and Dekker, 2008). The Act aims to diffuse ownership and management control of JSE listed companies in order to redress past discrimination and promote equality (Esser and Dekker, 2008, IoDSA, 2016, JSE, 2017).

Previous studies on ownership structure and firm value suggested that shareholder concentration enables adequate monitoring and optimizes management for value maximization (Berle and Means, 1932). Ownership concentration has been the focus of research on corporate governance with the aim of minimizing agency costs and maximizing shareholders' value (Jensen and Meckling, 1976, Shleifer and Vishny, 1997, De Miguel et al., 2004). The diffuseness of ownership and control on the JSE equity market tilts toward domestic shareholders and board management representatives (Steyn and Stainbank, 2013). However, this market also continues to attract foreign investors (Hilary, 2017, Lynne, 2017).

Few empirical studies have been conducted in South Africa on ownership structure and firm value. To the best of the researcher's knowledge, no studies have considered the effect of ownership concentration and the identity of shareholders such as domestic, foreign, and managerial on the firm value of JSE listed companies since the adoption of the King Report on corporate governance and the B-BBEE Act. Given increased racial diversification at board management level in South Africa, this study also examines the convergence-of-interest and entrenchment level of managerial ownership on the firm value of JSE listed companies.

Estimating the relationship between ownership structure and firm value is a significant challenge. To avoid inconsistent and biased estimation, this study employs both a static and dynamic modelling approach to the ownership structure and firm value of JSE listed companies. The static model assumes that the relationship between ownership structure and firm value do not adjust past firm value while the dynamic modelling approach adjusts past firm value. Thus, the dynamic approach used the GMM estimator by controlling for anomalies of heteroskedastic, unobserved individual effect, simultaneity and all the endogeneity issues inherent in the ownership structure.

1.8 Limitations of the study

All research studies encounter limitations. The first limitation of this study is that, while financial statements are widely recognized as containing reliable information on firm

performance, some are constrained by accounting policies and conventions, while, as seen in the recent Steinhoff scandal, others are replete with window dressing.

Secondly, the panel secondary data for this study were drawn from McGregor BFA and Bloomberg's online database for the period 2004 to 2016 based on financial statements. Data for 2002 and 2003 were excluded as these were the years in which the King Report on corporate governance was adopted by JSE listed companies and the B-BBEE Act was enacted by the South African government, respectively. This sample period thus spans 2004 to 2016, when the King Reports II, III, and IV on corporate governance, and the amended B-BBEE Act applied to firms listed on the JSE.

Thirdly, this study focused on one country. While this enables deep investigation that may not be possible across multiple countries due to their different institutional and legal frameworks, a larger sample could be useful for comparative purposes.

1.9 Structure of the Dissertation

This dissertation consists of six chapters.

Chapter One: Introduction

This chapter introduces the study. It presents the background to the study, the research problem, research objectives and questions, the study's hypotheses, its significance and limitations and the structure of the dissertation.

Chapter two: Theoretical framework

Chapter two focuses on the economic theories developed to solve the problem of ownership structure. It discusses the agency theory, property rights theory and stakeholder theory to understand the nature of firms in emerging economies like South Africa and the relationship between ownership and firm value.

Chapter three: Literature Review

This chapter reviews the empirical literature relevant to this study. It focuses on ownership structure (ownership concentration, managerial, foreign, and domestic ownership), corporate governance (the King Code of Corporate Governance in South Africa), and Black Economic Empowerment in South Africa.

Chapter four: Methodology

Chapter four presents the methodology employed to conduct this study. It highlights data analysis, variables measurement, data estimating techniques and the appropriateness of the methods used, empirical model specification and the proposed hypotheses on the relationship between ownership structure and firm value.

Chapter five: Presentation of the findings and discussion

This chapter presents the findings from the empirical model specification for the research hypotheses and relates these to the theoretical framework and empirical literature on ownership structure, including the impact of ownership concentration, managerial ownership, foreign ownership and domestic ownership on firm value. The chapter also presents the findings on the effect of suboptimal and optimal levels of managerial ownership on firm value in relation to the convergence-of-interest and entrenchment hypotheses.

Chapter Six: Conclusion and recommendations

The final chapter presents the study's overall findings on the effect of ownership structure on the firm value of JSE listed firms and provides recommendations to South African policy makers aimed at enhancing economic growth and development.

Chapter Two

Theoretical Framework

2.1 Introduction

The introductory chapter discussed the entire issues related to this study which include the background to the study, problem statement, research questions, research objective, research hypothesis, limitation of the study and structure of the dissertation. This chapter examines the different economies theory draw from various authors and academic scholars to develop the understanding of ownership structure and firm value. It focuses on the property rights theory, the agency theory, and the stakeholder theory to understand the impact of ownership structure on firms in South Africa's emerging economy.

2.2 Property rights theory

The property rights theory emerged from the Theory of the Firm (Coase, 1937, Grossman and Hart, 1986, Hart, 1995). It focuses on who possesses the right to assets, who decides how they are used and who benefits from this (Grossman and Hart, 1986, Hart, 1995). A property right is described as any decision on the use of potential assets based on the owner's right to control, benefit from and transfer the asset. Grossman and Hart (1986) emphasized that owners (shareholders) of an asset have a residual right over control of it and the right to transfers a specific right to the agent (managers) to control all aspects of the asset according to the terms of contracts. They argued that owners have a property right residual claim over the asset and the right to allocate contracts that give specific property rights to managers. Grossman and Hart (1986) describe a firm as an asset that is owned by individuals or groups with the right to control and transfer the use of its assets.

According to Berle and Means (1932), the separation of ownership and control limits residual rights claims over the firm-specific right transferred to the manager; they thus suggest ownership concentration to ensure adequate control of the firm. Owners (shareholders) that contribute resources to the firm have the right to usage of powers when electing or appointing directors as managers to oversee the operations of the firm. These determine the nature of control of the firm and decision-making in relation to investment preferences, dividend policy, profitability, and leverage, among others, that influence ownership structure and firm value.

Segal and Whinston (2010) highlighted that property rights over the assets compose of decision rights that provide the right to take certain action (right of access) and to prevent others from

taking certain action (rights of exclusion). The right of access includes the owners' right to benefit from control of the assets and the right of exclusion protects certain actions of benefit to the owner (legal restrictions). For example, a car owner is expected to have a driver's license and to obey traffic rules. Also, you can use your pen as you like in as much you do not have to answer to anyone. Thus, owners (shareholders) of assets are expected to benefit from these assets within the legal framework of operations.

Demsetz (1974) study highlighted that the risk of expropriation in the use of assets where owners' reward is not allocated accordingly, undermines the property rights theory. He argues that the decision-making right is typically attached to benefits and costs that enhance the interests of all parties who have a right to the assets (firm). Demsetz (1974) linked the property rights theory to internal and external interests in the firm, and highlighted the costs and benefits associated with owners' decision to transfer the right to generate residual income to managers. Ownership and control rest in those who make inputs to the firm and benefit from the outputs (Driffield et al., 2016). For example, investors require the services of managers in order for the firm to survive. They contribute to the firm and benefit from residual income. Therefore, the right to make decisions that owners delegate to managers should improve firm value and managers will be removed when they fail to act in shareholders' interests.

From this perspective, this study considers shareholders' right to use the firm as an asset, benefit from residual income and control specific rights granted in terms of contracts. It thus seeks to determine whether the residual rights of owners lead to improved decision making and prevent free-riding, problematic managers from abusing the specific rights transferred.

2.3 Agency theory

Berle and Means (1932) noted that the problems confronting modern firms arise from the separation of ownership and control. Jensen and Meckling (1976) agency theory posits that agency problem arises from "separation of ownership and control". The term agency describes an agreement between two parties, the principal and the agent that is engaged by the principal to take decisions on their behalf (Jensen and Meckling, 1976). The principal (shareholder) delegates the right to make decisions to the agent (manager) but maintains the right to residual income. The core assumption of the agency theory is that if both parties to contracts are utilities maximisers, the conflict of interests will give rise to agency costs and reduce firm value, especially when the agent (manager) allocates resources in a manner that serves their best interests rather than the principal's interests (Jensen and Meckling, 1976).

The agency problem primarily occurs when principals (owners) aim to maximize their wealth without bearing any risk and the hired agents (managers) that seek to serve their best interest rather than the principal interest (Jensen and Meckling, 1976, Fama, 1980). The agency theory thus focuses on unravelling the divergence of interests between owners (shareholders) and managers. The separation of ownership and control means that owners do not participate in the day-to-day operations of the firm and are thus, compelled to hire managers (Berle and Means, 1932). The fiduciary duty of managers is mainly to act on behalf of the owners' interests; they are thus required to make decisions that minimize corporate risk and maximize shareholders' wealth (Davis et al., 1997). Managers' failure to protect owners' interests will trigger a conflict of interests. Managers that disregard the interests of the owners could be removed using the owners' residual right. Owners thus require assurance that their goals are congruent with those that manage the firm.

The agency theory thus seeks to avoid conflicts of interest between the principal and agent and build goal congruence among the parties (Jensen and Meckling, 1976). This calls for adequate monitoring that aims to reduce costs and optimise management and thus enhance firm value. Jensen and Meckling (1976) proposed an incentive alignment strategy (compensation and equity-based) to avoid the uncertainty that surrounds the owners' corporate resources given the specific rights granted to managers. An increase in managers' shareholding would thus mitigate the agency problem and promote convergence with shareholders' interests, resulting in improved performance.

However, such incentives may carry the risk of takeovers when managers accumulate sufficient shares in the firm (Grossman and Hart, 1988, Shleifer and Vishny, 1997). Stulz (1988) argued that when managers gain equity, they might become entrenched within the firm and corporate discipline may be undermined. When managerial ownership increases beyond a certain level, this erodes shareholders' control (Stulz, 1988, Morck et al., 1988, Short and Keasey, 1999).

Although the agency theory addresses conflicting interests between the principal (owners) and agent (manager), it might not mitigate principal-principal divergent interests (Ward and Filatotchev, 2010). A principal-principal conflict of interests occurs when dominant owners with excessive power exercise control at the expense of minority owners. This might result in the expropriation of minority shareholders by majority owners who have a controlling interest in the firm, resulting in principal-principal agency costs and reducing firm value (Walsh and Seward, 1990, La Porta et al., 2000). The principal-principal agency relationship focuses on

the external and internal divergent interests that are detrimental to firm value. Corporate governance mechanisms are thus required to offset overall agency costs by addressing both principal-agent and principal-principal agency problems.

This study employs the agency theory to investigate whether ownership concentration can ensure adequate monitoring and mitigate the conflict of interests between manager, majority and minority shareholders.

2.4 Stakeholder theory

Given that firms and societies are interdependent, the stakeholder theory states that the firm should serve many purposes other than protecting the interests of shareholders (Freeman, 1984b). This shifts attention from the property rights theory and the agency theory that focus on shareholders' interests to incorporate economic, social, environmental, ethical and other issues (Freeman, 1984a, Donaldson and Preston, 1995, Freeman, 2004). Freeman (1984b) states, that, firms should acknowledge all stakeholders' interests. Stakeholders are defined as; *“any group or individual who can affect or be affected by the achievement of the organization's objectives”* (Freeman (1984a) 46).

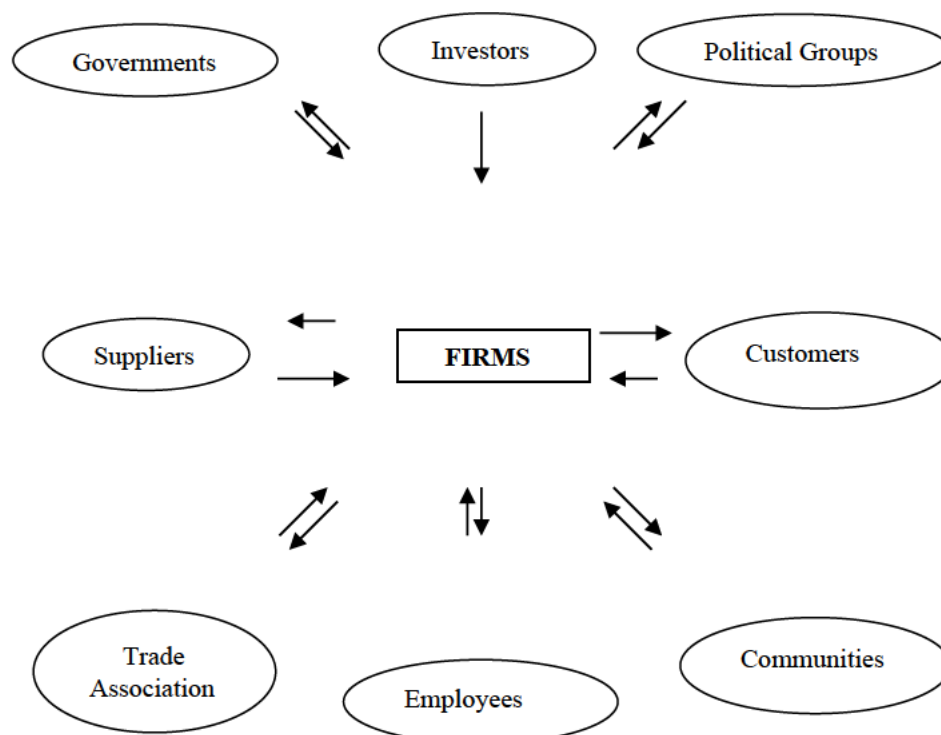
(Freeman, 1999) proposes that:

“If organizations want to be effective, they will pay attention to all and only those relationships that can affect or be affected by the achievement of the organization's purpose. That is, stakeholder management is fundamentally a pragmatic concept. Regardless of the content of the purpose of the firm, the effective firm will manage the relationships that are important.”

Modern firms are seen as the property of their owners-shareholders and are also limited in terms of their liability to protect their interests (Berle and Means, 1932). However, the turbulent environment in which today's businesses operate means that many other interests are involved. The stakeholder theory thus addresses the need for corporate entities to address the concerns of all external and internal interests. Donaldson and Preston (1995) describe the firm as a collection of operations and competing interests that possess intrinsic value. Such intrinsic value should benefit all stakeholders, including shareowners, the government, suppliers, customers, investors, communities, trade associations, political groups, and employees (Donaldson and Preston, 1995). The stakeholder theory thus focuses on how to strategically

structure operations in order to address the interests of stakeholders and improve the value of the firm (Freeman, 2004). Stakeholders are comprised of all those with an interest in the firm, regardless of whether the firm has any equivalent interest in them (Donaldson and Preston, 1995). For example, the government is interested in collecting taxes and providing the legal framework, an employee is interested in earning income for intellectual property, the supplier is interested in a return on goods or services supplied, and consumers seek satisfaction with the goods or services they purchase. Thus, the stakeholder theory incorporates all functional and non-functional structures that impact the firm in order to improve corporate performance. Owners' (shareholders) residual right to benefit from residual income depends on the specific right that is transferred to agents (managers) (Grossman and Hart, 1986). Therefore, managers are interested in protecting their own interests by improving the firm's financial performance to avoid a conflict of interest between the owners. The manager serves as an intermediary to improve conditions for all parties with an interest in the firm (Segal and Whinston, 2010). This study uses the stakeholder theory to assess management support for corporate governance mechanisms, specifically the King Report on corporate governance in South Africa that oblige firms to support the triple context of the economy, society, and the environment to improve the condition of all interested parties.

Figure 1: The Stakeholder Model



Source: Donaldson and Preston (1995)

2.5 Summary of chapter two

This chapter reviewed the property rights theory, stakeholder theory and agency theory that were employed in this study to assess the impact of ownership structure. The property rights theory focuses on the right of shareholders (owners) to make decisions and to transfer decision-making to managers (agents) and benefit from residual income. The agency theory assumes that conflicts of interest arise between shareholders and managers when managers make decisions that contradict the interests of shareholders. The stakeholder theory highlights the need to consider the interests of all parties, including investors, the government, suppliers, customers, communities, trade associations, political groups, and employees that can affect the operations of the firm in order to improve firm value. The following chapter presents a review of the literature on ownership structure.

Chapter Three

Literature Review

3.1 Introduction

The previous chapter discussed the theoretical framework adopted for this study which include property theory, agency theory and stakeholder theory. This chapter presents a literature review on ownership structure, corporate governance, and black economic empowerment in South Africa draw from diverse views of different authors and academic scholar to enable this study. Its discusses the interaction of ownership structure, corporate governance practices and black economic empowerment in South Africa with firm value.

3.2 Ownership structure

Numerous studies have been conducted on ownership structure and firm value relationship. The pioneering work of Berle and Means (1932) concluded that diffuse ownership of modern corporations could place shareholders' interests at risk as corporate resources are often used to benefit managers rather than shareholders. They argued that separation of ownership and control enabled opportunistic managers to use corporate resources to the detriments of owners' interests; and thus, proposed that ownership concentration be pursued in order to improve firm value. In this regard, extensive research has been conducted in developed and developing countries in a quest to understand the relationship between ownership structure and firm value (Berle and Means, 1932, Shleifer and Vishny, 1997, Claessens et al., 2000). Different theories have been advanced to ease efficient loss that arise from separation of ownership and control. The agency theory postulated by Jensen and Meckling (1976) posited that conflicts of interest arise when an agent (manager) who is hired by the principal (shareholders) makes decisions that conflict with the interests of the principal. This generates agency costs which are detrimental to firm value. Jensen and Meckling (1976) suggested that an incentive alignment strategy (monitoring costs) be adopted to minimize agency costs and enhance firm value.

However, Shleifer and Vishny (1997) highlighted that, in modern corporations, divergent interests exist not only between principals and agents, but among managers, and minority and majority shareholders. They proposed that corporate governance mechanisms are required to mitigate conflicts of interest. However, empirical studies on corporate governance show that, ownership structure is an important determinant of mechanisms to minimize agency costs

(Shleifer and Vishny, 1997, De Miguel et al., 2004). In this regard, ownership structure influences firm value.

Berle and Means (1932) content that concentration of ownership in the hands of a few large shareholders could optimize corporate value might not hold as conflicting interests between majority and minority shareholders could reduce firm value (Shleifer and Vishny, 1997). Gugler (1998) proposed that the nature or identity of the controlling shareholder is relevant for efficient and effective governance mechanisms. He argued that ownership concentration increases the likelihood of minority shareholders' interests being ignored. Porta et al. (1999) highlighted that different kinds of shareholders have different interests. Thomsen and Pedersen (2000) thus noted that the identity of owners is important in seeking to minimize agency costs and improve corporate value.

Debate on this issue is on-going as some scholars hold that ownership is exogenously determined (Morck et al., 1988, McConnell and Servaes, 1990, Shleifer and Vishny, 1997, Porta et al., 1999, Thomsen and Pedersen, 2000) while others have concluded that the ownership structure is endogenously and reasonably determined (Demsetz and Lehn, 1985, Himmelberg et al., 1999, Demsetz and Villalonga, 2001, Wintoki et al., 2012). It is against this background that this study investigates the effect of ownership structure (ownership concentration and the identity of owners such as foreign, domestic, and managerial) on the value of JSE listed firms in South Africa.

3.2.1 Ownership concentration

In seeking to minimize the agency problem and maximize shareholders' wealth, the relationship between ownership concentration and firm value has been the focal point of corporate governance research (Jensen and Meckling, 1976, Shleifer and Vishny, 1997, De Miguel et al., 2004). There is a large body of literature on separation of ownership and control as well as ownership concentration and firm value in different equity markets (Berle and Means, 1932, Demsetz and Lehn, 1985). Many studies have posited that ownership concentration can address the problems arising from separation of ownership and control and thus improve firm value (Berle and Means, 1932). Jensen and Meckling (1976) agency theory highlights that separation of ownership and control enables managers to pursue personal gain. Large shareholders can prevent this by monitoring decisions and using their votes to oust managers whose interests conflict with their interests (Berle and Means, 1932, Demsetz and Lehn, 1985, Shleifer and Vishny, 1997). It follows that ownership concentration maximises

firm value, reduces corporate risk and mitigates conflict between managers and shareholders, enhancing firm value (Jensen and Meckling, 1976, Shleifer and Vishny, 1997, Claessens et al., 2000).

It is widely acknowledged that ownership concentration promotes efficient decision making that controls conflict between shareholders and managers and maximises shareholders' wealth (Jensen and Meckling, 1976, Shleifer and Vishny, 1997, De Miguel et al., 2004). Increased ownership concentration is expected to reduce agency costs and improve firm financial performance. Large shareholders inspire confidence among investors (stakeholders) by ensuring that their interests are protected, resolving the issue of free-riding managers that reduce firm value (Shleifer and Vishny, 1986). Berle and Means (1932) concluded that ownership concentration is positively associated with corporate profitability and that a wide spread of shareholders reduces owners' residual claim on corporate decision making, with a negative impact on firm value. Drawing on data from Fortune 500 companies in the United States, Hill and Snell (1989) concluded that ownership concentration influences firm profitability. They argued that monitoring by large shareholders offset the diversification strategies adopted by managers that cause conflict between them and shareholders. Managers tend to increase their wealth through diverting corporate resources when insufficient control is exercised (Jensen and Meckling, 1976, Thomsen and Pedersen, 2000).

Large shareholders counteract managers' diversification strategies with adequate monitoring and a cost-effective incentive strategy that boosts corporate performance. They have stronger incentives to enforce corporate control that protects and maximises shareholders' wealth (Thomsen and Pedersen, 2000, Ongore, 2011). Effective monitoring facilitates investment growth and risk-bearing that enhances firm value (Singal and Singal, 2011). Thomsen and Pedersen (2000) found a positive relationship between ownership concentration and shareholder value among large European companies. They argued that large shareholders can put pressure on managers to prevent ill-conceived diversification and enhance corporate performance. Singal and Singal (2011) research on Indian corporate sectors concluded that large shareholders outperformed diffuse owners in terms of attracting investment and increasing firm value, irrespective of the type of owner. Claessens et al. (2000) used cross-sectional data on Czech Republic listed firms and showed a positive relationship between ownership concentration and firm, as well as labour profitability. Having addressed the endogenous issue of ownership, Kapopoulos and Lazaretou (2007) found a positive

relationship between ownership concentration and firm profitability using dynamic panel data on 175 Greek listed firms. They argued that higher profitability reduces debt and interest on debt that increase firms' operating costs. Ownership concentration is thus positively related to firm value.

However, arguments in favour of ownership concentration underplay conflicts of interest between majority and minority shareholders that lead to expropriation and poor corporate performance (Walsh and Seward, 1990, Shleifer and Vishny, 1997, Porta et al., 1999, Ward and Filatotchev, 2010). The risk of expropriation (value diversion) increases when large shareholders with controlling interests monitor corporate management for their own benefit using unethical means (Shleifer and Vishny, 1997). Earle et al. (2005) used panel data on firms listed on the Budapest Stock Exchange in Poland and found that while a single owner is positively related to firm performance, the marginal costs of large shareholders may outweigh the benefits when they increase beyond a certain level. Demsetz and Lehn (1985) also concluded that diffuse shareholders are inversely related to firm value.

