ESSAYS ON MEASURING INFORMATION ASYMMETRY, IMPACT OF INFORMATION ASYMMETRY AND CORPORATE OWNERSHIP STRUCTURE ON CAPITAL STRUCTURE OF SELECTED AFRICAN FIRMS

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**CHAPTER ONE**

**INTRODUCTION**

1.BACKGROUND TO THE THESIS

Modigliani and Miller’s (1958) proposition states that, in a perfect capital market, capital structure is irrelevant to firm value. The implications of this proposition are that, no matter how the firm finances its investments, the mix of debt and equity (and therefore the total cost of capital) will not affect the value of such investments. However, this proposition only holds in perfect capital markets. Ever since the introduction of this irrelevancy proposition, there has been a litany of research focusing on capital structure under imperfect markets. Without a doubt, some of the most important sources of market imperfections are taxes, agency costs between management and shareholders as well as between equity and debt holders (Jensen & Meckling, 1976), and the existence of information asymmetry between the manager of a firm and the investors, about the value of a firm (Myers 1984; Myers & Majluf, 1984).

The capital structure of firms has received immense attention over the past decades. Some of the contemporary empirical work on capital structure has evolved around which theory between the trade-off and the pecking order explains the financing behaviour of firms better. Indeed, Myers (1984) argues that these are the two leading conditional theories on financing behaviour around the globe. Most empirical work is also on these two theories (Myers, 1984; Adair & Adaskou, 2015). The static trade-off theory argues that, as leverage increases, there is an optimal level of debt, which trades off the tax benefits of debt and the costs of bankruptcy (Kraus & Litzenberger, 1973). The pecking-order theory argues that due to information asymmetry, firms tend to prefer less information-sensitive securities first, such as debt. Therefore, firms will tend to use internal funds, debt (short- and then long-term debt) and lastly, equity, in that order of preference. It is clear that each theory contributes to the observed financing patterns around the globe; however, neither theory has provided a conclusive explanation of the observed financing behaviour across countries, industries and firms (Brealey & Myers, 2000; Graham & Harvey, 2001).

The empirical tests on which theory better explains financing behaviour is mixed, with some results supporting the pecking-order theory and rejecting the trade-off theory and vice versa. For example, Myers (1984), Shyam-Sunder and Myers (1999), Frank and Goyal, (2003) Tong and Green (2005), and Chipeta and McClelland (2017) confirm the pecking order as the better theory explaining corporate-financing behaviour. Chang and Dasgupta (2009), Frank and Goyal (2009) and Leary and Roberts (2010), on the other hand, conclude that firms follow the trade-off theory. Graham and Harvey (2001); Mukherjee and Mahakud (2012) and Moyo, Wolmarans and Brumer (2013) show that these two theories are complementary in explaining financing behaviour. However, Shyam-Sunder and Myers (1999) use a novel approach to test the statistical power of the two theories and conclude that the pecking-order theory has more statistical power than the trade-off theory. Furthermore, Seifert and Gonenc (2010) confirm information asymmetry as the primary driver of the dynamic pecking-order theory. More recently, Yang et al. (2014) comment that firms with information asymmetry show evidence of pecking order in their financing behaviour.

Much literature on capital structure has focused on developed markets, which are more efficient and have readily available data relative to African markets. Singh (1999) and Gwatidzo and Ojah (2009) concur that African markets are less developed, inefficient, illiquid, thinly traded and are characterised by a high degree of information asymmetry (Seifert & Gonenc, 2010 & Moyo et al., 2013, Chipeta & Deresa, 2016b). Moyo et al. (2013) further argue that the African stock markets have lower credit ratings, poor macroeconomic fundamentals, with poor property rights and thus are susceptible to high degrees of information asymmetry. Therefore a logical step would be to investigate the applicability of the pecking-order theory in these African markets with high information asymmetry. It is against this backdrop that this thesis focuses on the Johannesburg Securities Exchange (JSE), an African stock market with a high likelihood of a high degree of information asymmetry and hence also the need to investigate further if the African firms follow a pecking-order pattern when financing their deficits.

1.1 THE PECKING-ORDER THEORY

Myers (1984) and Myers and Majluf (1984) reason that as managers tend to know more about their firm’s fair values than investors, they tend to exhibit a particular preference for their financing choices. This preference for external financing, which leads managers to prefer cheaper debt first before utilising more costly debt and as a last resort, equity, is popularly known as the pecking-order theory.

The important predictions of the pecking-order theory are that information asymmetry is a major determinant of capital structure and that managers utilise internal funds first, followed by debt and, lastly, equity. Debt is regarded as cheaper compared to the cost of issuing equity; hence equity will only be issued under extreme conditions, such as when a firm can only issue junk debt and when financial distress costs are high (after exceeding the debt capacity). This theory, unlike the trade-off theory, predicts no target debt level of capital structure.

Empirical research on the theory has focused exclusively on testing the predictions of the pecking-order theory. Thus, whether or not firms follow a pecking order when issuing securities. Furthermore, such indirect tests of the impact of information asymmetry on capital structure are mainly concentrated in the developed markets such as the US, UK and in some emerging markets such as China and South Africa. Growing literature is now focusing on emerging markets. Despite the numerous tests on the pecking-order theory, the empirical evidence provided on the theory to date is conflicting at best. For example, some studies find a negative relationship between profitability and firm leverage, implying profitable firms first utilise internal funds before issuing debt. Shyam-Sunder and Myers (1999) find evidence in support of the pecking-order theory in the US; that firms finance their deficits with debt. Nevertheless Frank and Goyal (2003) find evidence that net equity issues track the financing deficit quite closely rather than debt, refuting the pecking-order theory. Lemmon and Zender (2010) find support for the pecking-order theory after controlling for debt capacity in a large sample of firms. While we applaud these efforts, one cannot miss the conspicuous fact that no direct tests of the impact or effect of information asymmetry on capital structure is provided, neither do the studies on the pecking order test if managers are acting in the best interests of existing shareholders. Only recent studies by Bharath, Pasquariello and Wu (2009); Bessler, Drobetz and Gruninger (2011) and more recently by Gao and Zhu (2015) and Pan, Lin, Lee and Ho (2015) test the impact of information asymmetry on leverage. According to the pecking-order theory, the basic assumption of information asymmetry is the major (if not the sole) determinant of capital structure. Surprisingly, this basic assumption of the theory has not been tested empirically, especially in African emerging markets and extensively in developed markets. Save for the above-cited papers, the assumptions of the pecking-order theory have just been accepted (on faith) without testing the validity of the assumptions. In addition, the theory has been applied on all firms without distinguishing those firms with or without asymmetric information. It has also not been established if these managers act (or do not act) in the best interests of existing shareholders. These two assumptions are crucial for the pecking-order theory to hold. Thus, the theory should hold when there is asymmetric information and when managers act in the interests of existing shareholders. If these two assumptions are not satisfied, the pecking-order theory may not be able to adequately explain corporate-financing behaviour. This could explain why the empirical evidence on the theory to date has not been conclusive. This thesis seeks to contribute to this gap in literature.

On the other hand, Myers & Majluf’s (1984) assumption that managers act in the best interests of existing shareholders under asymmetric information has never been tested empirically. It is argued that managers acting on behalf of passive existing shareholders under asymmetric information will prefer internal sources of funding to external funding. Literature on agency problems suggests that firms with concentrated ownership, large and institutional owners, face fewer agency costs (see for example: Jensen & Meckling, 1976; Stiglitz, 1985; Jensen, 1986; Crutchley & Hansen, 1989; Shleifer & Vishny, 1997). This implies close monitoring of managers’ actions to be in tandem with the best interests of shareholders. In the absence of such close monitoring, managers may not act in the best interests of existing shareholders, in contradiction to Myers and Majluf’s (1984) assumption. Thus, the pecking-order theory should hold for firms with concentrated ownership, large and institutional shareholders. Such closely monitored firms ensure managers’ actions are in line with the best interest of existing shareholders. To the best of our knowledge, there is a clear lack of literature linking ownership structure to firm financial behaviour. Indeed Leary and Roberts (2010) propose that agency-based explanations can better explain the capital structure of firms than can asymmetric information. As an example, it is crucial to examine how diffused and concentrated ownership structures determine the amount or level of debt a firm uses. In the spirit of the pecking-order theory, firms with concentrated ownership and with managers pursuing the interests of existing shareholders, should prefer internal funds, then debt and as a last resort, equity.

1.2 OBJECTIVES

This thesis seeks to examine the impact of information asymmetry and agency costs on capital structure. More specifically,

* the first essay seeks to develop a measure of information asymmetry for the JSE-listed non-financial firms and to test whether such information asymmetry exists and if it does, the degree of information asymmetry on the JSE.
* the second essay seeks to determine the impact of information asymmetry on the leverage of JSE-listed non-financial firms.
* the third essay seeks to examine the impact of corporate ownership under information asymmetry on capital structure.

1.3 SIGNIFICANCE OF THE STUDY

The anticipated contribution to the existent literature heightens the importance and justification of conducting this study. The first contribution to the extant literature is that this is one of the few recent studies to develop a comprehensive information-asymmetry index measure for the JSE-listed firms. The study develops an information-asymmetry index for JSE-listed firms based on Bharath et al., (2009) and the information ratings adapted from Pan et al., (2015). Also, it is the first study to combine two information-asymmetry measures in one study. Since there is no direct measure of asymmetric information, it is hypothesised that the use of both measures could possibly lead to the identification of a robust information-asymmetry measure for the selected firms. This is vital given the unobserved nature and elusiveness of the information-asymmetry concept, which to date, has been measured through proxies. Furthermore, this research and approach is rare in capital structure literature. Most literature on capital structure, specifically, testing pecking-order theory assumes the existence of information asymmetry as the major determinant of the capital structure of firms without testing whether asymmetric information exists in such firms and whether such information asymmetry influences the firms’ leverage. Literature on this topic has focused mainly on testing the implications of the pecking-order theory, thus testing whether firms follow a pecking order when issuing securities. Such evidence is then inferred to imply the existence of information asymmetry and its effect on capital structure.

Secondly, we test whether information asymmetry affects capital-structure decisions, which is the basic assumption of the pecking-order theory. There is a dearth in literature that tests whether information asymmetry affects the financing behaviour of firms. Furthermore, the empirical evidence for the pecking-order theory is abundant for developed markets such as the US and UK, but scanty in emerging markets, and mixed at best.

Thirdly, the literature on agency problems suggests that firms with concentrated ownership, large and institutional owners with the capability, willingness and ability to monitor managers’ actions have fewer agency costs (see for example: Jensen & Meckling, 1976; Stiglitz, 1985; Jensen, 1986; Crutchley & Hansen, 1989; Shleifer & Vishny, 1997). This implies close monitoring of managers’ actions to be in line with the best interest of shareholders. In the absence of such close monitoring, managers may not act in the best interests of existing shareholders, in contradiction to Myers and Majluf (1984) assumption. Thus, the pecking-order theory should hold for firms with concentrated ownership, and large and institutional shareholders. Such closely monitored firms ensure managers’ actions are in line with the best interests of existing shareholders. Leary and Roberts (2010) suggest that agency-based explanations can better explain the capital structure of firms than can asymmetric information. It is envisaged that varied corporate control and incentive conflicts can lead to diverse capital structures. It is therefore interesting to investigate how different corporate-ownership structures affect capital structure. As an example, it is crucial to examine how diffused and concentrated ownership structures determine the amount or level of debt a firm uses. In the spirit of the pecking-order theory, firms with concentrated ownership and with managers pursuing the interests of existing shareholders, should prefer internal funds, debt and as a last resort, equity.

Finally, it is vital to test whether ownership structure has the tendency to influence information asymmetry, and ultimately leverage. High ownership concentration is expected to be associated with less information asymmetry, and therefore less evidence of pecking order. To the best of our knowledge, this has not be been done in an African context.

It is envisaged that market regulators, investors and the market in general could benefit from such a study. For instance, the development and evaluation of information asymmetry (measures) is vital in the face of: recent global corporate scandals; financial crises such the one that occurred in 2008; increased demand for both financial and non-financial information about firms; and environmental and socially responsible investing. Low information asymmetry in markets is generally associated with lower costs of debt, market efficiency and thus better price discovery, all of which benefit all market participants.

1.4 STRUCTURE OF THE THESIS

The contributions of the thesis are organised in three Chapters (essays) summarised as follows:

**Chapter Two:** The first essay seeks to develop a measure of information asymmetry for the JSE-listed non-financial firms and to test whether such information asymmetry exists, and if it does the degree of information asymmetry. This is vital given the unobserved nature and elusiveness of the information-asymmetry concept, which to date, has been measured through proxies. Furthermore, this research and approach is rare in capital-structure literature. Most literature on capital structure, specifically, testing the pecking-order theory assumes the existence of information asymmetry as the major determinant of the capital structure of firms without testing whether asymmetric information exists in such firms and whether or not such information asymmetry influences the firms’ leverage. Literature on this topic has focused mainly on testing the implications of the pecking-order theory, thus testing whether firms follow a pecking order when issuing securities. Such evidence is then inferred to imply the existence of information asymmetry and its effect on capital structure. Furthermore, the empirical evidence for the pecking-order theory is abundant for developed markets such as the US and UK, but scanty in emerging markets and mixed at best.

**Chapter Three:** The second essay focuses on determining the impact of information asymmetry on the capital structure of JSE-listed firms. The important predictions of the pecking-order theory are that, information asymmetry is a major determinant of capital structure and that managers utilise internal funds first, followed by debt and lastly equity. Empirical research on the theory has focused exclusively on testing the predictions of the pecking-order theory, thus whether firms follow a pecking order when issuing securities. Furthermore, such indirect tests of the impact of information asymmetry on capital structure are mainly concentrated in the developed markets such as the US, UK and in some emerging markets such as China and South Africa. Despite the numerous tests on the pecking-order theory, the empirical evidence provided on the theory to date is conflicting at best. For example, some studies find a negative relationship between profitability and firm leverage, implying profitable firms first utilise internal funds before issuing debt. Shyam-Sunder and Myers (1999) find evidence in support of the pecking-order theory in the US that firms finance their deficits with debt. While Frank and Goyal (2003) find evidence that net equity issues track the financing deficit more closely than debt, refuting the pecking-order theory. Lemmon and Zender (2010) find support for the pecking-order theory after controlling for debt capacity in a large sample of firms. While we applaud these efforts, one cannot miss the conspicuous fact that no direct tests of the impact or effect of information asymmetry on capital structure is provided. The only ones currently are by Bharath, Pasquariello and Wu (2009) and more recently by Gao and Zhu (2015) and Pan, Lin, Lee and Ho (2015), and are conducted in the US and Taiwan respectively, and include a mix of 39 developed and developing markets. According to the pecking-order theory, the basic assumption of information asymmetry is the major (if not the sole) determinant of capital structure. Surprisingly, this basic assumption of the theory has not been tested empirically, in both developed and emerging markets, apart from in the above-cited papers.

