DIVIDEND POLICY AND SHARE PRICE VOLATILITY: EVIDENCE FROM THE JOHANNESBURG STOCK EXCHANGE

by

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DECLARATION

I, **Francois Cornelius Wehncke** declare that **DIVIDEND POLICY AND SHARE PRICE VOLATILITY: EVIDENCE FROM THE JOHANNESBURG STOCK EXCHANGE** is my own work; that all sources used or quoted have been indicated and acknowledged by means of complete references, and that this dissertation was not previously submitted by myself or any other person for degree purposes at this or any other university.

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ABSTRACT

For many financial analysts the relationship between dividend policy and share price volatility remains inconclusive. The purpose of this study was to ascertain whether the relationship between dividend policy and share price volatility for JSE-listed firms in South Africa differs from previous, similar research done on different markets. The research study answered the research question and determined what the relationship is between dividend policy and share price volatility for a representative sample of JSE-listed firms. In addition, it met the objective of finding and evaluating the relationship between dividend policy and share price volatility for a selection of JSE-listed firms, under various economic conditions. The research study spanned a 12-year period with more than 1 065 observations noted. Quantitative, secondary data was collected and descriptive statistics were used during the analysis phase. Two standard multiple regression models were used to regress dividend policy and share price volatility, with the first regression model only providing a crude test between the variables. The second regression model accounted for factors that affect both variables and was included to provide a more accurate test estimation. The relationship between the dividend payout ratio and share price volatility and the relationship between dividend yield and share price volatility were evaluated and reported on, under various different economic conditions (pre, during and post the 2008 financial crisis). The study concluded that there is a negative correlation between a firm's dividend policy and share price volatility. It further found that a firm's dividend payout ratio, and not the dividend yield ratio, remains the single biggest contributor in explaining the variance in share price volatility throughout the different economic phases presented by pre, during and post the 2008 global financial crisis.

Key words

Dividend policy; share price volatility; dividend payout ratio; dividend yield ratio; Johannesburg Stock Exchange; capital structure; leverage; dividends.

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LIST OF ACRONYMS AND ABBREVIATIONS

The following abbreviations are used in this dissertation:

ANOVA	Analysis of variance
CFO	Chief Financial Officer
EBIT	Earnings Before Interest and Taxes
EU	European Union
GCC	Gulf Cooperating Council
IRESS	IRESS Software company
JSE	Johannesburg Stock Exchange
KSE	Karachi Stock Exchange (Pakistan)
LSE	London Stock Exchange
MS Excel	Microsoft Excel software
NPV	Net Present Value
NSE	Nigeria Stock Exchange
ROA	Return On Assets
ROE	Return On Equity
SMME	Small Medium and Micro Enterprises
SPSS	IBM SPSS statistical software
UK	United Kingdom
US/USA	United States of America
VIF	Variance Inflation Factor

CHAPTER 1:
INTRODUCTION TO DIVIDEND POLICY AND SHARE PRICE VOLATILITY

1.1 INTRODUCTION

Since the late 1950s scholars and professionals have argued about the influence that dividend policies have on share price changes. To this day, modern firms still face the trade-off between either paying out profits, as dividends or through share repurchases, or retaining profits for future investment. In the volatile and ever-changing global economy, this trade-off remains as relevant today as it ever was in the past. Business and financial managers need to be aware of the various investor inclinations and the range of circumstances under which financial decisions are made. Dividend policy, as a management decision, requires careful contemplation to enable management to deliver on the wealth maximisation they have been mandated with.

1.2 BACKGROUND TO DIVIDEND POLICY AND SHARE PRICE VOLATILITY

Dividend policy refers to the decisions taken by management on how to best apply the firm's free cash resources. Managers have to decide whether to invest in profitable projects or whether to pay out the free cash to shareholders (Nitta, 2006). For example, investing in profitable projects will ultimately lead to capital growth through the appreciation in the share price of the company. However, investors might expect a dividend payout as a reward for the risk they took through investing their capital in the firm. The two main measures of dividend policy, according to Baskin (1989) and Allen and Rachim (1996), are firstly, dividend yield which is the dividend per share expressed as a percentage of the share price, and secondly, the dividend payout ratio which is defined as the ratio of dividends per share to earnings per share. In other words, this refers to the percentage of earnings paid to shareholders as dividends (Hussainey, Mgbame & Chijoke-Mgbame, 2011).

Dividend policy theories include the dividend irrelevance theory as formulated by Miller and Modigliani (1961) who argued that investors do not show a specific preference for receiving dividends immediately, or for rather receiving capital gains on the value of

their shares at a later stage. The above-mentioned authors further maintained that a dividend decision does not have an effect on the market value of a share. The dividend irrelevance theory states that investors only want higher returns on their investments, regardless of how this return is generated.

Seminal arguments regarding the relevance of dividend policies, as stated by authors such as Gordon (1956), Walter (1963), and more recently by DeAngelo *et al.* (1996), imply that the payment of dividends sends a positive message to investors. It also reduces investor uncertainty, while increasing the firm's market value over the long term. These authors argue that the exact opposite is true if firms decide not to pay regular dividends. These arguments are commonly referred to as the signalling hypothesis.

Similarly, the bird-in-hand theory argues that in a world of uncertainty and information asymmetry, a dividend (bird in hand) now is worth more to an investor than capital gains on share prices in the future, and it also hints at a positive message (signalling theory) to shareholders.

Black (1976:8) referred to dividend decisions as "a puzzle with pieces that just don't fit together". The seminal research studies by Gordon (1956), Miller and Modigliani (1958;1961), Walter (1963) and Black (1976) on dividend policies and its effect on share price changes aimed to determine whether an optimal capital structure (the ratio of internal to external sources of funds) exists that would allow a firm to maximise its profits, market value, and ultimately, shareholders' wealth. The study by Black (1976) indicated that the arguments for and against a dividend policy are far from over. There is no clear solution regarding which direction to take when formulating policies, and making payment or retention decisions.

Given the arguments above, a firm's dividend policy should preferably lead to a form of share price stability over the long term. Share price stability inherently effects the value of a firm and therefore also its cash flow (Walter, 1963).

Volatility, as defined by Guo (2002), refers to the systematic risk faced by those who hold ordinary shares. According to Kenyoru, Kundu and Kibiwott (2013), volatility indicates the size and frequency of the fluctuations in a shares price. Nel and Kruger (2001) defined volatility as the degree or measure of risk faced by an investor with regards to the future returns on an investment. In other words, the greater the risk, the

greater the share price volatility. Therefore, the stability of a share price over time, determines not only its volatility, but also the degree of risk faced by the investor and the firm. In the context of this study, share price volatility refers to the degree of change in a share price over a certain time period.

Miller and Modigliani (1961) pointed out that dividend payouts and dividend yields, as proxy variables of a dividend policy, have an unfavourable effect on share prices and lead to price fluctuations. Constant and significant share price movements are regarded as signifying high risk investments, and could therefore lead to divestments by institutional investors. These dividend decisions (payout versus retention) therefore affect share price stability and the volatility of the share prices, which ultimately increase or decrease the risk faced by investors. Moreover, share price volatility as a risk indicator has a damaging effect on investor decision-making, as investors invest in portfolios based on the volatility of these investment portfolios or shares (Hussainey *et al.*, 2011). Therefore, investors need to know what the relationship is between dividend policies (as measured by dividend yield and dividend payout ratio) and the volatility of the share prices to enable them to make informed investment decisions.

In the last decade, contradictory views surrounding the relationship between dividend policy and share price volatility have come to the fore (Kenyoru *et al.*, 2013), especially in terms of developed and developing countries and their respective stock markets. Evidence from the London Stock Exchange in the United Kingdom (Hussainey *et al.*, 2011) contradicts results found on the Karachi Stock Exchange in Pakistan (Sadiq, Ahmad, Anjun, Suliman, Ul-Abrar & Khan, 2013) with regard to the relationship between dividend yield and share price volatility. Hussainey *et al.* (2011) found that dividend yield on the UK stock market had a positive relationship with share price volatility. Sadiq *et al.* (2013), however, concluded that a negative relationship exists between dividend yield and share price volatility for non-financial firms listed in Pakistan. The differences between the findings (Hussainey *et al*., 2011; Sadiq *et al.,* 2013; Kenyoru *et al.,* 2013; Morgan & Thomas, 1998) indicate the uninformed risk that investors are exposed to when making investment decisions on the different stock exchanges by relying on research done on only one stock exchange.

1.3 RATIONALE FOR THIS RESEARCH STUDY

Due to the dynamic environment faced by investors on the Johannesburg Stock Exchange (JSE) in South Africa, relying on research done in the United States of America (US), United Kingdom (UK) and Australia might have a negative effect on local investment decisions (Chinzara & Aziakponoy, 2009). This is due to the fact that these markets differ considerably in terms of size, market capitalisation and listing requirements (Page & Reyneke, 1997). This study therefore aims to add to the current literature on the subject, and aims to provide useful insight into recent prevailing dividend policies and the relationship and effect these policies have on share price volatility (Hussainey *et al.,* 2013; Sadiq *et al.,* 2013; Allen & Rachim, 1996).

The purpose of this study is not only to explore the impact that dividend policies have on share price volatility, but also to explore the relationship between these two elements. This study will thus add new research to the literature, and provide firms and investors with deeper insight into how these (dividend policy-related) variables affect share price volatility, specifically in South Africa for firms listed on the JSE. Moreover, the potential insight gained from this study will aid investors to strategically align their decisions in such a way that the appropriate or intended outcomes will be delivered and wealth maximised at their chosen level of risk appetite. This research is essential as no previous research has been done on the topic, specifically for South Africa and the JSE.

The rationale for evaluating the relationship between dividend policy and share price volatility over the period of the 2008 economic crisis is due to the change in managerial behaviour noted from US industrial firms who refrained from paying dividends in 2008–2009, as found by Hauser (2015), even though the financial position of firms had strengthened. This factor specifically pointed to the lack of South African studies on the topic and enabled the researcher to identify the gap in the literature.

1.4 PROBLEM STATEMENT

According to Jensen (2002:235), firm managers should seek “enlightened value maximisation” as the main purpose of increasing shareholder wealth. The existing literature argues that dividend policy plays a vital role in realising this objective. Although the current thinking continually changes regarding how important dividend

policy is, and how big the influence is that dividend policy has on share prices; the fact is that the findings remain inconclusive (Jensen, 1986; Linter, 1956).

Dividend payouts to shareholders is a difficult decision to make. Managers need to review and evaluate current and future investment opportunities. They need to analyse the past, dissect the present and predict the future in challenging economic conditions. Bodmer (2015) argues that relying on sophisticated models for predictions and analysis are often compared to going to fortune-tellers and asking for a way forward. Managers need to balance shareholders' interest, tax incentives, various business strategies and many more factors with its core survival.

A firm's dividend policy, as previously mentioned, is made up of two main measurables, namely, the dividend yield ratio and the dividend payout ratio. The dividend yield ratio is an indication of how much the firm paid out in the form of dividends, relative to the market value of a firm's share price. This could be viewed by investors as a form of return for the risk that they took when investing in the firm. The second measurable is a firm's dividend payout ratio, from which the market gets an indication of how much of a firm's free cash flow or earnings is paid out to investors. Both these variables are expressed as percentages and act as guidelines for dividend decision-making by a firm's managers. Given the background on dividend policy and the contradicting findings by scholars such as Miller and Modigliani (1958; 1961), Fisher (1961) and Pettit (1977), it becomes clear that managers can increase or decrease share price volatility through their choice of policy.

As previously stated, existing research provides and presents many contradictory views of the relationship between dividend policy and share price volatility (Kenyoru *et al.*, 2013; Hussainey *et al.*, 2011; Sadiq *et al.,* 2013; Morgan & Thomas, 1998; Allen & Rachim, 1996). In addition, the available research is also limited in scope, and focused around countries other than South Africa. The relationship between dividend policy and share price volatility within a South African context has not yet been determined. Therefore, the following problem statement has been formulated for this research study:

Does the relationship between dividend policy and share price volatility on JSE-listed firms differ from previous research on different markets?