Another school of thought argues that large shareholders have both positive and negative impacts on firm value. Shleifer and Vishny (1997) contended that adequate monitoring can improve corporate performance and prevent opportunistic value diversion. Hence, corporate governance is required for efficient and effective performance. However, the corporate governance literature has identified ownership concentration as an influential mechanism that alleviates the free-riding problem and mitigates conflicts of interest, thus enhancing firm value (Shleifer and Vishny, 1997, Claessens et al., 2000). Nonetheless, it should be borne in mind that large shareholders represent an incomplete solution as they can experience conflicts of interest with minority shareholders. Claessens et al. (2000) and Porta et al. (1999) observed that institutional frameworks and contractual agreements also determine firm value. Once again, this calls for efficient corporate governance to improve firm value (Gugler, 1998, Thomsen and Pedersen, 2000).

3.2.2 Ownership identity

Numerous studies have recognised the importance of shareholders' identity in examining the relationship between ownership structure and firm value (Gugler, 1998, Thomsen and Pedersen, 2000, Douma et al., 2006, Tam and Tan, 2007, Singal and Singal, 2011). This refers to different fractions or categories of equity owners with voting rights (Thomsen and Pedersen, 2000, Singal and Singal, 2011). The owner's identity impacts on investment preferences and

risk aversion. Large shareholders such as foreign or local investors often dominate other equity holders in decision-making (Singal and Singal, 2011) and thus determine governance mechanisms (Gugler, 1998). Thomsen and Pedersen (2000) note that ownership identity is important in considering the impact of ownership structure on firm performance. They argue that large shareholders have the power to influence corporate strategy, capital structure, corporate goals, and dividend policies and growth rates to improve firm value. Shareholders' identity illustrates the extent to which individual and corporate investors penetrate an equity market to protect their interests. Douma et al. (2006) argue that a firm's nature and performance are governed by shareholders' identity. Different shareholders have distinct traits and preferences in relation to governance practices that impact firm value. It is against this background that this study investigates the impact of managerial, foreign, and domestic ownership on firm value in the South African equity market.

3.2.2.1 Managerial ownership

Since Berle and Means (1932) raised the issue of separation of ownership and control in modern corporations, the need to align shareholders and managers interests via managerial shareholding has resulted in numerous empirical studies on the relationship between managerial ownership and firm value (Jensen and Meckling, 1976, Morck et al., 1988, McConnell and Servaes, 1990, Short and Keasey, 1999, De Miguel et al., 2004). The importance of management shareholding to enhance decision-making, ensure adequate monitoring of corporate resources, minimize corporate risk and maximise shareholders' wealth has raised questions on shareholders' identity (Al-Matari et al., 2013). Most of this literature focuses on developed economies such as the UK, US, Germany, and Spain among others while few studies have been conducted on developing nations. Based on Jensen and Meckling (1976) agency theory, a positive relationship is expected between managerial ownership and firm value.

Since it is impracticable for shareholders to manage the firms they invest in, managers are hired to oversee their operations and the authority to make decisions is delegated to them. While shareholders are interested in maximizing their value, managers are sometimes concerned with enhancing their personal benefits and future opportunities. This is likely to result in conflicts of interest. Managers sometimes favour risky investments that use firm resources to their benefit (Jensen and Meckling, 1976). To offset the firm monitoring costs and avoid corporate risk, Fama and Jensen (1983) suggested that corporate managers be allocated a small number

of shares. Demsetz (1983) also noted that corporate performance improves when managers have a small ownership stake in a firm, as market discipline ensures that they will maximize shareholders' value. This notion is also supported by the agency theory (Jensen and Meckling, 1976). Jensen and Meckling (1976) add that it is supported by the convergence-of-interest hypothesis and contend that an increase in managerial ownership increases firm value, as managers are less inclined to deviate from shareholders' interests and pursue the maximization of non-value adding activities. They thus recommend that managers be offered incentives (equity-based as well as compensation). Benson and Davidson (2009) highlighted that high levels of managerial ownership assist firms in avoiding the risk that a company is exposed to when managers gain control of decision-making. McConnell and Servaes (1990) found that a curvilinear relationship exists between a managerial equity stake and corporate value. They add that an incentive alignment strategy enables managers' interests to converge with those of shareholders and thus increases firm value. In this regard, an incentive alignment strategy resolves the agency problem and supports shareholders' objective of minimizing corporate risk and maximizing firm value.

In contrast, (Ruan et al., 2011) argue that when management shareholding reaches a certain level, any increase in such ownership with or without an incentive alignment strategy will result in them using their equity to pursue their own interests resulting in the reduction of firm value. Short and Keasey (1999) concur that once managerial ownership reaches a certain level, managers' consumption prerequisites (compensation and salaries) may outweigh the loss suffered and thereby result in non-value maximization. Morck et al. (1988) explained that any further increase in managerial ownership may enable a manager with outright power to pursue their own interests. As directors, such managers may build a personal empire at the expense of other shareholders, even when they receive remuneration for serving on the board (Thomsen and Pedersen, 2000). Stulz (1988) note that offering such managers incentives may improve firm value but could lead to a hostile takeover.

Morck et al. (1988) explored the convergence-of-interest and entrenchment hypotheses to investigate the relationship between market valuation and managerial ownership using the piecewise linear regression method. They found that managerial ownership in the range of 0% to 5% and more than 25% is positively related to Tobin's Q, representing convergence of interests of shareholders while entrenchment level with a negative relation with Tobin's Q range between 5% and 25%. They argue that non-linearity relationship exists between

managerial ownership and firm performance with a turning point of US is 5% and 25% respectively. McConnell and Servaes (1990) study used managerial ownership and the square of managerial ownership and found that a low level of managerial ownership is positively related to Tobin's Q and that a high level of manager ownership ranging between 40% and 50% is negatively related to Tobin's Q. They replicated the data used in (Morck et al., 1988) with piecewise regression and found similar results. Short and Keasey (1999) examined the relationship between managerial ownership and the performance of UK firms using the market-based and accounting-based measure of performance. Using cubic function measures of co-efficient they found that the accounting-based return on shareholder equity (RSE) below manager ownership ranges between 0% and 15.58% and above is 41.84%, while the market-based valuation ratio (VAL) below managerial ownership ranges between 0% and 12.99% and above is 41.8%. They added that the entrenchment effect in the UK ranges between 15.58% and 41.84% using accounting-based RSE and 12.99% - 41.84% using market-based VAL. De Miguel et al. (2004) used dynamic panel data on listed Spanish firms and generalised method of moments (GMM) model estimators to determine the relationship between ownership and firm value using a cubic function measure of co-efficient and found that manager stakes below 0% to 35% and above 75% are positively related to corporate performance in terms of the convergence-of-interest hypothesis, while the entrenchment effect ranges between 35% and 75%. They explained that incremental managerial ownership is consistent with convergence of interest and managerial ownership at optimal level to reduce firm value.

Accordingly, the managerial ownership convergence-of-interest hypothesis is found to have a positive relationship with firm value while the entrenchment effect has a negative relationship with such value (Morck et al., 1988, McConnell and Servaes, 1990, Short and Keasey, 1999, De Miguel et al., 2004). Himmelberg et al. (1999) posited that managerial ownership is characterized by a contractual preference for corporate performance. They argue that convergence of interest and the entrenchment effect of managerial ownership are confronted by the endogenous problem of manager compensation. Fahlenbrach and Stulz (2009) used panel data on listed US firms on insider ownership and found that managerial ownership is significantly negatively related to firm value. They argue that managers are more likely to diversify their ownership when firm is performing well and increases their ownership when firm became financially constraint.

Studies on managerial ownership and firm value relationship in South Africa have produced mixed results. Ntim (2013) examined the relationship between directors' share ownership and performance using dynamic panel data of South African listed firms from 2002 to 2007 and found that managerial ownership is positively and significantly related to firm value. Zondi and Sibanda (2015) focused on retail firms listed on the JSE from 2010 and 2013 and concluded that there was a negative association between managerial ownership and firm performance. Using Tobin's Q as a measure of firm financial performance, they explained that managerial ownership does not affect firm performance in any direction. Mugobo et al. (2016) used data on both JSE listed firms and private companies from 2001 to 2010 and found that managerial ownership and firm performance measures with return on assets (ROA) has a negative relationship. They argued that inadequate implementation of corporate governance mechanisms in South Africa is responsible for the negative impact of managers' shareholding. Erik Meyer (2013) investigated relationship between board structure and financial performance of JSE listed companies and concluded that managerial ownership is negatively related to firm performance. The author argued that a low level of managerial ownership and a large board would enhance firm performance. The current study examined the impact of directors as managers' shareholding on the firm value of the JSE equity market since the adoption of corporate governance in relation to B-BBEE. It also investigated the convergence-of-interest (sub-optimal level) and entrenchment (optimal level) hypotheses on the firm value of JSE listed companies.

3.2.2.2 Foreign ownership

Growing consensus on the positive impact of foreign ownership in improving firm value has attracted the attention of policymakers and academic scholars. Equity markets in both developed and developing economies have become globalised through mergers and acquisitions and cross-listing of firms across national boundaries in different equity markets. Since this opens equity markets up to foreign investors, an increase in foreign ownership is expected. It is, therefore, important to examine foreign ownership and firm value in South Africa.

Many studies have pointed to the benefits of foreign ownership in domestic economies in terms of capital opportunities, modern technology, managerial techniques, access to international markets, increased productivity, improved competitiveness, labour productivity, higher investment returns, and improved corporate governance, which enhance firm value. Different

studies have documented why firms that attract foreign investors enjoy advantages that are not available to locally controlled firms.

WecheGelübcke (2013) study on foreign ownership and firm performance in Germany's services sector found that foreign-controlled firms perform better than domestic ones. He noted that foreign ownership results in higher employee wages and productivity, and superior export intensity that tends to increase the host country's Gross Domestic Product. Khanna and Palepu (1999) used data on Indian listed firms and concluded that foreign institutional ownership resulted in better monitoring than domestic institutional ownership. They suggested that foreign companies with affiliated operations in emerging markets like India experience less corporate risk and improve firm performance, which, in turn, attracts more foreign investors to the firm. Ongore (2011) study in Kenya revealed that firms with higher levels of foreign ownership tend to perform better than their local counterparts as they can draw on more resources when the need arises and replicating affiliate firms' corporate management systems improves firm performance.

Koo and Maeng (2006) investigated foreign ownership and investment in Korea and found that cash flow that is sensitive to investment increase with a high level of foreign investors. They inferred that foreign ownership could ease firms' financial constraints and improve access to external finance, thus attracting further investors. Wellalage and Locke (2012) used dynamic panel data and, accounting for the endogeneity of the ownership variable of Sri Lankan listed companies, found a positive relationship between foreign ownership and firm performance. Douma et al. (2006) drew on multiple theories (resource-based, institutional and agency theory) to explore foreign ownership and firm value relationship among 1005 Indian firms and concluded that both foreign institutional ownership and foreign corporate shareholders have a positive effect on firm performance. A study conducted in Turkey also noted that foreign owned firms performed better than their domestic counterparts due to foreign investors' ability to offer better incentives and ensure adequate monitoring (Aydin et al., 2007). Ghahroudi (2011) studied the ownership advantage and the firm factors influencing the performance of foreign affiliates in Japan used data on 3 500 foreign owned companies and found that foreign ownership has a positive relationship with knowledge transfer by foreign managers.

One of the reasons why foreign ownership has a positive impact on firm value is that it enhances internal corporate governance (Mi Choi et al., 2012). Foreign investors use their influence on the board to oversee the management of corporate assets. Using ROA as the

accounting measure for firm performance, Barbosa and Louri (2005) found that Portuguese and Greek firms owned by multinational corporations outperformed domestic firms. They argued that the embedded corporate governance mechanisms of local firms and the capital advantage and managerial skills of foreign controlled firms influence firm performance. Phung and Hoang (2013) observed that high levels of foreign equity ownership ensure adequate monitoring. Oxelheim and Randøy (2003) investigated foreign (Anglo-American) board members on corporate performance in Norway and Sweden and concluded that foreign affiliated companies performed better than local firms due to improved corporate governance. Pervan et al. (2012) showed that foreign ownership positively impacted on strategic decision-making among firms in Croatia, resulting in improved firm performance. They attributed this to foreign investors' desire to generate superior returns.

Other studies have reported mixed findings on foreign ownership. Phung and Mishra (2016) used data on 2744 firms listed on the Vietnamese Stock Exchange and found a nonlinear relationship between foreign shareowners and firm performance. The concave nature of the relationship suggested that firm performance increases to a certain point, but decreases when foreign shareholding increases. Nonetheless, the authors recommend that policymakers encourage foreign share ownership to enhance firm performance. Greenaway et al. (2014) employed panel data in China and found evidence that foreign ownership contributed to an increase in modern technology and capital intensity, improved governance mechanisms and managerial skills and granted access to international networks that enhance firms' productivity. They found an inverted U-shape relationship between corporate performance and foreign ownership, with firm value increasing as foreign investors increased, and thereafter declining. Mi Choi et al. (2012) also pointed to an inverted U-shape relationship and concluded that corporate performance increases with foreign ownership through independent corporate monitoring, but decreases when the board gains excessive control. It is against this background that this research study examined the effect of foreign ownership on the firm value of JSE listed companies in South Africa's transition economy.

3.2.2.3 Domestic ownership

Many studies have documented the reasons why foreign controlled firms have advantages over domestic firms (Gugler, 1998, Ongore, 2011, Phung and Mishra, 2016). The state, private equity firms and individuals may hold shares in locally controlled firms (Gugler, 1998). Given that, like foreign owners, domestic owners are responsible for management decisions and

monitoring, local shareholders are expected to improve firm value and mitigate the conflicts of interest that negatively impact firm value.

There is a paucity of research on the impact of domestic ownership on firm value. Douma et al. (2006) used multiple theories to examine the Indian capital market and found that local shareholders comprised the majority of owners of the country's firms. The study established a positive relationship between domestic ownership and firm performance. The authors argued that superior returns are achieved when local investors hold a large proportion of shares; this enables incentives to be offered to managers and ensures adequate monitoring to improve firm value.

In contrast, Pervan et al. (2012) study that employed panel data on listed Croatian firms found a negative relationship between domestic ownership and firm profitability. They concluded that locally controlled firms' returns are no better than those that are owned by foreign shareholders. Khanna and Palepu (1999) explored the relationship between ownership by domestic financial institutions and firm performance and concluded that domestic ownership is negatively related to firm value. They argued that local investors do not ensure adequate management monitoring and support to promote effective governance.

Against this background, this study investigated the effect of domestic ownership on the firm value of JSE listed companies in South Africa's equity market in light of policies that aim to promote diversification and expansion of local shareholders, including affirmative action programmes and changes in the JSE's listing requirements (Steyn and Stainbank, 2013).

3.3 Ownership structure and corporate governance

Many studies have examined the effect of ownership structure and corporate governance on corporate performance. Separation of ownership and control has highlighted the need for effective corporate governance mechanisms to guide firms' operations in both developed and developing countries. The interests of corporate investors that finance firms may conflict with those of professional managers who run companies on behalf of owners (Shleifer and Vishny, 1997). Jensen and Meckling (1976) agency theory highlighted that agency cost will reduce firm value when the conflict of interest between shareholders and managers/directors subsists. They propose an incentive alignment strategy to mitigate the agency problem and maximize shareholders' interests. However, while the agency theory addresses conflicting interests between the principal (owners) and agents (managers), it might not mitigate the principal-

principal agency relationship (Walsh and Seward, 1990, La Porta et al., 2000, Ward and Filatotchev, 2010). This occurs when dominant owners with excessive power exercise control to the disadvantage of minority shareholders; this is detrimental to firm value (Walsh and Seward, 1990, La Porta et al., 2000).

Corporate governance aims to minimize the conflicting interests in the principal-agent, principal-principal agency relationship and among all other stakeholders in order to improve corporate value. Governance practices have been adopted in developed and developing economies to align stakeholders' interests and thus enhance firm value (Mutize et al., 2016). Corporate governance mechanisms seek to avoid the moral hazard of conflicting interests between shareholders and managers (Shleifer and Vishny, 1997). They are a significant factor in reducing the risk of corporate investment and attracting business investment capital, and invariably improve corporate performance as they enable firms to protect the interests of all stakeholders. However, corporate governance systems differ from country to country and also depend on the legal, political, social and economic context of the firm environment (Shleifer and Vishny, 1997).

Corporate governance emerged in the 20th century in the US, UK, and Germany, where best practices can be identified (Shleifer and Vishny, 1997). In the US, the stock market shock of 1929 led to the institution of a managerial class where corporations hire professional managers to run their affairs. Corporate failures like Enron and WorldCom led to the promulgation of the Sarbanes-Oxley Act in 2002 to enforce transparency and accountability. In the UK, the Company Act of 1990 was complemented by the Cadbury reports on corporate governance, and Germany adopted a Corporate Governance Code in 2001 to complement its Company Act of 1884. Corporate governance systems are influenced by legal, political and economic factors (Shleifer and Vishny, 1997) that, in turn, influence corporate performance. In this regard, this research study considered corporate governance mechanisms in South Africa.

3.3.1 The corporate governance system in South Africa

The impact of ownership structure on firm value has stimulated global interest in corporate governance practices. Like many other countries in the Commonwealth, South Africa's corporate governance structure resembles that of the UK. The South African Companies Act adopted in 1973 and English common law play a significant role in corporate governance guidelines West (2009). Current guidelines are contained in the King Code issued by the Institute of Directors South Africa (IoDSA) (Steyn and Stainbank, 2013).

The King Committee on Corporate Governance was set up after the release of the Cadbury reports in the UK in 1992. It sought to identify enabling policies and principles to effectively govern companies, including the role of the Board of Directors in monitoring and decision-making processes that maximize shareholders' wealth and reduce the risk of expropriation (Ntim, 2013). The King Reports aim to protect the interests of all stakeholders in a firm (Abdo and Fisher, 2007).

3.3.1.1 Parties to corporate governance in South Africa

Corporate management specialists and scholars argue that corporate governance plays a crucial role in establishing procedures, systems, regulations and codes of ethics to guide organisational operations. The first King Report on Corporate Governance was published in 1994. The primary aim is to promote sound corporate governance in the South African economy in the interests of all stakeholders (Vaughn and Ryan, 2006). Similar to their predecessor, the Cadbury Commission in the UK, the King Reports set principles and guidelines on financial reporting, transparency and accountability, good practices in relation to directors' and auditors' responsibilities and a code of ethical conduct for South African enterprises (Vaughn and Ryan, 2006).

3.3.1.2 King reports on corporate governance in South Africa

The King Report issued in 1994 and known as King I, set standards for corporate governance practices for all enterprises in South Africa (IoDSA, 2002, Mans-Kemp et al., 2016, Naidoo, 2016). The King Code on Corporate Governance addresses the ways in which entities are governed and controlled as well as information exchange between them and all stakeholders (Mans-Kemp et al., 2016). King I created unprecedented local and international interest in corporate governance practices and led to the publication of King II in 2002 (Mans-Kemp et al., 2016, Naidoo, 2016).

The King II report included a reporting framework that covers ethics, social, health and environment practices and transformation issues relating to the development of human capital and black economic empowerment (Naidoo, 2016). It stated that a firm's board should ultimately be responsible to protect the interest of all stakeholders. King II identified seven characteristics of sound corporate governance in South Africa, including discipline, transparency, accountability, independence, responsibility, fairness and social responsibility (IoDSA, 2002). The report covered the duties and responsibilities of directors, risk

management, internal auditing, integrated sustainability, accounting and auditing, compliance, and enforcement. In particular, it stressed the inclusion of all stakeholders in corporate governance (West, 2009). In response, the JSE changed its regulations to require all companies listed on the bourse to provide an annual report on compliance with the King principles (Mans-Kemp et al., 2016, Naidoo, 2016). The King III Report of 2009 was based on amendments to South Africa's Companies Act in 2008 (Naidoo, 2016). In line with King II, it recommended that firms listed on the JSE should reporting on sustainability and financial performance (Mans-Kemp et al., 2016).

The King IV Report was released in 2016. In line with previous reports, it defined sound corporate governance as integrity in running an enterprise through developing an ethical culture, ensuring adequate board control and enhancing corporate performance (IoDSA, 2016). Kings IV recommends a holistic and integrated strategy to ensure transparency and accountability to all stakeholders through appropriate disclosure of the company's financial, ethical and environmental performance. It proposes four outcomes, including effective and adequate control of the company by the Board of Directors, development of an ethical culture, ensuring performance and value creation for stakeholders, and building trust, reputation, and legitimacy (Naidoo, 2016, IoDSA, 2016).

King IV also recommends that board members' remuneration be approved by shareholders that should be given the opportunity to pass a separate, nonbinding vote against the board remuneration policy and the implementation report (IoDSA, 2016). The remuneration policy should detail the steps that the board will take in the event that 25% or more votes are cast by shareholders against the board remuneration policy and implementation report. Kings IV also recommends the use of performance measures that support positive results across the triple context (the economy, society, and the environment) in which the business operates and all the capitals this uses or affects (IoDSA, 2016)

3.3.1.3 The King Code and JSE listing requirements

Following the release of King II in 2002, the JSE recommend adoption of its recommendations by all listed companies (Abdo and Fisher, 2007). The King II, III and IV Reports prompted the amendment of JSE listing requirements with the aim of strengthening the capital market by adopting international best practices, increasing the discretionary power of the JSE as an institution and ensuring that directors conform with the recommendations (Naidoo, 2016). Listed firms are obliged to comply with the King Code and describe the extent of compliance

and non-compliance with the provisions in their annual reports. King IV also prompted an amendment to the listing rule on the JSE to promote racial diversity in compliance with the B-BBEE Amendment Act in 2013 (JSE, 2017). King IV noted that businesses operate in the triple context of the economy, society and the environment that affect corporate performance (IoDSA, 2016). Sound corporate governance will minimise the conflicting interests of the principal-agent, principal-principal agency relationship and all other stakeholders and thus affect ownership structure.

3.4 Ownership structure and Black Economic Empowerment in South Africa

Corporate ownership and control still bear the legacy of apartheid injustices (Chabane et al., 2006). The South African economy has undergone profound restructuring since the transition to democracy in 1994. Under apartheid, white people held ownership and control of the economy (Maloka, 2004). The dawn of democracy saw the adoption of various programmes such as Reconstruction and Development Programme (RDP) in 1994, the Growth Empowerment and Redistribution (GEAR) strategy in 1996, and Black Economic Empowerment (BEE) in 1998 that aimed to redress inequality, boost employment and alleviate poverty (Freund, 2007, Tangri and Southall, 2008). The notion of empowerment is closely related to the nationalization of the economy by increasing the participation of previously disadvantaged black South Africans.