**Chapter Four:** The third essay focuses on the agency-based explanations of capital structure. Myers & Majluf (1984) assume that managers act in the best interests of existing shareholders under asymmetric information. It is argued that managers acting on behalf of passive existing shareholders under asymmetric information will prefer internal sources of funding to external funding. In the case of a financing deficit, firms will issue debt first and equity last. Literature on agency problems suggests that firms with concentrated ownership, large and institutional owners with the capability, willingness and ability to monitor managers’ actions result in fewer agency costs (see for example: Jensen & Meckling, 1976; Stiglitz, 1985; Jensen, 1986; Crutchley & Hansen, 1989; Shleifer & Vishny, 1997). This implies close monitoring of managers’ actions to be in line with the best interests of shareholders. In the absence of such close monitoring, managers may not act in the best interests of existing shareholders, in contradiction to Myers and Majluf (1984)’s assumption. Thus, the pecking-order theory should hold for firms with concentrated ownership, including large and institutional shareholders. Such closely monitored firms ensure managers’ actions are in line with the best interests of existing shareholders. It is therefore interesting to investigate how different corporate ownership structures affect capital structure. As an example, it is crucial to examine how diffused and concentrated ownership structures determine the amount or level of debt a firm uses. In the spirit of the pecking-order theory, firms with concentrated ownership and with managers pursuing the interests of existing shareholders, should prefer internal funds, over debt and as a last resort, equity.

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**CHAPTER TWO**

**MEASURING INFORMATION ASYMMETRY**

1. **INTRODUCTION**

Information asymmetry dates back to the lemons principle introduced by Akerlof (1970) where one party knows more than the other party to the same contract. Information asymmetry exists when there is an imbalance in knowledge of relevant factors and details on a contract between two parties. The existence of information asymmetry is characterised by two major problems, which are adverse selection and moral-hazard problems (Knutsen, 2001).

Adverse selection relates to a situation where the type or quality of a product is unknown by one party in a transaction, while moral hazard describes a situation where there is a hidden action that results from the transaction. Of particular concern in this study is the adverse-selection problem. As an example, traders with better private information about the quality of a product will selectively participate in trades that benefit them, at the expense of the other traders. In a case where managers have inside information about the quality of the firm, they may offer or issue equity when they know the offer price exceeds their private assessments of the firm's value. Outside investors (aware that managers have private information) therefore require a high rate of return on equity to compensate them for the risk of buying a “lemon”. When debt is offered, outside investors infer that managers believe the current stock price is undervalued otherwise they would be keen on offering equity (Jensen & Meckling, 1976). Adverse-selection costs are lower for debt offerings. Thus, the required returns on debt and equity are related to perceived adverse-selection costs, implying that debt should be cheaper than equity as a source of external capital, forming a “[pecking order](https://en.wikipedia.org/wiki/Pecking_order_theory)” (Myers & Majluf, 1984). Consequently, Myers and Majluf (1984) state that information asymmetry is a major determinant of capital structure.

O’Hara (1995) extensively studies the problem of measuring information asymmetry about a firm’s value and the returns of securities. It is believed that insiders of a firm, such as managers, have intimate knowledge about the firm and are therefore better informed about the firm and its business. Indeed, Seyhun (1986) attests that corporate insiders earn positive abnormal returns when trading in their firm’s securities. Myers and Majluf (1984)’s pecking-order theory is based on information asymmetry between managers of the firm and outside investors. Managers know more about the firm as they get private information (firm-specific information) before the market (Diekens, 1991; Myers & Majluf, 1984; Ross, 1977). The firm-specific information asymmetry corresponds only to a subset of total market information asymmetry about the firm as both managers and investors are likely to be equally well informed about market-wide determinants of firm value.

Bagehot (1971) argues that adverse selection due to the presence of better-informed traders in the market affect the price-discovery process. It is only natural to believe that informed traders in the market are those closer to the firm’s operations, such as the managers, employees, analysts and large and/or institutional shareholders (Bharath et al., 2009). Indeed Seyhun (1986), and Piotroski and Roulstone (2004) show that firm insiders earn positive returns from trading on firms about which they have intimate information. United States of America (US) studies unanimously show that insiders are indeed better informed and earn abnormal returns (Jaffe, 1974; Finnerty, 1976; Seyhun, 1986, 1998; Rozeff & Zaman, 1988; Lin & Howe, 1990; Jeng, Metrick & Zeckhauser, 1999 and Mitchell & Kodongo, 2016, in South Africa). This is testament to the information asymmetry between firm managers and outside investors.

Market-microstructure literature is intended to capture adverse selection between a larger group of informed traders and the rest of the market who are assumed to be uninformed. Whilst these market-microstructure measures of liquidity capture information asymmetry between a group of informed traders and uniformed traders, Myers and Majluf (1984) only consider firm managers. The firm managers are a subset of informed traders who are also a subset of all traders in the market. Consequently, these microstructure measures of information asymmetry are by no means perfect measures of adverse selection between managers of the firm and outside investors. It is therefore not anticipated that these measures will precisely measure the adverse-selection component advanced by Myers and Majluf (1984). However, in the absence of better measures, these proxies are all we have to measure information asymmetry. This illustrates that information asymmetry is an elusive concept to measure.

The extant literature on information-asymmetry microstructure proxies are based on the fact that liquidity and transaction costs in particular consist of three components: order processing, inventory and adverse-selection costs. Of these three, the adverse-selection component captures information asymmetry.

The pecking-order theory is one of the most popular capital structure theories. However, empirical tests on this theory have focused exclusively on testing its implications, specifically whether firms issue debt first and equity as a last resort when external funding is needed. The empirical results of the tests are at best mixed. Thus, extant literature on the theory takes it as given that information asymmetry does exist in all the markets they apply the tests. They also do not assess whether the managers of such firms are acting in the best interests of existing shareholders (which is the main focus of Chapter Four) as assumed by the pecking-order theory (Myers & Majluf, 1984). However, a few authors such as Bharath, Pasquariello and Wu (2009); Bessler, Drobetz and Gruninger (2011) and more recently Gao and Zhu (2015) and Pan, Lin, Lee and Ho (2015) have since started to test the impact of information asymmetry on leverage. Only Bharath, Pasquariello and Wu (2009) and Bessler, Drobetz and Gruninger (2011) include the South African stock market. This clearly shows a gap in the literature testing the impact of information asymmetry on the financing behaviour of firms as well as on a more robust measure of information asymmetry. It is against this backdrop that this study seeks to develop a robust information-asymmetry index and information rating specific to the JSE. Therefore, this study seeks to develop and measure the level of information asymmetry of JSE non-financial listed firms. Furthermore, the study seeks to determine the degree of information asymmetry on the JSE-listed firms.

The extant literature on information asymmetry is largely based on developed markets (see for example: Agarwal et al., 2016; Ajina et al., 2015; Gajewski & Li, 2015; Orens et al., 2010, Cheng et al., 2006). There is a dearth in literature on information-asymmetry measures in African stock markets. The first contribution to the extant literature is that this is one of the few recent studies to develop an information-asymmetry-index measure for the JSE-listed firms. The study develops an information-asymmetry index for the JSE-firms based on Bharath et al., (2009) and information rating adapted from Pan et al. (2015). The information index is constructed using eight measures of information asymmetry, one more than the seven used by Bharath eat al. (2009). Most literature on information-asymmetry measure uses more than one proxy for information asymmetry (see for example Orens et al., 2010; Ajina et al., 2015; Gajewski & Li, 2015; Agarwal et al., 2016). However, none tries to extract a common information-asymmetry factor as Bharath et al. (2009) and this study do. Besides, Bharath et al. (2009) uses the JSE data up to 2002, which is now outdated. Since then, the JSE has gone through various regulatory, structural and technological changes meant to improve information asymmetry (efficiency), hence the need to do this study. Furthermore, this study constructs a comprehensive information rating specific to the JSE-listed firms. To the best of our knowledge, no such information rating exists on the JSE or in Africa. This is the first study to develop an information rating based on Pan et al. (2015), which is specific to the JSE. The information rating is more comprehensive and extensive as it goes beyond information-disclosure literature focusing on the impact of disclosure on information asymmetry (see for example Gajewski & Li, 2015; Fu et al., 2012; Brown & Hillegeist, 2007). Also, it is the first study to combine two information-asymmetry measures (information index and rating) in one study. Since there is no direct measure of asymmetric information, it is hypothesised that the use of both measures could possibly lead to the identification of a robust information-asymmetry measure for the selected JSE firms. This is vital, given the unobserved nature and elusiveness of the information-asymmetry concept, which to date, has been measured through proxies. This information rating includes the voluntary and non-voluntary disclosure of information as well as disclosure of information on company websites.

The remainder of this chapter is organised as follows: Section 2 reviews information-asymmetry proxies used in microstructure literature while Section 3 describes the data and methodology to be used in constructing the information-asymmetry index and the information rating.

1. **LITERATURE REVIEW**

The aim of this section is to review the extant literature on market-microstructure proxies of information asymmetry and the information rating. The first part of this section looks at the information-asymmetry, followed by the market-microstructure literature on information-asymmetry proxies, while the last part proceeds to detail the development of an information rating for the JSE-listed non-financial firms.

* 1. INFORMATION ASYMMETRY

Information asymmetry relates to a scenario where relevant information is not known to all the parties involved in a transaction (Ekumah & Essel, 2003). This implies that one party to the transaction possesses more or better information than the other party. In financial markets, information asymmetry entails the borrower knowing more about the project or investment than the investor (lender). Furthermore, information asymmetry embodies the heterogeneous processing of the same information by varying market participants. Information asymmetry can thus be measured on the basis of information quality and quantity. Information quality relates to reliable, timely, complete, fair and consistent information presented in clear, simple terms, relevant and understandable to decision makers or users (Tumwebaze, Orobia & Kamukama 2014). Information quantity, on the other hand, indicates the amount of information available to a decision maker or user. Too little or too much information can lead to inferior decision making (Afzal, 2015; Malhotra, 1982). O’Hara (1995) goes even further to state that information inefficiency can result in the collapse of the stock market. Jefferis and Smith (2004) stress the role stock markets play in pricing and allocating capital efficiently. Lagoarde-Segot and Lucey (2008) further comment that stock market informational efficiency is crucial for economic growth and, as such it is vital to persistently measure and improve information asymmetry in capital markets.

Prior market-microstructure literature on information asymmetry is largely based on the notion that market liquidity in general, and transaction costs specifically embody order processing, inventory and adverse-selection costs. The order-processing costs incorporate: communication; back-office costs; and fixed and variable transaction costs associated with placing or processing an order in the market. Inventory costs entail the carrying costs and the risks of stocking too much or too little inventory. Adverse-selection costs compensate market makers or liquidity traders for transacting with informed traders. The adverse-selection costs increase with the degree of information asymmetry. The adverse-selection component is presumed to measure information asymmetry. In an effort to provide a robust measure of information asymmetry, this study attempts to measure information asymmetry using the information-asymmetry index and the information rating. The information index is developed from market-microstructure proxies of information asymmetry and firms’ characteristics while the information rating is developed from firms’ information disclosure data. The information-index literature is discussed below, followed by the information rating.

* 1. MARKET-MICROSTRUCTURE MEASURES OF INFORMATION ASYMMETRY

The market-microstructure literature studies how the investors’ latent demands are eventually deciphered into actual transactions. Market-microstructure literature acknowledges that asset prices may not fully reflect all available information at all times due to market frictions as hypothesised by the efficient-market hypothesis (Malkiel & Fama, 1970). Information asymmetry is one such friction, which leads to market inefficiency. The issue of information asymmetry is extensively studied in accounting and finance literature. It is an elusive and unobservable concept subsequently; it has almost entirely been measured through proxies.

Bagehot (1971) attributes the revenues of the market maker to the transactions by three market players. The first group of market players consists of informed traders (who possess special or private information), the second group consists of liquidity traders (motivated by liquidity to trade), while the third group consists of uninformed traders (who rely only on publicly available information incorrectly believing that information has not been impounded into current market prices). It is the trading by the informed group that induces permanent revisions of the quotes to reflect the arrival of new private information.

Early market-microstructure literature recognised the important role played by the market makers in quote-driven markets. The market makers quote two-way prices, ready to either buy or sell securities thereby creating a market to trade securities at any time. The market makers trade against informed traders, liquidity traders and uniformed traders (Kyle, 1985). The market makers quote bid (prices at which they are willing to buy from traders) and ask (prices at which they are willing to sell to traders) that take into account three components. These there components are the order-processing costs, the inventory costs and the adverse-selection costs. Market makers incorporate these costs into their bid-ask prices. The order-processing and inventory costs are also considered as transitory components of the bid-ask spread while the adverse-selection costs are a permanent component of the spread (Glosten & Harris, 1988). Informed traders with private information will only trade when they have beneficial private information and thus impose adverse-selection costs on uninformed traders and market makers. Market makers pass on this adverse-selection cost to uninformed traders and thus adverse-selection costs are borne by uninformed traders (Kyle 1985). Market makers invariably lose to informed traders and offset those losses by trading with uninformed traders.

The market-microstructure literature generally decomposes the bid-ask spread into these order-processing, inventory and adverse-selection costs. Adverse-selection costs arise from trading with informed traders who possess private information. This component thus represents information asymmetry and microstructure literature attempts to decompose and measure information asymmetry through the adverse-selection costs component of the bid-ask spread. Almost all models on market microstructure look at the spread decomposition to measure information asymmetry and are discussed below. Most of these measures rely on the notion that asymmetric information determines securities liquidity, which is also an elusive concept to measure as there is no direct and all-encompassing measure of liquidity (Hasbrouck, 2005).

The issue of information asymmetry is extensively studied in accounting and finance literature. Information asymmetry is an elusive and unobservable concept; consequently it has almost entirely been measured through proxies. While there are several models developed in literature to extract the information-asymmetry component from the bid-ask spread, this study will discuss the following broad measures:

* Quoted or relative bid-ask spread
* Effective bid-ask spread
* The return-volume coefficient
* The probability of informed trading, in line with Bharath et al. (2009)
* The idiosyncratic volatility measure
* The liquidity measures namely: the liquidity ratio, the illiquidity ratio (lambda) and the reversal coefficient.

These measures are discussed below.

* + 1. **Quoted or proportional bid-ask spread (Roll, 1984)’s model and the Glosten and Harris (1988) model**

The earliest attempt to decompose the bid-ask spread into an information-asymmetry proxy was by Roll (1984), later revised by Glosten and Harris (1988). The Glosten and Harris spread decomposition model relied on the prominent role played by the market maker in a quote-driven market in the 1980s (Glosten & Harris, 1988). This model decomposes the bid-ask spread into a permanent (adverse-selection costs hence information asymmetry) and transitory component (order-processing or transaction costs and inventory costs).

This model relates the changes in stock-transaction prices to the transaction volume and to a trade indicator (i.e. buys or sells) as illustrated by the model below:

1

Where I*t* is the trade indicator equal to 1 if buyer initiated and -1 if seller initiated.

Pt is the transaction price

Vt is the volume traded

t captures public news

The permanent component that captures the adverse-selection costs is and the transitory component is . The adverse-selection component as a percentage of the total spread represents information asymmetry and is measured as:

2

where IA is information asymmetry and t is the average transaction volume over the estimation period (Glosten & Harris, 1988). The Lee and Ready (1991) procedure is applied to identify the trade indicator.

This model expresses the adverse-selection component (Z0) and the combined order-processing and inventory component C0, as linear functions of transaction volume. Based on trade data, the Ordinary Least Squares (OLS) method is employed to obtain the estimates for each listed stock in the sample.

However, most exchanges have ditched the quote-driven market in favour of the order-driven market. The JSE is no exception to that as it adopted the order-driven market, rendering this model obsolete. In an order-driven market, traders and their unexpected limit orders are the primary drivers of liquidity. Subsequently, several spread-decomposition models where developed such as those devised by Lin, Sanger and Booth (1995), Huang and Stroll (1997) and Madhavan, Richardson and Roomans (1997).