Furthermore, studying and determining this relationship through the different phases of the 2008 financial crisis will provide (additional) valuable insight into the dynamics of the relationship and the behaviour around it.

1.5 RESEARCH QUESTION(S)

The following research question has been formulated for this research study:

What is the relationship between dividend policy and share price volatility for a representative sample of JSE-listed firms?

1.6 RESEARCH OBJECTIVES

The foremost objective of this study is to determine the relationship between dividend policy and share price volatility for a representative sample of firms listed on the *JSE, under various economic conditions*.

The primary and secondary objectives of this study can be broken down as follows:

1. Evaluate the relationship between dividend policy and share price volatility for a selection of firms listed on the JSE,
2. under various economic conditions represented by periods *pre*, *during* and *post* the 2008 global financial crisis, through:
    a evaluating the relationship between dividend payout ratio and share price volatility for the periods.
    b evaluating the relationship between dividend yield and share price volatility for the afore-mentioned periods.

1.7 LIMITATIONS OF THE STUDY

There is no accepted or worldwide definition to what exactly constitutes a perfect dividend policy, and this is also the case in South Africa. This therefore makes it difficult to compare the results based on other findings dealing with different markets and exchange platforms. The independent variable (dividend policy) is one of many factors or variables that affect share price volatility, and should not be seen as the only variable affecting share price volatility. The time periods chosen are only a representation of the relationship between dividend policy and share price volatility

throughout the phases of the 2008 economic crisis and do not represent the relationship between the variables for other time periods.

1.8 ETHICAL CONSIDERATIONS

The researcher applied for and was granted permission to perform this particular study from the University of South Africa's (Unisa) ethical committee well in advance of the commencement of the study (Appendix A). None of the participants (the JSE-listed firms forming part of the sample) needed to be informed of the proceedings of the study, as the study was done using secondary data that is available in the public domain, and therefore no consent for using the data was needed. In addition, the JSE website places no prohibition on the use of the information available on the site.

The research did not require the signing of any confidentiality forms, as the information is available globally and the participants are non-human in nature. Throughout the research process the researcher strived to adhere to the best possible research guidelines as stated by Unisa's ethics committee to ensure that the research adheres to international best practices regarding research ethics.

1.9 SIGNIFICANCE OF THE STUDY

To the best of the researcher's knowledge, no literature is currently available which indicates whether there is a relationship between dividend policy and share price volatility for a sample of JSE-listed firms. In addition, no literature appears to be available to show what the relationship between the variables are for a sample of JSE-listed firms, over the periods pre, during and post the 2008 global financial crisis.

The research is significant in the sense that it will allow for more informed financial decision-making for managers as well as investors on the JSE. Furthermore, it will add to the already available literature on the relationship between the variable for emerging markets, making it comparable to other similar markets.

1.10 CONCLUSION

Chapter 1 introduced the study and explained, in a structured way, how the problem statement was formulated and why. The chapter further developed and formulated a research question and the research objectives for the study, over various economic

conditions. The introduction touched on some of the main theories of dividend policy and share price volatility, and seminal authors were quoted to give a brief overview on the developments over the years. The significance of the study and its contribution to the already existing body of knowledge was explained, emphasising that this research will focus on JSE-listed firms in South Africa (an emerging market).

Chapter 2 develops the study by following a structured and funnelled approach through an extensive review of the literature that focuses on dividend policy and share price volatility in both developed and emerging markets.

CHAPTER 2:
LITERATURE REVIEW

2.1 INTRODUCTION

For decades, managers have had difficulty in deciding whether to pay dividends to shareholders, or whether to reinvest the proceeds. Moreover, what amount, in relation to earnings, will suffice so that it is in the interest of both the firm and the shareholders (Hussainey *et al.,* 2011). As Bohart (2006) argued, the reality is that investors are mainly attracted to the stock market to make money through the selling of stock at a higher price than initially paid. These decisions, whether to pay out dividends or to retain earnings (Higgins, 1972), have plagued managers for a long time and are still as relevant today as they were when the dividend irrelevance theory was first discussed (Miller & Modigliani, 1961).

Dividend payout or dividend retention decisions have been an area of great controversy and debate in the financial management environment since the late 1950s (Linter, 1956; Gordon, 1956; Miller & Modigliani, 1961; Walter, 1963; DeAngelo *et al.*, 1996; Fama & French, 2001), and various seminal authors have all argued for and against its relevance.

The main purpose of this literature review chapter is therefore to build on the introduction chapter by: (1) providing an in-depth theoretical outline that forms the basis of the study, (2) to further explain the empirical literature against which the theoretical literature was tested, (3) to discuss the different theories and empirical literature against the backdrop of both developed and emerging markets. Although this study discusses and explains the main dividend policy theories, the aim is to assess the theories and identify their relevance to the current study.

The literature review presented in this chapter will follow a structured format. The first section focuses on the seminal research done on dividend policies, while the second section focuses on share price volatility. The third section focuses on capital structure decisions and the implications thereof for both dividend policies and share price volatility as discussed in the first two sections of the literature review. The fourth section reviews the empirical research against the theoretical framework presented in the previous three sections. The empirical literature on the various dividend theories

is separated into literature related to developed markets and literature related to emerging markets to provide a structured approach for future reference. The chapter conclusion concludes this literature review chapter.

2.2 DIVIDEND IRRELEVANCE THEORY

The dividend irrelevance theory, as developed by Miller and Modigliani (1961), argues that a dividend policy to pay out dividends in the form of cash, or in the form of capital gain in the future share price, has no effect on the volatility and market value of shares. Miller and Modigliani (1961) developed the M&M theorem which argued that shareholders do not show a specific preference for receiving dividends immediately, or for rather receiving the capital gain on their investments later. Investors therefore seek only high returns on the funds, irrespective of how they receive it. By way of capital gains, investors can then sell some of their equity when cash is needed, assuming liquid markets.

The assumption made by the M&M theorem is that perfect markets exist. This refers to a state where: (i) taxes are irrelevant, (ii) flotation costs are non-existent, (iii) management and investors have the same information about future investments, (iv) where investors and firms can borrow at the same rates, and (v) future cash flows are known. It is under these conditions that a perfect capital structure can be developed and where paying, or not paying, a dividend is irrelevant and does not influence a firm's value.

Miller and Modigliani (1961) further stated that different investors have different needs. These needs refer to the "clientele effect" of dividend payout decisions. They noted that the share prices of firms will move or be affected according to the demands and needs of investors. Miller and Modigliani also conceded that the only market imperfection able to influence the firm's value to a certain extent might be personal income taxes, but that the effect would be minimal (this will be discussed later in the literature review). They argued that a firm's investment policy and its ability to generate income, and not its dividend policy, is the deciding factor when determining its value.

Miller and Modigliani's irrelevance theory has provided the foundation for much of the research on dividend policy. The earlier belief was that corporate dividend payments satisfied all the shareholder expectations, and managers consequently even

smoothed these payments to prevent a negative influence on share price changes (Al-Malkawi, Rafferty & Pillai, 2010). Black and Scholes (1974) tested the irrelevance theory by examining the long-term effect of dividend yield, as a proxy for dividend policy, on share price volatility for 25 portfolios of shares. They found that there was no evidence indicating that either a high yield, or a low yield, influenced the share prices of the sampled portfolios, and by extension, the value of these firms. In contrast with Black and Scholes (1974), the authors, Ball, Brown, Finn and Officer (1979) established that a dividend is undeniably preferred above capital gains, and it also has a positive effect on a firm's value. They tested the irrelevance theory on industrial firms on the Melbourne Stock Exchange over a 10-year period.

Aside from all the empirical evidence gained from testing the dividend irrelevance theory, the impact that dividend policy has on share price volatility remains mostly unexplained (Al-Malkawi *et al.*, 2010). The findings of the various researchers led to alternatives to the dividend irrelevance theory. However, when research moves away from the binding assumptions that support the irrelevance theory, the issue of dividend policy becomes more complex. The following sections will discuss alternatives to the dividend irrelevance theory, based on research findings when one or more of the basic assumptions are relaxed.

2.3 DIVIDEND RELEVANCE THEORIES

The following section will review the relevant literature with regards to the relevance of a firm's dividend policy. In other words, to discuss the importance of the dividend policy to the firm and the fundamental reasons for it might be.

2.3.1 Bird-in-hand hypothesis

Given the assumptions of a perfect market, as defined by Miller and Modigliani (1961), older views from the 1950s (Gordon *et al.*, 1956; Linter, 1956) suggested that in an uncertain world and imperfect markets, a different view on dividends should be favoured that does not focus on capital gains. This view strengthens the idea that investors prefer a dividend now (bird in the hand) instead of a return of their capital in an uncertain future (two in the bush). In addition, it supports the idea that a firm's value will increase when dividends are paid, as it lowers the risk of investors not receiving a return in an uncertain future.

Gordon (1959) tested the bird-in-hand theory and found that the volatility of a given share price can be predicted with far more accuracy with a change in dividend payout policy as opposed to a change in retained earnings. Fisher (1961) reached similar conclusions and found that the mere declaration of dividend payments from undistributed profits have a significant positive effect on share prices. Despite the findings of various authors, Gordon (1959) received hefty criticism from Miller and Modigliani (1961:424), and a few years later from Bhattacharya (1979), labelling the bird-in-hand theory a fallacy. Diamond (1967) endeavoured to duplicate Gordon's model, with the exception of introducing firm risk and external financing to the model, and found only weak evidence in support of the bird-in-hand theory. To this day, there is mixed empirical support for and against the bird-in-hand theory, and authors such as Baker and Weigand (2015) mentioned that human needs should be seen as the deciding factor supporting such a theory.

2.3.2 Tax-effect theory

Due to the underlying assumption that the capital markets are not "perfect" as stated by Miller and Modigliani (1961), it has been assumed that in an environment where taxes matter to individual investors who seek higher after-tax returns, the demand for dividends may influence the share price, and ultimately, the firm's value (Al-Malkawi *et al*., 2010:179).

The tax-effect theory proposes that in cases where dividends are taxed at a rate higher than capital gains, investors would prefer the latter. This will also assist investors to defer taxes on capital growth, as they are only taxed when shares are sold, thereby maximising their wealth. This effect paves the way for the theory that a lower dividend payout ratio will lead to a reduction in the cost of capital, and therefore a higher share price.

Brennan (1970:426) found that as long as the market's effective tax rate is above zero, it is unfavourable for a firm to pay dividends and not in the interest of investors. Brennan (1970) concluded that if the effective tax rate is above zero, dividend-paying shares should sell at a discount to compensate investors for the tax disadvantage on their dividend returns (income). Supporting these findings, Litzenberger and Ramaswamy (1979) found that firms can increase their share price by reducing their dividend payments. Countries such as Ghana, Nigeria and Kenya all implemented a

withholding tax policy on dividend payments, whereas South Africa implemented a capital gains tax of 15%, supporting dividend payouts instead (Abor & Fiador, 2013). Note that current literature indicates South Africa implemented a 20% withholding tax (SARS, 2017). The reduced capital gains tax in Ghana and Nigeria (10%) as well as Kenya (0%), could lead to future earnings growth.

2.3.3 The clientele effect

The original argument by Miller and Modigliani (1961) regarding investor preferences revealed that under certain conditions, the dividend payout decision might play a role in share price volatility. These conditions were argued to be the influence of transaction costs on the buying and selling of shares, tax differences on income, and the difference in what investors want when they invest their portfolios. The “clientele effect” was the term coined by the above-mentioned authors to refer to situations where investors are interested in different shares with different characteristics. However, Miller and Modigliani (1961) maintained that even though the clientele effect might have an influence on dividend policy, in a perfect market, it will not influence a firm’s value, and therefore remains irrelevant.

In active markets, investors are often faced with a variety of tax treatments on both dividend income and capital gains. The timing of transaction costs incurred in the buying and selling of shares also gives way to different investor clienteles, and consequently this has an effect on the valuation of shares, hence share price volatility (Al-Malkawi *et al.*, 2010:182). Pettit (1977) found that there is a significant clientele effect present in relation to dividend yields. Factors prompting different clienteles and their portfolios typically include age and tax preferences on income. Scholtz (1992) supported the tax argument but added that it is not necessarily individual investors who form dividend clienteles, but specialised portfolio managers who are extremely sensitive to tax preferences. He added that the existence and sensitivity of these clienteles to dividend yields and payouts may cause the reluctance in management to change its dividend policy. Scholtz (1977:262) further noted that investors’ appetite for risk might be a deciding factor in the formation of clienteles.