BEE aims to promote full participation in the economy and equality among citizens by deracializing the economy through ownership, management, and control of all sectors for economic growth and development (Chipeta and Vokwana, 2011). It was first introduced in 1998 under competition law to increase the number of previously disadvantaged South Africans with an ownership stake in the economy (Roberts, 2004). The Competition Act recognizes the need to explicitly address excessive concentration of ownership and control of the economy in the hands of a minority (Roberts, 2004). It thus seeks to move away from anti-competitive practices. The South African government established the National Empowerment Fund in 1998 to acquire an equity stake in private and state-owned enterprises with the aim of deracializing ownership and control of the economy (Sartorius and Botha, 2008). The National Empowerment Fund Corporation was established in terms of the NEF Act in 1998 and was charged with managing the trust fund in order to provide previously disadvantaged people with opportunities to directly and indirectly acquire shares, support business ventures and promote savings and investments.

However, internal problems and the 1998 and 1999 Asian financial crisis and stock market crash resulted in black equity vendors with the National Empowerment Fund and other financiers incurring huge debt as the financial and equity markets experienced extreme volatility. This led to the promulgation of the B-BBEE Act in 2003 (Sartorius and Botha, 2008, Veloso, 2010). While the empowerment programme has boosted economic growth and development in South Africa, limited success was achieved in increasing the number of black people with significant ownership, management and control of private sector companies, especially financial services firms.

The South African government describes BEE

“as an integrated and coherent social-economic process that directly contributes to the economic transformation of South Africa and brings about significant increases in the numbers of black people that manage, own and control the country’s economy, as well as significant decreases in income inequalities”(DTI, 2003)

It can broadly be described as economic development and transformation that promotes reconstruction and the development of well-being through eradicating inequality (DTI, 2003). In the South African context, BEE seek to balance the scales by transferring corporate assets from white to black ownership and control and to ensure that management is representative of the country’s demographics. The policy objectives of BBE (DTI, 2003) are:

1. Extensive increase in the number of black people that own and control new and existing enterprises.
2. Significant increase in the number of black management representatives (executive and senior managers) in enterprises.
3. To increase black people’s income levels and promote redistribution of wealth among different races.
4. Accelerated increases in the number of back people that own enterprises.
5. To improve economic growth and development in South Africa.

These objectives are based on the fact that the South African business environment is characterized by racial disparities and wealth inequality. Therefore, BEE seeks to address apartheid legacies, deracialize the mainstream economy and promote more equitable ownership and control of private and state-owned enterprises. The objective of B-BBEE is to

reform the economy through more equitable ownership and management, preferential procurement, skills development, enterprise development, employment equity and corporate social investment (Ponte et al., 2007). The government has adopted different policy instruments to achieve these objectives, including legislation and regulations, institutional support from the Department of Trade and Industry (DTI), financial support (the National Empowerment Fund), preferential procurement and incentive schemes (DTI, 2003). The Ministry of Trade and Industry manages the Codes of Good Practice on B-BBEE, while National Treasury finances the programme. The DTI also monitors BEE and seeks relevant advice from stakeholders to achieve economic transformation.

The government introduced the *balanced scorecard* to benchmark BEE in different sectors and ensure that all state-owned and private enterprises align their procurement practices and BEE strategies (Dongwana, 2016). The balanced scorecard establishes BEE-rating for individual enterprises and is monitored by the government. Government is aiming for a target of black people owning 50.1% of enterprises with substantial management control of all mainstream sectors (Dongwana, 2016).

While adopting BEE is inevitable for companies that operate in South Africa due to the fact that compliance enables them to tender for government contracts, licenses and concessions (Sartorius and Botha, 2008), companies that do not depend on government contracts are also under pressure to adopt BEE as part of corporate social responsibility to retain customers and maximize corporate wealth.

It is against this background that the JSE amended its listing requirements to support affirmative action and B-BBEE. Firms must comply with JSE listing requirements, which are amended from time to time, in order to be granted listing on the bourse (Exchange, 2013). The BEE share scheme was introduced by means of an over-the-counter shares platform to encourage firms listed on the JSE to meet the government's requirements for BEE-rating (Gene, 2016). In 2011, the JSE launched trading in the BEE share scheme in accordance with the Code of Good Practice managed by the DTI. It also proposed inward-listing-requirements to allow foreign domiciles to be listed and raise capital in South Africa with the aim of promoting domestic share ownership and enhancing B-BBEE (Phakamisa and Ryk van, 2011). This affects share ownership and management representatives of companies listed on the South African equity market. It is against this background that this study considered firms' BEE-

rating as an external factor that affects ownership structure and the firm value of listed JSE companies in South Africa's transition economy.

3.5 Firm value and ownership structure

Studies on the relationship between ownership structure and firm value have used different performance measures (Holderness et al., 1999, Douma et al., 2006, Mi Choi et al., 2012, Pervan et al., 2012, Greenaway et al., 2014, Phung and Mishra, 2016). Firm value is described as the benefit from performance measured by the effectiveness and efficiency of a firm's operations over time (Al-Matari et al., 2014). Performance measurement reveals the steps taken by management to generate reward for the owners (shareholders). It evaluates how management directs corporate assets to enhance the owners' contribution and provide valuable information to stakeholders.

The different measures of performance include Tobin's Q (Morck et al., 1988, McConnell and Servaes, 1990, Agrawal and Knoeber, 1996, Himmelberg et al., 1999, Khanna and Palepu, 1999, Demsetz and Villalonga, 2001, Douma et al., 2006, Kapopoulos and Lazaretou, 2007, Pervan et al., 2012, Mi Choi et al., 2012, Phung and Mishra, 2016), return on assets (ROA) (Gugler, 1998, Claessens et al., 2000, Thomsen and Pedersen, 2000, Douma et al., 2006, Ongore, 2011, Pervan et al., 2012, Greenaway et al., 2014, Phung and Mishra, 2016), return on equity (ROE), dividend yield (Ongore, 2011) and operating profit margin (Berle and Means, 1932, Demsetz and Lehn, 1985) among others have been employed as proxy firm value. These are divided into accounting-based and market-based indicators (Al-Matari et al., 2014).

Accounting-based measures eclipse accounting standards established by professional bodies and emphasise the internal implications of professional managers as directors using the profit rate to gauge performance (Demsetz and Villalonga, 2001, Kapopoulos and Lazaretou, 2007). An accounting-based measure is inward-looking and measures profit taking amortisation and depreciation into account (Demsetz and Villalonga, 2001, Kapopoulos and Lazaretou, 2007, Al-Matari et al., 2014). Accounting-based measures of financial performance that have been employed to determine the relationship between ownership structure and firm value include ROA, ROE, earnings per share (EPS), and profit margin (PM) among others.

On the other hand, market-based performance measures are concerned with the forward-looking aspects of the firm which reflect the market and shareholders' expectations of the firm's future financial performance (Al-Matari et al., 2014). Market-based financial

performance measurement is observed from the perspective of investors and corporate financial analysts and is limited by unconventional professional standards of measuring performance (Demsetz and Villalonga, 2001). The market-based performance measures used in different empirical studies on ownership structure include Tobin's Q, dividend yield (DY), market value added (MVA), and the price-earnings ratio (PE), among others.

3.5.1 Factors affecting firm value and ownership structure

3.5.1.1 Leverage

Leverage is measured by long-term debt divided by the firm's total assets (McGregorBFA, 2016). It indicates the degree of debt finance to the capital contributed by shareholders. Debt is an alternative source of finance for firm operations and is expected to have positive and negative effect on firm value. Jensen and Meckling (1976) observed that leverage serves as one of the main internal governance mechanisms to mitigate agency costs when there is a cash flow shortage and the need arises to enhance firm value. They argue that an increase in debt and debt finance will discipline managers that do not adequately monitor corporate assets. Ross (1977) posited that a firm's future prospects depend on its ability to use debt and improve investment for higher firm value. Managers' major responsibility is to either increase or retain inherent control of the firm for their private benefit. However, debt is a means to avoid share dilution. Stiglitz (1985) states that effective and efficient monitoring by managers can be triggered by the lender's influence rather than shareowners. Agrawal and Knoeber (1996) add that when debt is used to finance a firm, lenders motivate managers to monitor its operations and thereby improve firm performance.

In contrast, Myers (1977) asserted that higher levels of leverage may reduce corporate value and lead to underinvestment. The author argued that high leverage increases debt financing costs and hinders a firm's ability to gain further loans for investment opportunities; it is thus negatively related to firm value. Stulz (1988) observed that higher debt levels influence the market value of stocks which in turn creates problems in raising additional finance from the equity market because of higher financial risk. Andrade and Kaplan (1998) contend that the higher a firm's leverage, the lower its profitability in times of financial distress and the lower the leverage, the better the firm's profitability when the need arises for investment. (Phung and Mishra, 2016) used panel data on Vietnamese listed firms to reveal a negative relationship between ownership structure and leverage.

3.5.1.2 Profitability

Profitability is measured by operation earnings divided by the firm's total sales (McGregorBFA, 2016). Firm profitability is a significant factor when measuring corporate value. A number of previous studies on ownership structure found a positive association between profitability and firm value (Phung and Mishra, 2016). Higher profitability indicates efficient use of the firm's resources and is thus expected to influence firm value. Firm profitability is significant when considering the dividend policy, retained profit, investment opportunities, reduction in debt finance, and access to long-term finance and lease finance that affect firms' operations (Himmelberg et al., 1999, Phung and Mishra, 2016). Thus,

3.5.1.3 Liquidity

Firms that are highly liquid are expected to have better investment prospects and improved access to debt finance as well as exhibit superior performance (Cho, 1998, Uno and Kamiyama, 2010). Liquidity improves the firm's credit rating and access to lease finance and other credit finance in times of financial distress. However, studies on ownership structure have produced mixed findings on the relationship between liquidity and firm value. Uno and Kamiyama (2010) used data on the Tokyo stock exchange and found that a low level of liquidity increases long-term investment and thus increases firm value. They explained that ownership concentration and managerial ownership can lead to poor firm liquidity to achieve superior future firm value. Cho (1998) highlights that higher liquidity opens up investment opportunities and access to finance to improve firm performance. The author adds that liquidity induces higher levels of managerial ownership.

3.5.1.4 Board size

While board sizes has been found to influences firm value, there is no optimal board size (Fauzi and Locke, 2012). A larger board is preferable as it promotes diversity and brings in more professional managers to oversee the operations of the firm and maximize firm value (Marashdeh, 2014). Since boards are the apex of the internal control mechanisms that monitor operations and provide management support, larger boards have a propensity to provide more skills and knowledge and offer diverse perspectives that are likely to enhance corporate performance. (Jensen, 1993) proposes that, while larger boards mean higher monitoring costs, they offer better opportunities and superior decisions that increase firm value. However, the author adds that when the size of the board exceeds a certain level, this creates inefficiencies.

From the perspective of the agency model, a large board is likely to generate increased firm value and increase incentive alignment costs (monitoring costs); it also opens the door to free-riding which is detrimental to firm value (Fauzi and Locke, 2012). Therefore, board size is determined by firm-specific characteristics that have both positive and negative effects on firm value. Coles et al. (2008) argue that complex firms have a tendency to have larger boards. A large board has more outside directors and this improves corporate performance. Wintoki et al. (2012) examined the relationship between board size and firm value by examining firm-specific effects using GMM estimator. They concluded that board size adjusts to the firm's past performance and is negatively related to firm value. Conyon and Peck (1998) used fixed effect estimation to determine the relationship between board size and corporate performance in five European countries and found that a large board is inversely related to firm value. Guest (2009) study on the impact of board size on firm performance in the UK contended that the relationship between board size and firm value adjusted to the institutional framework of the country in which the firm operated and not only firm-specific characteristics. Using Tobin's Q, profitability and share return, the author found that board size is negatively related to firm performance.

3.5.1.5 Board remuneration

Board remuneration plays a significant role in management and is expected to influence firm value. Jensen and Meckling (1976) propose that incentive alignment (board compensation) will mitigate conflicts of interest and improve firm value. Miyianda et al. (2012) investigated the relationship between directors' remuneration and company performance among firms listed on the Nairobi securities exchange in Kenya using ROE, earnings after tax (EAT) and Tobin's Q as measures of performance and found that board remuneration is positively related to firm value. They contend that efficiency and effective utilisation of firm resources to improve firm value can be a gauge of board remuneration. Yatim (2013) conducted a cross-sectional analysis of Malaysia's listed firms and concluded that directors' remuneration is positively and significantly related to firm value. The author notes that board remuneration not only encourages sound firm performance but influences the ways in which firms' results are achieved. In contrast, Fernandes (2008) found that board remuneration has no relationship with corporate performance among firms listed on Portugal's stock market. The author adds that board compensation does not relate to both market-based and accounting-based measures of firm financial performance.

3.5.1.6 BEE firm

The BEE affirmation programme by the South Africa government that aim diffuseness ownership structure is excepted to influence firm value. The BEE-rating is a *balanced scorecard* introduced by the South African government as the benchmark to assess the BEE programme since the enactment of the B-BBEE Act of 2003. The balanced scorecard is used to check adherent of firms in South Africa with the BEE. The BEE programme aims to transform the economy through ownership, management, and control of companies by incorporating previously disadvantaged black people, addressing inequality among both private and state-owned enterprises and creating a free market economy (Dongwana, 2016).

3.5.1.7 Firm size

A number of studies have controlled for firm size in analysing the relationship between ownership structure and firm value. Short and Keasey (1999) note that large firms are able to draw on substantial resources, both internal and external, that reduce financial constraints and have a beneficial effect on firm value. Jensen and Murphy (1989) propose that firm size may be employed as a control proxy when analysing the principal-agent problem. However, they add that when a firm is large, this could boost managers' confidence to exert more control and thus lead to conflicts of interest between managers and shareholders. Himmelberg et al. (1999) argue that in large-sized firms, insider shareowners have higher expectations, thus increasing monitoring costs. Jensen and Meckling (1976) argue that an increase in firm size leads to increased management costs and gives management more discretion to increase firm value.

Fama and Jensen (1983) argue that the more a firm's size increases, the more extensive its diversification. This implies that an increase in firm size leads to expanded investment. Agrawal and Knoeber (1996) found that firm size has a negative association with firm performance. They argue that a large firm may result in inefficient control of corporate assets due to managers having less control of its operations. Al-Najjar and Taylor (2008) concur that large firms tend to be more diversified and are thus inclined to increase firm value.

3.6 Summary of chapter three

The chapter reviewed the relevant literature on ownership structure, including ownership concentration and ownership identity. Previous studies on corporate governance mechanisms and ownership structure were discussed as well as the King Reports on Corporate Governance in South Africa and the B-BBEE Act. It also discussed external factors influence ownership

structure and firm value. The following chapter presents the research methodology employed to conduct this study.

Chapter Four

Methodology

4.1 Introduction

The previous chapters discussed the literature review for this study. This chapter presents the procedures employed to conduct the entire this study. It discusses data analysis, variable measurements and the model estimating method to be applied for this study analysis. It emphasises the process of determining the model specification appropriateness of static model using ordinary least square (OLS), fixed effects (FE), random effect (RE) estimators and dynamic model using generalised method of moments (GMM) estimator. It also enumerates empirical model specification in relation with the proposed hypotheses to examine the effect of ownership structure on the value of JSE listed firms.

4.2 Data analysis

This section discusses the sources and nature of the data gathered for this study. It provides details on the population and sample data on the firms in different sectors on the equity market that were used in this study.

4.2.1 Sources and nature of data

Data on firms listed on the JSE equity market including ownership variables, control variables, and firm value variables were sourced from the McGregor BFA and Bloomberg database from 2004 to 2016. This study period covers the adoption of the King II, III, and IV reports on corporate governance and the amendment of the B-BBEE Act. Firms listed on the JSE adopted the corporate governance provisions in 2002 and the B-BBEE Act was enacted in 2003. In particular, the data selected for this study were guided by the King corporate governance guidelines that acknowledge that the triple context of the economy, society and the environment affect corporate performance. The guidelines and the B-BBEE programme resulted in several amendments to JSE listing requirements, including share ownership and board management. The data for this study thus begins in 2004. Secondary panel data on JSE listed firms were employed composed of cross-sectional and times series data which include dependent and explanatory variables. Panel data methods are widely used in experimental studies in economics and corporate finance research, among others. Panel data adjusts to different estimating techniques such as the linear regression static model using OLS, fixed and random effect estimators and the linear regression dynamic model using GMM estimator and

different diagnostic tests. The data offers rich information as well as variability that shows less collinearity among the variables and high degrees of freedom that is more efficient.

4.2.2 Sample and population

The population for the study includes all listed firms in all sectors (basic materials, consumer goods, consumer services, healthcare, oil and gas, financial services, industrial, technology, telecommunications and utilities) on the JSE equity market. The equity market consists of the Main-board and the Alternative Exchange (AltX). The former is composed of well-established firms including listed South African companies and inward listed firms, while the Alternative Exchange is made up of small and medium sized high growth companies that have yet to be listed on the Main-board. Table 1 presents the 295 JSE-listed firms that were sourced from the Main-board using McGregorBFA (2016) data from 2004 to 2016. Following the convention adopted by other studies of this nature, we omitted financial services firms (banks and insurance companies) (Douma et al., 2006, Phung and Mishra, 2016). Other firms excluded include those delisted by the JSE due to violation of listing requirements and those with mergers and acquisitions, due to inadequate information. Sample data on 187 firms were selected from this population to provide quality data assurance. The overall sample comprises 63.38% of the population.

Table 1: Sample and population data

Sector	Population	Firms excluded	Sample	% of the sample
Basic materials	50	1	49	26.2%
Consumer goods	21	2	19	10.16%
Consumer services	41	4	37	19.8%
Financial services	100	100	0	0
Healthcare	7	0	7	3.7%
Industrials	58	0	58	31%
Oil & gas	3	0	3	1.6%
Technology	10	1	9	4.8%
Telecommunications	5	0	5	2.7%
Utilities	0	0	0	0
Total	295	108	187	100%

Source: Own construction based on data obtained from the McGregor BFA online database

4.3 Variables analysis

The variables used for this research study were drawn from the sample panel data gathered that comprise of dependent and independent variables. Following literature (Douma et al., 2006, Kapopoulos and Lazaretou, 2007, Pervan et al., 2012, Phung and Mishra, 2016) Tobin's Q and return on assets (ROA) were used as firm value proxies for dependent variable. The ownership variables proxies with ownership concentration, managerial ownership, domestic ownership and foreign ownership, and the control variables proxies with leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size were used for this study independent variable.

4.3.1 Firm value

Firm value is described as the benefit from performance measured by the effectiveness and efficiency of a firm's operations over time (Al-Matari et al., 2014). Following literature (Douma et al., 2006, Pervan et al., 2012, Phung and Mishra, 2016, Al-Saidi and Al-Shammari, 2014), this study applied both accounting-based and market-based measures to measure the performance of firms and used Tobin's Q and ROA to minimise potential weaknesses in the valuation of firm value

4.3.1.1 Tobin's Q

The Tobin's Q ratio is used to capture a firm's market performance. It is described as the sum of the market value of equity and book value of debt over the book value of total assets (Morck et al., 1988, McConnell and Servaes, 1990, Agrawal and Knoeber, 1996, Himmelberg et al., 1999, Khanna and Palepu, 1999, Demsetz and Villalonga, 2001, Douma et al., 2006, Kapopoulos and Lazaretou, 2007, Pervan et al., 2012, Mi Choi et al., 2012, Phung and Mishra, 2016). This indicates the actual market value of the firm over the replacement cost of its assets (Himmelberg et al., 1999). It evaluates the overall market value of the firm from the perception of investors and corporate financial analysts to gauge firm performance (Demsetz and Villalonga, 2001). The firm's market value includes the market value of debt and the market value of equity while the value of debt can be measured by the book value. These indicate a firm's leverage preference on investments depend on the market value of debt compared with the book-value (Kapopoulos and Lazaretou, 2007). Therefore, this study proxies Tobin's Q market-based measure of firm value on relations with the ownership structure. For the purposes of this study, the Tobin's Q ratio can be described as the market value of the enterprise's equity

plus the book value of interest-bearing debt to the replacement cost of its total assets (McGregorBFA, 2016).

4.3.1.2 Return on assets

As an accounting-based measure of the financial performance of a firm, ROA is described as operating earnings after interest and tax divided by the book value of total assets. It evaluates efficient resources utilisation within the context of profit rate returns measured using professional accounting standards (Demsetz and Villalonga, 2001). Many empirical studies on ownership structure have employ ROA as measure of firm value (Gugler, 1998, Claessens et al., 2000, Thomsen and Pedersen, 2000, Douma et al., 2006, Ongore, 2011, Pervan et al., 2012, Greenaway et al., 2014, Phung and Mishra, 2016). ROA is affected by different techniques used for the valuation of tangible and intangible assets. As an accounting-based measure to gauge performance, ROA is a financial ratio that shows the percentage of profit that a firm earns in relation to its overall resources, which is constrained by accounting standards set by professional bodies (Demsetz and Lehn, 1985). ROA is described as operating profit after tax divided by total assets (McGregorBFA, 2016). This reflects managements' ability to use financial and real resources to generate revenue for the firm. For the purposes of this study, ROA is employ as robustness test alternative to Tobin's Q as measures of firm value.

4.3.2 Ownership structure variables

Ownership structure is described as equity distribution with a voting right as well as the identity of shareowners. The ownership structure variables in this study include ownership concentration and identity of ownership such as foreign, domestic, and managerial ownership which are measured based on the proportion of shares owned by shareholders in the firm.

4.3.2.1 Ownership concentration

Ownership concentration is measured by the percentage of ordinary share equity held by the largest five shareholders in the firm (Demsetz and Lehn, 1985). Berle and Means (1932) proposed that ownership concentration is important in enhancing corporate performance. Many studies have used the five largest shareholders to establish the relationship between ownership concentration and firm value (Demsetz and Villalonga, 2001). This study adopted the same structural measures of ownership concentration described as the percentage of ownership share (votes) held by the five largest shareholders in the firm. This is measured by combining the

percentage of large five shareholders annually for each firm listed on the JSE market in South Africa.

4.3.2.2 Ownership identity

The standard assumption of economic theory which includes property rights theory, agency theory, and stakeholders theory is that every stakeholder maximises utility (Berle and Means, 1932, Jensen and Meckling, 1976). This notion is useful when discussing the impact of shareholders' identity on firm value. Ownership identity is described as the equity owners with a voting right that are identified as subgroup or category of shareholders in the firm (Thomsen and Pedersen, 2000). This study employs identity of managerial, foreign, and domestic ownership to determine the shareholders impact firm value of companies listed on the JSE market in South Africa.