* + 1. **The Lin Sanger Booth (1995) model**

This model attempts to measure empirically the effective spread component following Huang and Stoll (1994), Lin (1993) and Stoll (1989). The model is based on an order-driven market. Most markets around the world (including the JSE) are order-driven and thus more applicable than the quote-driven spread-decomposition model by Glosten and Harris (1988). The Lin et al. (1995) model assumes zero inventory costs in the calculation of the signed effective half spread (Zt). This model is similar to the Glosten model except is it based on an order-driven market unlike the quote-driven market of Glosten and Harris (1988). The model defines the signed effective half spread (Zt) as the transaction price at time t, (Pt), minus the spread mid-point, Qt. The signed effective spread is negative for sell orders and positive for buy orders. To identify the arrival of new private information revealed by the trades, Lin et al. (1995) add quote revisions of to both bid and ask quotes in the subsequent trade or quotes. Zero and one bound the proportion of spread due to adverse selection (). The dealer’s gross profit as a fraction of the effective spread is defined as where represents the extent of order persistence. reflects quote revisions in response to a trade as a fraction of the effective spread, and measures the pattern of order arrival as follows:

3

4

and are assumed to be uncorrelated error terms. Using the OLS, Lin et al. (1995) use the following model to obtain the adverse-selection component () for each stock in the sample:

5

The logarithms of the transaction price and the mid-point quote are used to yield a geometric return for the dependent and a relative effective spread for the explanatory variable.

* + 1. **The effective spread (Goerge, Kaul and Nimalendran, 1991) model**

This model allows expected returns to be serially dependent. The serial dependence has the same impact on both transaction returns and bid-ask spread mid-point returns. Hence the difference between the two filters out serial autocorrelation, which is used to measure adverse selection. The transaction return is given by:

6

Where Et is the expected return from time t-1 to t, and are the fractions of the spread due to order processing and the adverse-selection component respectively, is the percentage bid-ask spread, is a trade indicator +1 buy and -1 sell indicator and represents public-information innovations. The mid-quote or mid-point returns are measured as follows:

7

the mid-point quote returns are subtracted from the transaction returns and multiplied by two yields:

8

where .

Relaxing the assumption that is constant and including an intercept yields:

9

Again the Lee and Ready (1991) procedure is applied to determine the trade indicators and an OLS is applied to estimate the adverse-cost component, which represents information asymmetry.

* + 1. **The probability of informed trading (PIN, Easley, Hvidkjaer and O’Hara, 2002) model**

Easley, Keifer and O’Hara (1996) were the first to develop a model in which the extent of information asymmetry is inferred from the trading process, rather than from the price impact of trades, known as the probability of informed trading (PIN). The PIN model was later refined by Easley, Hvidkjaer and O’Hara (2002). Informed and uninformed trading occurs simultaneously in this model, hence it’s difficult to identify one from the other. Informed traders will only trade when they have special or private beneficial information. Subsequently, when they trade, there tends to be clustering of trades. Easley et al. (1996) regard this clustering of trades, as a result of informed traders taking advantage of the private information they have, as abnormal trading. Thus trade clustering is used to measure abnormal trading by informed traders hence the probability of informed trading (PIN) is the ratio of abnormal trading to total trading shown as:

) 10

Where is the frequency or probability of the arrival of new information

is the arrival of informed orders

is the arrival rate of uninformed orders

This model assumes an efficient market where trade takes place among informed and uninformed traders. Information events happen in trading days with a probability of α. The information event conveys bad (negative) news with a probability of δ, and good news with a probability of (1-δ). Informed traders only trade when they have private information, thus their orders enter the market following a Poisson process with arrival rate of μ. It is also assumed that the informed traders trade on the “right” side of the market. Thus, given bad news, informed traders will sell stocks, and buy when the news is good. Uninformed traders’ orders enter the market following a Poisson process and their arrival rate is ɛ, likely to buy or sell. The probability of observing a number of buys (B) and sells (S) is given as:

11

Where Yt is the vector of buys and sells observations on day t. The probability of informed trading in the above equation is a function of three Poisson-process probabilities, weighted by the probability of being a good-news α(1-δ), bad-news αδ and no-information day (1-α). This model assumes a constant rate of arrival of informed and uninformed trades (μ, ɛ). The maximum likelihood function is then used to estimate α δ μ and ɛ. Once these parameters are known, the PIN is then estimated as:

) 10

The probability of informed trading is the imbalance between buying and selling events at a time. This imbalance is regarded as a sign of informed trading in which information events are independent from one another over the trading days. An abnormal number of buy or sell orders is interpreted as informed trading and is used to identify while the number of days on which there is an abnormal volume of buy and sell orders is used to identify and . is the probability of an information event causing a low signal (thus sell orders are initiated) and is the probability of an information event causing a high signal (thus buy orders are initiated). The underlying assumption in this model is that, only informed trading should lead to trade clustering. The greater the estimated PIN is, the greater too is the estimated firms’ information asymmetry. However, the trade clustering can emanate from liquidity shocks unrelated to any information-based trading (Duarte & Young 2009). Misspecification errors could also arise from erroneously identifying buy and sell orders in the market (Hwang, Lee, Lim & Park, 2013). The PIN model is widely used in capital markets as a proxy for information asymmetry as it uses secondary trade data and is considered more independent (Hillegeist & Lo, 2008; Abad & Rubia, 2005). This study employs the PIN of Easley et al. (2002) as it has been consistently validated in the international literature (Aslan et al., 2011; Duarte & Young, 2009; Gruces & Kawamura, 2005; Abad & Rubia, 2005).

* + 1. **The return-volume coefficient (Llorente, Michaely, Saar and Wang, 2002) model**

This model was developed by Llorente et al., (2002). It classifies trades into hedging and speculative trades. Hedging trading is meant for portfolio rebalancing for risk sharing, while speculative trading relies on private information. These two types of trading generate different return-volume dynamics. As an example, when an investor sells a stock for hedging purposes, the stock price decreases so as to entice other investors to buy it. Since the future expected pay-offs from the stock remain unchanged, the decrease in the stock price causes a low return in the current period and a high expected return in the next period. However, when an investor sells a stock because of private information, its price will decrease, reflecting the negative private information about the stock’s expected future payoffs. This low return in the current period is often followed by a low return in the next period due to the slow pace of information incorporation into the new price. This implies that hedging generates negative autocorrelated returns whereas speculation generates positive autocorrelated returns. In high-volume periods, stocks with a high degree of speculative trading tend to exhibit positive autocorrelated returns while stocks with low levels of speculation tend to exhibit negative autocorrelated returns. Therefore this models attempts to create an equilibrium model to derive return-volume dynamics due to hedging and speculative trading. The equation used to do this is as follows:

12

Where *Rt* is the stock return at time *t*, *Volt*− 1 is the trading volume at time *t*-1, and *εt* denotes a random disturbance with mean zero and finite variance *σ*2. The coefficient *β*2 measures the effect of the interaction between the lagged return and the lagged volume. If hedging is relatively more important than speculation, high-volume days will be followed by price reversals, and therefore, *β*2 will be significantly negative. In contrast, if speculation is the primary trading motive, price continuations are expected following high-volume days, and therefore, *β*2 will be significantly positive.

* + 1. **Idiosyncratic volatility**

Idiosyncratic volatility measures the amount of price variability due to firm-specific information. This is directly related to the level of informed trading in the market and therefore the level of information asymmetry. Two approaches are used to measure idiosyncratic volatility.

1. Rajgopal and Venkartachalam (2010) model

This model employs the standard deviation of the residuals of the Fama and French (1993) factor model represented as:

13

Where Rit is the return on a stock

Rmt is the return on the market portfolio

SMB is the small-minus-big portfolio

HML is the value portfolio (high minus low)

1. Hutton, Marcus and Tehranian (2009) model

Idiosyncratic volatility is measured as:

) 14

Where R2 is the coefficient of determination from the FF factor model above. These measures have been widely used in literature (see for example Li, Rajgopal & Venkatachalam, 2014) and are simple to compute; hence this study employs this measure as well. Bharath et al. (2009) exclude the idiosyncratic volatility in their information-asymmetry index development.

* 1. THE TRADE-CLASSIFICATION RULES

The information asymmetries proxies discussed above rely on the accurate identification of buys and sells from trade and quote data. There are three known trade-classification rules, which are the Tick Rule (TR), the Lee and Ready (1991) (LR) and the Bulk Volume Classification (BVC) rules. These rules are discussed briefly below.

* + 1. The Tick Rule

This is the most common level 1 algorithm that uses trade data. The rule classifies a trade as buyer initiated if the trade price is above the preceding trade price (uptick trade) and classifies a trade as seller initiated if trading price is below the preceding trading price (downtick trade). If the trade price is equal to the previous trading price, (zero-tick trades) the rule uses the next or closest prior price that differs from the current price. If that closest price is below the current trade price, then the trade is classified as a zero uptick, thus it is buyer initiated. However, if the closest trade price is above the current trade price (zero downtick), it is classified as a zero downtick and thus seller initiated. The TR requires only trade data and is thus easy to apply and ensures all trades are classified. Odders-White (2000), Ellis, Michaely and O’Hara (2000) and Chakrabarty, Li, Nguyen and Van Ness (2007) report 79%, 78%, and 75.4% accuracy rates for the TR classification rule.

* + 1. The Lee and Ready (1991) trade-indicator model

The LR is the most popular and extensively used trading-classification rule in microstructure literature. It is a level 2 algorithm, thus relies on trade and quote data to assign trade indicators. It applies the TR rule above to assign trades that occur at the mid-point of the bid-ask spread. Trades outside the mid-point are assigned using the quote rule. The quote rule classifies trades above the mid-point as buyer initiated while those below are classified as seller initiated. Odders-White (2000) and Ellis, Michaely and O’Hara (2000) respectively report 85% and 81% accuracy rates for the TR classification rule. The LR rule is thus more accurate than the TR rule, however it is more cumbersome and requires both trade and quote data. Modern trade data may not allow for precise matching of quotes and trades, given the high rates of orders and cancellations, thus hindering its usefulness.

* + 1. Bulk volume classification

Easley, Lopez de Prado and O’Hara (ELO) (2012) propose replacing the tick-by-tick rule with continuous classification using probabilities. ELO (2012) aggregate trading activity over time, volume, or trade intervals (bars) and use the standardised price change between the bars to assign a fraction of the volume as buyer initiated and the reminder as seller initiated. The fraction of buyer-initiated volume for each bar is measured as follows:

15

Where is the estimated buyer-initiated volume during bar τ, is the aggregate volume during bar τ. Z(.) represents the cumulative distribution function of the normal distribution. is the price change between the last trade price in bar quote and the last trade price in bar quote τ-1, is the volume-weighted standard deviation of τ. The assumption is that, as increases (decreases), ( increases (decreases). The seller-initiated volume is given by . Chakrabarty, Pascual and Shkilko (2015) compare the three trading rules and conclude that the TR and the LR are superior and more accurate than the BVC.

In this study, the LR rule is used and the TR rule is used where trade or quote data is missing due to their accuracy and their relatively easy computational requirements.

* 1. THE LIQUIDITY MEASURES

The market microstructure does influence liquidity. The JSE is an order-driven market and thus liquidity is provided by traders and open-limit orders. Glosten (1994) suggests that an order-driven market has a positive impact on bid-ask spreads based on private information trades. Handa, Schwartz and Tiwari (2003) conclude that the magnitude of the bid-ask spread is dependent on differences in stock valuations and adverse selection, all originating from information asymmetries. All the dimensions of liquidity (such as immediacy, bid-ask spread, depth and resiliency), are determined by limit and market orders in an order-driven market such as the JSE. Limit orders provide liquidity while market orders demand liquidity.

**2.4.1 Illiquidity (Price-impact measure of Amihud, 2002)**

One measure of liquidity is known as the impact of order flow on market prices and is also known as lampda (Kyle, 185; Amihud & Mendelson 1980). Lampda increases with adverse selection and inventory costs. However, direct estimation of lampda requires transaction-level data, which is not readily available (Hasbrouck, 2005). Therefore, the price-impact measure, also known as the illiquidity ratio is employed in this study following Amihud (2002). It is defined as the average daily absolute stock return divided by its trading volume on that particular day (Amihud, 2002). Specifically, it is the mean of the square root of the ratio of a firms’ absolute stock return to the reported daily rand volume over all days in a fiscal year with non-zero volume (Hasbrouck, 2005). It is given by:

16

It is feasible for emerging markets to have zero-trading days and or low-trading volume. Low-volume days correspond with minimal price changes. Lesmond (2005) validates the Amihud (2002) illiquidity measure as the best to measure price impact on the JSE. Goyenko et al. (2009) further corroborate that the Amihud’s illiquidity measure accurately measures the price impact of liquidity on the JSE. This illiquidity measures the price movement associated with volume therefore it measures market depth (Chai, Faff & Gharghori, 2010). Amihud (2002) shows that illiquidity is significantly positively related to lampda. Subsequently, a liquid stock due to low adverse selection, inventory costs or both, accompanied by large trading volumes will have small prices changes.

**2.4.2 The Amivest liquidity ratio**

Cooper, Groth and Avera, (1985) and Amihud, Mendelson and Lauterbach (1997) develop and measure the liquidity ratio as minus the mean square root of the stock’s reported daily rand volume to its absolute stock return over all days in a fiscal year with non-zero return. It is the opposite of the Amihud illiquidity measure explained above. The more adverse selection in a stock, the worse is that stock’s liquidity and thus the greater is that stock’s illiquidity. The Amivest liquidity is calculated as:

17

Where rit and Volit are the return and the rand trading volume of stock i on day t.

**2.4.3 The return reversal coefficient**

Pastor and Stambaugh (2003) allude to the fact that a stock’s liquidity can be captured by the interaction between its returns and the lagged order flow. They argue that fewer liquid stocks overreact to order flow, thus illiquid stocks have a greater return reversal for a given rand volume. Adverse-selection cost worsens a stock’s liquidity and therefore, the greater the adverse selection in a stock, the less liquid the stock will be. Illiquidity will rise in the face of adverse-selection costs (Pastor & Stambaugh, 2003).

The equation is as follows:

18

Where rit is the return of stock *i* on day t, rmt is the return on the J203 on day t and Volit is the rand trading volume of stock i on day t. The coefficient γi measures the sensitivity of a stock’s excess return over the index with respect to lagged signed volume. The intuition is as follows: volume moves prices. However, some of the price change is transitory and will be reversed on the next trading day. The coefficient γi measures this reversal and is thus expected to be negative. The less liquid a stock, the higher the temporary price change and the reversal should be. Thus, less liquid stocks should have higher absolute (i.e. more negative) γi . The J203 is used as a market proxy.

* 1. INFORMATION RATINGS

Financial crises, financial globalisation, environmental concerns and corporate scandals around the world have heightened the need for corporate governance through increased accountability, transparency and disclosure practices (King Committee, 2002; Mallin 2002; Iatridis, 2010). There is a general policy shift deviating from the conventional view that financial performance vindicates poor governance. Recent corporate governance in South Africa (and around the world) distinctively requires companies to provide greater transparency and information disclosure and there has been a surge in pressure on the quality of information provided from internal and external stakeholders, regulators and investors alike (Linsley & Shrives, 2006). Improved disclosure is imperative for long-term sustainable corporate operations (Abraham & Cox, 2007; Bhimani, 2009).