Al-Malkawi *et al.* (2010) found that firms in high-growth industries who tend to pay low, to no dividends on their shares are preferred by investors who seek capital gains in the form of share price appreciation, and vice versa. Furthermore, the authors held the

view that due to transaction costs, individual investors, such as pensioners who rely on steady dividends, are attracted to high and regular dividend-paying shares. The transaction cost associated with a change in portfolio is too high and will negatively affect their wealth. Allen, Bernardo and Welch (2000) concluded that it is the tax difference between institutional and individual investors that attracts different clienteles, and not the outright tax payments on dividends.

Elton and Gruber (1970:73) demonstrated that shareholders in higher tax brackets show a preference for capital gains, as opposed to dividend income being preferred by those in lower tax ranges (thus the tax-induced clientele theory). In contrast to earlier studies, Kalay (1982) found that without additional management information, there is still a positive correlation between the reductions in share prices (ex-dividend) and the dividend yield, which is consistent with the tax-prompted clientele effect.

2.3.4 The signalling theory

The signalling theory conveyed by dividend payments, essentially states that the payment or non-payment of dividends by a firm, provides investors with an indication of whether the specific firm has a positive or negative future outlook (Al-Malkawi *et al.*, 2010:185). Dividend payments signal that a positive future cash flow is expected by management. The argument notes that managers within the organisation usually know more about its future prospects than outside investors. This is in contrast to Miller and Modigliani's (1961) assumption about asymmetric information. The authors, Koch and Shenoy (1999), reached the following two conclusions: that if (i) firm managers do possess valuable information on the firm's future prospects and are incentivised to share the information with the market and; (ii) the information holds true to what is really going to happen, then the market would react positively to dividend announcements (signalling increased future cash flows) and ultimately increase the firm's value. The dividend announcement will have the opposite effect if these two conditions are not met.

Koch *et al.* (1999) supported Linter's (1956) argument, and showed that firms increase dividend payments when management forecasts sustainable future cash flows. Other authors, however, cautioned against the signalling theory, as management could become over-ambitious, and suggested that other signalling options to convey a positive message should rather be used. Share repurchasing as a signalling option

was proposed, because dividend payments reduce financial flexibility (Soter, Brigham & Evanson, 1996) and consequently, share prices.

Pettit (1972) found evidence in support of the signalling theory and showed that a firm's share price reacts positively to dividend increases, and negatively to the declaration that dividend payments would be decreased. Pettit's (1972) research was supported by Aharony and Swary (1980) who also argued that managers have inside information about a firm's future predictions. Furthermore, these managers will use the two signalling devices (dividend and earnings announcements) to convey a message about the firm's prospects, as dividend announcements are done solely at management's behest. They stated that dividend payment announcements went beyond the earnings announcements and should reflect in the share price fluctuation after the dividend announcement. The argument holds true for efficient capital markets where information is readily available to investors.

An emerging market study done by Travlos, Trigeorgis and Vafeas (2001) on the Cyprus Stock Exchange found that there is a significant positive relationship between dividend announcements and returns, which is similar to what is found in developed markets. Travlos *et al.* (2001) concluded that their findings are consistent with the signalling theory. According to Al-Makwali *et al.*(2010:190), the signalling hypothesis makes an imperative notion, which is that managers want to convey the accurate or real value of the firm via dividends.

2.3.5 The agency theory of dividends

In a perfect market, Miller and Modigliani (1961) presumed that there would be no conflict of interest between the managers of a firm and its shareholders. That means that the managers' interests are aligned with that of shareholders, and that one of the parties would not act in self-interest. In an imperfect market, this is not always the case. Managers might act in their own interest by, for example, overinvesting in an unprofitable project. As the result of the conflict of interest between shareholders and managers, the cost that shareholders sustain whilst monitoring corporate managers are referred to as agency costs.

Studies by authors, such as Jensen (1986), found that the payment of dividends may reduce agency problems between managers and shareholders, as managers may have less opportunity to invest the additional free cash flow in unprofitable projects.

Jensen (1986) further found that agency costs are significantly higher in firms with large amounts of additional free cash flow. The author argued that one way of reducing agency costs and motivating managers to improve organisational performance is by using debt in leveraging the firm's capital structure, thereby binding managers to certain commitments and reducing the flexibility of managers' options.

However, Easterbrook (1984) warned against constantly increasing dividend payments as it might increase leverage to an unjustifiable level, thereby increasing share price risk. For example, managers might have to borrow additional funds to compensate for the cash outflow that occurred during dividend payments. Easterbrook concluded that the payments of dividends are effective where the costs of monitoring managers are low. Chang, Kang and Ying (2016) confirmed that institutions use dividend payments as a monitoring device to manage the risk presented by agency problems.

2.4 SHARE PRICE VOLATILITY

Share price volatility, as defined by Nel and Kruger (2001), refers to the degree of risk faced by investors with regards to the future returns on those investments. Thus the risk or chance associated with the uncertain future performance of a share adds to the volatility, and therefore share price fluctuations. It is in light of this argument that investor sentiment adds to the "dividend puzzle" of choosing shares or portfolios that fit into each specific investor's appetite or circumstances. Nel and Kruger's (2001) definition regarding share price volatility is supported by other authors such as Guo (2002), Li and Rosser (2003) and Montgomery (2002).

Arguments by Bohart (2006), supported by Kenyoru *et al*. (2013), conveyed that share price volatility is largely related to investors' investment goals, and that share prices and their volatility are dependent on: (i) the latest information on share prices (ii) inflation (iii) the economic strength of the market and peers (iv) psychological issues that investors have about share prices and supply and demand uncertainty.

Bohart (2006) and Kenyoru *et al.* (2013) further differentiated between two types of volatility: implied volatility, and deterministic volatility. Implied volatility contains disposable market information and provides efficient volatility forecasts to investors

analysing market movements. Deterministic volatility refers to the presumption that the future volatility shall be a function of the volatility in the past.

Rothonis, Tran and Wu (2016) tested the share price market volatility in 49 developed and developing countries in relation to culture, and found that share or equity traders with similar cultural backgrounds react in the same way and possess the same information with regards to share prices, which could increase volatility and risk globally. Research shows that long-run share market volatility on the London Stock Exchange can be described by several business circumstances as well as two transactional cost variables, which constitutes brokerage and tax charges (Green, Maggioni & Murinde, 2000). The study by Green *et al.* (2000) found that increased transactional costs led to increased market volatility as a result of the trading effect. The authors found that an increase in transactional costs reduces fundamental volatility (that is, an unobserved variable that differs over time) and thus has to be implemented correctly to have the desired effect on share price volatility.

2.5 CAPITAL STRUCTURE DECISIONS AND IMPLICATIONS

This section will discuss capital structure decisions and the implications thereof on dividend policy and share price volatility.

From the time when Modigliani and Miller (1958; 1961) developed the dividend irrelevance theory many scholars have tried to replicate their theory using real world examples. The original theory was based on perfect market conditions, with zero taxes and homogenous expectations. The practical implications that originated from research on realistic situations showed that a firm's dividend policy does have an influence on share price volatility, although different authors found different relationships. Due to the composition of a firm's capital structure, there would be a direct influence on its dividend policy (Clifford & Watts, 1992). This is because a typical capital structure constitutes of a mix of debt and equity (Myers, 1984) in order to minimise the cost of capital when investing. As a result, share price volatility would be affected by the influence that dividend policy has on the return of equity holders seeking a return. Empirical evidence of these relationships will be discussed later in the literature review.

A research study conducted by Michealas, Chittenden, and Poutziouris (1998) in the UK SMME (small, medium and micro environment) business sector showed that the use of debt is relevant, and that factors such as business risk, size and growth opportunities all have an influence on the firm's choice of long-term versus short-term debt usage. These factors also affect a firm's share price volatility. The study also showed that short-term debt was used, or rather preferred, in times of economic downturn, and that the opposite was true for periods of economic growth. The use of debt, instead of equity, as a finance mechanism strengthens the case for the dividend irrelevance theory. Firms who rely primarily on debt would not pay dividends because dividend policy decisions are subject to the equity holders' interest. Fama and French (1999) reached similar conclusions from earlier work that was done post-World War II, which could suggest that in times of economic recession, equity capital and retained earnings are rarely available, and that debt financing might be a more viable financing option, rendering dividend policy irrelevant to a degree.

Through an examination of capital structure choices in various industries, Titman and Wessels (1988) concluded that transactional cost might be a central determinant when choosing a specific capital structure. It was further noted that short-term debt ratios were negatively related to firm size and that the increased cost associated with long-term debt issuance may explain the correlation in share price volatility. Stuart, Whittam and Wyper (2007) argued in their findings about small business financing, that the pecking-order theory holds, but that external equity is sought, rather than external debt, once internal capital sources are depleted. The need for a dividend policy therefore becomes relevant as the new equity holders would expect a return.

The reasons for these decisions by entrepreneurs are twofold: Firstly, entrepreneurs see debt financing as an added personal liability and risk, due to the fact that the debt must usually be underwritten by personal guarantees. Secondly, they seek out external equity to add value to their firms by means of additional expertise on top of the acquired financing. In reality, this occurrence is becoming more and more prevalent, especially in the Fin-Tech industry (Ma & Liu, 2017).

Some firms indicate that the added social capital and the access to networks that new equity holders bring to the firm by far surpass the benefit of obtaining the additional finance. However, in their study of a variety of capital structures in UK-based listed

and unlisted small firms, Chittenden, Hall and Hutchinson (1996) found that rational trade-offs can be explained by owner-managed firms regarding costs, market flotation and debt levels. In the case of unlisted firms, the study showed that the over-reliance on internal funds and the importance of collateral are likely to be a major constraint on economic and business growth. The reason for this might be that small business owners are not willing to take on the additional risk associated with increased financial leverage. The fear of bankruptcy surpasses the willingness for rapid expansion and growth.

Literature presented by Abor (2005) suggested that there is a positive relationship between the short-term debt ratios (that is, short-term debt to total assets) of listed firms in Ghana and their return on equity ratios (ROE). The opposite was true for the long-term debt ratios in relation to the ROEs. However, the study showed that there was a positive correlation between the total debt to asset-ratio and the ROEs of the firms, suggesting that there is indeed value in the use of debt instead of equity for financing. Moreover, the research showed that successful firms depend more on debt as their main supply of financing. Dividend policy becomes less important when there is a lack of equity. The advantage will therefore be borne from the costs and the associated tax incentives.

In a study conducted under the top 30 pharmaceutical companies in Iran, Mohammadzadeh, Rahimi, Aarabi, and Salamzadeh (2013) showed that there is a noteworthy negative relationship between a debt-laden capital structure and profitability. The findings showed that through the use of internally generated funds, firms were able to generate higher profits and reduce share price volatility. They continued to show that the companies in question follow the pecking-order theory. Similar studies reaffirm the fact that profitable firms depend more on equity as their main source of funding (Shubita & Alsawalhah, 2012) and that the equity holders are only interested in receiving a high return, irrespective of its form.

On examining debt finance structures, Hurdle (1974) argued that firms with large market share tend not to increase their financial leverage because market conditions permit it. The results indicated that large firms with big market shares tend to enjoy lower debt levels, with lower risk and higher profits. This might suggest that equity financing, through the use of retained earnings, is an attribute for healthy earning

margins. These results stress the need for firms to have a flexible dividend policy to compensate equity holders for their investments.

2.5.1 The leverage effect and share price volatility

Brav (2009) stated that private firms in the UK, if compared to their public counterparts, rely mostly on debt financing and have higher leverage ratios coupled with high share price volatility. They also avoid external capital markets, which in turn lead to increased volatility in company performance. He argued that the reason for this difference is that private equity is more costly, and private firms tend to aspire to maintain control at the expense of income certainty. This also reinforces the belief that higher leverage can lead to higher risk. This increase in risk can also be seen as an agency cost if the issue of control determines the firm's capital structure.