4.3.2.2.1 Managerial ownership

Managerial ownership is measured as the sum of ordinary shares owned by insiders such as the Board of Directors, the CEO and the managers that run the firm (Morck et al., 1988, McConnell and Servaes, 1990, Short and Keasey, 1999, Himmelberg et al., 1999, De Miguel et al., 2004, Ntim, 2013, Al-Matari et al., 2013, ErikMeyer, 2013, Zondi and Sibanda, 2015, Mutize et al., 2016). This study adopted the same structural measures in the cited literature for managerial ownership described as the percentage of shares (votes) held by directors in the firm. Managerial ownership in this study is measured as the percentage of director's shareholders annually for each firm listed on the JSE market in South Africa.

4.3.2.2.2 Foreign ownership

Foreign ownership refers to the proportion of a firm's ordinary share equity owned by foreign investors (Khanna and Palepu, 1999, Oxelheim and Randøy, 2003, Barbosa and Louri, 2005, Koo and Maeng, 2006, Douma et al., 2006, Aydin et al., 2007, Ghahroudi, 2011, Ongore, 2011, Mi Choi et al., 2012, Wellalage and Locke, 2012, Pervan et al., 2012, WecheGelübcke, 2013, Greenaway et al., 2014, Phung and Mishra, 2016). There is a rich body of literature on the benefits of foreign equity ownership in the host country in terms of capital opportunities, modern technology, managerial techniques, access to international markets, increased productivity and competitiveness in the host country, improved labour productivity, better investment returns, and improved corporate governance mechanisms, among other drivers that enhance firm value. In this study, foreign ownership is described as the percentage of a firm's

shares (votes) held by foreign or international investors. It is measured as percentages of foreign investor shareholder annually for each firm listed on the JSE market in South Africa.

4.3.2.2.3 Domestic ownership

Domestic ownership represents the proportion of ordinary share equity owned by domestic or local investors in the firm (Khanna and Palepu, 1999, Douma et al., 2006, Pervan et al., 2012, McGregorBFA, 2016). This study investigated the relationship between domestic ownership and firm value using data on JSE listed firms in the South Africa transition economy, particularly in light of the government programme that aims to expand equity markets.

4.3.3 Control variable

The control variables for this research study are deduced based on the empirical and theoretical frameworks of previous studies on ownership structure and firm value. It was assumed that these variables, which include leverage, profitability, liquidity, board size, board remuneration, firm size, and BEE-rating are constant and are unaffected by standards of comparison in ownership structure and firm value relationship.

4.3.3.1 Leverage

Leverage is measured by long-term debt divided by the firm's total assets (McGregorBFA, 2016). Following literature (Jensen and Meckling, 1976, Ross, 1977, Stiglitz, 1985, Agrawal and Knoeber, 1996) pinpointed important of firm leverage to corporate performance. This study employs control for leverage as one the variable that affect firm value and ownership structure.

4.3.3.2 Profitability

Profitability is measured by operation earnings divided by the firm's total sales (McGregorBFA, 2016). Firm profitability is expected to be positively influences firm value and ownership structure (Phung and Mishra, 2016). Thus, this study includes profitability as a major control variable that influences ownership structure and firm value.

4.3.3.3 Liquidity

Liquidity is measured by cash and cash equivalents divided by the firm's total assets (McGregor, 2016). Firm liquidity increase the chances for better investment prospects and access to finance in times of financial distress (Cho, 1998, Uno and Kamiyama, 2010). Thus,

this research study includes liquidity as a major control variable that influences ownership structure and increases firm value.

4.3.3.4 Board size

Board size refers to the number of directors that oversee the affairs of firms on behalf of shareholders (McGregorBFA, 2016). Large board size indicate diverse professional managers ideas employ to oversee operations of the firm and is expected to be positively firm value (Marashdeh, 2014). Thus, this study considered board size as a control variable in examining the effect of ownership structure on the firm value of JSE listed companies in South Africa, especially given the recent King IV Report on Corporate Governance (2016) that prompted amendment of the listing requirements for companies on the JSE in order to promote racial diversity at board level and annual reporting in compliance with the B-BBEE Act as amended in 2013 (JSE, 2017).

4.3.3.5 Board remuneration

Board remuneration comprises of Board of Directors' salaries and compensation to management (McGregor, 2016). Board of Directors remuneration encourage encourages effective and efficient firm monitoring and is expected to be positively related to firm value (Miyienda et al., 2012, Yatim, 2013). This research study thus considered board remuneration as a control variable in examining the effect of ownership structure on the firm value of JSE listed companies in South Africa, particularly in light of the fact the remuneration policy is now also expected to record the measures that the Board of Directors of these firms take in event of a 25% or more vote against the remuneration policy and its implementation (Planting, 2017).

4.3.3.6 BEE firm

A firm's BEE-rating is measured using a dummy of (1) for firms that have BEE-rating and otherwise (0) for firms without any BEE-rating. As noted previously, the recent King IV Report on Corporate Governance (2016), prompted an amendment to listing requirements for companies on the JSE to promote racial diversity at board level and annual reporting in compliance with the B-BBEE Act as amended in 2013 (JSE, 2017). Thus, this research study controls for BEE as one of the main external factors that affect the ownership structure of firms in South Africa's transition economy.

4.3.3.7 Firm size

Firm size is measured as the natural logarithms of the firm's total assets (McGregorBFA, 2016). Firm size is commonly controlled for when measuring the ownership structure and firm value relationship (Jensen and Murphy, 1989, Short and Keasey, 1999, Al-Najjar and Taylor, 2008). It is generally perceived that large firms have the benefit of economies of scale and opportunity for investment diversification and thus improve firm value. On this backdrop, positive relationship is expected between firm value and firm size. This study control for firm size as one the factors that affect ownership structure and firm value.

4.4 Variable definitions

Table 2: Variables definitions and acronyms

Variable	Acronyms	Definitions
<u>Firm value</u>	FV	
Tobin's Q	TOQ	Market value equity plus debt value divided by the book value of total assets
Return on assets	ROA	Operating earnings before interest and tax/Book value of total assets
<u>Ownership structure variables</u>		
Ownership concentration (%)	OC	Percentage of share (votes) held by the five largest shareholders
Managerial ownership (%)	MO	Percentage of shares (votes) held by directors
Foreign ownership (%)	FO	Percentage of shares (votes) held by foreign shareholders
Domestic ownership (%)	DO	Percentage of shares (votes) held by local shareholders
<u>Control variables</u>		
Leverage	LV	Long-term debt and short-term debt divided by total assets
Profitability	PR	(Net profit after tax divided by turnover) * 100
Liquidity	LQ	Total current assets less total stock divided by total liability
Firm size	FS	Natural log of total assets
Board size	BS	Number of directors
Board remuneration	BR	Director remuneration (direct plus others) divided by EBIT *100
BEE firm	BF	Dummy of (1) for firms that have BEE rating and otherwise (0) for firms without the rating

Sources: McGregorBFA (2016) and Bloomberg online database.

4.5 Data model estimating techniques

This study used Stata/IC 15.0 software to analyse the data using a panel data model. The panel contains both time series data and cross-sectional data. Cross-sectional data consists of one or more variable values collected for several sample firms or sectors at the same point in time, while time series data observed one or more variables values over a period of time. Descriptive statistics were employed to summarise and describe the study variables as observed in the panel data. This assists in producing accurate data and identifying any data errors. Correlation coefficient analysis was also conducted among firm value, ownership variables and others control variables to ascertain the coexistence relationship between these variables.

In order to investigate the degree and direction of the relationship between the study's dependent variables and independent variables, different regression analysis was employed with the panel data model. Pooled OLS, fixed effects (FE), random effects (RE) and GMM estimating techniques are commonly used for the estimation of the panel data model. The linear regression static model can be presented as follows:

$$y_{it} = \beta_0 + \beta_1 x'_{it} + w_i + v_t + \varepsilon_{it} \quad (\text{EQ1})$$

Where i represent the firm and t represent the time, β_0 represents the constant term, β_1 represents the coefficient, y_{it} represents dependent variable of firm i at time t , x'_{it} represents vector of explanatory variables of firm i at time t , w_i represent unobserved firm-specific effect, v_t represents time-variants and ε_{it} represents error term of firm i at time t .

The pooled OLS linear regression is consistent and provides efficient estimates of the common intercept β_0 and the slope vector of β_1 with the assumption of unobserved heterogeneity, which means that ε_{it} is independent of x'_{it} . Thus, when individual effects (firm-specific effects) are observed, the OLS estimator became biased and inconsistent. OLS ignores heterogeneity that may exist among the variables. According to Baltagi (2005), the fixed and random effects models are used to deal with unobserved heterogeneity. Therefore, the fixed effects model assumed that explanatory variable x'_{it} is independent of the error term ε_{it} that is composed of unobserved effects and is time-invariant, which means that w_i is an unobserved firm-specific effect and random disturbance term v_{it} , and thus β_0 is independent of x'_{it} .

The OLS method is an inappropriate estimation because of the heteroskedastic and serial autocorrelation of the error term ε_{it} . Random effects estimation would produce consistent and efficient estimates assuming that the explanatory variable x'_{it} is uncorrelated with unobserved individual effects (firm-specific effects) w_i , which means that β_0 is uncorrelated with x'_{it} . Random effects assume that w_i individual effects vary over time, whereas the condition of the fixed effects estimates is consistent and unbiased when w_i is correlated to x'_{it} , which means that β_0 is correlated to x'_{it} . The fixed effect assumes that w_i individual effects do not vary over time.

The Breusch-Pagan Lagrange Multiplier (LM) test was conducted to choose between OLS and the random effects model (Breusch and Pagan, 1980) while the Hausman test was conducted to select the most suitable model between fixed effects and random effects (Hausman, 1978).

Table 3: Appropriate estimation tests for Pool OLS, and the Fixed Effects and Random Effects model

Tests	Null Hypothesis	Alternatives Hypothesis	Standard assumption	Appropriate Model
Pool OLS	Accepted	Rejected	Significant (p -value <0.1)	F-test
RE model	Accepted	Rejected	Insignificant (p -value <0.1)	Breusch-Pagan test
RE model	Accepted	Rejected	Significant (p -value >0.1)	Hausman Test
FE model	Rejected	Accepted	Significant (p -value <0.1)	Hausman Test

Breusch-Pagan is a pre-test designed to determine heteroskedasticity (random variables) in the linear regression model (Breusch and Pagan, 1980), while the Hausman test is designed to determine the violation of the random effects model estimation assumption that the explanatory variables are orthogonal to the individual effects (Hausman, 1978). If there is no correlation between x'_{it} explanatory variables and w_i individual effects, then the fixed effects model estimation of β_1 should be the same as the random effects model.

Although it is widely acknowledged that the fixed and random effects models deal with the problem of unobserved heterogeneity, it is a more conservative approach. According to Wintoki et al. (2012), biases and inconsistent estimations relating to endogeneity still exist when the relationship between ownership structure and firm value is investigated using fixed and random effects estimators to solve the problem of endogeneity, because they do not account for the endogeneity problem that subsists within the variables which include measurement errors, and time-invariant and simultaneity effects. Thus, applying fixed and random effects estimating techniques would be biased and inconsistent. Based on this premise, this study employed dynamic panel data as follows in order to avoid the endogeneity problem that leads to biased and inconsistent estimations using MM (Arellano and Bond, 1991) as follows:

$$y_{it} = \beta_0 + \delta y_{i,t-1} + \beta_1 x'_{it} + w_i + v_t + \varepsilon_{it} \quad (\text{EQ2})$$

where $y_{i,t-1}$ represent the lagged value dependent variable of firm i at time $t - 1$ and other variables are as previously defined.

The linear regression dynamic model includes the lagged dependent variable in explanatory variables that leads to biased and inconsistent estimation, which means that past dependent variable $y_{i,t-1}$ is correlated with w_i . To eliminate the endogeneity problem, the within

transformation approach of fixed effects will be used to remove the time-invariant effect w_i , but the transformed lagged of dependent variables ($y_{i,t-1} - \bar{y}_{t-1}$) is correlated with ($v_{i,t} - \bar{v}_i$) transformed error term and $y_{i,t-1}$ is correlated with $v_{i,t-1}$ lagged random error term (Baltagi, 2008). Thus, within transformation would produce inconsistent and biased estimation (Bond, 2002).

Since the level equation is not appropriate when one uses dynamic panel data, Anderson and Hsiao (1982) suggest that first differences (FD) should be used to address the endogeneity problem (Wooldridge, 2013). First difference eliminates the time-invariant effects w_i to apply the instrumental variable (IV). The instrumental variables (IV) in the lagged dependent variable can be developed from the second ($y_{i,t-2}$ or $\Delta y_{i,t-2}$) and third ($y_{i,t-3}$ or $\Delta y_{i,t-3}$) lag of the dependent variable. These subtract present level equation from the previous within transformation. Thus, instrumental variables (IV) are correlated with the lagged dependent but are uncorrelated with random error (Roodman, 2009b).

However, Nickell (1981) proposed that biases and inconsistent estimating techniques cannot be solved by simply replacing one form of within transformation with another. Hence, first difference according to Arellano and Bond (1991) do not account for potential orthogonality conditions. They add that the combination of first difference and generalised method of moments called difference GMM addresses the issue of the lagged explanatory variable in dynamic panel data to solve the endogeneity problem. In contrast, Blundell and Bond (1998) indicated that the difference GMM estimator is weak when there is persistence of the lagged dependent variable and thus, produces biases for the finite sample. Therefore, Blundell and Bond (1998) and Arellano and Bond (1991) proposed an augmented version that produces system GMM which includes difference transformation and level equation. According to Arellano and Bond (1991) and Blundell and Bond (1998), system GMM combines the moment condition of both difference and level equations to provide a reliable estimating technique and eliminates all time-invariant measures from the estimating equation which makes the estimation more efficient. In the system GMM estimator, it is assumed that the first difference (FD) lagged is used for the level equation and the lagged level equation is used as instrumental for equations in first difference which are uncorrelated with unobserved individual effects; which means that variation of predetermined variables can be used as instrumental for within transformation. Thus, system GMM introduces more instruments and thereby increases the efficiency of estimation (Roodman, 2009a). The GMM estimator tolerates the uses of instrument variables, which improves the condition of valid instruments and achieves over-

identification of the estimator. The instrumental variable in GMM addresses the problem of an endogenous variable which includes the lagged dependent and other control variables.

In addition to proving the reliability of GMM estimator, a diagnostic test is usually observed. According to Arellano and Bond (1991), checking GMM estimator validity is important, using the Arellano and Bond test of autocorrelation errors and the Sargan and Hansen tests of overidentification. The Arellano and Bond test of autocorrelation errors for autoregressive AR (1) assumes that the residual of difference-equation possesses serial correlation which means that AR (1) should be a significant test, but if the assumption of serial independence in the original errors is necessary; the difference residuals are expected to be insignificant in autoregressive AR (2). Hence, Hansen or Sargan is used to test the validity instrument of over-identifying restrictions for strict exogenous instruments in the GMM estimator. According to Pathan and Skully (2010), when testing for overidentification of instruments in GMM estimation, Hansen test results are more reliable. Therefore, to achieve more accuracy in this study model, we employ the results of OLS, fixed effects, random effects and GMM estimating methods with the diagnostic post-estimation test to ensure the reliability of the study's results.

Table 4: GMM model estimation test

Tests	Null Hypothesis	Standard assumption
AR (1)	First order autocorrelation	Significant (p -value >0.0)
AR (2)	No second order autocorrelation	Insignificant (p -value >0.1)
Hansen test	Instruments as a group are exogenous	Insignificant (p -value >0.1)

4.6 Endogeneity of ownership structure

The main problem encountered when studying the relationship between ownership structure and firm value is endogeneity. It is widely acknowledged that endogeneity should be controlled for when investigating this relationship (Demsetz and Lehn, 1985, Himmelberg et al., 1999, De Miguel et al., 2004). The endogeneity issue in a statistical model occurs when an independent variable correlates with the error term, more precisely, when ownership variables, as well as other control variables, are influenced by unobserved variables. Endogeneity issues lead to inefficient and inconsistent parameter estimation in the experimental model.

Demsetz (1983) suggests that the modern corporate ownership is determined by the interaction between decisions made by various owners to maximize value. As directors, shareholders may decide to become managers or to hire professional managers. Demsetz and Lehn (1985)

emphasised that firm owners are aware of the consequences when specific rights to decision-making are transferred to a professional manager who controls the firm as well as the costs associated with the benefits. Therefore, when shareholders opt for a concentrated or dispersed ownership structure, this is based on the rational assumption that the benefits will offset the costs to ensure goal congruency of value maximisation. The study of Demsetz and Lehn (1985) on the relationship between ownership concentration and firm performance found that ownership structure is endogenously determined given the notion that variations across firms result in systematic variation in firm value. Thus, the nature of the firm should be observed when studying the relationship between ownership structure and firm value.

Agrawal and Knoeber (1996) contended that a single mechanism (large shareholders) may be misleading when studying the relationship between ownership structure and firm performance. They suggested that numerous mechanisms, including managerial ownership, board size and debt financing, among others, can be applied in the model to gauge the precise relationship. Himmelberg et al. (1999) examined the effect of managerial ownership on firm performance using panel data and fixed effects to account for the endogeneity issue and found no relationship between insider ownership and firm value. They argue that ownership can be influenced by the contracting environment and that firm heterogeneity should be observed to avoid the problem of omitted variables.

Demsetz and Villalonga (2001) state, that, most previous studies on ownership structure have not solved the endogeneity problem in ownership variables. They argue that the source of endogeneity of ownership structure could be the simultaneity approach. Therefore, ownership structure and firm value depend on each other *ceteris paribus*. While ownership structure influences firm value, firm value can also influence ownership structure. Wintoki et al. (2012) argue that a firm's past performance has a direct influence on the corporate information environment, profit potential, opportunity costs, and all the other factors that affect ownership structure. They suggest that any estimation that does not observe the dynamic nature of the relationship between ownership structure and firm value will yield inconsistent estimations.

In light of these arguments, this study applied the static linear regression model with the pool OLS, RE, and FE estimations and dynamic linear regression model with GMM estimation to control for unobserved heterogeneity, simultaneity and all endogeneity issues relating to ownership structure and firm value.

4.7 Empirical model specification

An empirical model is employed to validate the hypotheses relating to the study's objectives. Based on panel data estimated and model equations, the static linear regression model using pooled OLS, RE and FE estimators and dynamic linear regression model using GMM estimator were applied from models 1 to 5 as follows:

Objective 1 - The effects of ownership structure (ownership concentration and identity of owners such as foreign, domestic, and managerial) on the firm value of JSE listed companies:

Models 1 to 4 for hypotheses 1, 2, 3 and 4 which are explained as follows:

$$FV_{it} = \beta_0 + \phi_2 OC_{it} + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 1}$$

$$FV_{it} = \beta_0 + \phi_3 MO_{it} + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 2}$$

$$FV_{it} = \beta_0 + \phi_4 FO_{it} + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 3}$$

$$FV_{it} = \beta_0 + \phi_5 DO_{it} + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 4}$$

Furthermore, the dynamic linear regression model using the GMM estimator which allows for inclusion of the lagged value of the past firm value of dependent variables from models 1 to 4 for hypotheses 1, 2, 3 and 4 which are explained as follows:

$$FV_{it} = \beta_0 + \gamma FV_{i,t-1} + \phi_2 OC_{it} + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 1}$$

$$FV_{it} = \beta_0 + \gamma FV_{i,t-1} + \phi_3 MO_{it} + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 2}$$

$$FV_{it} = \beta_0 + \gamma FV_{i,t-1} + \phi_4 FO_{it} + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 3}$$

$$FV_{it} = \beta_0 + \gamma FV_{i,t-1} + \phi_5 DO_{it} + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 4}$$

Where FV_{it} is firm value of firm i at time t , $FV_{i,t-1}$ is the lagged value of firm value, OC_{it} is ownership concentration of firm i at time t , MO_{it} is managerial ownership of firm i at time t , FO_{it} is foreign ownership of firm i at time t , DO_{it} is domestic ownership of firm i at time t , and Z_{it} is the matrix of control variables leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. , w_i represent unobserved firm-specific effect, v_t represents time-variants and ε_{it} represents error term of firm i at time t

Model 1 addresses the first hypothesis on the relationship between ownership concentration and firm value using OLS, fixed effects, random effect and GMM model estimations. Model 2 explain the second hypothesis on the relationship between managerial ownership and firm

value using pool OLS, fixed effects, random effect and GMM model estimations. Model 3 describe the third hypothesis on the relationship between foreign ownership and firm value using OLS, fixed effects, random effect and GMM model estimations. Model 4 addresses the fourth hypothesis on the relationship between ownership concentration and firm value using OLS, fixed effects, random effect and GMM model estimations.

Objective 2 - The effect of managerial ownership convergence-of-interest (sub-optimal level) and the entrenchment effect (optimal level) on the firm value of JSE listed companies: Model 5 was applied for the fifth hypothesis which is explained as follows:

$$FV_{it} = \beta_0 + \phi_3 MO_{it} + \phi_6 MO_{it}^2 + \phi_7 MO_{it}^3 + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 5}$$

Furthermore, the dynamic linear regression model using the GMM estimator which allows for inclusion of the lagged value of the past firm value in the explanatory variables (Wintoki et al., 2012) used from model 5 of the fifth hypothesis explained as follows:

$$FV_{it} = \beta_0 + \gamma FV_{i,t-1} + \phi_3 MO_{it} + \phi_6 MO_{it}^2 + \phi_7 MO_{it}^3 + \varphi Z_{it} + w_i + v_t + \varepsilon_{it} \quad \text{Model 5}$$

Where FV_{it} is the firm value of firm i at time t , $FV_{i,t-1}$ is the lagged value of firm value, MO_{it} is managerial ownership of firm i at time t , MO_{it}^2 is the managerial ownership square in firm i at time t , MO_{it}^3 is the managerial ownership cube in firm i at time t , and Z_{it} is the matrix of the control variables leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. , w_i represent unobserved firm-specific effect, v_t represents time-variants and ε_{it} represents error term of firm i at time t .

To determine the maximum and minimum turning point of managerial ownership, in line with (Mudambi and Nicosia, 1998, Short and Keasey, 1999, De Miguel et al., 2004), the cubic function will be applied for the turning points on convergence-of-interest and the entrenchment effect. The derivative and quadratic are commonly used on managerial ownership to observe the non-monotonic relationship through the maximal and minimal turning points.

4.8 Estimation of the robustness test

In checking the robustness of this research study, ROA is used as an alternative measurement of corporate performance. ROA is an accounting-based measure that measures earnings generated by firms from invested capital. To provide quality assurance of this study, ROA is proxy as alternatives measure of firm value.

4.9 Proposed hypotheses

The effect of ownership structure on the firm value of listed JSE companies is hypothesised following the property rights theory (Grossman and Hart, 1986), the agency theory (Jensen and Meckling, 1976) and the stakeholders theory (Freeman, 1984b). In this study, five research hypotheses were proposed on ownership structure, which include ownership concentration and the identity of owners such as managerial ownership, foreign ownership and domestic ownership, and the managerial ownership convergence of interest level and entrenchment level. The choice of these hypotheses is based on the identified features of ownership structure on the JSE equity market and more specifically, on the adoption of corporate governance in the triple context of the economy, society, and environment, and B-BBEE that aims to promote racial diffuseness of equity ownership and board and management representation in South Africa. However, foreign ownership of the top 40 companies on this bourse hovered between 47% and 52% in the past two years (Hilary, 2017).