Greater transparency and disclosure reduce information asymmetry between the firms’ managers and its stakeholders (Rajgopal, 1997; Holm & Laursen, 2007), which enhances firm performance (Abdo & Fisher, 2007; Ntim, Opong, Danbolt & Thomas, 2012; Ntim, 2011). According to Holm and Laursen (2007), increased corporate disclosure and transparency can be an effective strategy to garner support from a firm’s influential stakeholders such as the regulators, investors and government. Furthermore, greater transparency and disclosure could have significant investment, financing and liquidity implications by reducing agency and information-asymmetry problems (Abraham & Cox, 2007; Brown & Caylor, 2009). Good corporate governance increases a firm’s performance. Consequently, share prices appreciate and as a result the cost of outside capital and/or risk tends to fall (Black et al., 2006; Chen et al.2009). Corporate governance is also particularly crucial to emerging markets’ economic growth, which rely on foreign investments (Vaughn & Ryan, 2006).

It is opined that investors in certain emerging markets will pay a premium of 23 to 28% for shares with good corporate governance compared to firms with similar performance but poor corporate governance (Rose, 2003). Collins and Montgomery (2005) even go so far as to state that good corporate governance reduces the risk of firm failure. It can thus be argued that corporate governance should be viewed as a component of equity risk (Bozec & Bozec, 2011). Indeed Patel, Balic and Bwakira (2002) confirm that firms with higher transparency and disclosure are prized higher compared to similar firms with lower transparency and disclosure in over 30 countries. Abdo and Fisher (2007) unearth a positive relationship between corporate-governance disclosure and firm performance using 97 JSE-listed firms during 2003 and 2006. They also illustrate that investors pay a premium for companies with a high governance-disclosure score, thus corporate-governance disclosure is a significant component of equity risk. Ntim (2013) confirms a positive relationship between broader corporate governance and firm performance in South Africa.

Using the Standard & Poor (S&P)’s Transparency and Disclosure (T&D) ratings, Durnev & Kim (2002), for example, found that company-level rankings are useful in understanding financial decision making at the company level. This suggests that the market pays a premium for companies that provide more information in their annual reports than is required by regulations. Companies that earned high T&D rankings for their annual-report disclosure typically provided information in their annual reports that is also required in other documents (for example, executive compensation information typically found only in proxy statements).

Developments in corporate governance started with the requirement to disclose financial and economic performance information about the operations of a company. Recently, due to cases of accounting fraud observed in some large companies (as an example, Enron, WORLDCOM), firms have also been requested to publish a report on corporate governance so that users can determine their level of “good governance”. Additionally, and usually on a voluntary basis, companies often produce corporate social responsibility reports to demonstrate to society as a whole and to stakeholders in particular the appropriateness of their corporate behaviour regarding social and environmental aspects (Lozano & Huisingh, [2011](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0063)). In general, these new reporting requirements added through a raft of measures, such as laws regulations, standards, codes, guidelines and stock market listing requirements, is currently a common practice among companies, which seek to reduce agency costs, political costs and information asymmetries (Rodríguez-Melo & Mansouri, [2011](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0082); Heikkurinen & Ketola, [2012](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0051); Matisoff et al., [2012](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0068); Stanny, [2012](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0086); Fifka & Drabble, [2012](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0031); Fifka, [2012](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0030)). These information-disclosure requirements are both mandatory and voluntary, although the disclosed information may differ in information quality.

Longitudinal studies on corporate information disclosure have revealed a gradual increase in the number of companies adopting these practices and in the amount of information provided (Deegan & Gordon, [1996](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0025); Gray et al., [1995](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0042); [2001](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0041); Da Silva Monteiro & Aibar-Guzmán, [2010](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0022); Luna-Sotorrío & Fernández-Sánchez, [2010](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0064); Hassan & Ibrahim, [2012](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0048); Aşıcı & Bünül, [2012](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0004); Garnåsjordet et al., [2012](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0036)). However, there are vital adjustments in the relevance and quality of the information published (Clarkson et al., [2008](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0016); Prado Lorenzo & García Sánchez, [2010](http://onlinelibrary.wiley.com/doi/10.1002/bse.1765/full#bse1765-bib-0077)).

* 1. CORPORATE GOVERNANCE IN SOUTH AFRICA

The corporate governance landscape in South Africa is mostly regulated by the King Codes (I, II, III and the forthcoming IV) and the JSE listing rules in conjunction with the Companies Act 1973 (and amendments thereof). The primary objective of the King Code report(s) is to promote the highest standards of corporate governance in SA by taking an integrated reporting approach, which encompasses all stakeholders (Barrier, 2003). The King reports I to III (including the forthcoming King Code IV) will be discussed in detail in the literature review of the paper.

* 1. THE SFI INFORMATION RATING

The Securities and Futures Institute of Taiwan (SFI) is a quasi-government organisation entrusted with the introduction and development of an Information Disclosure and Transparency Ratings System (IDTRS, henceforth Information Ratings). This occurred in 2003 upon enactment of the Corporate Governance Best-Practice Principles (CGBPP) by the Taiwanese Stock Exchange (TSE) and the GreTai Securities Market (GTSM), collectively referred to as TSE/GTSM. The main purpose of the IDTRS is to develop criteria to evaluate the level of information disclosure of listed firms and assist regulators to monitor Taiwan’s financial markets. The SFI stipulates that when setting up its corporate governance system, in addition to complying with relevant laws and regulations, a TSE/GTSM-listed company should also follow the following principles:

* Protect shareholders' rights and interests
* Strengthen the powers of the board of directors
* Fulfill the function of supervisors
* Respect stakeholders’ rights and interests
* Enhance information transparency.

The SFI (2017) principles incorporate not only directors and supervisors, but also employees and shareholders who must perform their functions to raise corporate governance. The objectives of the IDTRS ratings are clearly specified as:

* To promote corporate transparency by developing evaluation criteria, which not only examine local disclosure practices but also comply with international standards.
* To assist companies in reducing the cost of capital as disclosure levels increase.
* To enable investors to better protect their interests through the use of ranking results as an additional decision-making tool.
* To help regulators better monitor the market (SFI, 2014).

To measure or evaluate firms’ information disclosure and transparency, the SFI uses 109 indicators divided into five categories namely: compliance with mandatory information disclosures; timeliness of information reporting; disclosure of financial forecast; disclosure of annual reports; and disclosure of corporate website. Each disclosure item is in the form of a “yes” or “no” question where each “yes” question is equal to one point and each “no” is equal to zero. Unfortunately, the IDTRS aims to determine the existence of each closure item not its accuracy. However a two-stage screening process is applied. All information provided is preliminarily screened by the SFI in-house ranking team based on the existence of each disclosure item. All companies are entitled to check the preliminary result via the internet, then directly respond to the SFI regarding ambiguous issues in two weeks. Upon receiving the different opinions expressed by the companies, the ranking committee, composed of experts from the accounting profession, industry and academia, access the presentation of information and proposed ranking results. Subsequently the corporate governance consulting committee decides the final list of company ranking results.

This information-ratings approach draws from both the direct financial and non-financial information and is less sensitive to the way in which asymmetric information is extracted.

2.8 THE STANDARD & POOR TRANSPARENCY AND DISCLOSURE RATING

The Standard and Poor (S&P) Transparency and Disclosure (TD) ratings were developed in 2001 as an initiative to introduce new governance information and analytical services. The S&P TD ratings include the Standard & Poor’s Global 1200 index as well as more than 300 companies in the S&P/IFCI emerging-markets indices. The study was launched in 2001 for emerging-market companies in Latin America and Asia, and in 2002 the study was extended to the S&P/TOPIX 150 in Japan. The TD methodology incorporates disclosure items from the criteria that Standard & Poor’s Governance Services uses in its interactive corporate governance scoring service. In order to assess TD practices, the study identifies 98 disclosure items, classified into three broad categories:

* Ownership structure and investor rights
* Financial transparency and information disclosure, and
* Board and management structure (Patel & Dallas, 2002)

However, the S&P TD is less broad compared to the SFI IDTRS. The S&P TD is mostly concerned about disclosure of information by management whereas the SFI TD includes even employees of the firm, thus all stakeholders.

1. **METHODOLOGY**

This section describes the data used in developing the information-asymmetry index as well as the information rating. The first section looks at data sampling and the second section looks at the construction of the information-asymmetry index and information rating respectively.

* 1. SAMPLING AND DATA COLLECTION

The firms’ quote and trade data from 1995 to 2017 are sourced from Bloomberg Global database (BGD) and IRESS is used to supplement missing values. In order to calculate the firm-level proportional quoted spread, effective spread, PIN, return-volume coefficient, idiosyncratic volatility, the liquidity ratio, the illiquidity ratio (lambda) and the reversal coefficient, daily closing data is used. Specifically: closing share prices; daily bid-ask spreads and quoted depth; volume traded; number of trades; and number of outstanding shares data is obtained in order to calculate each variable used to construct the information-asymmetry index. To construct the information ratings, firms’ annual financial and non-financial information annual data is obtained from firms’ financial statements or reports, company filings and websites drawn from BGD. For the purposes of this study, all firms are included from 03 January 1995 to 31 December 2017. Consistent with capital-structure literature, utility and financial firms are excluded (see for example Chipeta & Mbululu, 2013, Chipeta & Deresa, 2016).

3.2 ECONOMETRIC APPROACH

**3.2.1 Information-asymmetry index constituency**

1. *The quoted/proportional spread*

The quoted or relative spread is measured as:

19

Where Bidit is highest or best-buying price for firm *i* on day *t* and Askit is the lowest or best-selling price for firm *i* on the day t.

1. *The effective bid-ask spread*

The effective bid-ask spread is measured as follows:

20

Where Di is the trade indicator variable equal to +1 for buy-initiated trades and -1 for seller-initiated trade for firm *i* on day t. Pit is the transaction price for firm *i* on day *t* and M*it* is the mid-point quote () prevailing at the time of the trade.

1. *The probability of informed trading (PIN)*

The probability of informed trading (PIN) is the ratio of abnormal trading to total trading shown as:

) 10

Where is the frequency or probability of the arrival of new information

is the arrival of informed orders

is the arrival rate of informed sell orders and

is the arrival of informed buy orders.

1. *Illiquidity (price impact measure of Amihud 2002)*

Measured as follows:

21

Where *rit* is the daily absolute return and *LogVolit* is the natural log of the number of shares traded times the share price (rand volume) for firm *i* on day *t*.

1. *Share-price volatility*

It is calculated as the daily standard deviation of the daily share returns. Any change in share price following a change in investor’s expectations will increase volatility. The share-price volatility is a well-known measure of volatility, with high volatility indicating high risk (Ajina, 2015). The private information revealed to the market causes the price volatility (Cheng et al., 2006) and low levels of volatility correspond to low levels of information asymmetry (Leuz & Verrechia, 2000). Thus share-price volatility is positively correlated with information asymmetry.

1. *Amivest liquidity ratio*

Liquidity ratio measured as minus the mean square root of the stock’s reported daily rand volume to its absolute stock return over all days in a fiscal year with non-zero return. The more adverse selection in a stock, the worse that stock’s liquidity is and thus the greater is that stock’s illiquidity. The Amivest liquidity is calculated as:

22

Where rit and Volit are the return and the rand trading volume of stock i on day t.

1. *Idiosyncratic volatility*

Idiosyncratic volatility is calculated following the Rajgopal and Venkartachalam (2010) model and the Hutton et al. (2009) model. Firstly, expected returns are calculated using the FF model below:

13

Where Rit is the return on a stock

Rmt is the return on the market portfolio (The All Share Index, J203)

SMB small-minus-big portfolio using market capitalisation

HML high-minus-low portfolio based on book-to-market ratio.

Following Rajgopal and Venkartachalam (2010), idiosyncratic volatility will be measured as follows the standard deviation of the residuals of the Fama and French (1993) factor model. Using the Hutton, Marcus and Tehranian (2009) model, idiosyncratic volatility is then measured as:

) 14

Where R2 is the coefficient of determination from the FF (1993) model.

1. *The return reversal coefficient (Pastor and Stambaugh, 2001)*

The return reversal coefficient captures the price-volume relationship. It is estimated using an OLS regression as follows:

15

Where rit is the return of stock *i* on day t, rmt is the return on the J203 on day *t* and Volit is the rand trading volume of stock *i* on day *t*. The coefficient γi measures the sensitivity of a stock’s excess return over the index with respect to lagged signed volume. The intuition is as follows: volume moves prices. However, some of the price change is transitory and will be reversed on the next trading day. The coefficient γi measures this reversal and is thus expected to be negative. The less liquid a stock, the higher the temporary price change and the reversal should be. Thus, less liquid stocks should have higher absolute (i.e. more negative) γi. The J203 is used as a market proxy.

The Leary and Ready (1991) trade-indicator classification will be utilised. The LR trade-classification rule has been long-established as more accurate in classifying buyer- and seller-initiated trades in the literature (Chakrabarty, Pascual & Shkilko, 2015).

After computing the eight measures of information asymmetry, which must all be positively correlated with adverse-selection costs (information asymmetry), the standardised measures are then computed.

The principal component analysis will be applied to extract the first component from the above calculated information-asymmetry proxies. This is in line with Bharath et al. (2009). The first principal component of the available standardized proxies for the extent of firm-level adverse selection in each fiscal year τ, PCA*1iτ* is computed *as* PCA1iτ, as well as of the available year-on-year standardized changes in such extent, ΔPCA*1iτ*. In most cases, only the first eigenvalue is significantly larger than one. We expect that one factor captures much of the common variation among the proxies (i.e., the variation due to adverse selection). We then define a parsimonious index of either firm-level extent of or year-on-year change in adverse selection as

ASYiτ = PCA*1iτ* and

ΔASYiτ = ΔPCA*1iτ*, respectively.

It is envisaged that the first component will capture the adverse-selection costs (information asymmetry) between informed managers and uniformed investors. The central idea of principal component analysis (PCA) is to reduce the dimensionality of a data set consisting of a large number of interrelated variables, while retaining as much as possible of the variation present in the data set. This is achieved by transforming to a new set of variables, the principal components (PCs), which are uncorrelated, and which are ordered so that the first few retain most of the variation present in all of the original variables. PCA allows one to reduce the data dimensions without any loss in information contained in data. This is crucial in reducing the eight indices in formulating one information-asymmetry index without losing any information.

The first principal component is first computed at first in level at first and as changes in asymmetric information.

**3.2.2 The information rating**

Following Pan et al. (2015) 114 questions are used to compile the transparency scores for each sample firm. These questions fall into five disclosure categories namely: compliance with the mandatory information disclosures; timeliness of the information disclosure; disclosure of the financial forecast; disclosure of annual reports; and corporate website disclosure. Each sample firm is then assigned a rating from AA to D based on these questions. Firms with highest levels of transparency are presumed to have less information asymmetry. The specific details of the information-ratings measures will also be discussed in detail in the literature review section. The information rating, which measures information completeness hence, information asymmetry, will then be used to determine if information asymmetry affects the capital structure of firms (in Chapter Three).

Each company is assessed against the 114 disclosure indicator questions. Each disclosure indicator represents a “yes” or “no” question. One point is given to the question with a “yes” answer and zero otherwise. A firm's total score is the sum of the points from each indicator. The score mechanism is comparable to the governance index (G-index) compiled by [Gompers et al. (2003)](http://www.sciencedirect.com/science/article/pii/S0929119915000127" \l "bb0125) on a firm's governance practices and to the one used by Pan et al. (2015). A firm with the highest corporate transparency is assigned an AA rating, whereas a firm with the lowest corporate transparency is given a D rating. A score of information rating ranging from 1 (the lowest, D) to 7 (the highest, AA) is assigned.

Table 1 below shows the information ratings and how firms will be classified into each rating category.