According to Welsh (2004), a market-based debt ratio that describes the comparative ownership of a firm by examining the creditors and equity holders, still remains an essential element in determining the cost of capital. The author's research shows that firms do little to counteract share price fluctuations by, for example, changing their capital structures. Consequently, a firm's debt–equity ratios then fluctuate closely with the changes in those share prices. He further showed that stock returns form the basis for determining debt ratios and that these returns *per se* are most likely the best understood influence on debt-ratio dynamics.

A study done by Kyereboah-Coleman (2007) found that the capital structures of well-established micro-finance institutions in the Sub-Sahara regions keep almost 71% of their capital in the form of current assets. The research revealed that highly leveraged micro-finance institutions increase their profits and manage risk by reaching out to a broader clientele base, and by doing this, keep default rates to a minimum. The study found that increased leverage for micro-finance institutions leads to economies of scale, and allows firms to deal effectively with moral hazards, such as agency problems. The study, however, noted that access to mainstream long-term debt is necessary for micro-finance institutions to increase their current performance, but that access to the required funds remains a challenge in developing countries (Kyereboah-Coleman, 2007).

In contrast, a study done by El-Sayed Ebaid (2009) had the opposite finding, namely, that capital structure choices have little to no impact on business performance measures such as ROE, ROA (Return on Assets), and gross profit margins. Research done by Eriotis (2007) implicated that there is indeed a negative relationship between a firm's debt-ratio and the growth rate, the quick ratio, and the interest coverage ratio.

This study stresses the need for equity financing, coupled with a relevant dividend policy to increase firm growth. Establishing a relevant dividend policy will assist in changing a firm's capital structure to levels where growth and return can be maximised.

2.5.2 Equity financing and share price volatility

An assessment of the property sector in Hong Kong found that construction contractors on average have a much higher gearing ratio than the developers they build for, despite the fact that there are vast differences in their profit margins (Hung, Albert & Eddie, 2002). This phenomenon can be ascribed to the fact that contractors usually borrow funds from the developers; a widely accepted practice in the industry. The developer thus indirectly becomes an equity holder in the construction firm.

The higher gearing also reflects the fact that in Hong Kong equity is expensive for these contractors, due to the low profit margins they produce, especially in comparison with the developers' margins (Hung *et al*., 2002). The study further noted, through a regression analysis, that capital gearing is negatively related to earning margins, and stated that an unequal relationship exists between property developers, their contractors and the competitiveness between these two. According to Hung *et al.* (2002), the capital intensity faced by developers, and the labour intensity of the contractors, might be the main factors influencing profitability. The immense bargaining power developers have over contractors sometimes leaves contractors with low- to non-profitable projects and a lack of competitiveness in the industry. The study correlates well with the agency problem. Dividend policy decisions would therefore favour developers, as contractors are reliant on them for projects as well as project funding.

Many firms tend to make capital structure decisions based on that which market conditions permit and that which the firm can afford in order to remain sustainable, competitive and profitable. According to Noulas and Genimakis (2014), the pecking

order theory still holds and is preferred over the trade-off theory by many CFOs in non-financial listed firms in Greece. These firms tend to prefer the use of internally generated funds versus external borrowings, and the researchers showed that there might be uneven distribution of information regarding new, long-term investment opportunities. The above-mentioned authors highlighted market imperfections as a major challenge confronting managers. Other factors that might have a significant effect on capital-structure decisions include tangible assets and the possibility of firm bankruptcy (Fathi, Ghandehari & Shirangi, 2014).

Cheng and Shiu (2007) explained that certain firm characteristics, institutional policies, and the various environments in which firms are active, all play a role in capital structure decision-making. Their research showed that investor protection in various countries also plays a significant role. Higher leverage is usually evident in countries where creditors are well protected, while in contrast, more equity is utilised where better shareholder protection is evident. Where more equity is used, a dividend policy has an important role to play. This implies that investor protection plays a significant role when it comes to funding supply (Cheng & Shiu, 2007). Factors such as the importance of the banking as well as the stock market sector, economic development, tax rates and the treatment thereof regarding both profits and losses, influences the aggregated effect on capital structure choices and share price volatility.

The above discussion demonstrates that contradictory views prevail among leading authors regarding firm capital structures and the effect these structures have on profitability, dividend payment and ultimately, share price volatility. Capital structure decisions form the foundation of a firm’s dividend policy decisions and consequently, share price volatility.

The literature discussed so far shows that there appears to be a positive relationship that prevails between short-term debt and profitability, but that the opposite is true for the relationship between long-term debt and profitability. Previous research might indicate that equity is preferred as a long-term investment vehicle and assumptions could be made that the use of equity has a negative effect on a firm’s earnings. Such a choice would then affect the risk as well as the volatility of a given share. Capital structure decisions therefore play a pivotal role when managers need to make dividend

policy decisions, and as such, forms a crucial part of the literature surrounding dividend policies and share price volatility.

2.6 EMPIRICAL LITERATURE

This section of the literature review contains a discussion of the extensive research that has been done by various academics on dividend policy and share price volatility. The discussion focuses on research related to the relationship between a firm's dividend policy and its share price volatility. The foundational theories on dividend policy were tested against empirical evidence. Due to the numerous dividend theories that are based on certain assumptions (such as the irrelevance of taxes), relaxing one or more of these notions might lead to different dividend policy recommendations. The prevailing literature clearly indicates that there is a notable relationship between dividend policy and share price volatility, but to what extent the variables influence one another remains inconclusive. No such research or relationship could be found for the South African context or for the JSE. The discussion would also focus on the differences between developed and developing (JSE) markets or countries. The following sections assess the theoretical literature against the empirical findings from other studies.

2.6.1 Dividend policy and share price volatility

The topic of dividend policy is firstly discussed in terms of the tax effect of dividend policies on share price volatility, and secondly, in terms of the clientele effect of dividend policies on share price volatility.

2.6.1.1 The tax effect of dividend policies

Given the assumption that markets are not perfect, capital gains and dividend taxes are not treated the same. Based on these tax differences, dividend policy may have a significant influence on the volatility of a share price. Furthermore, due to investors being mainly interested in after-tax returns, the demand for dividends also affects the share price volatility (Al-Malkawi *et al*, 2010).

Black and Scholes (1974) tested Brennan's (1970) model, as noted earlier in the literature review, and found no support for the tax effect on dividend payments. Other authors, such as Litzenberger and Ramaswamy (1979), have tried ever since to quantify the relationship. In their quest to describe this relationship between dividend

yield and share price fluctuations they came up with the question: why would a firm pay dividends at all if that firm can increase its share price by decreasing dividends? (Al-Malkawi, 2010).

A study by Morgan and Thomas (1998) on firms in the UK's equity market found that there is a positive relationship between dividend yields and share price volatility. It should, however, be mentioned that the study provided different results under different tax structures. Morgan and Thomas (1998) pointed out that there is a non-linear relationship between dividend yield and risk-adjusted returns. In addition, they argued that low-yield shares should reward investors with higher returns, due to the additional tax liability on capital gains for UK listed firms. Hussainey *et al*. (2011), in contrast, found that there is a positive relationship between dividend yield and share price volatility, and a negative relationship between a firm's dividend payout ratio and share price volatility for firms listed on the London Stock Exchange (LSE). Their research implies that dividend payments for firms listed on the LSE would lead to a decrease in share price volatility.

2.6.1.2 The clientele effect of dividend policies

According to Pettit (1977), there is a positive relationship between an individual investor's age and the dividend yields of the investor's portfolio. The study also found a negative relationship between these investors' income and the dividend yields of their portfolios. Pettit (1977) proposed that low income, elderly investors rely on dividend payments to fund their current lifestyles. These investors tend to avoid the transaction costs associated with the sale of shares. The research proves the existence of the tax-induced clientele effect.

Fama and French (1989) found that dividend yield is positively related to volatility, and that the pattern resembles investor perceptions about basic business risk and economic conditions. Fama and Babiak (1968:1135) earlier tested the notion that dividend payments are largely as a result of the "lag function" of a firm's current or future profits. Their model indicated that firms tend to pay dividends after high profits, irrespective of future prospects, thereby supporting the assumptions about the investors' perception around economic conditions, as noted earlier. Therefore, variations in clientele display variations in investor preferences, and firms could use their dividend policy to cater for these variations in needs.

2.6.2 Dividends, volatility and the clientele effect

Dividends, volatility and the clientele effect are discussed as related firstly, to the developed markets and secondly, the emerging markets.

2.6.2.1 The developed markets

Von Eije and Megginson (2008) examined the cash dividend payments and share repurchase for EU member firms from 1989–2005. They found that the sampled firms paid out less dividends, but the firms who did pay out cash dividends, paid out substantially higher amounts of cash (Von Eije & Megginson, 2008). The study by Von Eije *et al.* (2008) acknowledged that the larger the cash holdings of a firm, the more likely dividends and share repurchases would occur. The same effect occurred with regards to share repurchases in the event of a share price decrease. However, dividend payouts were also associated with the firm's age.

Friend and Puckett (1964) suggested that there is little foundation to support the general opinion that a cash dividend has a multiplication effect on share price increases, as opposed to the same amount being held back as retained earnings. Friend and Puckett's (1964) analysis showed that a minor premium may be placed on share prices by investors who invest in saturated low-growth industries that pay dividends instead of retaining their earnings. The authors stated that in the event that this hypothesis holds, management could increase their share value by increasing the dividend payments for low-growth industries and by retaining cash for high-growth industries. To conclude their argument, the authors discussed the complexity of the development of an optimum retention and/or payout ratio.

The scholars, Grullon and Michaely (2002), conducted a study to examine how a firm's share price would be affected if the dividend payments were eliminated and substituted with a share repurchase decision. They determined that US firms repurchase shares with funds that would otherwise have been used for cash dividend payments. It was further noted that the regulatory environment in the US pre-1983 prohibited firms from aggressively buying back shares. This form of ROI is viewed favourably by investors due the tax effect on earnings. Evidence shows that no significant influence or market reaction has been noted when such an announcement has been made. In contrast, Grullon and Michealy (2002) indicated that when there is a cut in dividend payout, with no substitute to replace the payments, share prices drop

significantly as investor sentiment decreases. The authors specified that a total payout instead of dividend payout should be used for the valuation of shares to compensate for the overvaluation when relying on only dividend payouts.

Belo, Collin-Dufresne and Goldstein (2015) investigated two different methods of modelling joint leverage and dividend dynamics for asset pricing purposes. The authors challenged the findings of the models in the work of Campbell and Cochrane, (1999) as well as that of Bansal and Yaron (2004), when testing dividend volatility and expected returns. The new model, as developed and tested by Belo *et al.* (2015), substituted the changing dividend characteristic of firms with a method that produces fixed leverage ratios. In the "new" model, the authors suggest that investors are forced to invest (or sell) when the leverage becomes low (or increases) which will change the estimated return's volatility, and therefore risk in the shares (Belo *et al.*, 2015:1156). By implementing the above-mentioned new model, firms can cater for the variations in clientele, and in doing so, increase its share price.

In a recent study by Kim, Luo and Xie (2016) on dividend dynamics, a big sample of US firms were drawn to study the relationship between cash dividend payments and the possibility, or risk, of a share price crash. A share price crash is defined as an event that leads to "extreme negative stock returns" (Kim *et al.,* 2016:1) and subsequently, the diminishing of the shareholders' wealth. The study concluded that there is a significant negative correlation between dividend paying shares and share prices crashes. A notable finding was that firms with a high market-to-book ratio and who invest in research-and-development tend to be less likely to experience a share price crash.

2.6.2.2 Emerging markets

Evidence from India, an emerging market economy (Anwar, Singh & Jain, 2015), suggests that share price volatility increases substantially after dividend payments. Anwar *et al.* (2015) argued that occurrence of volatility is a reflection of the investor's expectation of both risk and return. There is consequently a lower risk to the firm after dividend announcements. Allen *et al.* (2000) also promoted the idea that institutional investors can influence the management of a firm, and as a result, they are in a better position to predict the firm's future performance.