As noted previously, the King IV Report resulted in the amendment of JSE listing requirements to promote racial diversity at board level and annual reports on compliance with the amended B-BBEE Act of 2013 (JSE, 2017). King IV also recommend that shareholders should pass a 25% or more nonbinding vote against the board remuneration policy and implementation reports (IoDSA, 2016). Therefore, this study examines whether concentration of shareholders and their identity such as managerial, foreign and domestic shareholders matter when it comes to the firm value (firm financial performance) of JSE listed companies. Given recent amendments to the listing requirements relating to racial diversity at board level, the study also investigates managerial ownership convergence of interest and the entrenchment level. Given this perspective, the following hypotheses were developed in line with the study's model specifications.

4.9.1 Ownership concentration

Large shareholders are expected to be positively related to firm value in line with Berle and Means (1932) supported by property rights theory (Grossman and Hart, 1986), agency theory (Jensen and Meckling, 1976) and stakeholders theory

H_1 : There is a positive relationship between ownership concentration and firm value.

4.9.2 Ownership identity

In the context of this study, ownership identity comprised of managerial, foreign and domestic ownership.

4.9.2.1 Managerial ownership

Managerial ownership is expected to be positively related to firm value in line with McConnell and Servaes (1990), Short and Keasey (1999), De Miguel et al. (2004) supported by the agency theory (Jensen and Meckling, 1976).

H_2 : There is a positive relationship between managerial ownership and firm value.

4.9.2.2 Foreign ownership

Foreign ownership is expected to be positively related to firm value in agreement with Greenaway et al. (2014), Phung and Mishra (2016), Ongore (2011), Wellalage and Locke (2012) among others, supporting the property rights theory (Grossman and Hart, 1986).

H_3 : There is a positive relationship between foreign ownership and firm value.

4.9.2.3 Domestic ownership

Domestic ownership is expected to be positively related to firm value in line with Douma et al. (2006), supporting the property rights theory (Grossman and Hart, 1986),

H_4 : There is a positive relationship between domestic ownership and firm value.

4.9.3 Managerial ownership convergence of interest and the entrenchment level

Firm value is expected to be positively related with managerial ownership at sub-optimal level (convergence-of-interest) and negatively related with managerial ownership at optimal level (entrenchment effect) in agreement with McConnell and Servaes (1990), Short and Keasey (1999), and De Miguel et al. (2004), among others, supporting the agency theory (Jensen and Meckling, 1976).

H_5 : Suboptimal level of managerial ownership is positively related to firm value (convergence-of-interest) and optimal level of managerial ownership is negatively related to firm value (entrenchment effect).

Table 5: Expectation of managerial ownership convergence-of-interest and entrenchment hypotheses

Managerial ownership	
Convergence-of-interest hypothesis	Entrenchment hypothesis
+	-

4.10 Summary of chapter four

This chapter presented the method employed to conduct this research study. The study adopted the empirical positivism method where the pre-existing theoretical base is recognized and relied on in developing the model hypotheses. Linear regression static and dynamic models are selected as the main tool of analysis to capture the different analysis using panel data for pooled OLS, fixed effects and random effects, and the GMM estimator to solve the problem of endogeneity. Moreover, the effect of external effects variables such as corporate governance and others firm features, including leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size were all controlled for in order to provide internal cause in the empirical model specification. The following chapter presents incomplete sentence.

Chapter Five

Presentation and analysis of findings

5.1 Introduction

This chapter presents the results of the empirical model specification, different estimating methods and diagnostic tests discussed in the previous chapter. It establishes the important effects of ownership structure on the firm value of JSE listed companies using strong balanced panel data on 187 non-financial JSE listed firms from 2004 to 2016. More specifically, it investigates the effect of ownership concentration and owner identity such as foreign, domestic, and managerial ownership on the value of listed South Africa firms using Tobin's Q (TOQ) and return on assets (ROA) proxies of firm value. In addition, it observes the effects of optimal level of managerial ownership (convergence-of-interest) and sub-optimal managerial ownership (entrenchment effect) on the firm value of listed JSE companies. The descriptive statistics test is used to summarise the study variables and correlation coefficients to determine the relationship between these variables. Linear regression with the static model was used for pool OLS, fixed effects (FE) and random effect (RE) estimators and the dynamic model was applied for GMM estimators with all necessary diagnostic tests for the appropriateness of the model to provide quality assurance of the study's findings.

5.2 Descriptive statistics

The descriptive statistics test in Table 6 shows the overall summary of the ownership variable (ownership concentration and owner identity such as foreign, domestic and managerial ownership), control variables (leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size) and the firm value variable (Tobin's Q and Return on Assets). The main features of all the variables' proxies of firm value, ownership structure and control variables in Table 6 are quantitatively described.

5.2.1 Firm value

The firm value indicators are presented by Tobin's Q (TOQ) and Return on Assets (ROA). On average, the value of Tobin's Q is 1.71 with a minimum and maximum value of 0.00 and 52.11, respectively. This implies that average actual market value of firm securities on the JSE market is 1.7 times the replacement cost of it is assets (Himmelberg et al., 1999). The accounting-based performance measure using ROA average values is 10.04% with a minimum and

maximum value of -845 to 105, respectively. ROA implies that the listed firms on the JSE equity market net income is on averages of 10.05% to the firm assets.

Table 6 : Descriptive statistics test summary of ownership structure and firm value

Variables	Observation	Mean	Std Dev	Min	Max
<i>Firm value</i>					
TOQ	2,035	1.7146	2.7949	0.0000	52.11
ROA	1,949	10.045	38.886	-845.2	105.26
<i>Ownership structure</i>					
OC	1,938	40.1025	22.172	0.0300	98.400
MO	2,032	15.5421	22.910	0.0000	100.00
FO	2,040	2.0166	5.6270	0.0000	80.350
DO	2,041	97.9843	5.6258	19.650	100.00
<i>Control Variables</i>					
LV	1,951	0.4870	0.2581	0.0000	2.9100
PR	1,905	-145.48	2588.0	-95400	59670
LQ	1,948	1.5358	2.3107	0.0500	38.380
BS	1,907	10.561	3.9377	2.0000	36.000
BR	1,921	16.673	333.50	-695.26	14465
BF	2,046	0.2058	0.4044	0.0000	1.0000
FS	1,795	14892.76	38530	13395	41138

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database

5.2.2 Ownership structure

The average value of ownership concentration (OC) representing the five largest shareholders of the JSE listed firms is 40.10%, with a prominent maximum and minimum value of 98.4% and 0.03%, respectively. The large five shareholders on the JSE equity market is higher than the similar study stated by Demsetz and Lehn (1985) study in the US with 24.81% and 37.66% in the cases of large twenty shareholders. This implies that shareholders on the JSE is more concentrated on averaged rather than the diffused portray in the study of Steyn and Stainbank (2013) in South Africa. Kantor (1998) study on ownership and control under black rule highlighted that, under apartheid regime, ownership and control of the South African economy was highly concentrated. However, with the JSE reform and amendment to the listing requirement to diffuses ownership and control of the JSE equity among South African. This finding reveals that shareholders have high levels of interest in their companies irrespective diverse framework to expands ownership and control of South Africa equity market.

Managerial ownership of listed JSE firms ranges from a minimum of 0.00% to a maximum of 100% with an average value of 15.54%. The domestic ownership ranges from a minimum of 0% to a maximum 100% with an average value of 97.98% shows that local investors possess high percentages of firm share on the JSE equity market. Foreign investors possess a very low percentage of firm shares on the JSE equity market, the average value is 2.02% with minimum and maximum value of 0% and 80.35% respectively. This implies that JSE listed companies in

South Africa is highly dominated by South African investors irrespective of FDI inflow and secondary listing by the firm to raises capital aboard (Lynne, 2017, Carin, 2017).

5.2.3 Control variables

Firm leverage ranges from a minimum of 0.258 and maximum of 2.910 with an average value is 0.487. This implies that approximately 49% of the firm assets on the JSE equity market are finance by debt and 51% financed by shareholders contribution.

Profitability (PR) on average indicates a negative of -145.47 with a maximum value of 5967 and a minimum value of -95400 net profit margin. This suggest that listed firms on the JSE equity market have a low profit rate sales return and thus will affect the firm retain profit and dividend pay-out ratio.

Liquidity (LQ) on average is 1.54, with maximum and minimum values of 38.38 and .05, respectively. This indicates firms listed on the JSE equity market are less liquid to meet financial obligation in times of financial distress and thus reduce the chances of assess to debt finances.

On average board size (BS) of directors that oversee the operation of firm on the JSE equity market is 10.58, with a minimum and maximum of 2 and 38, respectively. This suggesting that the amendment of JSE listing requirements to promote racial diversity at board level will further increases of board size and thus increase the monitoring costs of the firms on the JSE.

Average board remuneration (BR) stands at 16.67% of firm profitability in the South African capital market. This implies that the average remaining 83.33% of firm earnings are allocated to dividends to shareholders and retained earnings after board salaries and compensation. The King IV proposal that, the remuneration policy should detail the steps that the board will take in the event that 25% or more votes are cast by shareholders against the board remuneration policy and implementation report is important for shareholders (Planting, 2017).

On average, 20.44% of firms on the JSE firms have implemented B-BBEE. The BEE firm dummy variable implies that most firms on the JSE does not support the government declaration programme of BEE in South Africa even with frequent amendments to the listing requirement on the JSE listed firm to promote racial diversity in ownership and control.

The average firm size (FS) on the JSE equity market is 14,893 with a minimum and maximum 13,395 and 41,138 respectively. This implies that firm size of JSE listed firms will improve investment diversification and influences firm value.

5.3 Correlation coefficient analysis

The correlation coefficient analysis was used to determine the degree of relationship between the ownership structure and firm value. Table 7 indicates the degree of relationship among all the variables used in the regression analysis. All the coefficients are quite low among others in the analysed variables. The ROA an accounting based of measuring firm value presents the highest correlation coefficient of 0.54 with the Tobin's Q market-based of measuring firm value. The positive correlation between Tobin's Q and ROA suggests that accounting-based measures to determine firm value are a reliable robustness as alternative to market-based measures of firm value. The ROA and Tobin's Q indicate that move in tandem to affect the going concern of the listed firm on the

The negative correlation found between ownership concentration measures with large five shareholders and firm values proxies with Tobin's Q and ROA suggesting that large shareholder cannot provide adequate monitoring to improve firm value. Similarly, managerial ownership measures with shareholding held by director demonstrated a negative correlation with Tobin's Q and ROA. On the other hand, foreign ownership measures with share equity owned by foreign investors show a positives correlation with Tobin's Q and ROA, while domestics ownership measures with local shareholders is negatively correlated with Tobin Q and ROA. This finding demonstrated that an increase foreign investor has more influences on corporate value in South Africa, while large shareholders, managers shareholding and local investors decrease corporate value of JSE firms. Therefore, the sensitivity of the corporate performance of JSE listed firms is more important to foreign investors when increasing their share ownership in South Africa's JSE market.

The board sizes measures with number of board of directors that oversee the affairs of the firm positive correlation with Tobin's Q and ROA suggest that large board sizes bestow diverse professional managers ideas that increase corporate performance. However, a negative correlation of board remuneration with Tobin's Q and ROA suggests that higher monitoring costs is not important to improve firm value.

Firm sizes measures with Natural log of total assets a positive correlation with to Tobin's Q and ROA suggesting that large firm size of benefit economics of scales and opportunity for invest firm investment diversification to improve firm value (Jensen and Murphy, 1989, Short and Keasey, 1999, Al-Najjar and Taylor, 2008).

The proxy for firm liquidity measure as total current assets less total stock divided by total liability show a positive correlation with Tobin's Q and ROA, suggesting that firm on the JSE equity market possess chances for better investment prospects and access to finance in times of financial distress (Cho, 1998, Uno and Kamiyama, 2010). A positive correlation is found between Firm leverage measures with total debt to total assets Tobin's Q, and a negative correlation with ROA. This implies that from perspective of market based of measuring firm value the degree of debt finance contributed to corporates performance and inversely related from the accounting base view of assess firm leverage. This suggest that using ROA a measure of firm value, shareholders equity contributed significant to improve firm value.

The proxy of profitability measures as net profit after tax divided by turnover show a negative correlation with TOQ and positive correlation with ROA as of firm value. This is suggesting that profit rate is insignificant to corporates performance from the perspective of market based and seen as significant measure of corporate performances on the perspective of accounting based. The firm profit rate is significant when considering the dividend policy, retained profit, investment opportunities, reduction in debt finance, and access to long-term finance and lease finance that affect firms' operations (Phung and Mishra, 2016).

The proxy of BEE firm measure with Dummy of (1) for firms that have BEE rating and otherwise (0) for firms without the rating show a positive correlation with TOA and negative correlation with ROA. This is suggesting that the government affirmation programme of BEE is important to corporate performance from the view of market based and inversely related from the view accounting based firm performance of measure.

Table 7: Correlation coefficients of all variables on ownership structure and firm value

	TOQ	ROA	OC	MO	FO	DO	LV	PR	LQ	BS	BR	BF	FS
TOQ	1.00												
ROA	0.5396	1.00											
OC	-0.0704	-0.0892	1.00										
MO	-0.1127	-0.0012	0.3624	1.00									
FO	0.2155	0.0262	-0.1715	-0.2705	1.00								
DO	-0.2155	-0.0262	0.1715	0.2705	-1.00	1.00							
LV	0.0202	-0.0266	-0.1109	0.0197	0.0567	-0.0567	1.00						
PR	-0.0745	0.1200	-0.0319	0.0125	0.0145	-0.0145	0.0438	1.00					
LQ	0.0625	0.0825	0.0452	0.0322	-0.0402	0.0402	-0.4871	-0.4469	1.00				
BS	0.0978	0.0163	-0.1909	-0.3072	0.2390	-0.2390	0.0008	0.0144	-0.1681	1.00			
BR	-0.0300	-0.0295	0.0248	0.0408	-0.0210	0.0210	-0.0296	0.0061	0.0143	-0.0211	1.00		
BF	0.0917	-0.0403	-0.1693	-0.2530	0.4514	-0.4514	0.0249	0.0163	-0.0854	0.2456	-0.0211	1.00	
FS	0.2141	0.1612	-0.0477	-0.2100	0.2808	-0.2808	-0.0661	0.0119	-0.0424	0.3419	-0.0189	0.2570	1.00

Sources: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database.

5.4 Panel unit root test on ownership structure and firm value

The panel unit root test on ownership and firm value was tested to determine the stationarity of this study data. The unit root test helps to control for serial correlation among the variable used on the relationship between ownership structure and firm value. Levin, Lin and Chu test (Levin et al., 2002), Im, Pesaran and Shin W-stat (Im et al., 2003), Augmented Dickey Fuller ADF- Fish Chi-square test were all conducted to validates the comparison of the stationarity results for this study.

Levin, Lin and Chu panel unit root test show that statistical significant less than zero with p-values of 0.0000 for all the variables except BEE firm dummy variable with p-value of 0.0456. This implies that null hypothesis of a panel unit root is rejected, and the alternative panel stationarity is accepted for all the variable used in this study.

Alternatively, Im, Pesaran and Shin W-stat panel unit root test shows that statistical significant less than zero with p-values of 0.0000 for all the variables except BEE firm dummy and firm size variables with p-value of 0.9995 and 0.2721. This suggesting reject of a null hypothesis of panel unit root test in favour of the alternatives hypothesis that some stationarity exists in the panel data study.

Table 8: Panel unit root test on ownership structure and firm value

Panel unit root	Levin, Lin and Chu test		Im, Pesaran and Shin W-stat		ADF- Fish Chi-square	
Variables	Statistic	P-Value	Statistic	P-Value	Statistic	P-Value
TOQ	-355.252	0.0000	-43.9670	0.0000	768.836	0.0000
ROA	-41.6489	0.0000	-12.8195	0.0000	663.532	0.0000
OC	-47.4062	0.0000	-9.32143	0.0000	534.989	0.0000
MO	-93.5131	0.0000	-21.1985	0.0000	604.851	0.0000
FO	-193.278	0.0000	-19.1085	0.0000	244.105	0.9295
DO	-193.606	0.0000	-19.1740	0.0000	245.350	0.9214
LV	-16.5021	0.0000	-7.33337	0.0000	551.131	0.0000
PR	-42.9251	0.0000	-17.8246	0.0000	700.642	0.0000
LQ	-23.3076	0.0000	-9.67947	0.0000	621.723	0.0000
BS	-19.2103	0.0000	-10.0413	0.0000	627.487	0.0000
BR	-29.4967	0.0000	-18.6906	0.0000	935.645	0.0000
BF	-1.68949	0.0456	3.31033	0.9995	56.3510	1.0000
FS	-7.06972	0.0000	-0.60639	0.2721	399.660	0.0002

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database

Furthermore, Augmented Dickey Fuller ADF- Fish Chi-square panel unit root test show that statistical significant greater than zero with p-values of 0.0000 for all the variables except

foreign ownership, domestic ownership and BEE firm dummy variables with p-value of 0.9295, 0.9214, and 1 respectively. This implies that null hypothesis of a panel unit root is rejected, and the alternative is accepted with at least one of the variable panel is stationarity in this study.

5.5 Regression results: Effects of ownership structure on the firm value

The results pertaining to objective one: the effect of ownership structure (ownership concentration and identity of owners such as foreign, domestic, and managerial ownership) on the firm value of JSE listed companies. The empirical specification model of first hypothesis (there is a positive relationship between ownership concentration and firm value) in model 1, the second hypothesis (there is a positive relationship between managerial ownership and firm value) in model 2, the third hypothesis (there is a positive relationship between foreign ownership and firm value) in model 3, and the fourth hypothesis (there is a positive relationship between domestic ownership and firm value) in model 4 were analysed using static model with pool OLS, RE, FE estimators and dynamic model with GMM estimator. The results of pooled OLS, RE and FE model estimation were presents in Tables 9,10 and 11 respectively while GMM model estimation in table 12 for models 1 to 4 on the effect of ownership structure on firm value of JSE listed companies in South Africa.

5.5.1 Pooled OLS model estimation

Table 9 shows the results of the pooled OLS estimator used to evaluate the relationship between ownership structure and firm value while controlling for other factors that influence firm value such as leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. The static linear regression models developed in empirical specification models 1 to 4 were analyzed using both TOQ and ROA as a proxy of firm value.

The OLS results using TOQ as a measure of firm value show that foreign ownership has a positive and significant effect on firm value in model 3. While ownership concentration, managerial and domestic ownership is negative interaction with firm value in model 1, mode2 and model 4 respectively. This implies that a percentage increase in foreign ownership will improve firm value by (0.0648), while a percentage increase in ownership concentration, managerial ownership and domestic ownership will reduce the firm value by (-0.0032), (-0.0043) and (-0.0643) respectively. OLS findings from perspective of market-based measure of firm value established that foreign investors improve corporate performance on the JSE

market in South Africa. Also, the findings show that leverage, liquidity, board size and firm size have a positive interaction with firm value while profitability and board remuneration are negatively linked to firm value in models 1 to 4.

Conversely, OLS results using ROA as a measure of firm value show that managerial and foreign ownership have a positive effect on firm performance in model 2 and model 3. While ownership concentration and domestic ownership have a negative impact on firm performance in model 1 and model 4. Managerial ownership and foreign ownership show a positive coefficient of (0.0045) and (0.0434), while ownership concentration and domestic ownership show a negative (-0.0653) and (-0.0391) respectively. This implies that using an accounting-based as a measure of firm value, foreign investors and management shareholding influences the firm performance of JSE market, whereas domestic ownership and ownership concentration inversely related. Similarly, findings in models 1 to 4 show that BEE firm and board remuneration have a negative relationship firm value, while leverage, profitability, liquidity and firm size have a positive impact on firm value.

The F-test results of the OLS model estimation with p-values are less than 0.05, indicating that models 1 to 4 are good fit models for both TOQ and ROA as a proxy of firm value. However, the consistency and efficiency of coefficient of OLS estimation with panel data are widely questioned. This is because OLS does not account for unobserved effects or firm-specific effects that are common in non-experimental research (Baltagi, 2005). Thus, to solve the problem of unobserved heterogeneity in this research study, random effects (RE) and fixed effects (FE) estimating techniques were employed to analyse the relationship between ownership structure and the firm value of JSE listed companies in South Africa.

Table 9: Pooled OLS model estimation findings using Tobin's Q and return on assets as a measure of firm value

	TOQ				ROA			
	Model (1)	Model (2)	Model (3)	Model (4)	Model (1)	Model (2)	Model (3)	Model (4)
OC	-0.0032* (-1.95)				-0.0653*** (-3.86)			
MO		-0.0043*** (-2.92)				0.0045 (0.30)		
FO			0.0648*** (6.48)				0.0434 (0.41)	
DO				-0.0643*** (-6.45)				-0.0391 (-0.37)
LV	0.4641*** (2.83)	0.5162*** (3.20)	0.4338*** (2.17)	0.4381*** (2.73)	4.5091*** (2.65)	5.3354*** (3.16)	5.2593*** (3.11)	5.2991*** (3.13)
PR	-0.0000 (-1.57)	-0.0000 (-1.16)	-0.0000* (-1.67)	-0.0000* (-1.66)	0.0012*** (7.59)	0.0013*** (7.89)	0.0013*** (7.77)	0.0013*** (7.77)
LQ	0.1137*** (2.80)	0.1394*** (3.43)	0.1071*** (2.67)	0.1073*** (2.70)	2.7745*** (6.59)	2.9991*** (7.04)	2.8671*** (6.81)	2.8699*** (6.82)
BS	0.0097 (1.04)	0.0082 (0.88)	0.0085 (0.94)	0.0850 (0.94)	-0.0575 (-0.60)	0.0093 (0.09)	-0.0052 (-0.05)	-0.0052 (-0.05)
BR	-0.0001 (-0.94)	-0.0001 (-0.89)	-0.0001 (-0.93)	-0.0001 (-0.93)	-0.0011 (-1.18)	-0.0012 (-1.24)	-0.0012 (-1.24)	-0.0013 (-1.24)
BF	0.1053 (1.32)	0.0842 (1.05)	-0.0855 (0.312)	-0.0820 (-0.94)	-2.9620*** (-3.58)	-2.5126*** (3.00)	-2.6852*** (-3.00)	-2.6531*** (-2.97)
FS	7.02e-6*** (7.95)	6.71e-06*** (7.61)	6.00e-07*** (6.80)	6.06e-06*** (6.87)	0.0001*** (7.78)	0.0001*** (7.55)	0.0001*** (7.38)	0.0001*** (7.44)
Cons	1.0856*** (5.60)	0.9917*** (5.77)	0.9199*** (5.71)	7.3494*** (7.19)	11.1083*** (5.52)	6.8284*** (3.79)	7.1962*** (4.23)	11.0868 (1.03)
Observations	1664	1680	1688	1689	1665	1680	1688	1689
Adj R ² (within)	0.0602	0.0647	0.0821	0.0825	0.0799	0.0721	0.0703	0.0706
F-test	14.32	15.51	19.86	19.98	19.07	17.31	16.95	17.04
Prob >F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

t-statistical are in parentheses; * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database

5.5.2 Random effects (RE) model estimation

The results of the RE model estimator are presented in Table 10 that shows the relationship between ownership structure and firm value while controlling for other firm factors including leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. The static linear regression model considered that ownership structure variables and control variable are correlated with unobserved individual effects (firm-specific effects) in the empirical models 1 to 4 analyzed using both TOQ and ROA as a proxy of firm value.