Table 1: The information rating scores

|  |  |  |
| --- | --- | --- |
| **Pan et al. ratings** | **Information Rating (IR)** | **Ranges** |
| A++ | AA | 98 – 114 |
| A+ | A | 82 – 97 |
| A | BB | 66 – 81 |
| A- | B | 50 – 65 |
| B | C | 34 – 49 |
| C | D | 18 – 34 |
| C- | D- | 00 – 17 |

*Source:* Pan et al. (2015)

The total scores for each company as a proportion of the total 114 indicators will determine the information rating (IR) of each company per year. As an example, a company scoring 95 out of 114 questions will be classified into the A IR category with ranges between 82 – 97. This represents the second-highest level of information asymmetry. Table 2 shows the proportion of each of the five disclosure items’ categories. Disclosure of annual reports is the biggest contributor to the IR scoring. This is ideally so, as all firms are expected to publicise their annual financial statements and they are also required to furnish the information timeously. The disclosure of financial forecast has a low proportion as firms are not required to furnish such information. However this measure is vital as it provides stakeholders with possible future information about a firm’s prospects. Disclosure of information on company websites is also vital.

From the computed IR scores, a standardised information-rating score (IRS), is computed as the difference between IR for firm i at time t and the average IR, scaled by the firm's IR standard deviation. Apart from measuring the annual IR scores, the annual changes in the IR ratings are also computed

**Table 2: Five dimensions of the information-rating measurement**

|  |  |  |
| --- | --- | --- |
| **Dimension** | **Total Items** | **Proportion** |
| Regulatory compliance | 12 | 10.53 |
| Timeliness of information disclosure | 26 | 22.81 |
| Disclosure of financial forecast | 5 | 4.39 |
| Disclosure of annual report | 50 | 43.86 |
| Disclosure of firm website | 21 | 18.42 |
| **TOTAL** | **114** | **100.00%** |

*Source:* Pan et. al. (2015)

The information ratings draw from both direct financial and non-financial information. Consequently, the IRs are likely to be superior to the information-asymmetry index because they are not sensitive to the way in which asymmetric information is extracted. The IRs are less entangled with firm characteristics, analyst interpretations and not limited to high-frequency data availability that may cause sample-selection bias. Furthermore, in response to investors' increasing demand for quality corporate disclosure, the IR has incorporated voluntary disclosure measurements such as the willingness to disclose consolidated financial-forecast information and the amount of non-audit fees from the same auditor into the evaluation criteria (Pan et al., 2015). The IR measure is robust to firms’ characteristics and industry effects as it can be computed for each firm subject to the same set of questions, despite its size or industry. Healy and Palepu (2001) report that voluntary disclosures are credible and should enhance information quality. Vanstraelen et al. (2003) also find that the non-financial voluntary information is helpful in improving the accuracy of analysts’ forecasts. In sum, Ajinkya et al. (2005) suggest that firms that disclose non-mandatory items tend to have low information asymmetry.

It is envisaged that the existence and the level or degree of information asymmetry will thus be ascertained by these two measures of information asymmetry (information index and information rating). As an example, a high rating of seven (AA) indicates high levels of transparency, hence low information asymmetry. Similarly, the information-asymmetry index will gauge the existence and degree of information asymmetry. A high value for the index indicates higher levels of information asymmetry.

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**Appendix A. Information disclosure and transparency measures**

This appendix lists the 114 questions used to compile the transparency scores for each sample firm. The questions fall into five categories of information disclosures: compliance with the mandatory information disclosures, timeliness of information disclosure, disclosure of financial forecast, disclosure of annual reports, and corporate website disclosure. Each sample firm is assigned a rating from AA to D based on these questions (Pan et al., 2015).

**I. Compliance with the mandatory information disclosures (questions 1–12)**

1 Whether companies comply with Procedures for Verification and Disclosure of Material Information of Listed Companies, and whether companies have no records of breach penalty or other more serious punishment due to violation of the above regulations?

2 Whether companies comply with Procedures for Holding Material Information Press Conference of Listed Companies, and whether companies have no records of breach penalty or other more serious punishment due to violation of the above regulations?

3 Whether companies comply with Procedures for Information Reporting of Listed Companies, and whether companies have no records of breach penalty or other more serious punishment due to violation of the above regulations?

4 Whether the announcement of ownership change of directors, supervisors, managers, and shareholders with more than 10% ownership complies with JSE regulations and whether companies have no records of punishment due to violation of the above regulations?

5 Whether company's announcements of lending and guarantee from the company itself and its subsidiaries have no records of punishment due to violation of regulators' rules?

6 Whether company's announcements of asset disposal or acquisition have no records of punishment due to violation of regulators' rules?

7 Whether company announces major events that have significant impact on shareholders' rights or stock price on a timely basis, and whether company has no records of punishment due to violation of the above regulations?

8 Whether company has reported, on a timely basis, the internal control statement (four months within the completion of accounting year) and internal audit related operations, and whether company has no records of punishment due to violation of the above regulations?

9 Whether company discloses auditor's fee based on regulation and whether company has no records of punishment due to violation of the above regulations?

10 Whether company's financial report needs adjustment or re-statement as required by regulator?

11 Whether company discloses clarification based on regulators' rules when the material information that has some impact on stock price is reported by the press media or investors, and whether company receives no notification of improvement in this matter?

12 Whether company reports and announces shareholder handbook and meeting supplement in time, and whether company receives no penalty associated with the violation of the above regulations?

**II. Timeliness of information reporting (questions 13–39)**

13 Whether company announces monthly financial report in time?

14 Whether company announces consolidated/integrated monthly financial report in time?

15 Whether company announces monthly operating income and before tax income statement in time?

16 Whether the company announces monthly guarantees and lending information backed up by the company itself and its subsidiaries in time?

17 Whether company announces operating income, operating income by products for major subsidiaries, and intra-company sales and its sales percentage between the company itself and its major subsidiaries on a timely basis?

18 Whether company announces monthly amount of derivative product trading for the company itself and its subsidiaries in time?

19 Whether company reports the investment information in Mainland from the company and its overseas subsidiaries based on the Operating Rules for Information Report of Listed Companies?

20 Whether company reports independent directors' and supervisors' position, experience, and education background and their part-time jobs as directors and supervisors for other companies in time?

21 Whether company reports treasury stock related operations to regulators in time?

22 Whether company reports annual exercised and unexercised employee stock warrant information in time based on the Rules for Information Reporting of Listed Companies?

23 Whether company reports annual report in time?

24 Whether company finishes annual report within two months of accounting year-end?

25 Whether company reports annual report within three months of accounting year-end?

26 Whether company reports semi-annual report in time?

27 Whether company reports semi-annual report within one month of accounting half year-end?

28 Whether company reports first quarter and third quarter financial reports in time?

29 Whether company reports consolidated financial statements in time?

30 Whether company reports annual report in time?

31 Whether company reports first quarter and third quarter consolidated financial statements in time?

32 Whether company reports first quarter and third quarter consolidated financial statements within one month of first quarter-end and third quarter-end respectively in time?

33 Whether company reports accounting manager's qualifications and on-the-job professional training situation in time?

34 Whether company reports shareholder handbook and meeting supplement 30 days before the start of shareholder meeting?

35 Whether company reports English version shareholder handbook and meeting supplement 30 days before the start of shareholder meeting?

36 Whether company reports English version shareholder annual report and uploads it to market observation post system (MOPS)?

37 Whether company discloses English version material information when material information is announced?

38 Whether company reports the date of shareholders' meeting in time based on pre-announcement reporting mechanism of publicly listed firms?

39 Whether company reports financial statements in XBRL format in time?

**III. Disclosure of financial forecast (questions 40–44)**

40 Whether company discloses financial forecast information of the current year voluntarily?

41 Whether company discloses consolidated financial forecast information of the current year voluntarily?

42 Whether company explains the possible factors that may lead to a discrepancy between financial forecast and actual financial results in advance (warning of forward looking information)?

43 Whether company has received rectification from regulator, and records of flaw from JSE due to the delayed update (correction) of financial forecast information?

44 Whether company has received rectification from regulator, and records of flaw from JSE due to unreasonable basic assumptions on the delayed update (correction) of financial forecast information?

**IV. Disclosure of annual report (questions 45–94)**

***(1) Transparency in financial and operating information***

45 Whether company discloses important accounting policy in annual report?

46 Whether the accounting standards that the company adopts are the same as the generally accepted accounting principles in SA?

47 Whether the annual report discloses accounting adjustments due to the adoption of different accounting principles?

48 Whether company discloses the methods of fixed asset depreciation and depreciation age limit?

49 Whether company discloses the rules and methods of asset and liability valuation?

50 Whether company uses buying price or selling price to decide the fair value of non-stock and non-warrants derivative products?

51 Whether company discloses analytical information that is conducted by different departments in annual report?

52 Whether company discloses the name of certified audit firm and the unqualified (modified unqualified) audit report in annual report?

53 Whether company discloses the amount and types of other non-audit fees that are paid to the same certified audit firm or its affiliated enterprises in annual report?

54 Whether company discloses organizational and ownership structures in annual report?

55 Whether company discloses the guarantee, lending, and other derivative trading information of itself or its affiliated enterprises in annual report?

56 Whether company discloses trading information for related persons (including its affiliation) in annual report?

57 Whether company discloses the review of company's operation from the management team in annual report?

58 Whether company discloses information about industry trend and macroeconomics environment in annual report?

59 Whether company discloses long-term and short-term sales expansion project in annual report?

60 Whether company discloses future R&D plan and its estimated expenses in annual report?

61 Whether company discloses R&D investment plan and progress in annual report?

62 Whether company discloses detailed information about the products and services manufactured and provided by the company in annual report?

63 Whether company discloses the amount produced and sold and product mix in annual report?

64 Whether company discloses industry-specific Key Performance Indicators (KPI) in annual report?

65 Whether company discloses historical performance indicator (such as ROE, ROA, etc.) in annual report?

66 Whether company discloses risk management policy in annual report?

67 Whether company discloses the organizational structure of risk management in annual report?

68 Whether company discloses the adoption of hedge accounting and its associated objective and methods in annual report?

69 Whether company discloses managers' participation in corporate governance related on-the-job training in annual report?

70 Whether company discloses the information of employees' on-the-job training in annual report?

71 Whether company discloses all kinds of employees' welfare, retirement plan, and their current practice in annual report?

72 Whether company discloses certificates (regulator certified) holding situation for the personnel responsible for the transparency of finance information

in annual report?

73 Whether company discloses the ethic or moral rules for employees in annual report?

74 Whether company discloses the Procedures for Internal Material Information Processing in annual report?

75 Whether company discloses work environment and safety related protective measures in annual report?

76 Whether company discloses corporate social responsibility in annual report?

(***2) Board meeting and ownership structure***

77 Whether company discloses directors' or supervisors' names, education, experience, ownership, and the date of becoming board members in annual report?

78 Whether company discloses the classification of titles of directors and supervisors based on “independence” in annual report?

79 Whether company discloses the part-time positions that are held by directors and supervisors in annual report?

80 Whether company discloses directors' and supervisors' remuneration in annual report?

81 Whether company discloses the detailed breakdown of directors' and supervisors' remuneration except those items required for disclosure by regulators in annual report?

82 Whether company discloses the compensation of CEO, and vice presidents, and top management in annual report?

83 Whether company discloses the current situation (increase or decrease) of the stocks being used as collaterals by directors, supervisors, managers, and large shareholders in annual report?

84 Whether company discloses the board meeting attendance situation for directors and supervisors, and the attendance situation of audit committee meeting for independent directors in annual report?

85 Whether company discloses governing information regarding the operation of board meeting and audit committee meeting separately in annual report?

86 Whether company discloses training for directors and supervisors in annual report?

87 Whether company discloses the discussion of corporate governance in annual report?

88 Whether company discloses the resignation and dismissal situation for personnel related to corporate disclosure and financial report in annual report?

89 Whether company discloses the names and positions of top 10 employee stock warrants recipients in annual report?

90 Whether company discloses the bonus amount, names and positions of top 10 employees who receive stock bonus in annual report?

91 Whether company discloses managers' names, stock ownership, education, experience, current part-time positions in other companies, and the number of employee stock warrants in annual report?

92 Whether company discloses the amount and percentage of stock ownership for top 10 shareholders in annual report?

93 Whether company discloses the information of related persons between top 10 shareholders in annual report?

94 Whether company discloses the review of execution situation (for the items decided for execution in shareholder meeting) in annual report?

**V. Company website disclosure (questions 95–114)**

95 Whether company has corporate website that discloses public information (including detailed financial data) on website?

96 Whether company discloses shareholders annual report on corporate website?

97 Whether company discloses public information (including detailed financial data) in English on website?

98 Whether company discloses shareholder meeting information in English on corporate website?

99 Whether company discloses monthly operating profit/loss (financial holding companies, banks, and bills finance companies disclose profit and loss for the departments with continued operation) and accumulated operating profit/loss for the current year on corporate website?

100 Whether company discloses the reports of monthly revenue and the monthly revenue for the previous 24 months on corporate website?

101 Whether company discloses the compliance of JSE/King III's rule regarding the qualifications of appointing independent directors on corporate website?

102 Whether company discloses execution items of board meeting on corporate website?

103 Whether company discloses complete meeting minutes of board meeting on corporate website?

104 Whether company discloses dividends and stock price information on corporate website?

105 Whether company discloses material information on corporate website?

106 Whether company discloses articles of incorporation, and the operating procedures for acquisition and disposal of assets, lending, guarantee, and derivative trading on corporate website?

107 Whether company provides shareholders Q&A function on corporate website?

108 Whether company discloses information on whether the company holds a conference for institutional investor and posts meeting related information on corporate website?

109 Whether company discloses the audio or video recording throughout the conference of institutional investors on corporate website?

110 Whether shareholders are allowed to exert their voting rights in writing or via electronic media and whether such voting methods and their execution situation are posted on corporate website?

111 Whether company discloses the election regulation regarding the directors and supervisors to be elected are nominated by a nominating committee?

112 Whether company discloses corporate organizational structure, managers' positions, power, and their responsibility on corporate website?

113 Whether company discloses the organization and operation of internal audit on corporate website?

114 Whether company discloses corporate social responsibility on corporate website?

**CHAPTER THREE**

**THE EFFECT OF INFORMATION ASYMMETRY ON CAPITAL STRUCTURE**

1. **INTRODUCTION**

Modigliani and Miller’s (1958) proposition states that capital structure is irrelevant to firm value in a perfect capital market. The implications of this proposition are that, no matter how the firm finances its investments, the mix of debt and equity (and therefore the total cost of capital) will not affect the value of such investments. However, this proposition only holds in perfect capital markets. Ever since the introduction of this irrelevancy proposition, there has been voluminous literature focusing on how market imperfections determine a firm’s financing policy. Arguably, some of the most important sources of market imperfections are taxes, contracting costs and the existence of information asymmetry between the manager of a firm and the investors, about the value of a firm.

Myers (1984) and Myers and Majluf (1984) reason that as managers tend to know more about their firm’s fair values than investors, they tend to exhibit a particular preference for their financing choices. This preference for external financing, which leads managers to prefer cheaper debt first before utilising more costly debt and as a last resort, equity, is popularly known as the pecking-order theory (Myers, 1984; Myers & Majluf, 1984).

Ross (1977) was the first to note that managers of firms (who are also a subset of investors) know more about the true value of firms they manage than investors. Diekens (1991) further illuminates that managers and investors possess similar market-wide information (non-firm specific), thus both bear market-wide uncertainty. However, managers know more about the firm as they get private information (firm-specific) before the market. This firm-specific information will only be released into the market over time or through some information-release events, such as earnings announcements. The firm-specific information asymmetry corresponds only to a subset of total-market information asymmetry about the firm as both managers and investors are likely to be equally well informed about market-wide determinants of firm value (Diekens, 1991).