Risk, when used as a variable to explain why firms do not, or have stopped paying dividends, describes between one-third and one-half of the original disappearing dividend puzzle (Hoberg & Prabhala, 2009:112). According to Hoberg and Prabhala (2009), they found little to no evidence that supports the clientele effect when risk is used as a proxy for dividend payment decisions. They concluded that in the absence of risk, in other words, when risk is not used as a control variable, the dividend premium is the deciding factor between a firm's payment or non-payment decision; however, the relationship is not significant when risk is introduced.

2.6.3 Dividends, volatility and signalling theory

As stated earlier in the literature review, the signalling theory on dividends is in essence concerned with the message or information that a firm sends to the market. Investors view dividend payout decisions as signals of the future earnings prospects of the firm. Fama (1997) supported the view that paying out dividends is indeed relevant in order to increase both the value of a share and the marketability of shares, as it would impact (share) returns positively. It was found that the overall volatility of shares are lower when firms pay regular dividends, especially when compared with firms who do not pay regular dividends. Fama (1997) further noted that firms who have paid out dividends, tend to have abnormal high returns and those who do not pay, have abnormal low returns.

The literature below indicates different share price volatility outcomes. Arguments are presented both for and against the use of dividends as a signalling device. The literature remains inconclusive with regards to the effect that dividend policy has on the volatility of share prices.

2.6.3.1 The developed markets

Baker and Weigand (2015) found that in developed economies, such as in the US, the importance of paying dividends has declined in recent years, and that investors prefer a share buyback as a more important way of signalling firm performance, and thus, share price volatility. Their evidence shows that there was a constant decline in dividend yield for US firms over the period of 1983–2012. Baker and Weigand (2015) said that there is still no "one size fits all" solution regarding which dividend policy should be implemented by managers, due to the various features, such as firm size, that influence policy decisions.

Gill, Biger and Tibrewala (2010) studied the determinants of dividend payout ratios for manufacturing and service-related firms in the US. The study found that a negative relationship existed between the standard dividend payout ratio and profitability, but after the payout ratio was adjusted for depreciation, a positive relationship was established. The findings are in contrast with finding by authors such as Amidu and Abor (2006). Gill *et al*. (2010) further stated that after adjusting the dividend payout ratio for depreciation (a non-monetary expense), the results showed the exact opposite effect between the dependent (adjusted payout ratio) and independent variables (cash flow, corporate taxes, sales growth, market-to-book value and the debt-to-equity ratios). Different correlations for the service and manufacturing industries were similarly obtained.

Hoberg and Prabhala (2009) tested the disappearing dividend mystery, as noted by Fama and French (2001:3), which indicated that firms stopped paying dividends for the tested period of 1978–1999, based on the changing characteristics of publicly-traded firms. Hoberg and Prabhala (2009) tested the phenomenon (where dividend payments were reduced) from a risk perspective. Their findings suggest that risk is paramount in explaining the dividend payout policy of firms. The authors went so far as to say that risks associated with the availability of funds to pay dividends, explains a third to a half of the reasons dividend payments reduce.(Hoberg & Prabhala, 2009:112).

Empirical evidence from the US equity market indicates that the higher a firm's dividend yield, the lower its share price volatility (Profilet & Bacon, 2013). Evidence in support of this notion could be seen in the way investors flocked to high yield, low volatility shares during the 2008 global economic crisis. These findings are similar to research done by Pettit (1972). In addition to the signalling results, Profilet and Bacon (2013) found uncharacteristic results in the relationship between the variables of dividend payout ratio and share price volatility, which revealed a positive relationship. The authors noted the importance of providing investors with a cash dividend, and stressed the notion that dividend-paying shares are indeed less risky, and therefore volatile than those shares not paying dividends.

An original research study by Liljeblom, Mollah and Rotter (2015) tested the dividend signalling and information content theory on the future earnings of Nordic Civil Law

Markets (Denmark, Sweden and Norway). Through the application of a different methodology (the Granger-causality method, with data spanning from 1969–2010) than that which has been widely used in recent studies as shown in the literature review, the authors found that dividend payouts convey information about future earnings in terms of the Swedish and Norwegian markets. The study showed that neither the extent of the sample period, nor the use of combined or separate data lessened the chance of finding a significant relationship in support of the signalling theory. The methodology used to determine the relationship seems to be the deciding factor (Liljeblom *et al*., 2015:508).

Liljeblom *et al*. (2015) went on to explain that by applying the OLS (ordinary least squares) statistical method to a dataset that is not stationary (which is the case for dividend payouts and earnings), the results might not be used as the 'norm'. Liljeblom *et al*. (2015) concluded that even the smallest variation in factors, such as corporate structures and legal environments in different countries, may yield a different relationship between earnings volatility and dividend payments.

By testing the irrelevance of a dividend payment and its effect on share price volatility, Richardson, Sefcik and Thompson (1986), found that markets react favourably to cash dividend announcements, and that an increase in trading volumes was noted for 192 firms who declared their first dividends, signalling positive future earnings as view by investors. Additionally, the authors found little support for the clientele effect in relation to the volatility in share prices.

Volatility as defined by Cochrane (1991), focuses on expected returns. Cochrane (1991) viewed the economic crisis in 1987 as the result of forecasts done by analysts and investors who based their opinions purely on dividend yield as a growth indicator, and which led people to believe that it would be a period of low expected returns. Cochrane (1991) further explained that a new model needs to be developed to test share price changes. The author argued that either sociological, physiological or rational models could be developed as people could not always be modelled as "rational maximiser" of profits or expected returns.

An analysis of the above literature on developed markets can lead to more insight into the contrasts and similarities between the developed and emerging markets. However, research done on the former market, might not automatically be relevant to the latter.

The following section reviews the existing literature on emerging markets with the view of shedding additional light on the topic.

2.6.3.2 Emerging markets

Sharma (2011) embarked on a study to test the relationship between share prices and the independent variables, namely, dividend per share, earnings per share, book value per share, price earnings ratios, dividend yield, dividend payout and firm size. The study found a significant positive influence between earnings per share, dividend per share and book value per share, and stated that of these variables, dividend per share and earnings per share are the most significant causes of an increase in share prices. These findings correspond with those of other authors, such as Travlos *et al.* (2001), and advocate for dividend payments to boost the market value of shares, resulting in wealth creation. The study added that in India, a higher book value per share might indicate to investors that the firm has a sound financial position going forward and it should be used by firms as a signalling device.

Research conducted by Sadiq *et al*. (2013) found a negative relationship between price volatility and dividend yield (as the independent variable) for firms listed on the Karachi stock market, but cautioned that the relationship is not statistically significant. The study went further to state that (for the same market) evidence exists that indicates a significant positive relationship between price volatility and the growth of a firms' assets. The authors concluded by saying that in the face of the above, they could not find any relationship between share price volatility and earnings volatility for non-financial firms in Pakistan.

These findings were reaffirmed by Kenyoru *et al*. (2013) who also found that the dividend payout ratio is an important catalyst for stock price volatility (high payout ratio generates low price volatility), thereby indicating that managers have an important role to play in the stability and growth of a firm's market value. Kenyoru *et al.* (2013) recommended that developing countries emulate the dividend policies of developed countries, as they share similar characteristics. However, they warned that firms should caution against depleting their cash reserves which are of utmost importance in emerging markets due to the challenges of raising capital. They further concluded that dividend yield increases the volatility of shares.

Rashid and Rahman (2008) established in their results, based on the Bangladesh capital markets, that a positive relationship is prevalent between dividend yield and share price volatility. They reached this conclusion after using control variables for earnings volatility, dividend payout ratio, growth in firm assets, debt, and firm size in their cross sectional regression analysis. Rashid and Rahman (2008) warned that their findings indicate that emerging markets react differently from their developed counterparts to earnings announcements, and that results should not be generalised by managers wanting to influence share price volatility, especially since the Bangladesh capital market is in its development stage. They also explained that corporate structures in their country differs significantly from other countries, in the sense that shareholders hold positions on the firm's board, and therefore the signalling theory does not always hold.

Nuhu, Musah and Senyo (2014) ran a regression analysis on listed firms in Ghana for the period 2000–2009 to examine the stability of dividend payouts. The findings for listed firms indicated that for both financial as well as non-financial firms, firm profitability, taxes, debt levels, and even the number of directors on the board, influence dividend payouts. However, Nuhu *et al.*, (2014) found that the only constant that has a significant positive effect on dividend payout choices is board size.

Additional research done in Ghana by Amidu and Abor (2006) revealed a negative relationship between risk and the dividend payout ratio for firms listed on the Ghana Stock Exchange. The findings indicate that firms with a high risk and volatile share price pay out less of their earnings to shareholders in the form of dividends. The study went further to suggest that a possible reason for this might be because firms in their growth phase require the additional cash to fund their expansions plans.

Nazir, Nawaz, Anwar and Ahmed (2010) tested the effect of corporate dividend payout decisions on share price volatility for 73 firms in Pakistan. The authors found that for their sample of 73 firms listed on the Karachi Stock Exchange (2003–2008) there was a significant positive relationship between dividend payout and dividend yield, and share price volatility. The findings are consistent with those of Rashid and Rahman (2008) and might indicate a trend for developing economies or markets. Nazir *et al.* (2010) used firm size, debt, earnings and growth as control variables in regression models, and stated that their findings confirm and support the arbitrage effect, as well

as the information effect of dividend policies. Furthermore, the authors concluded that the level of significance is higher for dividend yield, as opposed to the dividend payout ratios over the tested time period. During the tested period, a negative, insignificant relationship was established between volatility, firm size and leverage.

According to Habib, Kiani and Khan (2012), a positive relationship exists between dividend payout ratio and share price volatility for firms listed on the Pakistani Stock Market, while they also found a negative relationship between share price volatility and dividend yield. They concluded that the signalling theory holds (that is, the idea that insiders, such as managers, have information not available to the market). Thus decisions made by insiders can signal information to outsiders and influence the share price (Bhattacharya, 1979), indicating that investors view dividend payouts as a positive indicator for future growth.

Following the 2008 global financial crisis and the downturn in the Nigerian Stock Exchange (NSE), Ojeme, Mamidu and Ojo (2015) scrutinised various factors, such as company performance, dividend policy decisions and the introduction of new technology, which might lead to the share price volatility on the NSE. The authors examined the situation of listed banks both before and after the crisis, and found that dividend payments are undeniably relevant in terms of establishing a higher market value per share, and are therefore able to reduce volatility. The findings of Hooi, Albaity and Ibrahimy (2015) correspond with those of Ojeme *et al.* (2015) for firms listed on the Malaysian market. Hooi *et al.* (2015) tested the relationship between dividend policy and share price volatility for 319 firms listed on the Kuala Lumpur Stock Exchange.

Hooi *et al.* (2015) concluded that there is a statistically significant, negative relationship between share price volatility and dividend policy (both dividend yield and dividend payout ratios) for the sampled firms. The detected relationship was the same between the variables, firm size and share price volatility (Hooi *et al.,* 2015:229). Supplementary to the relationship between dividend policy and share price volatility, the authors found a positive, significant relationship between earnings volatility and debt, and no relationship between asset growth and price volatility.

Various authors, such as Ojeme *et al.* (2015), Hooi *et al.* (2015), and Ilaboya and Aggreh (2013), found that for 26 cross-sector firms listed on the NSE, dividend yield

has a significant positive effect on share price volatility, and that dividend payouts have the exact opposite influence on share price volatility. Ilaboya *et al.* (2013) also stressed the importance of management keeping the results in mind and adopting an effective and well-organised approach to maximising shareholders' wealth in the creation of an optimum capital structure.

Through analysing firms' earnings (both current and future), book values and dividends, Ohlson (1995) found in his research that among other variables, dividend payments reduce a firm's current book value, but that it does not affect the firm's earnings in the short term. Ali and Chowdury (2010) in an event study based on commercial banks in Bangladesh found no supportive evidence that a dividend declaration by a firm influences its share price in any way. The study reasoned that due to the amount of insider trading manifested in the Bangladesh market, share prices react before dividends are declared, and therefore once the declaration is made, very little change is experienced. It was thus observed that the market reacts in the same way as the corporate insiders, where outside investors buy and sell shares in line with managers who possess private information. False information about firms often misleads investors, rendering the dividend signalling theory ineffective. Ali and Chowdury (2010) did, however, note that the Bangladesh market is still in its developing stage and is often manipulated by traders.