The findings of market-based measure of firm value proxy with TOQ show that ownership concentration and domestic ownership have a negative impact on firm value with a coefficient of (-0.0001) and (-0.0267) in model 1 and model 4, while firm value is positively influenced by managerial and foreign ownership with coefficients of (0.0000) and (0.0267) in model 2 and model 3 respectively. This implies that a percentage increase in foreign shareholders and management shareholding improves the firm value of JSE listed companies. More so, findings from models 1 to 4 revealed that profitability, board remuneration, and firm size negatively related to firm value while board size have a positive effect on firm value with their coefficients.

Equally, accounting based measure of firm value proxy with ROA using RE estimation from model 1 to 4 exhibit that managerial and domestic ownership positively improve firm value at significant level with coefficients of (0.0463) and (0.2832) in model 2 and model 4, while ownership concentration and foreign ownership have a negative relationship on firm value at significant level with coefficients of (-0.0822) and (-0.2828) in model 1 and model 3 respectively. The implies that management and domestic shareholding positively affect firm value of JSE listed companies using accounting-based evaluation, while foreign and larges shareholders is inversely related. Also, findings elucidate that board size and firm size are positively related to corporate performance while leverage, profitability, liquidity, board remuneration, and BEE firm have negatively related firm value from models 1 to 4. From models 1 to 4, the Wald-test statistic results ($\text{Prob} > \text{Chi}^2 = 0.0000$) indicate that RE is a good fit model using both TOQ and ROA as a proxy of firm value.

Table 10: Random effects (RE) model estimation findings using Tobin's Q and return on assets as a measure of firm value

	TOQ				ROA			
	Model (1)	Model (2)	Model (3)	Model (4)	Model (1)	Model (2)	Model (3)	Model (4)
OC	-0.0001 (-0.02)				-0.0822*** (-3.77)			
MO		0.00001 (0.01)				0.0463** (2.12)		
FO			0.0267*** (3.13)				-0.2828*** (-2.94)	
DO				-0.0267*** (-3.13)				0.2832*** (2.94)
LV	-0.1576 (-0.89)	-0.1441 (-8.82)	-0.1494 (-0.86)	-0.1487 (-0.85)	0.1815 (0.09)	1.0565 (0.54)	1.0317 (0.53)	1.0357 (0.53)
PR	-0.0000*** (-2.61)	-0.0000** (-2.53)	-0.0000*** (-2.60)	-0.0000*** (2.60)	0.0010*** (6.72)	0.0010*** (6.85)	0.0010*** (6.87)	0.0010*** (6.87)
LQ	-0.0041 (-0.11)	0.0000 (0.00)	-0.0026 (-0.07)	-0.0027 (-0.07)	2.8792*** (6.62)	2.9796*** (6.74)	2.9396*** (6.75)	2.9394*** (6.75)
BS	0.0204** (1.97)	0.0222** (2.12)	0.0225** (2.19)	0.0226** (2.20)	-0.0936 (-0.82)	-0.0387 (-0.33)	-0.0827 (-0.73)	-0.0824 (-0.73)
BR	-0.0001 (-0.77)	-0.0001 (-0.78)	-0.0001 (-0.78)	-0.0001 (-0.78)	-0.0006 (-0.87)	-0.0007 (-0.89)	-0.0006 (-0.86)	-0.0006 (-0.86)
BF	0.0814 (1.25)	0.0820* (1.25)	-0.0175 (-0.24)	-0.0165 (-0.23)	-4.6327*** (-6.35)	-4.4588*** (-6.03)	-3.6025*** (-4.42)	-3.5967*** (-4.42)
FS	0.0000*** (8.73)	0.0000*** (8.64)	9.80e-06*** (7.99)	9.75e-06*** (7.97)	0.0001*** (6.36)	0.0001*** (6.49)	0.0001*** (6.81)	0.0001*** (6.81)
Cons	1.2648*** (6.14)	1.2276*** (6.84)	1.2120*** (6.72)	3.8821*** (4.49)	14.181*** (6.35)	8.6782*** (4.18)	10.2932*** (5.26)	-18.031* (-1.85)
Observations	1664	1680	1688	1689	1665	1680	1688	1689
Adj R ² (within)	0.0655	0.0650	0.0678	0.0676	0.0826	0.0778	0.0813	0.0814
Wald test	108.96	109.59	120.69	120.38	145.40	133.05	139.12	139.12
Prob >Chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breusch & Pagan test	2629.1	2558.2	2516.5	2521.3	1783.1	1766.5	1777.3	1780.8
Prob > Chibar2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

z-statistical are in parentheses; * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database

In selecting the appropriate model estimation between OLS and RE model estimator, since the F-test statistic shows that OLS is better, Breusch and Pagan's tests were conducted. The p -value results of the Breusch and Pagan test statistic for both (TOQ) and (ROA) is (Prob > Chi2 = 0.0000), implying that the RE model is more suitable than the pooled OLS regression model for the research study. However, the RE model remains an efficient and consistent estimator without the Hausman test. The Hausman statistic test is applied to select the most appropriate model estimator between the RE and FE models. Fixed effect model estimating methods were employed to analyse the relationship between the ownership structure and firm value of JSE listed companies to select the most suitable model between the RE and FE models using the Hausman test.

5.5.3 Fixed effects (FE) model estimation

The results of the FE model estimator are presented in table 11, on the relationship between ownership structure and firm value while controlling for others factors that impact on firm value such as leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. The static linear regression model considered unobserved individual effects (firm-specific effects) correlated with ownership structure and control variables in the empirical models 1 to 4 analyzed using both TOQ and ROA as a proxy of firm value.

The findings of market-based measure of firm value proxy with TOQ using fixed effect model estimation show that ownership concentration, managerial ownership and foreign ownership are positively related to firm value with coefficients of (0.0004), (0.0010) and (0.0249) in model 1, model 2 and model 3 respectively. Model 4 exhibits that domestic ownership is negatively related to firm value with a coefficient of (0.0205) at a significant level. This implies that domestic shareholder improves firm value of JSE listed company in South Africa, while large shareholders, management shareholdings and foreign shareholders reduces firm value from market-based perspectives. The findings also reveal that leverage, profitability, liquidity and board remuneration have a negative effect on firm value while firm value is positively affected by board size and firm size in all four models.

Equally, the results FE model estimation of accounting based using of ROA as proxy of firm value exhibit that managerial and domestic ownership are positively and significantly related to firm performance with coefficients of (0.0818) and (0.3555) in model 2 and model 4, while ownership concentration and foreign ownership are negatively and significantly related firm value with coefficients of (-0.0855) and (-0.3556) in model 1 and model 3 respectively.

Table 11 : Fixed effects (FE) model estimation findings using Tobin's Q and return on assets as a measure of firm value

	TOQ				ROA			
	Model (1)	Model (2)	Model (3)	Model (4)	Model (1)	Model (2)	Model (3)	Model (4)
OC	0.0004 (0.16)				-0.0855*** (-3.37)			
MO		0.0010 (0.42)				0.0818*** (3.04)		
FO			0.0249** (2.34)				-0.3556*** (-3.57)	
DO				-0.0205** (-2.34)				0.3555*** (3.57)
LV	-0.3398* (-1.80)	-0.3347* (-1.77)	-0.3381 (-1.80)	-0.3373* (-1.80)	-1.8923 (-0.88)	-1.0241 (-0.48)	-1.3060 (-0.61)	-1.3038 (-0.61)
PR	-0.0000*** (-2.69)	-0.0000*** (-2.65)	-0.0000*** (-2.69)	-0.0000*** (-2.69)	0.0010*** (6.48)	0.0010*** (6.64)	0.0010*** (6.61)	0.0010*** (6.61)
LQ	-0.0253 (-0.61)	-0.0235 (-0.56)	-0.0249 (-0.61)	-0.0249 (-0.61)	3.0154*** (6.46)	3.1574*** (6.65)	3.0650*** (6.57)	3.0651*** (6.57)
BS	0.0272** (2.40)	0.0295** (2.59)	0.0298*** (2.65)	0.0297*** (2.65)	-0.1336 (-1.04)	-0.1274 (-0.98)	-0.1624 (-1.27)	-0.1624 (-1.27)
BR	-0.0001 (-0.75)	-0.0001 (-0.76)	-0.0001 (-0.76)	-0.0001 (-0.76)	-0.0006 (-0.82)	-0.0006 (-0.81)	-0.0006 (-0.78)	-0.0006 (-0.78)
BF	0.0693 (1.05)	0.0727 (1.09)	-0.0750 (-0.10)	-0.0063 (-0.09)	-5.0140*** (-6.69)	-4.9161*** (-6.50)	-3.8332*** (-4.58)	-3.8301*** (-4.58)
FS	0.0000*** (8.71)	0.0000*** (8.71)	0.0000*** (8.12)	0.0000*** (8.09)	0.0001*** (5.33)	0.0001*** (5.32)	0.0001*** (5.82)	0.0001*** (5.84)
Cons	1.2606*** (6.29)	1.2281*** (6.59)	1.2287*** (7.00)	3.2805*** (3.71)	15.894*** (7.01)	10.216*** (4.83)	12.443*** (6.24)	-23.101** (-2.30)
Observations	1664	1680	1688	1689	1665	1680	1688	1689
Adj R ² (within)	0.0663	0.0661	0.0694	0.0676	0.0835	0.0801	0.0827	0.0828
Overall F-test	13.39	13.46	14.27	14.22	17.19	16.56	17.25	17.29
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
F-test that all u _i = 0	13.98	13.59	13.43	13.44	10.13	10.09	10.20	10.21
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman test	10.98	13.56	21.23	20.87	11.46	19.31	21.92	22.03
Prob > Chi2	0.0518	0.0186	0.0007	0.0009	0.0430	0.0017	0.0005	0.0005

t-statistical are in parentheses; * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database

This implies that local investors and managerial ownership influence the firm value of JSE listed companies from the perspective of accounting-based determinants of the corporate performance of JSE listed companies. The findings also reveal that profitability, liquidity and firm size have a positive influence on firm performance while leverage, board size, board remuneration and BEE firm have a negative on firm performance in models 1 to 4.

The p-value result of the overall F-test is ($\text{Prob} > F = 0.0000$), less than 0.05 for both TOQ and ROA which indicates that FE is a good fit model. To select the most suitable model estimation between the RE model and FE model since the Wald-test statistic ($\text{Prob} > \text{Chi}^2 = 0.0000$) indicates that random effects are a better model than the pooled OLS model, the Hausman test was conducted. The p-value results of the Hausman test statistic for both TOQ and ROA hover between (0.05) and (0.0005), implying that the FE model is more suitable than the RE regression model for this research study. However, the FE model and the RE model traditionally assumed that the explanatory variable (ownership structure) is completely independent of the past value of the dependent variable (firm value). This may be realistic when shareowners notice positive or negative influences on value contributed to firm resources. However, considering that the lagged dependent of firm value proxies with TOQ and ROA using dynamic panel data implies that the FE model is an inconsistent and biased estimator for this research study. Therefore, the GMM estimating technique was employed to analyse the relationship between the ownership structure and firm value of JSE listed companies in South Africa.

5.5.4 Generalised Method of Moments (GMM) model estimation

Despite wide acknowledgement of the fixed effects and random effects model in dealing with the unobserved heterogeneity problem, it is a more conservative approach. According to Wintoki et al. (2012), inefficient and inconsistent estimation relating to endogeneity still exists when using the fixed effects model to test the effect of ownership structure on firm value without considering the past dependent variable (lagged of firm value). They added that the fixed effect model assumes that current observed explanatory variables (ownership structure) are completely independent of the past value of the dependent variable (firm value) and thus proposed a dynamic approach when testing the relationship between structure and firm value using the GMM model.

The GMM model estimation enables us to control for past firm value to remove the inherent endogenously problem in ownership variable. This study support the belief that ownership

structure is also partially driven by firm features, which include past firm value, leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size (Demsetz and Villalonga, 2001, Wintoki et al., 2012). Demsetz and Lehn (1985) state that the ownership structure can be altered by others firm factors, such as size, volatility of profit or change in expenditure, e.g. R&D, among other things.

Therefore, given the endogenous ownership structure, the results of previous estimators using only pooled OLS, RE and FE to determine the effects of ownership on firm value can be ambiguous. To deal with other firm factor that can affect the estimation, Cameron and Trivedi (2005) proposed the use of instrumental variables (IV) estimators to obtained strong model estimation or the use of dynamic panel with GMM estimator proposed by Arellano and Bond (1991). However, since it is difficult to find appropriate IV that will serve as a strong instrument for ownership concentration and ownership identity such as managerial, foreign, and domestic ownership, this research study used GMM estimating techniques

According to Arellano and Bond (1991), the use of the linear regression dynamic model with the GMM estimator, deals with the endogenous problem and thus, allows for lagged variables (past firm value) on ownership structure and firm value relationship. First developed by Arellano and Bond (1991), difference GMM proved to be a weak instrument when lagged variables in the regression are close to the random walk (Blundell and Bond, 1998). Thus, Arellano and Bond (1991) and Blundell and Bond (1998) developed system GMM that combines moment condition of both difference and level equations to provide a reliable estimating technique and eliminate all time-invariant measures from the estimating equation, rendering the estimation more efficient. In addition to the reliability of the system GMM estimator, diagnostic tests such the Sargan test and Hansen test of overidentification and Arellano and Bond's test of autocorrelation errors for autoregressive AR (1) and AR (2) where observed (Arellano and Bond, 1991) have been used. According to Wintoki et al. (2012), when statistical significance of AR(2) is encountered, the historical value of the lagged dependent variable (past firm value) is a valid instrument since it will be exogenous to the current dependent variable (firm value). Moreover, according to Pathan and Skully (2010), when testing for overidentification of instruments in GMM estimation, Hansen test results are more reliable. Therefore, the results of two-step system GMM with the introduced "xtabond2" command in line with Roodman (2009a) were employed for this research study. The robust GMM model for both TOQ and ROA are presented in Table 11 to provide quality assurance of the estimation.

The results of TOQ as a measure of firm value using the robust system GMM model estimator are presented in Table 12. They show that ownership concentration and foreign ownership have a significant and negative effect on firm value with coefficients of (-0.020) and (-0.0218) in model 1 and model 3 respectively. Managerial and domestic ownership have a positive effect on firm value with coefficients of (0.0097) and (0.0260) in model 2 and model 4 respectively. This implies that domestic shareholders and management shareholding influence firm value from a market-based (TOQ) perspective to determine the corporate performance of JSE listed companies in South Africa. The findings also reveal that profitability and board remuneration have a negative on firm value while liquidity, firm size and past firm value have a positives impact on firm value from models 1 to 4.

Equally, the results on ROA as a measure of firm value using robust system GMM reveal that ownership concentration and foreign ownership have a significant and negative effect on firm value with coefficients of (-0.5803) and (-0.4990) in model 1 and model 3 respectively. While managerial and domestic ownership are positively and significantly related to firm value with coefficients of (0.7234) and (0.6944) in model 2 and model 4 respectively. This implies that local shareholders and a management equity stake influence firm value from an accounting-based (ROA) perspective to determine the corporate performance of JSE listed companies in South Africa. The findings also show that board remuneration is negatively related to firm value while profitability, liquidity, firm size and past firm value have a positive effect on firm value.

The robust GMM model estimator using both ROA and TOQ as a proxy for firm value exhibited that managerial and domestic ownership has a positive relationship with the firm value of JSE listed companies in South Africa. The Hansen test for overidentification restrictions and Arellano and Bond test of autocorrelation errors for autoregressive for both (ROA) and (TOQ) were presented. All the Hansen test p-values are above 0.10, which implies that the null hypothesis could be not rejected and thus, the overidentification restriction is valid. Furthermore, the results of AR (1) revealed that the residual in differences are correlated as expected from models 1 to 4 and the p-values of the AR (2) test are above 0.10 which implies that the null hypothesis of no serial correlation could not be rejected. Thus, all the results of system GMM using both (TQ) and (ROA) from models 1 to 4 are valid.

Table 12 : Generalised Method of Moments (GMM) model robust estimation findings using Tobin's Q and return on assets as a measure of firm value

	TOQ				ROA			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
OC	-0.0201** (3.25)				-0.5803** (-2.01)			
MO		0.0097 (0.63)				0.7234** (2.01)		
FO			-0.0218* (-1.74)				-0.4990** (-2.25)	
DO				0.0260* (1.90)				0.6944** (2.50)
LV	-0.1058 (-2.04)	0.1894 (0.43)	0.0993 (0.48)	0.1108 (0.51)	-2.2368 (-0.47)	7.5039 (1.55)	3.8303 (1.37)	3.9003 (1.33)
PR	-0.0000*** (-0.35)	-0.0000*** (-1.17)	-0.0000** (-2.28)	-0.0000** (-2.00)	0.0007** (2.43)	0.0009*** (2.92)	0.0007*** (2.79)	0.0007*** (2.61)
LQ	0.4360 (-2.81)	0.0567 (0.50)	0.0336 (0.56)	0.0461 (0.73)	1.7423 (1.39)	2.9910** (2.58)	1.7695* (1.77)	1.8236 (1.63)
BS	-0.0119 (0.82)	0.0275 (0.91)	-0.0033 (-0.26)	-0.0082 (-0.59)	-0.1666 (-0.51)	0.8115* (1.93)	0.0431 (0.24)	0.0313 (0.17)
BR	-0.0000 (-0.70)	-0.0000 (-0.67)	-0.0000* (-1.84)	-0.0000* (-1.66)	-0.0009*** (-5.29)	-0.0014** (-2.29)	-0.0009** (-2.48)	-0.0009** (-2.31)
BF	0.2188 (-0.71)	0.0632 (0.07)	-0.7873* (1.89)	0.9951** (0.028)	-27.787** (-2.55)	1.5516 (0.12)	-4.3732 (-0.46)	-0.4859 (-0.05)
FS	5.73e-06 (0.39)	8.95e-06** (0.047)	2.57e-06 (1.11)	2.06e-06 (2.19)	0.0001*** (2.66)	0.0001** (2.05)	0.0001** (2.07)	0.0001* (1.74)
FV(t-1)	0.4225*** (1.63)	0.3999*** (3.26)	0.4160** (2.54)	0.4230** (2.54)	0.1102 (0.76)	0.1300 (1.02)	0.2251** (2.18)	0.2206** (2.24)
Cons	1.5959** (2.54)	-0.0221 (-0.03)	0.5226** (2.28)	-2.0948 (-1.42)	41.647*** (2.58)	-19.280 (-1.45)	7.1681** (2.42)	-62.843** (-2.18)
Observations	1525	1540	1548	1548	1518	1534	1541	1542
Wald Chi2	11183	917.74	9706.9	7929.8	220.92	395.98	133.89	138.47
Prob > Chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR (1)	0.001	0.001	0.005	0.004	0.009	0.004	0.001	0.001
AR (2)	0.938	0.780	0.610	0.565	0.820	0.727	0.688	0.665
Hansen test	0.252	0.429	0.161	0.190	0.580	0.171	0.329	0.263

Z-statistical are in parentheses; * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database

5.6 Analysis of the findings: Effect of ownership structure on the firm value.

The results of system GMM estimation on the effect of ownership structure (ownership concentration and identity of owners such as foreign, domestic, and managerial ownership) on the value of JSE listed firms in empirical specifications from models 1 to 4 using both TOQ and ROA as proxy of firm value were presented separately for the first and second hypotheses. Model 1 presents the first hypothesis on the effect of ownership concentration on firm value, while the second, third and fourth hypotheses on the effect of managerial ownership (model 2), foreign ownership (model 3) and domestic ownership (model 4) on firm value. The robust results of system GMM model as the most appropriate and unbiased estimation after capturing for anomalies of heteroskedastic, unobserved individual effect, simultaneity and all the endogeneity issues, inherent in ownership structure were analysed in detail for the hypotheses.

5.6.1 Lagged of dependent variables, firm value proxies with Tobin's Q and ROA(FVt-1)

Firm value lagged (FVt-1) exhibited a positive relationship with firm value. The results Tobin's Q as proxy of firm value show a positive and significant relationship between past performance of the firms on the JSE equity market with the current firm value from model 1 to 4. While the ROA as robust test of firm value shows a positive relationship between past firm value of the JSE listed companies with current firm value for model 1 and 2 and significant for model 3 and 4. The persistent significance of past firm value proxied with TOQ and ROA illustrates the important of dynamic nature of the ownership structure under consideration. This is consistent with Wintoki et al. (2012) study that suggested that an estimation that does not take a dynamic approach to the relationship between ownership structure and firm value will yield inconsistent and biased estimations. A firm's past performance has a direct influence on the corporate information environment, profit potential, opportunity costs, and all the other factors that affect ownership structure. This implies that the past performance of firms listed on the JSE should be included as one of the main explanatory variables when modelling the relationship between ownership structure and firm value in South Africa, irrespective of other control variables.

5.6.2 Economic impact of the regression results system GMM estimation on effect of ownership structure on the value of JSE listed firms.

The results of system GMM estimation on the effect of ownership structure (ownership concentration and identity of owners such as foreign, domestic, and managerial ownership) on the firm value of JSE listed companies from models 1 to 4 were analysis in table 13 and 14 respectively to determine the economic impact.

Table 13: Economic Impact of GMM Regression Results using Tobin's Q as firm value proxy

Variable	Model 1	Model 2	Model 3	Model 4
OWN	-0.1595	0.0795	-0.0439	0.0528
LV	-0.0098	0.0175	0.0092	0.0102
PR	-0.0267	-0.0236	-0.0260	-0.0239
LQ	0.3605	0.0469	0.0278	0.0381
BS	-0.0168	0.0387	-0.0046	-0.0116
BR	-0.0019	-0.0039	-0.0027	-0.0015
BF	0.0317	0.0091	-0.1139	0.1440
FS	0.7899	1.2338	0.3543	0.2840

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database.