This creates a knowledge or information gap between the managers and investors, allowing managers to time the issuance of securities to finance investments. Indeed, Myers and Majluf (1984) state that in perfect capital markets, managers will not issue undervalued equity. Optimistic managers of undervalued shares will issue debt while pessimistic managers of undervalued shares will issue equity, only because issuing debt is expensive (Myers, 2001). Harris and Raviv (1991) argue that because of this information gap, the level of debt or dividend signals the quality of a firm. Investors consider high debt in a firm to show high quality as low-quality firms cannot mimic this (Narayanan, 1988). This implies that external financing by issuing debt or equity has adverse-selection costs or information costs, which are substantial enough for consideration before issuing either debt or equity. Thus, faced with an investment opportunity (ignoring financial-distress costs) and a financing deficit, managers will issue a less information-sensitive security first (debt), as managers believe issuing these securities send signals to the market. Specifically, issuing debt signals to the less-informed investors that the company is optimistic about its future prospects and cash flows, hence its ability to service the debt. Issuing equity, on the other hand, signals to the market that the firm is overvalued.

Equity capital is the most sensitive form of finance with regards debt capital to the adverse-selection problem. As a result, outside investors require a higher adverse-selection risk premium on equity than on debt. Consequently, firms with high information asymmetry would borrow more and end up with high leverage (Gao & Zhu, 2015). Thus, their choice of financing will signal either undervaluation (therefore, they issue debt) or overvaluation (therefore, they issue equity). This therefore implies that firms with limited investment opportunities and high free cash flow will have low debt ratios as they first utilise internal funds. Firms with high growth opportunities and limited cash flow, nevertheless, will use more leverage in their capital structure. Therefore, the resultant capital structure represents the cumulative need for external financing. However, a broader pecking-order theory incorporates the financing-distress costs, which will lead to equity being issued to finance the financing deficit. If the costs of financial distress are high (when a firm exceeds its debt capacity), then the firm will consider issuing equity to pay down its debt or finance the financial deficit.

The important predictions of the pecking-order theory are that information asymmetry is a major determinant of capital structure and that managers utilise internal funds first, followed by debt and lastly equity. Debt is regarded as cheaper compared to the cost of issuing equity; hence equity will only be issued under extreme conditions, such as when a firm can only issue junk debt and when financial distress costs are high (after exceeding the debt capacity). This theory, unlike the trade-off theory, predicts no target debt level of capital structure.

Empirical research on the theory has focused exclusively on testing the predictions of the pecking-order theory, thus whether firms follow a pecking order when issuing securities. Furthermore, such indirect tests of the impact of information asymmetry on capital structure are mainly concentrated in the developed markets such as the US, UK and in some emerging markets including China and South Africa. Growing literature is now focusing on emerging markets. Despite the numerous tests on the pecking-order theory, the empirical evidence provided on the theory to date is conflicting at best. For example, some studies find a negative relationship between profitability and firm leverage, implying profitable firms first utilise internal funds before issuing debt. Shyam-Sunder and Myers (1999) find evidence in support of the pecking-order theory in the US since firms finance their deficits with debt. While Frank and Goyal (2003) find evidence that net-equity issues track the financing deficit quite closely than debt, refuting the pecking-order theory. Lemmon and Zender (2010) find support for the pecking-order theory after controlling for debt capacity in a large sample of firms. While we applaud these efforts, one cannot miss the conspicuous fact that no direct tests of the impact or effect of information asymmetry on capital structure is provided, save by Bharath, Pasquariello and Wu (2009) and more recently by Gao and Zhu (2015) and Pan, Lin, Lee and Ho (2015). These were done in the US and Taiwan respectively, and included a mix of 39 developed and developing markets. According to the pecking-order theory, the basic assumption of information asymmetry is the major (if not the sole) determinant of capital structure. Surprisingly, this basic assumption of the theory has not been tested empirically, in both developed and emerging markets, apart from in the above-cited papers. This essay seeks to contribute to this gap in the literature. More specifically, we aim to test the effect of asymmetric information on the capital structure of non-financial-listed JSE firms. Furthermore, the degree of information asymmetry present in these firms will be tested. This contribution is two-fold. Firstly, we construct two information-asymmetry measures for African listed non-financial firms based on measures of:

* adverse selection developed from microstructure literature (see Bharath et al., 2009) and
* the information -index (both measures are developed in the first essay).

This is the first study to combine these information-asymmetry measures in one study. Since there is no direct measure of asymmetric information, it is hypothesised that the use of both measures could possibly lead to the identification of a robust information-asymmetry measure for the selected firms. Secondly, we test the degree of information asymmetry present in these firms. To the best of our knowledge, this has not been tested empirically. Finally, we test whether information asymmetry affects capital-structure decisions, which is the basic assumption of the pecking-order theory.

The remainder of this chapter is organised as follows: section two reviews the measures of information asymmetry (developed in Chapter Two), and the firm, macroeconomic and institutional determinants of capital structure, while section three discusses the data and methodology to be employed in the study.

1. **LITERATURE REVIEW**

This section aims to review the capital-structure literature, specifically, the pecking-order theory and the determinants of capital structure as well as the market-microstructure literature on measures of information asymmetry. The first section briefly discusses the pecking-order theory, followed by the determinants of leverage. Lastly, we summarise the information-asymmetry measures developed in Chapter Two (which make up the information-asymmetry index based on market microstructure and the ratings model).

* 1. THE PECKING-ORDER THEORY

Myers (1984) and Myers and Majluf (1984) reason that as managers tend to know more about their firm’s fair values than investors, they tend to exhibit a particular preference for their financing choices. This preference for external financing, which leads managers to prefer cheaper debt first before utilising more costly debt and as a last resort, equity, is popularly known as the pecking-order theory (Myers, 1984; Myers & Majluf, 1984).

Ross (1977) noted that managers of firms (who are also a subset of investors) know more about the true value (assets) of firms they manage than investors. Diekens (1991) further illuminates that managers and investors possess similar market-wide information (non-firm specific), thus both bear market-wide certainty. However, managers know more about the firm as they get private information (firm-specific) before the market. This firm-specific information will only be released into the market over time or through some information-release events, such as earnings announcements. The firm-specific information asymmetry corresponds only to a subset of total market-information asymmetry about the firm as both managers and investors are likely to be equally well informed about market-wide determinants of firm value.

This creates a knowledge or information gap between the managers and investors, allowing managers to time the issuance of securities to finance investments. Indeed, Myers and Majluf (1984) state that managers acting in the interests of existing shareholders in perfect capital markets, will not issue undervalued equity. Optimistic managers will issue debt while pessimistic managers will issue equity (Myers, 2001). Harris and Raviv (1991) argue that because of this information gap, the level of debt or dividend signals the quality of a firm. Investors consider high debt in a firm as a signal of high quality as low-quality firms cannot mimic this (Narayanan, 1988). This implies that external financing by issuing debt or equity has adverse-selection or information costs, which are substantial enough for consideration before issuing either debt or equity. Thus, faced with an investment opportunity (ignoring financial-distress costs) and a financing deficit, managers will issue a less information-sensitive security first (debt), as managers believe issuing these securities send signals to the market. Specifically, issuing debt signals to the less-informed investors that the company is optimistic about its future prospects and cash flows, hence its ability to service the debt. Issuing equity on the other hand, signals to the market that the firm is overvalued.

Equity capital is the most sensitive form of finance compared to debt capital with regards to adverse-selection problem. As a result, outside investors require a higher adverse-selection risk premium on equity than on debt. Consequently, firms with high information asymmetry will borrow more and end up with high leverage (Gao & Zhu, 2015). Thus, their choice of financing will signal either undervaluation (therefore, they issue debt) or overvaluation (therefore, they issue equity). This therefore implies that firms with limited investment opportunities and high free cash flow will have low debt ratios as they first utilise internal funds. Firms with high growth opportunities and limited cash flow, nevertheless, will use more leverage in their capital structure. Therefore, the resultant capital structure represents the cumulative need for external financing. However, a broader pecking-order theory incorporates the financing-distress costs, which will lead to equity being issued to finance the financing deficit. If the costs of financial distress are high (when a firm exceeds its debt capacity), then the firm will consider issuing equity to pay down its debt or finance the financial deficit.

The important predictions of the pecking-order theory are that information asymmetry is a major determinant of capital structure and that managers utilise internal funds first, followed by debt and lastly, equity. Debt is regarded as cheaper compared to the cost of issuing equity; hence equity will only be issued under extreme conditions, such as when a firm can only issue junk debt and when financial-distress costs are high (after exceeding the debt capacity). This theory, unlike the trade-off theory, predicts no target debt level of capital structure.

Empirical research on the theory has focused exclusively on testing the predictions of the pecking-order theory. Thus, whether firms follow a pecking order when issuing securities. Furthermore, such indirect tests of the impact of information asymmetry on capital structure are mainly concentrated in the developed markets such as the US, UK and in some emerging markets including China and South Africa. Growing literature is now focusing on emerging markets. Despite the numerous tests on the pecking-order theory, the empirical evidence provided on the theory to date is at best conflicting. For example, some studies find a negative relationship between profitability and firm leverage, implying profitable firms first utilise internal funds before issuing debt. Shyam-Sunder and Myers (1999) find evidence in support of the pecking-order theory in the US in that firms finance their deficits with debt. While Frank and Goyal (2003) find evidence that net-equity issues track the financing deficit quite closely compared to debt, refuting the pecking-order theory. Lemmon and Zender (2010) find support for the pecking-order theory after controlling for debt capacity in a large sample of firms. While we applaud these efforts, one cannot miss the conspicuous fact that no direct tests of the impact or effect of information asymmetry on capital structure is provided, neither do the studies on the pecking-order theory test if managers are acting in the best interests of their existing shareholders. Only recent studies by Bharath, Pasquariello and Wu (2009), Bessler, Drobetz and Gruninger (2011), and more recently by Gao and Zhu (2015) and Pan, Lin, Lee and Ho (2015) test the impact of information asymmetry on leverage. According to the pecking-order theory, the basic assumption of information asymmetry is the major (if not the sole) determinant of capital structure. Surprisingly, this basic assumption of the theory has not been tested empirically, in both developed and emerging markets. Save for the above-cited papers, the assumptions of the pecking-order theory have just been accepted (on faith) without testing the validity of the assumptions. In addition, the theory has been applied on all firms without distinguishing those firms with or without asymmetric information. Neither has it been ascertained whether or not these firms’ managers act in the best interests of their existing shareholders. These two assumptions are crucial for the pecking-order theory to hold. Thus, the theory should hold when there is asymmetric information and when managers act in the interests of existing shareholders. If these two assumptions are not satisfied, the pecking-order theory may not be able to adequately explain corporate-financing behaviour. This could explain why the empirical evidence on the theory to date has not been conclusive. This thesis seeks to contribute to this gap in the literature.

Furthermore, Myers & Majluf (1984)’s assumption that managers act in the best interests of existing shareholders under asymmetric information has never been tested empirically. It is argued that managers acting on behalf of passive existing shareholders under asymmetric information prefer internal sources of funding to external funding. The literature on agency problems suggests that firms with concentrated ownership, large and institutional owners face fewer agency costs (see for example: Jensen & Meckling, 1976; Stiglitz, 1985; Jensen, 1986; Crutchley & Hansen, 1989; Shleifer & Vishny, 1997). This implies close monitoring of managers’ actions should run in tandem with the best interests of shareholders. In the absence of such close monitoring, managers may not act in the best interests of existing shareholders, in contradiction to Myers and Majluf (1984)’s assumption. Thus, the pecking-order theory should hold for firms with concentrated ownership, large and institutional shareholders. Such closely monitored firms ensure managers’ actions are in line with the best interests of existing shareholders. To the best of our knowledge, there is a clear lack of literature linking ownership structure to firm financial behaviour. Indeed Leary and Roberts (2010) propose that agency-based explanations can better explain the capital structure of firms than can asymmetric information. As an example, it is crucial to examine how diffused and concentrated ownership structures determine the amount or level of debt a firm uses. In the spirit of the pecking-order theory, firms with concentrated ownership and with managers pursuing the interests of existing shareholders, should prefer internal funds, then debt and as a last resort, equity.

* 1. MACROECONOMIC DETERMINANTS OF CAPITAL STRUCTURE

The literature is replete with various determinants of capital structure across the globe. The most common determinants will be discussed in the literature review. Following Chipeta and Deressa (2016), the following variables are selected: size, growth profitability tangibility, stock market capitalisation to GDP (SMCGDP) and private sector credit to GDP (PSCGDP).

* 1. MEASURING INFORMATION ASYMMETRY
     1. *MARKET-MICROSTRUCTURE INFORMATION ASYMMETRY*

O’Hara (1995) extensively studies the problem of measuring information asymmetry with regards a firm’s value and the returns of securities. It is believed that insiders of a firm, for example, managers, have intimate knowledge about the firm and are therefore better informed about the firm and its business. Indeed, Seyhun (1986) attests that corporate insiders earn positive abnormal returns when trading in their firm’s securities. Based on this, market-microstructure attempts to estimate the information asymmetry with regard to a firm based on quotes, bid-ask spreads, trades and transaction prices. Information asymmetry is an elusive and multifaceted concept that is significantly sensitive to several corporate events.

However, this study attempts to address information-asymmetry measures’ elusiveness by constructing a composite index of adverse selection similar to Bharath et al. (2009) albeit, using firms listed on the JSE from 1995 to 2015. The firm-level index is based on the common cross-sectional variation of either the level of, or annual change in, seven measures of information asymmetry. These measures can be classified into direct and broader measures of information asymmetry. Direct measures of information asymmetry’s adverse-selection component are: quoted bid-ask spread; effective bid-ask spread; the probability of informed trading; and the price-impact measure (interaction of daily trading volume and first-order return autocorrelation). These are common measures of information gaps between informed and noisy traders. The three broader measures of information asymmetry are: liquidity measures such as the liquidity ratio; the illiquidity ratio; and the reversal coefficient. The broader measures have readily available data, unlike the first four direct measures of adverse selection. Each of these microstructure measures will be discussed in detail in the literature review including the procedure to construct the measures as well as the properties of the index.

The liquidity measures may be driven by other factors besides adverse selection, such as, non-informational liquidity, hence the use of a composite index. Although these seven measures are an improvement in measuring information asymmetry; they remain less direct measures and are restricted by data availability. This necessitates the use of information ratings developed by Pan et al. (2015), which draw from both direct and non-financial information.

* + 1. *INFORMATION RATINGS*

The information-ratings approach to measure information asymmetry was first introduced by Pan et al. (2015). They draw from both direct financial and non-financial information and are less sensitive to the way in which asymmetric information is extracted. The proxies for information ratings used in this study combine accounting and finance proxies for measuring information asymmetry as well as a broader information set from published reports. These proxies include: firm characteristics; analyst coverage; bid-ask spread; probability of informed trading (PIN); and the price impact of trade (all the microstructure variables cited above); public listing of a firm; and the auditor’s reputation. The proxies are evaluated on the completeness, clarity and timeliness of information across a broad spectrum of industries, thus assigning information ratings. The information ranking is therefore based on the same set of information criteria, which eliminates the size effect. Ideally, each firm is given a rating based on the completeness, clarity and timeliness of the information proxies stated above.

Following Pan et al. (2015), 114 questions are used to compile the transparency scores for each sample firm. These questions fall into five disclosure categories namely: compliance with the mandatory information disclosures; timeliness of information disclosure; disclosure of financial forecast; disclosure of annual reports; and corporate website disclosure. Each sample firm is then assigned a rating from AA to D based on these questions. Firms with the highest levels of transparency are presumed to have less information asymmetry. The specific details of the information ratings measures will also be discussed in the literature review section. The information rating that measures information completeness hence, information asymmetry, will then be used to determine if information asymmetry affects the capital structure of firms.