The results found in a study by Sharif, Ali and Jan (2015) on the relationship between share price volatility and dividend resolutions on the KSE-100 index in Pakistan, found that only earnings per share, dividend payout ratio and the return on equity ratio have a statistically significant positive relationship on share prices, and accordingly the market value of the firm.

Vermeulen and Smith (2011) found that firms in South Africa (excluding financial services and mining companies), that pay out more dividends realise higher future earnings. This is contrary to the belief that firms who pay out dividends lack the capacity for adequate future investment, which will have a negative effect on the share price and thus volatility. These findings are supported by Firer, Gilbert and Maytham (2008) who also found that South African managers, when compared to their US counterparts, are very conservative when a dividend payout ratio is set, in order not to have to lower the dividends in future, which is also referred to as "sticky dividends".

2.6.4 Dividends, volatility and agency theory

The following section revolves exclusively around the agency theory related to dividends and its effect on share price volatility. The agency theory is tested in real-world circumstances, and the different outcomes in terms of developed and emerging markets are explained.

2.6.4.1 The developed markets

In a study done by Gugler and Yutoglu (2003), the authors found that dividend payout and retention decisions can be used to indicate (signal) a conflict of interest with regards to firm ownership among large and minority shareholders in German firms. The authors used the rent-seeking theory (a way of manipulating share prices to gain larger shareholding and control over a firm) and dividend payout decisions to account for reasons why share prices become volatile when dividend announcements are made.

Gugler and Yutoglo (2003) acknowledged that a rise in dividend payouts (dividend yield was used as a proxy) would naturally lead to an increase in market value of shares, and that a decrease in dividend payouts would therefore lead to a decrease in share price, and subsequently an increase in volatility. Larger shareholders would then use rent extraction to repurchase shares at a discount from minority shareholders, and thus manipulate markets to gain control over firms. The results were the same when the dividend payout ratio was used as a proxy for dividend policy.

La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) developed and tested two “agency models” and found that the minority shareholders apply pressure on corporate managers to disburse cash in the form of dividends, and not the other way around. Their “substitute model” (La Porta *et al.*, 2000:7) indicated that managers who are planning to issue equity in the foreseeable future, will pay more dividends to show their willingness and support for minority shareholders. La Porta *et al.* (2000) showed that firms that pay out more of their earnings in the form of dividends are more concerned about the rights of minority shareholders, while the opposite is true of firms that pay out fewer dividends. The results were conclusive and included 4 000 firms across 33 countries.

Andres, Betzer, Goergen and Renneboog (2009) found through the wide-ranging literature on dividend policy of Anglo-American companies (Andres *et al.,* 2009:184),

that managers of these companies set long-term benchmark dividend payout ratios. The authors further observed that these managers tend to focus on dividend changes, rather than on the dividend levels, when deciding on dividend policies. Andres *et al.* (2009) indicated that management might consider changing the dividend policy when encountering a change in earnings, and that they are reluctant to change their decision if earning levels are constant in the short term.

Given these dividend characteristics, German firms, who operate in a different corporate governance system, pay out less of their free cash flow than their UK counterparts (Andres *et al.,* 2009:185) and focus instead on paying out bigger portions of their profits, leading to higher payout ratios. The authors, moreover, established that due to differences in reporting standards in Germany versus the UK and US, the published earnings figures given on the statement of comprehensive income might not reflect the true performance of the firm. German firms build up huge reserves from their earnings as legal reserves, and the authors therefore concluded that dividend payout ratios for German firms are based on cash flow as an alternative for earnings, and should be considered when share price volatility is considered.

Lang and Litzenberger (1989) stated that if corporate managers overinvest, an increase in dividend payments will result in an increase in share price, and therefore the market value of the firm. Consequently, less money will be available for investment in unprofitable projects. The authors argued that by increasing the dividend payment, the agency problem will be reduced, and this may lead to improved governance.

In theory, dividend payments and positive NPV (net present value) projects should be independent of each other. Lang and Litzenberger (1989) split sampled firms into groups, spanning from over-investors, value maximising firms, and firms who over-invest but to a lesser degree, and found that the signalling theory holds, especially for over-investing firms that encounter sudden changes in their dividend policies.

A study was done by Fenn and Liang (2001) to show how dividend payout policies changed for more than 1 100 non-financial firms for the period 1993–1997 as a result of share incentives given to corporate managers. In the study, Fenn and Liang (2001) detected higher dividend payouts for firms with these management share options, leading to an escalation in the agency problem. Some of the sampled firms indicate that there is a relationship between the various payout structures and management's

share incentives. A positive correlation between share incentives and share repurchases was established which led Fenn and Liang (2001) to the conclusion that the escalation in share repurchases was implemented at the expense of dividend payouts to ordinary shareholders.

By using a survey approach, as opposed to secondary data, Dhanani (2005) studied the relevance of the various dividend polices for UK firms. Based on management responses, the study sought to appraise the extent to which dividend theories (such as the irrelevance theory) were affected by firm characteristics, such as firm size and the specific industry of the firm. The authors found that in British firms, the firm's capital structure or investment decisions are not influenced by the dividend policy and that they view the dividend policy as a limited way of doing so. Baker *et al.* (1985; 2002) as well as Dhanani (2005) found that UK firms frequently show higher dividend payout levels than US firms. Additional findings by Dhanani (2005) indicated that (1) UK managers do not seem to use dividend policy to control the principal - agency conflicts; (2) most of the sampled managers support the dividend signalling theory to convey a positive message to shareholders, but make use of other signalling tools as well; (3) that UK firms place less importance on dividend policies for share price valuation than US firms; and (4) that corporate managers in the UK do pay some attention to investor characteristics and corporate ownership structures when making dividend decisions.

Lambert, Lanen and Larcker (1989) endeavoured to discover the reasons for a reduction in dividend payments in situations where share options form part of the compensation package of the firm's executive management. Given that corporate managers also become shareholders, the authors found that following the introduction of share options as a form of compensation, dividend payments decrease almost immediately, which then results in an increase in share prices. Even though the management might have successfully fulfilled their wealth maximisation mandate, actions like these raise serious questions about agency ethics.

2.6.4.2 Emerging markets

Research by Ramadan (2013) on industrial firms listed on the Amman Stock Exchange in Jordan, pointed out that from 2000 to 2011, a period that includes the 2008 global financial economic crisis, dividend policy (dividend payout and dividend yield) had a significant negative effect on share price volatility. Thus an increase in one or both of

the variables (dividend payout and/or dividend yield) decreases the volatility of the share price and therefore also risk, when risk is defined as volatility. This research by Ramadan (2013) showed that managers of industrial firms listed in Jordan do indeed have the ability to influence share price change through adapting a dividend policy that will be preferred by specific investors.

Emerging market research done by Al-Kuwari (2009) investigated the dividend policy effect on six Middle Eastern countries' (Gulf Co-Operation Council (GCC)) stock exchange platforms, as up to that point, very little research had been done on emerging market platforms. Al-Kuwari's (2009) study focused on non-financial firms for the period 1999–2003. The authors used panel data, and tested seven theories related to agency cost by using random effect models. The models considered, among others, the impact of government ownership, free cash flow, business risk, profitability, and growth rate, on dividend payout ratios. The results indicated that the biggest contributor to the dividend payout decisions were (i) government ownership, (ii) firm size and (iii) profitability. However, conversely, a firms' leverage ratio was negatively related to dividend payouts

Al-Kuwari (2009) confirmed that his results showed that firms pay dividends with the intention of reducing the agency problem between corporate managers and owners. The author explained that GCC country firms pay out dividends to maintain their reputation as respected firms, and that very little legal protection exists for external shareholders in the sampled countries. The author stated that, in the quest by the firms to build a sound reputation, dividend policy decision was strongly influenced by profitability, which indicates frequent dividend changes and short-run dividend policies.

Benavides, Berggrun and Perafan (2016) examined the dividend payout policies of six Latin American countries (emerging markets) for the period 1995–2013. The authors established that the dividend payout ratio was positively related to share price increases and profitability. Additionally, it was noted that a benchmark dividend payout ratio was positively related to good governance, and that there was a positive view towards investors at country level. Benavides *et al.* (2016) found that in countries with high governance scores (Argentina, Brazil and Chile), there is a lower urgency regarding changes in dividend payouts as earnings increase, however, the reverse

(Colombia, Mexico and Peru) also holds. Firms in these high governance score countries tend to stretch dividend payments over a longer period after the initial earnings have increased. No significant relationship was found between the dividend payout ratio and volatility for the sampled firms.

2.7 CONCLUSION: THE JSE IN CONTEXT

The literature review presented above illustrates the contradicting views on dividend policy and the influence it has on share price volatility. Different authors have come to different conclusions. The literature review started by examining the different theoretical frameworks and concluded with a discussion of empirical studies that tested these theories. A brief, yet important, background was given on capital structure formation and how such a structure influences dividend policy and share price volatility. The literature review that followed, tested the theoretical assumptions against realistic expectations. Differences in market conditions, such as tax treatments and information asymmetry, all play a role in influencing dividend policy, and therefore the volatility of share prices. Throughout the literature it seems that dividend payments in developed markets have a much bigger influence on share price volatility, as compared to the effect such payments have on emerging markets.

As supported by the existing literature, no evidence can be found that explains the relationship between dividend policy and share price volatility, specifically for the JSE in South Africa. Although many market imperfections, such as tax treatment on dividends and capital gains (SARS, 2017), exist in South Africa, empirical studies are necessary to determine which theory best explains the volatility of share prices in this context.

In the following chapters, the relationship between these variables will be tested and conclusions will be made. The research will therefore add to the existing body of knowledge and assist in the dividend payout and valuation decisions of JSE-listed firms. In doing so, the problem statement will be addressed and the research questions answered.

CHAPTER 3:
RESEARCH METHODOLOGY

3.1 INTRODUCTION

The preceding two chapters explored the theoretical and empirical literature available on the main dividend theories, and the effect that these theories have on the volatility of a firm's share price. The literature was reviewed together with capital structure decision-making, which forms an essential part of the literature. This chapter discusses the research methodology used to conduct the study. The chapter starts off with an explanation of the research design. Thereafter, the two different econometric regression models and estimation techniques which were used to regress the dependent and independent variables over the different time periods are discussed. In addition, the data used, sampling technique, variable definitions, data analysis and issues of reliability are discussed and commented on in a logical and structured manner.

3.2 RESEARCH DESIGN

This study is non-experimental and descriptive in nature. It is non-experimental in nature due to the fact that no cause-and-effect relationship between the variables was considered (Salkind, 2012:10). Correlation research, as an inferential technique, was utilised in this study. The correlation between the two variables was examined in order to: (i) establish whether a relationship did exist (Salkind, 2012); (ii) determine the type of relationship, if a relationship did exist; and (iii) determine the strength of the relationship, if any.

Dividend policy, defined as the dividend payout ratio and the dividend yield, were the independent variables upon which the study was based. Both ratios are proxy variables for dividend policy which serve as valid, realistic and appropriate proxy variables, and are the two main (financially measurable) elements that constitute dividend policy. Dividend policy, as such, formed the fundamental basis of this research, since share price volatility was derived to evaluate and determine whether the change in dividend payouts or dividend yield (independent variables) effected a change in share price volatility, and if so, to what extent.

This study used a quantitative research design due to the numerical nature of the data on JSE-listed companies. According to Cresswell (2003), a quantitative research design is most suitable for research done on data that is collected from predetermined sources such as external databases, and which then yields statistical information. Descriptive statistics was used to summarise the results obtained in order to describe some characteristics of the distributions given after the data had been analysed. These explanatory statistic methods, coupled with the given histograms, model summaries, ANOVA, coefficient outputs and scatterplots for the two multiple regression analysis models (1) and (2) listed below, allowed for accurate estimations between the dependent and independent variables.