Table 14: Economic Impact of GMM Regression Results using ROA as firm value proxy

Variable	Model 1	Model 2	Model 3	Model 4
OWN	-0.3309	0.4262	-0.0722	0.1005
LV	-0.0148	0.0498	0.0254	0.0259
PR	0.0466	0.0599	0.0466	0.0466
LQ	0.1035	0.1777	0.1051	0.1084
BS	-0.0169	0.0822	0.0044	0.0032
BR	-0.0077	-0.0120	-0.0072	-0.0072
BF	-0.2890	0.0161	-0.0455	0.0051
FS	0.0991	0.0991	0.0991	0.0991

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database.

Economic Impact = $\frac{\text{S.D of explanatory variable} \times \text{R.C of explanatory variable}}{\text{S.D of dependent variable}}$

S.D of dependent variable.

Where S.D is standard deviation of the variable

R.C is regression correlation of the variable

5.6.3 Ownership concentration

The empirical model 1 results of GMM present the relationship between ownership concentration and firm value for the first hypothesis. It was found that ownership concentration, measured by the percentage of shares held by the five largest shareholders, exhibited a negative and significant relationship with the firm value of JSE listed companies using both TOQ and ROA. Therefore, the proposed hypothesis H_1 : There is a positive relationship between ownership concentration and firm value, should be rejected while the alternative hypothesis should be accepted. These results are consistent with those of previous studies by Cameron (2012), and Mutize et al. (2016) in South Africa. However, they contradict Berle and Means (1932) assertion that ownership concentration is desirable in order to reduce corporate risk and improve corporate performance and are thus, not consistent with Grossman and Hart (1986) property rights theory that proposes the owners will exert adequate control even when there are high levels of concentration in order to improve corporate performance. This implies that larger shareholders on the JSE equity market cannot ease efficient loss that arise from separation of ownership and control. The negative influence of ownership concentration on firm value can be explained by the fact that there is principal-principal agency relationship problem, especially in light of the government policy of BEE that aims to promote more diffuse share ownership in South Africa (Shleifer and Vishny, 1997, Porta et al., 1999, Walsh and Seward, 1990, Ward and Filatotchev, 2010). This finding supports Steyn and Stainbank (2013) finding that separation of ownership and control results in more diffuse shareholding. Since ownership concentration has a negative effect on firm value, diffusion of shareholders is expected to be positively related to firm value, which can be influenced by differences in corporate governance mechanisms.

The economic impact results of ownership concentration reveal that a one percent increase in standard deviation large shareholders is expected to reduce firm value by 16% using Tobin's Q and 33% using ROA as measures of firm value of companies listed on the JSE. This implies that large shareholders on the JSE equity underplay conflicts of interest between majority and minority shareholders that lead to expropriation and poor corporate performance (Shleifer and Vishny, 1997, Porta et al., 1999, Walsh and Seward, 1990, Ward and Filatotchev, 2010). Hence, adequate corporate governance mechanism is required for efficient and effective performance and to halt efficient loss that arise from separation of ownership and control.

5.6.4 Managerial ownership

The summary results of the GMM estimation in model 2 on the effect of managerial ownership on firm value revealed that managerial ownership measured by the percentage of shares held by the Board of Directors has a positive effect on both the firm value proxies (ROA and TOQ). This is consistent with the proposed hypothesis H_2 : There is a positive relationship between managerial ownership identity and firm value. This result is consistent with those of Ntim (2013) but run contrary to Zondi and Sibanda (2015) study that was restricted to the retail sector in South Africa. The finding is consistent with Jensen and Meckling (1976) agency theory that suggests that an increase in managerial ownership increases firm value and thus maximises shareholders' wealth. The implies that to offset monitoring costs and avoid corporate risk, corporate managers needed to owned equity stake in firm on the JSE equity market to improve corporate performances (Fama and Jensen (1983); Demsetz (1983). The positive effect of managers' shareholding on firm value can be explained by the unitary board system in South Africa that allows directors as managers to take on supervisory and management roles in the firm and thus, influence corporate governance mechanisms to maximise shareholders' wealth.

The economic implication of the board of director's shareholding results show that everyone increases in standard deviation of management shareholders results to an 8% increase using Tobin's Q and a 43% increase using ROA as a measure of the value of JSE listed firms in South Africa. This implies that managers with equity stake in the firm on the JSE equity market incline to deviation shareholders of interest to improve firm value in South Africa. This help to improve the corporate governance quality for JSE listed firms and corporate performance in South Africa.

5.6.5 Foreign ownership

The empirical model 3 results of GMM present the relationship between foreign ownership and firm value for the third hypothesis. Foreign ownership refers to the percentage of foreign shareholders. It exhibited a negative and significant relationship with the firm value of JSE listed companies using both TOQ and ROA. Therefore, the proposed hypothesis H_3 : There is a positive relationship between foreign ownership and firm value should be rejected while the alternative hypothesis should be accepted. This is not consistent with previous studies by Greenaway et al. (2014), Phung and Mishra (2016), Ongore (2011), and Wellalage and Locke (2012) that argued that foreign investors result in improved managerial techniques, better investment returns,

improved corporate governance mechanisms and adequate monitoring of firm resources. Furthermore, it does not support Grossman and Hart (1986) property rights theory and the stakeholders theory (Freeman, 1984b). This can be explained by the dynamism of the South African corporate environment, especially government policies such as BEE that aim to promote racial diversity of ownership and management to address inequality. BEE firm is thus negatively related to firm value with regard to the relationship between foreign ownership and firm value.

The economic impact of foreign ownership regression results shows that a one percent increase in standard deviation of foreign investors leads to a decrease of 4% in TOQ and 7% in ROA as measures of firm value. This implies that an increase in foreign investors on the JSE equity market is contrary to adequate monitoring, corporate quality control and internal corporate governance mechanism to improve value of JSE listed firms in South Africa.

5.6.6 Domestic ownership

The summary results of GMM estimation in model 2 on the effect of domestic ownership on firm value revealed that domestic ownership, measured by the percentage of shares held by local investors has a positive and significant effect on the firm value of JSE listed companies using both TOQ and ROA. This is consistent with the proposed hypothesis H_4 : There is a positive relationship between domestic ownership identity and firm value and this hypothesis should thus be accepted. This implies that South African shareholders have a positive influence on firm value. The finding is consistent with those of Douma et al. (2006) who argued that superior corporate returns are associated with large domestic block holdings, thus providing managers with incentives and adequate monitoring to improve firm value. It is supported by Grossman and Hart (1986) property rights theory and stakeholders theory (Freeman, 1984b).

The findings of the economic implication of domestic ownership regression results indicate that a one percent increase in standard deviation of local investors results in a 5% increase in TOQ and 10% increase in ROA as a measure of the value of JSE listed firms in South Africa. This implies that superior returns are achieved when local investors hold a large proportion of shares, and this ensure adequate management monitoring and support to promote effective governance to improve value of JSE listed firms South Africa.

5.6.7 Control variables

The control variables include leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. The economic impact regression results of GMM estimation for control variables effect on firm value presented in Table 13 and 14 were analysed for each model which include ownership concentration (model 1), managerial ownership (model 2), foreign ownership (model 3) and domestic ownership (model 4).

The findings on leverage (LV) revealed a negative effect on firm value when large shareholders are concentrated in the model, but a positive relationship with firm value when owner identity including managerial, foreign and domestic ownership, is observed. This negative effect is consistent with Myers (1977), Andrade and Kaplan (1998), and Phung and Mishra (2016) studies and the positive effect is consistent with Ross (1977), Stiglitz (1985), and Agrawal and Knoeber (1996) findings on firm value. This implies that owners of firms listed on the JSE improve corporate performance when debt and equity finance are employed.

The leverage has a significant economic impact, an increase of one standard deviation in leverage results in decrease by 1% in model 1 and increase by 2%, 1% and 1% in model 2, 3 and 4 respectively using Tobin's Q as measure of firm value. Using ROA as measures of firm values, one standard deviation in leverage leads to decrease by 1% in model 1 and increase by 5%, 3% and 3% in model 2, 3 and 4 respectively. This suggest that an increase in debt and debt finance will discipline and motivates managers to provide adequately monitoring of the firm on the JSE equity market Jensen and Meckling (1976) Agrawal and Knoeber (1996).

The findings on profitability (PR) exhibit a significant and positive relationship with firm value using ROA, an accounting-base measure and a negative effect using TOQ as a measure of firm value. The findings are consistent with those of Phung and Mishra (2016) that found a negative relationship with firm value. Firm profit rate to sales return is significant when considering the dividend policy, retained profit, investment opportunities, reduction in debt finance, and access to long-term finance and lease finance that affect firms' operations (Himmelberg et al., 1999, Phung and Mishra, 2016). This implies that JSE listed companies' profitability improves corporate value when financial performance is measured using accounting-base measures but decreases firm value from the perspective of market-based measures.

The profitability has a significant economic impact, an increase of one standard deviation in profitability results in decrease by 3%, 2%, 3% and 2% in model 1, 2, 3 and 4 respectively using TOQ as measure of firm value. In model 1, 2, 3 and 4, the same increase in profitability results to an increase firm value by 5%, 6%, 5% and 5% respectively using ROA as measures of firm value. This suggest that an increase in firm net operating margin improve corporate performance of the JSE listed firms.

Liquidity (LQ) has a positive relationship with firm value in the model for all ownership structure variables. The is consistent with Uno and Kamiyama (2010) study that argued that highly liquid firm offer better investment prospects and access to more debt investment finance as well as superior corporate performance. This implies that companies listed on the JSE have more investment opportunities to improve firm value. The economic impact show that one percent increase in standard deviation of liquidity, results to increase in firm value by 36%, 5%, 3% and 4% using TOQ and 10%, 18%, 11%, and 11% using ROA. This suggest the firms on the JSE equity market have better opportunity to access lease finance and other credit finance in times of financial distress.

The economic impact of Board size (BS) exhibited on standard deviation of board size leads to fall in firm value by 2%, 1% and 1% in the model 1, 3 and 4, but a rise in firm value by 4% in model 2 using TOQ as proxy of firm value. Using ROA as proxy of firm value, one standard deviation in board size leads to increases by 8%, 0.4% and 0.3% in model 2, 3 and 4, but decrease of 2%. The results also revealed that using TOQ as a proxy of board size is negatively related to firm value while ROA has a positive relationship. The positive and negative effect of board size on firm value is consistent with Fauzi and Locke (2012) argument that a large board is likely to generate increased firm value but can also have a negative impact due to the cost of monitoring to avoid the free-riding problem. This implies that an increase in JSE listed companies' board size is characterised by both effective monitoring and an increase in incentive alignment costs to avoid free-riding problems. Board size positive effect on firm value, consistent with Jensen and Meckling (1976) study that proposed an incentive alignment strategy (monitoring costs) to maximise shareholders' wealth.

Board remuneration (BR) had a negative relationship with firm value in models 1 to 4 of ownership variables. This is consistent with Fernandes (2008) finding that board remuneration does not affect

firm value using both accounting-based and market-based measures regardless of board composition. This infers that board remuneration (salaries and compensation) among JSE listed companies has no effect on firm value irrespective of board composition. The economic impact of board remuneration suggest that one standard deviation of board remuneration leads to fall in firm value by 1% in all the model using ROA as proxy of firm value and decrease by 0.1%, 0.3%, 0.3% and 0.02% in model 1, 2, 3 and 4 respectively. Thus, the 25% non-binding vote set out in the King IV Report on Corporate Governance in South Africa should be implemented.

The results show that BEE firm is positively related to firm value in model using both TOQ and ROA, but negative on ROA and positive on TOQ for models 2, 3 and 4. This implies that JSE listed companies' implementation of BEE improves firm value and that BEE can be improved when management shareholding increases. This is consistent with Esser and Dekker (2008) that argued that the fiduciary responsibility of the Board of Directors to protect shareholders' interests has been re-directed to protect the interests of stakeholders within the triple context of society, the economy and the environment introduced by the King Reports on corporate governance in South Africa.

Firm size (FS) showed a positive relationship with firm value in the models of all the ownership structure variables. This is consistent with studies by Jensen and Murphy (1989) and Himmelberg et al. (1999). They argued that firm size boosts managers' morale and causes them to seek to take control of the firm, leading to conflicts of interest between managers and shareholders. This implies that firm size is a significant variable when studying the relationship between ownership structure and firm value, especially given that the South African equity market is the largest in Africa.

5.7 Findings to second objective: the convergence-of-interest and entrenchment levels of managerial ownership on the firm value.

The study's second objective was to determine the effect of suboptimal and optimal levels of managerial ownership on firm value with convergence-of-interest and the entrenchment hypotheses on JSE listed companies. The results were presented using the static linear regression in model 5 employing pooled OLS, RE and FE estimators, while the dynamic linear regression in model 5 was applied on the GMM estimator in Table 15 for TOQ and Table 16 for ROA, respectively. This study investigates managerial ownership at below and above the optimal

converged interest of managers to increase firm value and what level of managerial ownership at optimal entrenches management interests to decrease firm value. The MO (the percentage of managerial ownership) is below the optimal level, MO^2 (the square percentage of managerial ownership) is optimal level, and MO^3 (the cube percentage of managerial ownership) is above optimal level (McConnell and Servaes, 1990, Mudambi and Nicosia, 1998, Short and Keasey, 1999, De Miguel et al., 2004). TOQ and ROA were proxies of firm value on managerial ownership convergence-of-interest and the entrenchment effect for the study's fifth hypothesis in tables 15 and 16 respectively.

5.7.1 Managerial ownership convergence-of-interest (sub-optimal level) and the entrenchment effect (optimal level) hypothesis using Tobin's Q as a measure of firm value

Table 15 presents the TOQ results of managerial ownership convergence-of-interest and the entrenchment effect hypotheses using pooled OLS, RE, FE and GMM estimators. Managerial ownership below the optimal level (MO) and above the optimal level (MO^3) represents convergence-of-interest and managerial ownership at the optimal level (MO^2) is the entrenchment effect hypothesis while controlling for others firm factors such as leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. An accounting-based measure of firm value proxy with TOQ using static regression model 5 on pooled OLS, RE and FE estimators and dynamic regression model 5 on GMM estimator results were analysed

The pooled OLS results exhibited that managerial ownership at below and above optimal level is positively related to firm value with a coefficient of 0.0124 and 8.52e-07, respectively while managerial ownership at the optimal level is negatively related to firm value with a coefficient of -0.0003. This implies that managers of JSE listed companies in South Africa move from alignment to entrenchment, to alignment as their ownership stake in the firm increases (Morck et al., 1988, Short and Keasey, 1999). The findings also showed that leverage, liquidity, board size, BEE firm and firm size have a positive effect on firm value while profitability and board remuneration have a negative relationship with firm value. The F-test with p -values is less than 0.05 which indicates a good fit of the model. However, the OLS estimator in panel data is widely questioned, because it does not account for unobserved individual effects and thus to solve the problem of unobserved heterogeneity, RE and FE are required (Baltagi, 2005).

Table 15: Convergence of interest and entrenchment level of managerial ownership on firm value measured with Tobin Q using Pool OLS, Random Effects (RE), Fixed Effects (FE) and Generalised Method of Moments(GMM) model estimations

	OLS	RE	FE	GMM
MO	0.0124*** (0.127)	0.0004*** (0.968)	-0.0066*** (0.575)	0.1236939* (0.108)
MO²	-0.0003*** (0.234)	0.0001*** (0.868)	0.0002*** (0.529)	-0.0034335*** (0.176)
MO³	8.52e-07*** (0.645)	-7.17e-07*** (0.762)	-1.50e-06*** (0.571)	0.0000235*** (0.278)
LV	0.4354 (0.007)	-0.1539 (0.384)	-0.3421 (0.072)	-0.1784 (0.712)
PR	-0.0000*** (0.246)	-0.0000*** (0.011)	-0.0000*** (0.009)	-0.0000*** (0.077)
LQ	0.1382** (0.001)	-0.0002** (0.996)	-0.0224** (0.593)	0.0167 (0.851)
BS	0.0094*** (0.315)	0.0220*** (0.036)	0.0301*** (0.009)	-0.0012** (0.956)
BR	-0.0001*** (0.299)	-0.0001*** (0.431)	-0.0001*** (0.450)	-0.0001*** (0.133)
BF	0.1159* (0.148)	0.0843* (0.201)	0.0681* (0.311)	0.1681 (0.212)
FS	6.99e-06*** (0.000)	0.0000*** (0.000)	0.0000*** (0.000)	7.94e-06*** (0.054)
FV(t-1)				0.4083 (0.003)
Cons	0.9240 (0.000)	1.2209 (0.000)	1.2527 (0.000)	0.4061 (0.477)
Observations	1680	1680	1680	1540
Adj R ² (within)	0.0707	0.0647	0.0663	
F-test	13.78		10.80	
Prob >F	0.0000		0.000	
Wald test		109.93		1068.75
Prob >Chi2		0.0000		0.0000
Breusch & Pagan test	2491.3			
Prob > Chibar2	0.0000			
Hausman test Chi2		11.36		
Prob >Chi2		0.0777		
AR (1)				0.002
AR (2)				0.967
Hansen test				0.200

Standard error in parentheses; * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database.

The RE results revealed that managerial ownership at below optimal level and optimal level has a positive coefficient of 0.0004 and 0.000, respectively on firm value while managerial ownership at above optimal level is negatively related to firm value with a coefficient of -7.17e-07. This implies that management shareholding moves from convergent interest to convergent of interest entrenchment level on managerial ownership to improve firm value. The results also exhibited that leverage, profitability liquidity, and board remuneration are negatively related to firm value, while

board size, BEE firm, and firm size have a positive effect on firm value. The p -value results of the Breusch and Pagan test statistic ($\text{Prob} > \text{Chi}^2 = 0.0000$) imply that the RE estimator is more suitable than the OLS estimator. Although, the Wald-test statistic ($\text{Prob} > \text{Chi}^2 = 0.0000$) indicates that the model is a good fit, this remains biased and inconsistent without Hausman to select the most suitable estimators between RE and FE.

The FE model estimator results showed that managerial ownership at below optimal and above optimal level is negatively related to firm value with a coefficient of -0.0066 and $-1.50\text{e-}06$, respectively, while managerial ownership at the optimal level has a positive relationship with a coefficient of 0.0002 . This implies that managerial ownership moves from entrenchment to alignment on firm value. The findings also exhibited that board size, BEE firm, and firm size, have a positive effect on firm value while leverage, profitability liquidity, and board remuneration are negatively related to firm value. The overall F- test indicates significant p -values of less than 0.05 which means that the model is a good fit. The results of the Hausman test reveal a significant p -value of 0.077 which indicates that both models are consistent but RE is more efficient. However, Wintoki et al. (2012) note that inconsistent and biased estimation relating to endogeneity still exist with regard to managerial ownership when considering past firm value (Tobin's Q).

Thus, dynamic linear regression model 5 was applied using the GMM estimators. The GMM results exhibited that managerial ownership at below and above optimal level is positively related to firm value with a coefficient of 0.1236939 and 0.0000235 , respectively while managerial ownership at the optimal level is negatively related to firm value with a coefficient of -0.0034335 . This implies that managers of JSE listed companies in South Africa move from alignment to entrenchment, to alignment as their ownership stake in the firm increases (Morck et al., 1988, Short and Keasey, 1999, De Miguel et al., 2004). The results exhibited that liquidity, BEE firm, firm size and past firm value have a positive effect on firm value, while leverage, profitability, board size, and board remuneration are negatively related to firm value. The results of the Arellano and Bond (AB) test of autocorrelation errors for autoregressive and Hansen test for overidentification restrictions were also presented. All the Hansen test p -values are 0.200 , which implies that the null hypothesis could be not rejected and thus, the overidentification restriction is valid. The AR (1) revealed that the residual in differences are correlated as expected and the p -

value of the AR (2) test is 0.967, which implies that a null hypothesis of no serial correlation could not be rejected. Thus, the robust results of system GMM are the most appropriate estimation for this study.

5.7.2 Managerial ownership convergence-of-interest (sub-optimal level) and the entrenchment effect (optimal level) hypothesis using return on asset (ROA) as a measure of firm value

Table 16 presents the ROA results on managerial ownership convergence-of-interest and the entrenchment effect hypothesis using pooled OLS, RE, FE and GMM estimators. Managerial ownership below the optimal level (MO) and above the optimal level (MO^3) represent convergence-of-interest and managerial ownership at the optimal level (MO^2) the entrenchment effect hypotheses, while controlling for others firm factors such as leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. The market-based measure of firm value proxy with ROA using static linear regression model 5 on pooled OLS, RE and FE estimators and dynamic linear regression model 5 on GMM estimator results were analysed as follows:

The pooled OLS results exhibited that managerial ownership at optimal level is positively related to firm value with a coefficient of 0.0052, while at below and above optimal level it is negatively related to firm value with a coefficient of -0.0771 and -0.0001, respectively. This implies that as the managerial ownership stake moves from entrenchment to alignment, to entrenchment, firm value decreases, increases and then decreases. The results also revealed that leverage, profitability, liquidity, board size and firm size are positively related to firm value while board remuneration and BEE firm have a negative effect on firm value. Although the F-test with p -values is less than 0.05, which indicate a good fit of the model, the OLS model estimator in panel data is widely questioned, because it does not account for unobserved individual effects and thus to solve the problem of unobserved heterogeneity; RE and FE are required (Baltagi, 2005).

The RE model estimator results revealed that managerial ownership at below optimal level and above optimal level has a negative coefficient of -0.054 and -0.0001, respectively on firm value while managerial ownership at above optimal level is positively related to firm value with a coefficient of 0.0060. The RE implies that management moves from entrenchment to alignment, to entrenchment as managerial ownership increases in the firm. The findings also revealed that board size, board remuneration, and BEE firm are negatively related to firm value while leverage,

profitability, liquidity and firm size have a positive effect on firm value. The p -value results of the Breusch and Pagan test statistic ($\text{Prob} > \text{Chi}^2 = 0.0000$) imply that the RE estimator is more suitable than the OLS estimator. The Wald-test statistic ($\text{Prob} > \text{Chi}^2 = 0.0000$) indicates that the model remains efficient and reliable. However, to select the most suitable estimator between RE and FE, Hausman tests are conducted.

The FE model estimator results showed that at below optimal and at optimal level managerial ownership has a negative effect on firm value with a coefficient of 0.0078 and 0.0063, respectively, while managerial ownership at above optimal level has a positive relationship with a coefficient of 0.0002. This implies that managerial ownership moves from entrenchment to entrenchment, to alignment effect on firm value. The findings also showed that leverage, profitability, liquidity and firm size have a positive effect on firm value while board size, board remuneration, and BEE firm are negatively related to firm value. The overall F-test indicates significant p -values of less than 0.05, which means that the model is a good fit. The results of the Hausman test reveal a significant p -value of 0.077 which indicates that both models are consistent but RE is more efficient. However, Wintoki et al. (2012) note that biases and inconsistent estimations relating to endogeneity still exist in relation to managerial ownership when considering past firm value (ROA).