1. **METHODOLOGY**
   1. DATA

Unbalanced panel data of selected JSE-listed firms from 1995 to 2017 is utilised in this study. The financial statement data for each firm is sourced from BGD and IRESS databases. Unbalanced panel data controls for survivorship bias as all firms are included despite being listed or delisted along the sample period. Some disclosure information for information ratings is sourced directly from company websites. Real GDP growth rate data is sourced from Stats SA.

* 1. ECONOMETRIC APPROACH

The pecking-order theory predicts that firms prefer debt to equity in the presence of information asymmetry. Thus, when there is a financing deficit, debt is used before employing equity. Shyam-Sunder and Myers (1999)’s model regressed net debt issuance on financing deficit as follows:

1

Where is change in debt calculated as long-term debt issuance minus long-term debt reduction, while is defined by the accounting cash flow identity,

2

Where are dividends and share repurchases, are capital expenditures, is the net change in working capital and is the operating cash flow after interest and taxes. All variables are scaled by total assets. The Shyam-Sunder and Myers (1999)’s pecking-order model predicts that the coefficient should be close to one or lower than one but positive according to the strict version and the modified version of the pecking-order theory, respectively.

If information asymmetry drives financing decisions, firms with lower information asymmetry or higher information ratings (less adverse selection) will be associated with a lower beta coefficient. We assess the extent of debt issuance and information asymmetry (information ratings) using an interaction term as follows:

3

Where is information asymmetry for firm *i* at time *t*, measured as market microstructure (information-asymmetry index) and information ratings. The interactive term measures how the degree of information asymmetry affects leverage. As an example, firms with lower information asymmetry should have a lower beta coefficient, implying less adherence to the pecking-order theory. For robustness, we also test how information asymmetry affects leverage (specifically short-, long- and total debt term) similar to Bharath et al. (2009) and Frank and Goyal (2003) using the following panel model:

4

Where is a vector of control variables lagged by one year to control for endogeneity problems. Following Chipeta and Deressa (2016), size, growth, prof, tang, risk, SMCGDP PSCGDP and RGDP are selected are measured according to Table 1.

It is hypothesised that the information-ratings approach may result in an unbalanced panel and thus unbalanced-panel estimations are deemed appropriate. The System GMM method proposed by Blundell and Bond (1998) will be utilised to carry out the analysis. The system GMM model corrects for endogeneity, autocorrelation and panel-specific heteroscedasticity as well as multicollinearity problems (see Chipeta & Deressa, 2016) while minimizing loss of information.

**Table 1. Variables and their definition**

|  |  |
| --- | --- |
| **VARIABLE** | **DEFINITION** |
| SIZE | the size of the company and is calculated as the logarithm of total assets |
| GROWTH | the growth prospects of the company and is calculated as the annual percentage change in the total assets |
| PROF | the profitability of assets and is calculated as earnings before interest and taxes divided by total assets |
| TANG | the collateral value of assets and is calculated as fixed assets divided by total assets |
| RISK | the volatility of earnings and is calculated as the standard deviation of earnings before interest and taxes divided by the total assets |
| SMCGDP | stock market capitalisation to GDP, a measure of the significance of the stock market. It is calculated as the total market Capitalisation as a percentage of the GDP |
| PSCGDP | Private sector credit to GDP A measure of the significance of the banking sector. It is calculated as the total credit extended to the private sector as a percentage of the GDP |
| RGDP | real GDP defined as the nominal GDP in US Dollars adjusted for inflation . |

*Source*: Chipeta and Deressa (2016)

Following Baker and Wurgler (2002), we construct the following regression model to test whether market to book affects leverage through net-equity issues. This provides evidence for market timing of security issues in financing deficits.

5

Where is divided into three parts, depending on total growth in assets from equity issues, debt issue and newly retained earnings. Book-value leverage is book debt scaled by total assets and market-value leverage is book debt scaled by total assets minus book equity plus market equity. is a vector of control variables such as profitability and size, is physical-assets intensity defined as fixed tangible assets scaled by total assets. is the market-to-book ratio defined as total assets minus book equity plus market equity. This is also in line with Chen at al. (2013). If the market-to-book ratio is significant, it implies market timing in issuing securities to finance the investments.

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**CHAPTER FOUR**

**THE EFFECT OF CORPORATE OWENRSHIP AND INFORMATION ASYMMETRY ON CAPITAL STRUCTURE**

1. **INTRODUCTION**

Myers & Majluf (1984) pecking order theory argues that, when firms are faced with the prospect of raising external funds to finance an investment, a less information sensitive security is issued first. This implies that debt will be issued first (including short and long term debt) and equity will only be issued as a last resort. However, the pecking order theory relies on two important assumptions. Myers and Majluf assume that the preference for debt to equity holds when information asymmetry exists and when managers are acting in the best interest of existing shareholders. Thus, it is argued that managers acting on behalf of passive existing shareholders under asymmetric information will prefer internal sources of funding to external funding.

Literature on agency problems suggests that firms with concentrated ownership, large and institutional owners with the capability, willingness and ability to monitor managers’ actions result in less agency costs (see for example: Jensen & Meckling 1976; Stiglitz 1985; Jensen 1986; Crutchley & Hansen 1989; Shleifer & Vishny 1997). This implies close monitoring of managers’ actions to be in line with the best interest of shareholders. In the absence of such close monitoring, managers may not act in the best interest of existing shareholders, in contradiction to Myers and Majluf (1984) assumption. Thus, the pecking order theory should hold for firms with concentrated ownership, large and institutional shareholders. Such closely monitored firms ensure managers’ actions are in line with the best interest of existing shareholders. Indeed Leary and Roberts (2010) propose that agency based explanations can better explain capital structure of firms than asymmetric information. It is therefore interesting to investigate how different corporate ownership structures affect capital structure. As an example, it is crucial to examine how diffused and concentrated ownership structures determine the amount or level of debt a firm uses. In the spirit of the pecking order theory, firms with concentrated ownership and with managers pursuing the interest of existing shareholders, should prefer internal funds, then debt and as a last resort, equity.

It is against this backdrop that this essay seeks to investigate the effect of concentrated ownership on financing behaviour of JSE listed non-financial firms. Furthermore, it seeks to determine how information asymmetry coupled with ownership structure affect the capital structure of firms. Aside from this, the essay also seeks to establish the relationship that exists between information asymmetry and ownership structure of JSE listed firms. To the best of the authors knowledge, the impact of ownership structure on leverage has not been tested empirically, neither has the relationship between information asymmetry and ownership structure. This specifies the contribution of this essay to the capital structure discourse.

The existence of information asymmetry and mangers acting on behalf of existing passive shareholders are crucial assumptions of the pecking order theory. These assumptions have not been jointly tested in capital structure literature across the globe. Recent literature has just started focusing on how information asymmetry affects capital structure (see for example, Bharath, et al., 2009; Bessler et al., 2011; Gao & Zhu, 2015 and Pan, et al., 2015). It is envisaged that this essay could contribute to the inconclusive empirical evidence on the pecking order theory and capital structure broadly, by an appropriate application of the theory. Such an application of the theory could conclusively provide empirical evidence on the pecking order theory. Furthermore, this essay extends the current literature on capital structure and provides a multilink with other areas of corporate finance and economics. As an example, the essay provides interplay amongst corporate governance, information asymmetries and capital structure of firms. Given the current, capital structure puzzle, this could provide conclusive evidence especially on the pecking order theory.

Such information could be indispensable to various market participants such as the managers of firms, lenders and borrowers, regulators and most importantly, investors. As an example, increased good corporate governance can reduce a firm’s agency costs (information asymmetry between managers and outside investors), thereby enhancing firm performance. Good corporate governance also ensures managers and shareholders interests are well aligned which enhances sustainable corporate operations and reputation. This could lure influential stakeholders and increase access to crucial resources to the firm important to the economic survival of the firm through improved firm image and reputation (Branco & Rodrigues, 2006; Pirson & Turnbull, 2011).

The remainder of the essay is structured as follows: Section two reviews the pecking order theory assumptions, corporate governance literature and the links between corporate governance, information asymmetry and financing behaviour. Section three details the data and methodology to be employed in this study.

1. **LITERATURE REVIEW**

The aim of this section is to review the extant literature on capital structure, corporate governance and information asymmetry. The first part of this section looks at the pecking order assumptions, followed by the corporate governance literature, specifically focusing on ownership structure and then information asymmetry, while the last part attempts to link capital structure to information asymmetry and ownership structure.

* 1. THE PECKING ORDER THEORY

Myers (1984) and Myers and Majluf (1984) argue that, there is a pecking order associated with the choice of financing, founded on the cheapest source of available financing. In consideration of the information costs, firms should prefer internal funds to the use of external funds and in the event that external funds are required, firms should prefer debt to equity financing. The pecking order model based on information asymmetries between managers and investors, argues that managers are better informed than investors with respect to the true value of the firm’s assets and its growth opportunities. Therefore, in the interest of existing shareholders, managers will only issue equity when they believe that their equity is overvalued. The uninformed investors are aware of the manager’s private information and therefore interpret the announcement of share issues as bad news about the firm’s intrinsic value (Pilotte, 1992). Debt issue is viewed as sending positive (good) news to uniformed investors. Thus debt issues signal to the uninformed investors that the firm is in a position to pay future interest payments (Barclay & Smith, 2005) while equity signals that the firm is overvalued (see for example, Ritter & Welch, 2002; Loughran & Ritter, 2004; Chipeta & Jardine, 2014). Therefore debt is considered to be less sensitive and less costly than equity issues.

The pecking order makes two crucial assumptions. The first assumption is that information asymmetry exists between managers of the firm and the outside investors about the fair value of the firm and its future prospects. This assumption is dealt with in Chapter Two (Essay Two). The second assumption is that, managers act in the interest of passive, existing shareholders. This last assumption is not based on any managerial behavioural theory as alluded to by Myers and Majluf (1984). They state three possible objectives of managers under asymmetric information stated below as:

* Management act in the interest of all stakeholders ignoring conflict of interest between old and new shareholders
* Management acts in the interest of existing shareholders and the old shareholders are assumed to be passive
* Management act in the interest of old shareholders but the shareholders are assumed to rationally rebalance their portfolios as they learn from the firm’s actions (Myers & Majluf, 1984:189).

Assumption two (managers acting on behalf of passive existing shareholders) is chosen based on the empirical evidence of market reaction to equity and debt issuances and its ability to explain the less impact of debt issuance than equity issuance observed in literature (see for example Pilotte, 1992; Ritter & Welch, 2002; Loughran & Ritter, 2004; Barclay & Smith, 2005). This is the main focus of this essay.

* 1. CORPORATE GOVERNANCE

The conflict of interest between managers and shareholders is the pinnacle of the agency theory and dates back right to the formation of a public company (Berle & Means, 1932). The agency theory details the relationship between a principal (shareholder) and an agent (manager) who participate in cooperative behaviour, but have conflicting goals and attitudes towards risk (Eisenhardt, 1989). The theory focuses mainly on problems that surface due to divergent goals and desires between the principal and agent. It is assumed that the manager (agent) will behave opportunistically, especially when conflicting interests arise with the shareholders (Mitchell & Meacheam, 2011; Ang, Cole, & Lin, 2000). Jensen and Meckling (1976) infer that if both parties to this agency relationship are utility maximises, then there is a good reason to conclude that the agent will not always act in the best interests of the principal, assuming that they are both motivated by self-interest. Monitoring of the agents actions by shareholders is costly and not entirely feasible (Bendickson et al., 2016). Jensen and Meckling (1976) allude to the fact that corporate debt levels and management equity levels are essentially influenced by the motivation to contain agency costs.

Sarens and Abdolmohammadi (2011) argue that the existence of the principal-agent relationship allows the agent to have more information than the principals. That information asymmetry adversely affects the principal’s ability to monitor if agents are properly serving their interest (Dzingai & Fakoya, 2017). Connelly, Ketchen and Slater (2011) suggest that the presence of information asymmetry presents opportunities for managers to pursue self-interested behaviour or consume on the job perquisites, divergent to shareholders interests. Shareholders do not have access to all the information at the time managers make decisions consequently they are unable to determine if managers’ actions are in their best interest.

Corporate governance systems and policies have since been introduced and are persistently being updated around the world in an effort to deal with the agency problem and the associated agency costs. Loosely defined, corporate governance refers to the systems, procedures processes, policies and structures to ensure management achieves the stated goals of a company. From a shareholder’s perspective, corporate governance can be defined as a process for monitoring and control to ensure that management runs the company in the interests of the shareholders. An effective and function corporate governance system aids firms to attract investment, raise capital at low costs and enhance firm performance (Morey, Gottesman, Baker & Godridge, 2009; Marx, Watt & Bourne, 2011; Dzingai & Fakayo, 2017). Indeed Jackson and Stent (2010) argue that well governed firms that disclose favourable corporate governance matters are less risky and more likely to attract investors. Kyereboah-Coleman (2008) finds that large independent boards increase firm value in select African countries. Ngobo and Fouda (2012) and Armeanu, Vintila, Gherghina, and Petrache (2017) find that good corporate governance can be the ‘antidote’ to firm risk and volatility in firm profits. Ntim (2013) endorses that good corporate governance in SA is good for firm performance, reduces corporate failure risk, attracts foreign direct investment and facilitates economic growth and development.

Literature is awash with various with various corporate governance measures meant to align managers and shareholders objectives. Internal and external corporate control mechanisms are have been proffered to mitigate the agency problem. Such control mechanisms include the board of directors (and its composition), debt financing, dividend payout, equity ownership by insiders and outsiders as well as the market for corporate control. The roles of the board and ownership structure have been extensively reviewed in literature. In this essay, we analyse the board of directors, ownership concentration and the corporate governance practice via the King reports.

* + 1. *Board of directors*

The board of directors play an important role and are central to mitigating agency costs (Fama & Jensen, 1983; Mangena & Chamisa, 2008; Waweru, 2014). The board of directors’ role is to ensure that managers are accountable and their interests are in line with the shareholders interest. Specifically, board of directors monitor, advise and discipline managers (Jensen & Meckling, 1976; Ntim 2009). In South Africa, the King III report recommends a unitary board structure that includes both executive and non-executive directors. However, more non-executive directors are preferred in the board structure. The JSE code specifies the minimum of number of four directors (Waweru, 2014). The King report further recommends the split role of the chairperson of the board who should be a non-executive director and not the Chief Executive Officer (CEO) of the company. A substantial portion of executive directors’ remuneration should be performance based. However compliance with these recommendations is voluntary, hence the JSE Listing Code (2005) requires firms to either apply or explain.

Khanchel (2007) reviews corporate governance literature and concludes that the board of directors has an influence on a firm’s corporate governance. Specifically, an independent board, independent directors board size split chairperson/CEO roles and board meetings significantly improve the quality of corporate governance. Shapiro (2006) notes that a board consisting a higher proportion of non-executive directors increases controls on self-interested managers. Mangena and Chamisa (2008) and Guest (2009) corroborate that a well constituted board is effective in monitoring the actions of managers. However, there is no consensus on whether a large or small board size improves corporate governance. For example, Jensen (1993) and Yermack (1996) argue that large boards are slow in making decisions, difficult to coordinate and thus negatively affect corporate governance. On the other hand, Beasley (1996) and Karamanou and Vafeas (2005) argue in favour of large boards with greater range of expertise as an effective monitoring tool. Cabedo and Tirado (2004) and Elzahar and Hussainey (2012) argue that board diversity (ethnic and gender) can improve board independence and effective monitoring.