3.3 ECONOMETRIC MODEL AND ESTIMATION TECHNIQUE

A quantitative research methodology was chosen in this study to quantify the relationship between share price changes (volatility) and the dividend yield and dividend payout ratios. The methodology is based on the model that authors, such as Baskin (1989), Hussainey *et al.* (2011), and Sadiq *et al*. (2013), used in order for the results to be comparable. However, different periods of analysis (from January 2003 to December 2014) and a different stock market were used.

The different economic periods (representing the different economic conditions) may lead to a better understanding of the relationship between the variables, as well as to indicate what the relationships between the variables were over the period of the economic crisis (2008-2009) for a sample of the JSE-listed firms.

A standardised multiple regression analysis was performed on time-series panel data to test the relationship between the dependent (price volatility) and independent variables (dividend policy). Control variables such as asset growth, firm size and earnings volatility was included in the regression model to account for factors that affect both share price volatility and dividend policy. According to Williams, Sweeney and Anderson (2006:570), the least squares method is the most widely used in practice for making predictions based on the values of the dependent and independent variables.

The basis of the multiple regression model **(1)** used in this study is (Baskin, 1989):

$$PVol_{it} = \alpha + \beta_1 \text{D\_yield}_{it} + \beta_2 \text{Payout}_{it} + \varepsilon_t \quad \textbf{(1)}$$

Where:

$PVol_{it}$ = Share price volatility for a share of company *it*;

β_1 = is the dividend yield variable's coefficient;

β_2 = is the dividend payout variable's coefficient;

α = intercept; and

ε = (residual) error term to account for outliers on the mean of the model.

3.3.1 Dependent and independent variable definitions (multiple regression model 1 & 2)

$PVol_{it}$ refers to share price volatility for company *it* and is the dependent variable. It was based on the annual range (highest closing price minus lowest closing price) of the share price obtained from IRESS (an online, real-time provider of, amongst other things, financial research and market data) for each year within the analysis period. The annual range was then divided by the average of the highest and lowest prices obtained, raised to the second power, and a square root transformation was applied for a variable so that it was equivalent to a standard deviation.

This was done for the different time phases (Jan 2003–December 2007; January 2008–December 2009; January 2010– December 2014). This method of calculating price volatility is, however, a slight modification of Baskin's model (1989) which is based on Parkinson's (1980) extreme value appraisal. Parkinson (1980) argued that the model is a superior estimation method if compared to the traditional methods. This model was also successfully used by Kenyoru *et al.* (2013).

$$Price\ Volatility_{it} = \sqrt{\frac{(High\ Price - Low\ Price)}{\left(\frac{High\ Price + Low\ Price}{2}\right)^2}}$$

D_Yield_{it} refers to the dividend yield ratio: The variable is expressed as the annual dividend per share as a percentage of the annual share price. In other words it refers

to the ratio of the cash dividends that were paid out to shareholders and the market value of the share. Data was obtained directly from IRESS.

Payout$_{it}$ refers to the dividend payout ratio. The ratio was expressed as the percentage of the company's earnings that were paid out to its shareholders. The ratio was calculated by dividing the annual dividends per share by the earnings per share. The figures were obtained directly from IRESS and no additional calculations had to be made.

3.3.2 Independent (control) variable definitions (multiple regression model 2)

Due to the fact that Equation (1) only provided a crude test (Hussaney *et al*., 2011) of the relationship between share price volatility and dividend policy, another regression model was proposed to account for variables that influence both dividend policy and share price volatility.

According to Baskin (1989), share price volatility is linked to the risk that a firm encounters in their specific product market. Because of the market risk, which might influence dividend policy decisions, Baskin (1989) included earnings volatility (*EVol*) as a control variable. This is necessary in order to control the intrinsic variability in a firm's earnings stream.

Earnings volatility measures how much a firm's earnings fluctuate from the mean. In order to calculate the earnings volatility, EBIT (earnings before interest and tax) was divided by total assets for each year to obtain a ratio. This ratio was then subtracted from the average ratio for all the years and then squared. Finally the standard deviation was calculated by obtaining the square root (Baskin, 1989; Dichev & Tang, 2009). The EBIT (operating profit) and total asset figures were obtained directly from IRESS.

Allen and Rachim (1996), as well as Hussaney *et al*. (2011), followed Baskin and also included the long-term debt/assets (*Debt*) ratio as a control variable to account for the influence leverage has on volatility. The authors argued that by holding operating risk constant, an increase in leverage would increase share price volatility.

The long-term debt ratio was expressed as the ratio between the firm's long-term interest bearing debt obligations to the firm's total assets. It was indicative of a firm's

financial leverage and excluded debt obligations due within a year. The figures were obtained directly from IRESS.

Firm size (*Size*), as a control variable, was included in the regression model to account for the influence it has on the volatility of a share price. Baskin (1989) noted that bigger and more differentiated firms are considered less volatile as a result of continued scrutiny by institutional investors, the fact that there is more publicly available information, and a market that is aware of what the firm does and where and how it operates.

Contrary to the bigger, more established firms, the shares of smaller, lesser-known firms are considered to be less liquid and more volatile. Analysts find it time-consuming and sometimes difficult to acquire the necessary information to make informed investment decisions, and this leads to investors displaying irrational investment behaviour. Baskin (1989) stressed that a control variable for size is necessary to ensure that the study doesn't get a false relationship between the dependent and independent variables. This is because larger firms just happen to pay out more dividends and use dividend payments as a signalling device (Baker & Weigand, 2015).

Firm size (*Size*) is calculated by multiplying the share price by the number of shares issued. According to Baskin (1989) it is then necessary to calculated the logarithm of the market value (size) to reflect the orders of magnitude. The market value (Size) figures were obtained directly from IRESS and a manual calculation for the logarithm was performed by the researcher.

Baskin (1989) included the growth in a firm's assets (*Growth*) as a fourth and final control variable. Baskin (1989) noted that dividend policy may function as a representation for growth and additional investment opportunities. Asset growth is considered to be a fundamental investment objective.

It was further suggested that the remaining link between share price volatility and dividend policy, after controlling for the influence of growth, would suggest the presence of the arbitrage, or information effect (Miller & Rock, 1985). To account for the possibility of an inverse link between dividend policy and the growth in assets, it is necessary to include the control variable *Growth*.

The growth in assets (*Growth*) was calculated by taking the change in total assets during the year to the level of total assets at the beginning of the year. The *Growth* figure were obtained directly from IRESS.

Control variables, such as asset growth, earnings volatility, firm size and debt, were included in **Equation (2)** in order to eliminate problems posed by **Equation (1)**, such as systematic differences in cost structures, market conditions and regulatory limitations (Allen & Rachim, 1996). These differences affect both dividend policy and share price volatility. The expanded regression model is defined as follows (Baskin 1989; Hussaney *et al.,* 2011):

$$PVol_{\mathrm{it}} = \alpha + \beta_1 D\_Yield_{\mathrm{it}} + \beta_2 \mathrm{Payout}_{\mathrm{it}} + \beta_3 EVol_{it} + \beta_4 Size_{it} + \beta_5 Debt_{it} + \beta_6 Growth_{it} + \varepsilon_{\mathrm{t}} \quad \textbf{(2)}$$

Where:

$PVol_{it}$ = Share price volatility for a share of company *t*;

β_1 = is the dividend yield variable's coefficient;

β_2 = is the dividend payout variable's coefficient;

β_3 = is the earnings volatility variable's coefficient;

β_4 = is the firm size variable's coefficient;

β_5 = is the debt variable's coefficient;

β_6 = is the growth variable's coefficient;

α = intercept; and

ε = (residual) error term.

The rationale for this study was to determine whether: (i) dividend policy influenced share price volatility throughout the phases of the 2008 financial crisis; and (ii) to see whether the impact of dividend policy on share price volatility was similar in South Africa, when compared to studies in other regions. The population from which the sample was taken consisted of all the companies listed on the JSE.

The study sampled all the firms listed on the JSE over a 12-year period (2003–2014), and for the three separate periods, which are 2003–2007 (pre-economic crisis),

2008–2009 (during economic crisis) and 2010–2014 (post-economic crisis) using the convenience sampling method. The reason for choosing 12 years was to illustrate the effect the variables had on each other during the different time periods.

The dividend policies (namely, dividend payout ratio and dividend yield) of the sampled firms were examined and the volatility was calculated. Statistical techniques were used to investigate the relationship between these variables. The analysis and graphs illustrate the relationships between the variables, and show to what extent dividend policy influences and or impacts the volatility of JSE-listed firms' share price.

The convenience sampling method was followed as a sampling strategy as it is inexpensive, practical and easy to implement. Generalisation regarding the results from the use of this technique should, however, be treated with some degree of care (Salkind, 2012:104).

3.4 DATA SOURCES

Quantitative, non-experimental and secondary data was used in this study. The data was obtained from a secondary data provider: IRESS which is an online, real-time provider of, amongst other things, financial research and market data. The data was obtained from IRESS's research domain and extracted from their database. The main data used by the data provider was in the form of standardised financial statements, which included the selected companies' statements of financial position (also known as the Balance Sheet) and their statements of comprehensive income (also known as the Income Statement). Where possible, the data provider did the ratio analysis calculations by using a computerised analytical system that consolidates the necessary financial data so that the relevant information can be extracted and analysed into meaningful interpretations. In cases where the ratios were not available, manual calculations were done using MS Excel.

IRESS was the only source used for the acquisition of data for this study. However, IRESS arguably and potentially obtained the data from various primary sources, such as the JSE and the listed companies themselves. Secondary data sources from all over the world were effectively used by researcher to carry out reliable research (Quinlan, 2011), because of the time and costs associated with the gathering of primary data. It is essential to note that the data set used in this research was either

directly acquired from the listed companies on the JSE, or from the service provider IRESS.

3.5 DATA COLLECTION

Considering the quantitative nature of the study, not all data collection methods were suitable and/ or appropriate for this study. This study sampled all the firms on the JSE (by using the convenience sampling approach) for which financial sample data was available for the period of January 2003–December 2014.

The data was extracted using IRESS's own (financial data) online extraction platform by selecting the required (data) fields needed to support this research study. IRESS was chosen for this study because of its prominence as a respected data provider/vendor, particularly on South African company data. The use of secondary data from a data provider such as IRESS has a huge time-saving advantage and provides the researcher with additional time to study, consider and interpret the dataset. In addition, Saunders *et al.* (2012) argued that other researchers can then find it easier to replicate the study and findings, which strengthens the validity, transparency and integrity of the research.

It is assumed that IRESS adhered to ethical research practices when collecting and distributing data to their clients. In addition to the service provider's efforts, the researcher made sure that no identification or re-identification of the listed companies would be possible. No confidential information was disclosed and no harm can come to any of the companies as a result of the research based on the data provided. No names were mentioned and only publicly available data was used. No interviews were done, and there was no interaction between the researcher and the respondents, as the data was purely of a secondary nature. The data collection from IRESS was done in the following manner:

1. The IRESS research platform was accessed through the Unisa library;
2. The Research Domain Tab was selected,
3. Financial Ratios/Price Data and the Data List as a Product Module were selected;

4. The JSE was selected as the sector from which the data needed to be extracted;

5. The firms that were chosen in the sample for which the data was needed were selected;

6. The years from 2003–2014 were selected;

7. The ratios and figures to be used (that were available) were selected;

8. The request was submitted to obtain the figures and ratios;

9. The ratios were exported into MS Excel 2010 for additional calculations;

10. The MS Excel calculations were exported into the SPSS program (software for editing and analysing all sorts of data) for statistical analysis and interpretation.

The use of the above-mentioned technique was ideal to collect the data for this particular study. All the data that was needed could be provided in a well formulated manner and in real time, eliminating the time constraints experienced by other methods, such as interviews and questionnaires between researchers and participants.

3.6 SAMPLING TECHNIQUE

The convenience sampling, as a non-probability sampling technique, was chosen for this particular study. The participants of this study (the firms whose data was analysed) were selected and the available data that was needed to perform the study over the particular time period (January 2003–December 2014) was acquired from the data provider (IRESS).