Thus, dynamic linear regression model 5 was applied using the GMM estimators. The GMM results exhibited that at below and above optimal level, managerial ownership is positively related to firm value with a coefficient of 0.3639 and 0.0001, respectively while managerial ownership at optimal level is negatively related to firm value with a coefficient of -0.0089. This implies that, as managers' ownership stake moves from alignment to entrenchment, to alignment, the firm value of JSE listed companies increases, decreases and then increases (Morck et al., 1988, Short and Keasey, 1999). The results also revealed that leverage, profitability, liquidity, board size, firm size and past firm value have a positive effect on firm value while board remuneration and BEE firm are negatively related to firm value. The results of the Hansen test for overidentification restrictions and Arellano and Bond's test of autocorrelation errors for autoregressive were also presented. The Hansen test p -value is 0.14, which implies that a null hypothesis could be not rejected and the overidentification restriction is thus valid. The AR (1) revealed that the residual in differences are correlated as expected and the p -value of the AR (2) test is 0.619, which implies that a null

hypothesis of no serial correlation could not be rejected. Thus, the robust results of system GMM are a valid and most suitable estimator for this study.

Table 16 : Convergence of interest and entrenchment level of managerial ownership on firm value measured with ROA using Pool OLS, Random Effects (RE), Fixed Effects (FE) and Generalised Method of Moments(GMM) model estimations

	OLS	RE	FE	GMM
MO	-0.0771* (0.367)	-0.054 (0.639)	0.0078 (0.954)	0.3639 (0.612)
MO²	0.0052*** (0.043)	0.0060*** (0.077)	0.0063*** (0.107)	-0.0089** (0.743)
MO³	-0.0001*** (0.007)	-0.0001*** (0.022)	-0.0001*** (0.027)	0.0001*** (0.771)
LV	4.7081 (0.006)	0.4982 (0.798)	-1.5820 (0.462)	2.3857 (0.472)
PR	0.0013*** (0.000)	0.0010*** (0.000)	0.0010*** (0.000)	0.0008*** (0.004)
LQ	3.0630 (0.000)	2.9917 (0.000)	3.0174 (0.000)	2.3162 (0.056)
BS	0.0230 (0.759)	-0.0408 (0.724)	-0.1515 (0.244)	0.0826 (0.806)
BR	-0.0012*** (0.182)	-0.0007*** (0.348)	-0.0007*** (0.381)	-0.0010*** (0.046)
BF	-2.3824 (0.005)	-4.4169 (0.000)	-4.8469 (0.000)	-2.0196 (0.272)
FS	0.0001*** (0.000)	0.0001*** (0.000)	0.0001*** (0.000)	0.0001*** (0.059)
FV(t-1)				0.2027 (0.029)
Cons	6.6533 (0.000)	8.7326 (0.000)	10.2337 (0.000)	3.3270 (0.685)
Observations	1680	1680	1680	1543
Adj R ² (within)	0.0801	0.0836	0.0865	
F-test	15.62		14.39	
Prob >F	0.0000		0.000	
Wald test		143.47		160.48
Prob >Chi2		0.0000		0.0000
Breusch & Pagan test	2491.3			
Prob > Chibar2	0.0000			
Hausman test Chi2		19.92		
Prob >Chi2		0.0028		
AR (1)				0.001
AR (2)				0.619
Hansen test				0.146

Standard error in parentheses; * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database.

5.7.3 Analysis of the findings for the second objective

The robust GMM results as the most appropriate estimation for model 5 using both TOQ and ROA as measures of firm value are summarised in tables 17 and 18 respectively, for the fifth hypothesis on the effect of managerial ownership convergence-of-interest (sub-optimal level) and the entrenchment effect (optimal level) on the firm value of JSE listed companies.

Table 17 exhibits the results of GMM estimation using TOQ as the measure of firm value. Managerial ownership at below and above optimal level converged shareholders' interest while managerial ownership at optimal level entrenched shareholders' interest; this is consistent with previous studies (Morck et al., 1988, Mudambi and Nicosia, 1998, Short and Keasey, 1999, De Miguel et al., 2004). This implies that the managerial ownership stake moves from alignment to entrenchment to alignment, which indicates that firm value increases, decreases and subsequently increases. The cubic function (Appendix A) estimation using the resulting coefficient on the relationship between managerial ownership and firm value exhibited minimum and maximum turning points of 24% and 74%, respectively. This implies that managerial ownership below optimal level ranges between 0% to 24% and above optimal level 74% on convergence-of-interest (sub-optimal level) increases firm value while managerial ownership on entrenchment effect (optimal level) that hovers between 24% to 74%, decreases firm value of JSE listed firm in South Africa. An increase in firm value with managerial ownership reflect the convergence of interest between managers and shareholders, while decrease in firm value infer the entrenchment of the management team. These findings are consistent and closely related to Spanish firms study of De Miguel et al. (2004) whose minimum and maximum turning points are 35% and 75%, respectively. The finding reveals that management shareholders in South Africa equity market get entrenched at higher ownership level than the UK and US equity market studies (Morck et al., 1988, Mudambi and Nicosia, 1998, Short and Keasey, 1999, De Miguel et al., 2004). This can be explained by the unitary board system in South Africa that allows directors as managers to take on supervisory and management roles in the firm and thus, influence corporate governance mechanisms to maximise shareholders' wealth. The descriptive test show that average managerial ownership on the on the JSE equity market is 16%. This means that when managers have shareholding on the JSE equity market in South Africa there is convergence of interest and thus improves firm value.

Table 17: Managerial ownership convergence-of-interest and the entrenchment level using Tobin's Q (TOQ)

Firm value	Tobin's Q (TOQ)		
	Below optimal	Optimal level	Above optimal
Managerial ownership	0.1236939* (0.108)	-0.0034335*** (0.176)	0.0000235***(0.278)
Convergence of interest	0%-24%		74% and above
Entrenchment Effect		24%-74%	
Standard error in parentheses; * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.			

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database.

Table 18 shows the results of the GMM model using ROA as the measure of firm value. Managerial ownership at below optimal level and above optimal level converged shareholders' interest while managerial ownership at optimal level entrenched shareholders' interest. This is consistent with previous studies (Morck et al., 1988, Mudambi and Nicosia, 1998, Short and Keasey, 1999, De Miguel et al., 2004). This implies that the managerial ownership stake moves from alignment to entrenchment to alignment, which indicates that firm value increases, decreases and subsequently increases. The cubic function (Appendix A) estimation using the resulting coefficient on the relationship between managerial ownership and firm value exhibited minimum and maximum turning points of 33% and 54%, respectively. This implies that managerial ownership below optimal level ranges between 0% and 33% and above optimal level 54% on the convergence of interest (sub-optimal level) increases firm value while managerial ownership on the entrenchment effect that hovers between 33% and 54% (optimal level) decreases firm value. A decrease in firm value infer the entrenchment of the management team while an increase in firm value with managerial ownership reflect the convergence of interest between managers and shareholders. These results are consistent with those of De Miguel et al. (2004) in Spanish study whose minimum and maximum turning points are 35% and 75%, respectively. The entrenchment level of board shareholding is higher than UK and US counterpart studies (Morck et al., 1988, Mudambi and Nicosia, 1998, Short and Keasey, 1999, De Miguel et al., 2004). Higher managers shareholding entrenchment level is noticeable through the average managerial ownership with 16%. This can be explained by the unitary board system in South Africa that allows directors as managers to take on supervisory and management roles in the firm and thus, influence corporate governance mechanisms to maximise shareholders' wealth. This means that when managers have

shareholding there is a convergence of interest on the JSE equity market in South Africa and thus improve firm value.

Table 18: Managerial ownership convergence-of-interest and the entrenchment effect using ROA

Firm value	ROA		
	Below optimal	Optimal level	Above optimal
Managerial ownership	0.3639 (0.612)	-0.0089**(0.743)	0.0001*** (0.771)
Convergence of interest	0%-33%		54% and above
Entrenchment Effect		33%-54%	
Standard error in parentheses; * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.			

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database.

5.8 Summary of chapter five

This chapter presented and discussed the study's findings on the effect of ownership structure on the firm value of JSE listed companies in South Africa. The descriptive statistics summarised all the features of variables proxies for firm value, ownership structure and control variables, while correlation coefficients emphasise the degree of the relationship between the variables. Empirical model specification of all the models was estimated using pool OLS, RE, FE, and the GMM model estimator for all the objectives' hypotheses analysed in the tables and discussed in detail. To ensure that the findings were adequately discussed in line with each hypothesis, a separate table was presented according to the research objectives. The robust results of GMM as the most appropriate estimating technique exhibited that large shareholders and foreign shareholders are inversely related to firm value while managerial shareholding and local shareholders are positively related to the firm values of JSE listed companies. In addition, the robust results of the GMM model estimator on managerial ownership convergence-of-interest (sub-optimal level) and the entrenchment effect (optimal level) hypotheses exhibited that both the convergence-of-interest and the entrenchment hypotheses consistently use the cubic function to determine the minimum and maximum point of managerial ownership's relationship with the firm value of JSE listed companies in South Africa. Nonetheless, using both accounting-based and market-based measures as a proxy of firm value enhanced the robustness of this study.

Chapters Six

Conclusions and Recommendations

6.1 Introduction

The chapter presents a summary of the main research findings and the study's contribution to knowledge. It discusses the effect of ownership structure on the firm value of JSE listed companies, highlights the implications and makes policy recommendations. Finally, suggestions are made for further research.

6.2 Summary of the study

This study on the effect of ownership structure on the value of JSE listed firms was motivated by the lack of empirical evidence on the relationship between ownership structure and firm value, applying a dynamic estimation approach to the data set. This is particularly true of South Africa, a mature market and transition economy that has undergone many legislative and regulatory changes in the recent past to address apartheid inequities. The impact of the ownership structure was examined via ownership concentration and ownership identity, which included managerial, foreign, and domestic ownership while controlling for other factors that affect firm value such as leverage, profitability, liquidity, board size, board remuneration, BEE firm and firm size. In addition, managerial ownership convergence-of-interest (sub-optimal level) and the entrenchment effect (optimal level) hypotheses were investigated in relation to firm value. TOQ, a market-based and ROA, an accounting-based measure of financial performance, were proxies for firm value.

Data on 187 non-financial services JSE listed companies from 2004 to 2016 was applied using different estimating techniques including pool OLS, RE, FE and the GMM model to test the relationship between ownership structure and firm value. In dealing with unobserved heterogeneity, the OLS model became an inconsistent and biased estimator. Thus, the RE and FE model was applied to control heteroskedasticity with the Hausman test to select the suitable estimator among the models. However, solving the issue of the endogenous problem required dynamic panel data which include the lagged variable of past firm value on the current explanatory variable. The system GMM estimation was applied after controlling for unobserved heterogeneity, simultaneity, and all issues of endogeneity in a dynamic model. Thus, the robust results of system

GMM estimation from models 1 to 5 as the most efficient and appropriate estimating method is valid for the study.

6.3 Summary of major findings and contributions

This study examined the effect of ownership structure on the firm value of JSE listed companies in South Africa. Its first objective was to determine the effect of ownership structure, which includes ownership concentration and owner identity such as managerial, foreign, and domestic on the firm value of JSE listed companies. The second objective was to investigate the effect of managerial ownership convergence-of-interest (sub-optimal level) and the entrenchment effect (optimal level) on the firm value of JSE listed companies. The descriptive statistic test shows that ownership concentration has an average block ownership of 40%. In terms of ownership identity, on average, South African shareholders hold 97.98% while foreign investors hold 2.02%. Managers' shareholding owned by the Board of Directors stands at an average of 15.5%. Based on the nature of the ownership structure and the firm value variable applied in the study, Table 19 restates the hypotheses and lists the empirical finding that support or do not support the hypotheses. The following section presents a summary of the findings in relation to the objectives.

Table 19: Summary of the study's empirical findings in relation to the hypotheses and conclusion

Hypothesis	Empirical findings		Conclusion
	Tobin Q	ROA	
H1; There is a positive relationship between ownership concentration and firm value.	Negative significant	Negative significant	Not supported
H2; There is a positive relationship between managerial ownership and firm value.	Positive significant	Positive Insignificant	Supported
H3; There is a positive relationship between foreign ownership and firm value.	Negative significant	Negative significant	Not supported
H4; There is a positive relationship between domestic ownership and firm value.	Positive significant	Positive significant	Supported
H5; The suboptimal level of managerial ownership is positively related to firm value (convergence-of-interest) and the optimal level of managerial ownership is negatively related to firm value (entrenchment effect).	Significant	Significant	Supported

Source: Own calculations using a balanced panel data over the period of 2004 to 2016. Data obtained from McGregorBFA (2016) and Bloomberg online database

6.2.1 First objective

The first objective was to investigate the effect of ownership structure, including ownership concentration and ownership identity such as managerial, foreign, and domestic ownership on the firm value of JSE listed companies in South Africa. In terms of the different ownership variables applied, the results demonstrated different empirical findings from the study hypotheses in Table 19.

The robust empirical evidence shows that ownership concentration among the five largest shareholders has a negative and significant effect on firm value in this corporate market environment where ownership is highly concentrated. This implies that there is no evidence of large shareholders' monitoring role to ease efficient loss that arise from separation of ownership and control on the JSE equity market in South Africa. These findings can be explained by the fact that South Africa has adopted measures to diffuse ownership and control of JSE listed firms through a series of programmes including B-BBEE supported by the adoption of corporate governance in the triple context of the economy, society, and the environment. This finding is contrary to agency theory and property right theory on the role of blockholders to half free-riding problem of the management.

The empirical results showed that the Board of Directors' shareholding exhibited a positive and meaningful relationship with an accounting-based measure of firm value and a positive and insignificant relationship with a market-based measure. Thus, managerial shareholding has a positive effect on firm value. This implies that managers provide adequate monitoring of firm resources to optimize firm value when they own an equity stake in the firm. This result can be explained by the one-tier or unitary board system in South Africa where a director as manager supervises and manages the firm, which is influenced by corporate governance mechanisms in South Africa to maximise shareholders' wealth. The finding also supports the recent King IV Report on Corporate Governance in South Africa that proposed a 25% non-binding vote against board remuneration and implementation since board managements' equity stake is positive and significant to firm value.

Foreign ownership in the South African equity market exhibited a negative and significant effect on firm value. This implies that there is no evidence to support the monitoring role of foreign

investors among JSE listed firms. This finding can be explained by the fact that South Africa's transition economy has adopted a series of programmes, including the inward listing rule by the JSE to increase the number of domestic shareholders in the equity market and thus support the government transformation programme on racial diversity of ownership, management, and control of the economy have a negative effect on foreign ownership to influence firm value.

The robust empirical findings exhibited a positive and significant relationship between domestic ownership and firm value in South African corporate environments, where most owners and managers are local investors. This suggests that local investors in the host country are better able than foreign investors to provide adequate monitoring of corporate resources that optimize shareholders' wealth. These findings can be explained by the fact that domestic ownership and control of the equity market are encouraged, specifically through the B-BBEE empowerment programmes introduced by the South African government to promote racial diversity in ownership, management and control of the economy, supported by the the adoption of corporate governance in the triple context of the economy, society, and the environment. This finding support agency theory and property right theory on the role of local investors to half free-riding problem of management that arises from separation of ownership and control. The results obtained suggest that local shareholders in the host country could help to strengthened firm monitoring and corporate governance practices to improve firm value. local investors could help to reduce agency costs and to ease efficient loss that arise from separation of ownership and control.

All these findings hold afters capturing anomalies of heteroskedastic, unobserved firm effects, simultaneity and the endogeneity problem inherent in ownership structure. on the effect of ownership structure on the firm value of JSE listed companies in South Africa. These results imply that ownership of different types can be modelled when studying the relationship between ownership structure and firm value, specifically, with the diverse institutional framework of the corporate environment. In this transitional emerging market economy, it was found that domestic owners in the host country, rather than foreign investors, provide active monitoring. The study thus supports the notion that local investors in the host country can help to reduce shareholders' agency costs through governance mechanisms and active monitoring of management. The monitoring role of local investors can help to converge management interests with those of stakeholders to improve firm value. In addition, the monitoring role of large shareholders is

irrelevant in minimising agency costs as the reverse is the case in emerging market economies, where ownership identity tends to halt the free-riding problem to improve firm value.

6.2.2 Second objective

The second objective was to investigate the effect of managerial ownership convergence-of-interest (sub-optimal level) and the entrenchment effect (optimal level) on the firm value of JSE listed companies. The empirical findings in Table 19 showed that managerial ownership at below and above optimal level positively related to firm value and managerial ownership at the optimal level is negatively related to firm value. This is consistent with the convergence-of-interest and entrenchment hypotheses. It implies that, irrespective of the incentive alignment strategy (monitoring costs), an increase in management shareholding provides effective monitoring at the low level and a high level of managerial ownership improves firm value while at the intermediate level it reduces firm value. JSE listed companies' managerial ownership moves from alignment to entrenchment to alignment in support of both the convergence-of-interest and entrenchment hypotheses. The convergence-of-interest level of managerial ownership shows that when managerial ownership hovers between 0% and 24% below and above 74%, using market-based, and hovers between 0%-33% below and above 54% using accounting-based measures, managers improve the firm value of JSE listed companies in South Africa which are measured with cubic function. The descriptive statistics test shows overall average managerial ownership at higher level of 16%, managerial shareholding that hovers from 0% to 24% and 33% tends to improve the firm value of JSE listed firms. This suggest that the higher overall average of board shareholding on the JSE reflects the high level of managerial ownership on convergence of interest between managers and shareholders. The entrenchment level that hovers between 24% and 74% using market-based, and between 33% and 54% using accounting-based measures, tends to decrease firm value. The finding reveals that management shareholders in South Africa equity market get entrenched at higher ownership level than the UK and US counterpart studies (Morck et al., 1988, Mudambi and Nicosia, 1998, Short and Keasey, 1999, De Miguel et al., 2004). This implies board shareholders on the higher level of entrenchment of management team the unitary board system in South Africa that allows directors as managers to take on supervisory and management roles in the firm and thus, influence corporate governance mechanisms to maximise shareholders' wealth.

The finding on the convergence-of-interest level implies that managerial ownership improved the firm value of listed companies in South Africa when the board of directors have share in the firm and thus reduces the monitoring costs. This supports the King IV Report's proposal that a 25% non-binding vote against board remuneration should be implemented to protect shareholders' interests. The governance mechanisms in South Africa explain the entrenchment effect, given institutional monitoring to halt management takeovers with excessive board remuneration (salaries and compensation) that is negatively related to firm value in this study.

6.3 Policy implications and recommendations

The study's findings have implications for JSE listed firms and policy makers in South Africa. They show that large shareholders and foreign investors provide no corporate monitoring support in South African equity markets while local shareholders and management shareholding provide adequate monitoring to improve the firm value of JSE listed companies. This study supports the South African government's B-BBEE programme that aims to promote diffuseness among JSE listed companies through domestic shareholding and management control that will improve firm value. Large shareholders' inverse relation to firm value can be explained by such diffusion on the JSE equity market. The study also supports the JSE's inward listing rule that allows foreign companies to raised capital on this bourse in order to increase domestic shareholding. This makes the JSE equity market more attractive to local investors and will thus improve firm value.

In addition, the study's findings support the King Report on Corporate Governance with regard to the triple context of the economy, society, and the environment in supports of B-BBEE in South Africa. Therefore, the amended listing requirement for JSE listed firms to promote racial diversity at board level, and annual publication of reports in compliance with the amended B-BBEE Act of 2013 should be implemented by South African companies, since, on average, management shareholding is less likely to decrease firm value. The King IV Report also proposed that a 25% non-binding vote against board remuneration should be implemented to protect shareholders' interests. The study's findings support implementation of this proposal. It is recommended that a binding vote along the lines of that in the UK be adopted since the Board of Directors' shareholding improved firm value and board remuneration has inverse effects.

6.3 Suggestions for further research

This research study investigated the effect of ownership structure on the firm value of JSE listed companies in South Africa. It revealed a relationship between ownership structure which includes ownership concentration and ownership identity such as managerial, foreign, and domestic ownership with firm value proxy with Tobin's Q and ROA. The study also investigated the managerial ownership convergence-of-interest and the entrenchment effect hypotheses. Further research could be conducted using other kinds of ownership structure variables and firm value proxy of financial performance. Furthermore, the minimum and the maximum turning point on convergence-of-interest and the entrenchment effect hypotheses could be investigated with another proxy of firm financial performance.

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Appendix

Appendix (A)

The cubic function relationship between managerial ownership and firm value is used to determine the minimum and maximum turning point. The calculation is carried out on the coefficient of managerial ownership convergence-of-interest and the entrenchment hypotheses assuming all other variables are constant.

Managerial ownership of convergent-of-interest and entrenchment hypotheses expectations

Managerial ownership	
Convergence-of-interest hypothesis	Entrenchment hypothesis
+	-

The breakpoint of cubic function values is calculated as follows;

TOBIN's Q

$$\text{tobin } q = 0.1236939x - 0.0034335x^2 + 0.0000235x^3$$

The turning points are found by differentiating y (Tobin's Q) with respect to x, by letting $\frac{dy}{dx} = 0$ solve for x. Thus, to determine whether x is the minimum and maximum turning point, after quadratic equation function and the value $\frac{d^2y}{dx^2}$ is calculated. If $\frac{d^2y}{dx^2} > 0$ is the minimum turning point. If $\frac{d^2y}{dx^2} < 0$ is the maximum turning point.

$$x = \frac{-2b \pm \sqrt{2b^2 - 4ac}}{2a}$$

Managerial ownership convergence of interest and entrenchment effect using Tobin's Q (TOQ)

Firm value	Tobin's Q (TOQ)		
	Below optimal	Optimal level	Above optimal
Managerial ownership	0.1236939* (0.108)	-0.0034335*** (0.176)	0.0000235*** (0.278)
Convergence of interest	0%-24%		74% and above
Entrenchment Effect		24%-74%	

Return on Assets(ROA)

$$roa = 0.3639x - .0089x^2 + 0.0001x^3$$

The turning points are found by the differentiating y (ROA) with respect to x, by letting $\frac{dy}{dx} = 0$ solve for x. Thus, to determine whether x is the minimum and maximum turning point, after quadratic equation function and the value $\frac{d^2y}{dx^2}$ is calculated. If $\frac{d^2y}{dx^2} > 0$ is the minimum turning point. If $\frac{d^2y}{dx^2} < 0$ is the maximum turning point.

$$x = \frac{-2b \pm \sqrt{2b^2 - 4ac}}{2a}$$

Managerial ownership convergence of interest and entrenchment effect using ROA

Firm value	ROA		
	Below optimal	Optimal level	Above optimal
Managerial ownership	0.3639 (0.612)	-0.0089**(0.743)	0.0001*** (0.771)
Convergence of interest	0%-33%		54% and above
Entrenchment Effect		33%-54%	