* + 1. *Ownership structure*

The agency theory is the agency problem between corporate insiders and outside investors is central to corporate governance. Insiders have less than full ownership of the cash flow rights of the firm (Berle & Means, 1932; Jensen & Meckling, 1976). This suggests that the firm's ownership structure is a primary determinant of the extent of agency problems between controlling insiders and outside investors, which has important implications for the valuation of the firm. The insiders who control corporate assets can potentially expropriate outside investors by diverting resources for their personal use or by committing funds to unprofitable projects that provide private benefits. By diverting resources for private benefit, controlling managers have the opportunity to increase their current wealth or perquisite consumption without bearing the full cost of their act (Shleifer & Vishny, 1997). Concentrated ownership as opposed to diffused share ownership has been documented as an effective agency cost monitoring tool in literature. SA is characterised by concentrated ownership, greater institutional ownership, weaker shareholder activism and poor corporate laws enforcement (Bar et al., 1995; Ntim et al., 2011a). Cconcentrated, large and/or institutional owners have the capability, willingness and ability to monitor managers’ actions resulting in less agency costs and better firm performance (see for example: Jensen & Meckling 1976; Stiglitz 1985; Jensen 1986; Crutchley & Hansen 1989; Shleifer & Vishny 1997; Lemmon & Lins, 2003). Kane and Velury (2004) argue that institutional shareholders’ (as providers of capital) trading impacts market prices of stock and that they can influence managers actions through their voting rights.

Managerial ownership is also crucial in aligning the interest of managers and shareholders Jensen & Meckling, 1976). Gul et al., (2003) argues that managerial share ownership reduces earnings manipulation by management as well as opportunistic behaviour. Managerial share ownership is meant to reduce the information asymmetry between management and shareholders as well as align their objectives. It is envisaged that large, institutional and concentrated ownership has a positive effect on firm performance and that such an effective control mechanism should lead to less information asymmetry, consequently less evidence of the pecking order theory.

* + 1. *King III reports*

Theoretically, good corporate governance should reduce agency costs and enhance a firm’s performance (Davidson, 1995; Ntim, 2011). Corporate governance refers to the system by which firms are managed (Smerdon, 1998). In South Africa, good corporate governance can be summed up by the King I (1994), King II (2002) King III (2009) and the new King IV (April, 2017) reports. The King reports have focused generally on improving the corporate governance of South African firms by improving the independence and monitoring of managers, information transparency and disclosure (Ntim 2009; Ntim & Osei, 2011). The King reports are based on the United Kingdom Cadbury Report of 1992 (Mangena & Chamisa, 2008). According to Mangena and Chamisa (2008), the board of directors is generally the focal point of the King reports. The recent King Reports (III and IV) are much broader as they consider domestic and international reforms such as the affirmative action and stakeholder demands. Specifically, they include socially responsible investing, black economic empowerment, the environment, HIV/AIDS, and the more recently. The King reports have moved from ‘comply or explain’ to ‘apply and explain’ in the King IV report. An effective and functional corporate governance mechanism reduces information asymmetry between managers and shareholders, thus it aligns both managers and shareholders their interest.

1. **METHODOLOGY**
   1. HYPOTHESIS DEVELOPMENT

Myers and Majluf (1984) pecking order theory assumes that firms faced with information asymmetry and with managers acting in the best interest of existing shareholders will follow the pecking order when raising external funds for projects. Given that it is almost impossible to directly monitor and accurately measure if managers’ actions are in line with shareholders objectives, the following hypotheses, based on well-established corporate governance literature, is developed.

Firstly, it is hypothesized that, concentrated ownership, large and institutional shareholders, an independent board of directors has a huge strain on managerial discretion. Thus, in firms characterised by concentrated ownership, large and institutional shareholders, managerial ownership and an independent board, managers and shareholders’ interest are expected to be in line (see for example: Jensen & Meckling 1976; Stiglitz 1985; Jensen 1986; Crutchley & Hansen 1989; Shleifer & Vishny 1997). Consequently, it is expected that managers of such firms are acting in the interest of existing shareholders because of close monitoring and supervision. Similarly, implementation of the code of good corporate governance system such as the King III report is expected to reduce the conflict of interest between managers and shareholders. Thus, good corporate governance reduces agency costs. In both instances, where managers are acting in the best interest of shareholders, we expect these agency costs control mechanisms to lead to an increase in shareholder wealth (or increase in firm performance). Borrowing from corporate governance literature, concentrated ownership, an independent board, large, institutional and managerial ownership, and good corporate governance should lead to an increase in firm performance. The positive relationship between these agency mechanisms and firm performance act as a robustness test in this study, to identify firms with managers acting in the best interest of shareholders. In sum, firms with managers pursuing the interest of existing shareholders should implement good corporate governance systems which enhance firm performance.

Secondly, it is hypothesized that, good corporate governance reduces information asymmetry between management shareholders. Thus, close monitoring and implementation of good corporate governance systems which relies mostly on transparency and disclosure of information reduces information asymmetry. Greater transparency and disclosure reduce information asymmetry between the firms’ managers and its stakeholders (Rajgopal 1997; Holm & Laursen 2007) which enhances firm performance (Abdo & Fisher, 2007; Pardia, 2012; Ntim et al., 2012; Ntim, 2011). Furthermore, greater transparency and disclosure could have significant investment, financing and liquidity implications by reducing agency and information asymmetry problems (Abraham & Cox, 2007; Brown et al., 2009). Good corporate governance increases firm performance consequently, share prices appreciate hence the cost of outside capital and/or risk tend to fall (Black et al., 2006; Chen et al., 2009).

Finally, and closely following the pecking order theory, firms with management acting in the interest of existing shareholders under information asymmetry should follow the pecking order. Specifically, firms with good corporate governance and high information asymmetry should follow the pecking order theory, according to Myers and Majluf (1984). Stated differently, firms with good corporate governance and information asymmetry will consequently show less evidence of the pecking order.

* 1. DATA

The sample is drawn from all listed nonfinancial firms from 1995 to 2017. The data are collected from the companies’ annual reports from IRESS while some disclosure information for information ratings is sourced directly from company websites. In line with capital structure literature, financial and utility firms are excluded.

3.2.1 *The Corporate governance variables*

This study focuses on concentrated ownership, large and institutional shareholders, an independent board of directors and a corporate governance index. For the board of directors, we focus on board independence, measured as percentage of independent directors (non-executive directors). Institutional ownership is measured as the percentage of shares held by institutional investors (such as mutual funds, pension funds, bank trust). Large shareholders is a dummy variable equal to 1 if a firm has a large owner with direct or indirect voting rights greater than 10%. The 10% cut of is based on Laeven and Levine (2009). Gillian and Starks (2007) suggests that institutional and large shareholders play a significant role in monitoring and disciplining managers.

The corporate governance index is similar to Ntim (2013)’s integrated corporate governance index. It is constructed by awarding a value of 1 if any of the 50 corporate governance provisions of King II are disclosed in company annual reports or 0 otherwise. The scoring of such a scheme ranges between 0 and 100% based on 50 provisions of the King II report covering:

* Boards, directors and ownership
* Accounting and auditing
* Risk management, internal audit and control,
* Integrated sustainability reporting and
* Compliance and enforcement (Ntim, 2013).

This corporate governance index is broad and takes into account more reforms such as affirmative action and stakeholder provisions introduced in SA corporate governance landscape.

3.2.2 *The firm performance measures*

Corporate governance is replete with several measures of firm performance. The extensively used measures are the Tobin Q (TQ) and the Return on equity (ROA). Tobin Q is measured as the ratio of a firm’s market value to book value of its total assets. ROA is the return on assets measured as a ratio of net income to total assets.

3.2.3 *The information asymmetry measures*

This study utilises the information asymmetry index and the information rating developed in the first essay (Chapter Two). See Chapter Two for more details on the development of these two measures of information asymmetry.

3.2.4 *The control variables*

For robustness, the study uses standard control variables used extensively in corporate governance literature which are firm size, sales growth, research and development, capital expenditure, gear as measured by Ntim (2013) and Munisi and Randoy (2013).

* 1. ECONOMETRIC APPROACH

Firstly, we test if good corporate governance leads to positive firm performance. A positive relationship between corporate governance and firm performance implies that good corporate governance practices curtail managerial discretion. Thus good corporate governance ensures that management is acting in the interest of existing shareholders. The model applied is similar to the one used by Ntim (2013); Munisi and Randoy (2013) and Erkens, Huang and Matos (2012) and is as follows:

1

Where is Tobin Q and ROA,

is Good corporate governance variables: board independency, concentrated ownership, large shareholders, institutional shareholders and a corporate governance index, and is a vector of control variables: firm size, sales growth, research and development, capital expenditure, gear, and is the error term.

Secondly, we test the relationship between corporate governance and information asymmetry using the following model:

2

Where is information asymmetry index or information rating for firm *i* at time *t* and is good corporate governance variables for firm *i* at time *t*. good corporate governance is expected to reduce information asymmetry in firms. However, it is also possible that the desire by management to be transparent and to disclose information can lead to implementation of good corporate governance systems in firms. Thus the purported relationship between corporate governance and information asymmetry can be bi-directional. A granger causality test will be employed to test this possibility.

Thirdly, we test whether corporate governance has an effect on leverage. It is important to determine if ownership structure of firms influences financing behaviour of firms. The model specified below is used:

3

Where is measured as change in the book value of long term debt and total debt (see Chapter Three for the measurement of these variables) for firm *i* at time *t*, is the financing deficit (Shyam-Sunder & Myers (1999). measures the impact of corporate governance on leverage. Thus, if corporate governance drives financing decisions, firms with good corporate governance should be related to a lower pecking order β coefficient. Thus, firms with good corporate governance should issue less debt. are capital structure control variables lagged by one year to control for endogeneity problems. These control variables include: *Slack*- the ratio of cash to total assets, *Tang*- the ratio of fixed to total assets, *QR*-the ratio of market to book assets, *Size*- natural log of sales, *RGDP* is real GDP growth rate (Real GDP is included since forecast earnings may be downward biased in periods of high economic growth), and *Prof*, is profitability.

Finally, we test the combined effect of good corporate governance and information asymmetry on the financing behaviour of firms. Firms with good corporate governance mechanisms (thus with converging interests of managers and shareholders) should have less information asymmetry and thus exhibit no preference for debt to equity in their financing behavior. Stated differently, firms with higher levels of information asymmetry and less levels good corporate governance should follow a pecking order when external financing is required. One way in which to measure the combined effect of good corporate governance and information asymmetry on leverage is by converting the corporate governance variable to a dummy variable equal to ‘1’ for firms with good corporate governance and ‘0’ otherwise. Good corporate governance implies that firms with higher percentages of concentrated ownership, independent board, large, institutional and managerial ownership are assigned a value of ‘1’ and ‘0’ otherwise. We then implement an interactive term between the dummy corporate governance dummy variable and information asymmetry and evaluate the combined effect on leverage as follows:

4

Where is an interactive term. is a dummy variable equal to ‘1’ for firm *i* at time *t* with 55% or more good corporate governance. Alternatively, an interaction term between information asymmetry and good corporate governance can be developed and estimated using the following equation:

5

Where is the interactive effect of corporate governance and information asymmetry on financing behaviour. However, to use this interactive term, we use the standardised information asymmetry and corporate governance index measures to be able to interpret the results.

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APPENDIX (adapted from Ntim, 2013)

*Full List of the SA Corporate Governance Index Provisions Based on King II*

***Section 1: Board, directors and ownership***

1. Whether the roles of chairperson and CEO/MD are split.
2. Whether the chairperson of the board is independent non-executive directors.
3. Whether the board is composed by a majority of non-executive directors (NEDs).
4. Whether the board meets at least four times in a year.
5. Whether individual directors' meetings record is disclosed.
6. Whether directors are clearly classified into executive, NED, and independent.
7. Whether chairperson's performance and effectiveness is evaluated and disclosed.
8. Whether CEO/MD's performance and effectiveness is appraised and disclosed.
9. Whether the board's performance and effectiveness is evaluated and disclosed.
10. Whether the board subcommittees' performance and effectiveness is evaluated.
11. Whether directors' biography, experience and responsibilities are disclosed.
12. Whether a policy that prohibits directors, officers and employees (insider) share dealings around the release of price sensitive information is disclosed.
13. The existence of the office of company secretary.
14. Whether a nomination committee has been established.
15. Whether the nomination committee consists of a majority independent NEDs.
16. Whether the chairperson of the nomination committee is an independent NED.
17. Whether the membership of the nomination committee is disclosed.
18. Whether the nomination committee's members' meetings attendance record is disclosed.
19. Whether a remuneration committee has been established.
20. Whether the remuneration committee is constituted entirely by independent NEDs.
21. Whether the chairperson of the remuneration committee is an independent NEDs.
22. Whether the membership of the remuneration committee is disclosed.
23. Whether the remuneration committee's members' meetings attendance record is disclosed.
24. Whether directors' remuneration, interests and share options are disclosed.
25. Whether director remuneration philosophy and procedure is disclosed.
26. Whether directors' have access to free independent professional legal advice.
27. Whether share ownership by directors and officers (internal share ownership) is less than 50% of the total company shareholdings.

***Section 2: Accounting and auditing***

1. Whether an audit committee has been established.
2. Whether the audit committee is constituted by at least two independent NEDs with significant professional financial training and experience.
3. Whether the chairperson of the audit committee is an independent NED.
4. Whether the membership of the audit committee is disclosed.
5. Whether the audit committee's members' meetings attendance record is disclosed.
6. Whether a board statement on the going-concern status of the firm is disclosed.

***Section 3: Risk management, internal audit and control***

1. Whether a risk management committee has been established.
2. Whether the risk committee's members' meetings attendance record is disclosed.
3. Whether a narrative on both actual and potential future systematic and non-systematic risks is disclosed.
4. Whether a narrative (policy) on existing internal control systems (including internal audit) is disclosed.
5. Whether narrative (policy) on how current and future assessed company risks will be managed is disclosed.

***Section 4: Integrated sustainability reporting (non-financial information)***

1. Whether a narrative (policy) on how a firm is complying with and implementing the broad-based black economic empowerment and empowerment of women laws is disclosed.
2. Whether a narrative (policy) on how a firm is complying with and implementing employment equity laws in terms of gender, age, ethnicity and disabilities is disclosed.
3. Whether a narrative (policy) on how a firm is addressing the threat posed by HIV/AIDS pandemic in South Africa is disclosed.
4. Whether a narrative (policy) on measures taken by a firm to address occupational health and safety of its employees is disclosed.
5. Whether a narrative (policy) on how a firm is complying with and implementing rules and regulations on the environment is disclosed.
6. Whether a narrative (policy) on the existence of a code of ethics is disclosed.
7. Whether a firm's board is formed by at least one white and one non-white (board diversity on the basis of ethnicity) person.
8. Whether a firm's board is formed by at least one male and one female (board diversity on the basis of gender) person.
9. Whether a narrative (policy) on community support and other corporate social investments or responsibilities is disclosed.

***Section 5: Encouraging a culture of voluntary compliance and enforcement***

1. Whether a positive statement on the compliance or non-compliance with the corporate governance provisions of King II is disclosed.
2. Whether a narrative (policy) on how a firm is contributing towards the development of financial journalism is disclosed.
3. Whether a narrative (policy) on what a firm is doing to encourage shareholder activism, like having investor relations department and proxy voting is disclosed.