According to Salkind (2012:104), convenience sampling as a sampling technique is best to implement when the members of the population, such as the relevant companies chosen from the JSE in this study, are convenient to sample. In this case, IRESS provided all the relevant information needed for the sample to be taken, and where the information was not available, manual MS Excel calculations were done.

The convenient sample technique is inexpensive, and with a study such as this that had a limited budget, it was an appropriate technique to follow.

Companies on the JSE are listed in one of the following industries: oil and gas, basic materials, industrials, consumer goods, health care, consumer services, telecommunications, utilities, financials and technology (Vermeulen & Smit, 2011). The sample for this study included participants from various industries, backgrounds, sizes and performance measurements. The results of the analysis between the different participants were measured to ascertain to what extent share price volatility was influenced by a firms' dividend policy; thus to determine what correlation could be drawn between the two. The order of the proceedings for the sampling was thus:

1. Sample the companies from the population by using IRESS;
2. Data collection;
3. Choose and calculate the necessary ratios/variables needed for the analysis and interpretation;
4. Define the variables before interpretation;
5. Interpret the variables;
6. Graph the findings;
7. Conclude results and make recommendations.

3.7 DATA ANALYSIS

The data and statistical analysis of this research study were done by using the software program SPSS (due to its statistics functionality and capabilities) as well as MS Excel. The descriptive and residual statistics, among other factors, included the mean, minimum, maximum, standard deviation and the skewness of the data. In addition, a correlation and a multiple regression analysis were done. The multiple regression analysis formed the backbone of the analysis as it was used to investigate and evaluate the relationship between the dependent variable (share price volatility) and the independent variable (dividend policy). The analysis showed to what extent the one explained the increase and or decrease in the other throughout the phases of the 2008 economic crisis.

The analysis allowed the researcher to identify how strong the two variables correlated to one another. The interpretation will allow practitioners to understand what the

relationship between the two variables is and could result in better decision-making with regard to dividend policy choices and the coupled (and potential) effect of dividend policy (decisions) on share price volatility.

In addition to the analyses mentioned, stationarity or unit root tests were done on the panel data, such as the Levin-Lin-Chu (2002) test. Based on the assumptions of the multiple linear regressions, tests for normality, autocorrelation, heteroscedasticity, multi-collinearity were also done on the data to allow for a more accurate and descriptive representation of the results.

The order of operations, as defined by Pallant (2011), for the standard multiple regression analysis in SPSS was as follows: The first step was to select the functions to analyse the data by choosing the correction regression model to be used. Both the dependent (price volatility) and independent variables were included in the regression analysis function boxes. Next, the researcher had to make sure to choose standard multiple regression as a method and continue to select all the relevant statistical functions and outputs that were needed in the analysis. It is important that all the relevant diagnostic, graphs and plots needed to be selected so that SPSS could provide the correct output. The syntax and outputs were saved for any future reference purposes. This procedure provided all the necessary information for analysis and interpretation and was repeated for both multiple regression models **(1)** and **(2)**.

3.8 ISSUES OF RELIABILITY AND VALIDITY

To ensure reliability or global consistency, the Cronbach Alpha and interclass-correlation coefficients as a descriptive technique were used by the statistical package SPSS. The Cronbach Alpha coefficients calculate how two variables measure one single underlying construct. Apart from the above-mentioned techniques, SPSS performed a factor analysis as a validation technique to further ensure reliability of the measuring instruments.

These methods and instruments demonstrate high levels of validity, and coupled with the statistical techniques for the determination of the relationship between the variables, were best suited for this particular study as all the relevant information was taken into account (Salkind, 2012).

3.9 CONCLUSION

Chapter 3 discussed the research methodology that was chosen for this specific study. Both econometric models and their variables were defined. The data sources and the collection method were explained and this was coupled with an explanation of the sampling technique and the process of how the data was analysed. The chapter furthermore clarified that the process the researcher followed to ensure the reliability and legitimacy of the study.

CHAPTER 4:
RESULTS

4.1 INTRODUCTION

The previous chapter (Chapter 3) developed and discussed the research methodology relevant to the current study. The choice of the two econometric regression models for the study was based on their ability to address the research problem and research objective as set out in Chapter 1. This chapter reports on the results produced by the two models. The results are presented in a structured format which clearly states which one of the two econometric models is represented by the results output, and for which specific period of analysis.

4.2 RESULTS OUTPUT

The interpretation of the output results, as presented in the tables and charts below, will follow a sequential order. This will assist in comparing the results over the different time periods (pre, during and post the 2008–2009 economic crisis). In addition, it provides a clear breakdown of how the relationship between the dependent and independent variables differ over a given period. The order of operations will follow the process as presented by Pallant (2011) for a multiple regression analysis in SPSS.

In order to correctly report and interpret the output of the results from SPSS, the researcher will report on certain assumptions about the data for the multiple regression analysis. The researcher also ran certain diagnostics in SPSS to ensure for accurate analysis. These basic diagnostic assumptions, according to Tabachnick and Fidell (2007), included a test for sample size, multicollinearity and singularity, outliers, homoscedasticity, normality and linearity. These test were done on a continuous basis, but are only reported on once, or if there is a significant change in any of the assumptions. These diagnostics include the Durbin-Watson test for autocorrelation, histograms, scatterplots, and so forth. According to Field (2009), the value for the Durbin-Watson test should ideally be between 1 and 3, as a conventional estimate.

The first step of the process would therefore be to check for multiple regression assumptions, such as multicollinearity, homoscedasticity, outliers, normality and linearity. Step two revolved around the evaluation of the model, thus how much of the

variance in the dependent variable was explained by the multiple regression equation. Step three revolved around the assessment of each independent variable in terms of its contribution to the likelihood of forecasting the movement in the dependent variable. In this case, to determine whether dividend policy could predict the movement in share price volatility. The entire process was repeated for the period 2003–2014 and then for each time period individually (2003–2007; 2008–2009; 2010–2014) for both regression models **(1)** and **(2)**.

Unless otherwise stated, all assumptions for multiple linear regression were continuously tested. The correlation between the dependent and independent variables were tested, reported on, and depicted by way of the named and numbered tables below each period. The output was reporting using a similar method as that which was presented by Cronk (2012).

In cases where there was a strong correlation (>0,7) between the independent variables, the correlation was noted and explained. SPSS automatically performed multicollinearity diagnostics for each period which is presented in the Coefficients tables. The values for Tolerance should be more than 0,10 and for VIF (Variance Inflation Factor) less than 10. If these values should exceed the prescribed minimums or maximums, multicollinearity is present. To test for the possibility of homoscedasticity, outliers, normality and linearity, Scatterplots were used and reported on. In cases where outliers were identified, the Mahalanobis distances were inspected and outliers removed. The Mahalanobis distances is reported in the Residuals Statistics tables for each period.

According to Tabachnick and Fidell (2007), the Mahalanobis distances (maximum value) should not exceed the critical value 13,82 for two independent variables, and 22,46 for six independent variables. In this analysis, outliers were removed where the values exceeded the critical values by more than the acceptable limits.

After the successful extraction of the secondary data needed for the statistical analysis for the relationship between dividend policy (independent variable) and share price volatility (dependent variable) from the data provider, and the importation of the data from MS Excel into SPSS, the following results were yielded for the multiple regression analysis (1) for the full period from 2003 to 2014.

4.2.1 Results output for 2003-2014: multiple regression model (1)

The descriptive statistics (Table 4.1) and correlations (Table 4.2) for the period 2003-2014 (1) are presented in the tables below.

Table 4.1: Descriptive statistics: Multiple Regression model (1) results output 2003-2014

Descriptive statistics

Variable	Mean	Standard Deviation	Observations
Price volatility	0,674	0,160	1 065
Dividend yield	0,273	0,221	1 065
Dividend payout	0,319	0,246	1 065

Table 4.2: Correlations: Multiple Regression model (1) results output 2003-2014

Correlations

Statistic	Variable	Price volatility	Dividend yield	Dividend payout
Pearson Correlation	Price volatility	1,000		
	Dividend yield	-0,207	1,000	
	Dividend payout	-0,319	0,774	1,000
P-value (1-tailed)	Price volatility			
	Dividend yield	0,000		
	Dividend payout	0,000	0,000	
Observations	Price volatility	1,065		
	Dividend yield	1,065	1,065	
	Dividend payout	1,065	1,065	1,065

Table 4.1 presents the explanatory descriptive statistics (mean, standard deviation and observations). It should be noted that a total of 1 065 observations remained after outliers were removed and the assumptions for multiple regression were met.

Table 4.2 represents the correlations between the dependent (price volatility) and independent variables (dividend yield and dividend payout). Pearson's correlation coefficient (r) should have a value of between -1 and +1: the former indicating a strong negative, and the latter a strong positive linear correlation between the variables. Zero indicates that there is no correlation at all.

The strongest correlation of -0,319 is between price volatility (PVol) and dividend payout (Payout). However, it should be noted that there is a strong positive correlation between the two independent variables, dividend yield (D_Yield) and dividend payout (r = 0,774). In addition to these results, it should be noted that a reasonable amount of shared variance was removed by SPSS when both variables were included in Equation (1)**.**

The tables below present the model summary (Table 4.3), ANOVA (Table 4.4) and coefficients (Table 4.5) for the period 2003–2014 (1).

The results displayed in the tables will be discussed after Table 4.5.

Table 4.3: Model summary: Multiple Regression model (1) results output 2003-2014

Model summary

R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
0,325	0,106	0,104	0,151	1,363

Table 4.4: ANOVA: Multiple Regression model (1) results output 2003-2014

ANOVA

Statistic	Sum of Squares	Degrees of freedom	Mean Square	F	P-value
Regression	2,874	2	1,437	62,687	0,000
Residual	24,343	1,062	0,023		
Total	27,217	1,064			

Table 4.5: Coefficients: Multiple Regression model (1) results output 2003-2014

Coefficients

Coefficient	Unstandardised Coefficients		Standardised Coefficients	t	P-value	95,0% Confidence Interval for B		Collinearity Statistics	
	B	Standard Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	0,736	0,008		94,567	0,000	0,721	0,751		
Dividend yield	0,072	0,033	0,099	2,172	0,030	0,007	0,137	0,401	2,491
Dividend payout	-0,257	0,030	-0,396	-8,640	0,000	-0,316	-0,199	0,401	2,491

A multiple linear regression was calculated to predict price volatility (PVol) based on dividend yield (D_Yield) and dividend payout (Payout). A significant regression equation was found ($F(2,1062) = 21,687$, $p<.000$), with an R^2 of 0,106. The study predicted a constant of 0,736, a beta coefficient of -0,257 on the dividend payout, and 0,072 on the divided yield. Thus price volatility (PVol) is equal to 0,736 – 0,257 (Payout) + 0,072 (D_Yield).

Dividend yield was measured as the annual dividend per share as a percentage of the annual share price, and dividend payout was measured as the percentage of the company's earnings that was paid out to its shareholders. Thus, 1% increase in dividend yield is associated with an increase of 0,072% in price volatility (PVol), holding dividend payout constant. In contrast, a 0,257% decrease in PVol is associated with 1% change in dividend payout, if dividend yield is held constant.

Both dividend yield and dividend payout were significant predictors of PVol (P-Values < 0,05). Dividend payout with a beta coefficient (a measure for systematic risk) of – 0,396 makes the strongest unique contribution to explaining changes in the dependent variable (PVol) for multiple regression Equation (1). Dividend yield (D_Yield) made significant less of a contribution (beta 0,099) in explaining the variance in price volatility (PVol) when controlling for other all other variables. This may be due to the overlap between the D_Yield and Payout, which will be controlled for in regression Equation (2).

Overall, the independent variables (dividend yield and dividend payout) in regression model (1) only explain 10.6% of the variance in share price volatility for 2003–2014. The tolerance and VIF values are within the acceptable limits, indicating no presence of multicollinearity.

Figure 4.1 and the scatterplot for the period (Appendix B) confirm the multiple regression assumptions around normality and homoscedasticity, therefore strengthening the discussion of the results. The Durbin-Watson value (1,363) indicates no autocorrelation.

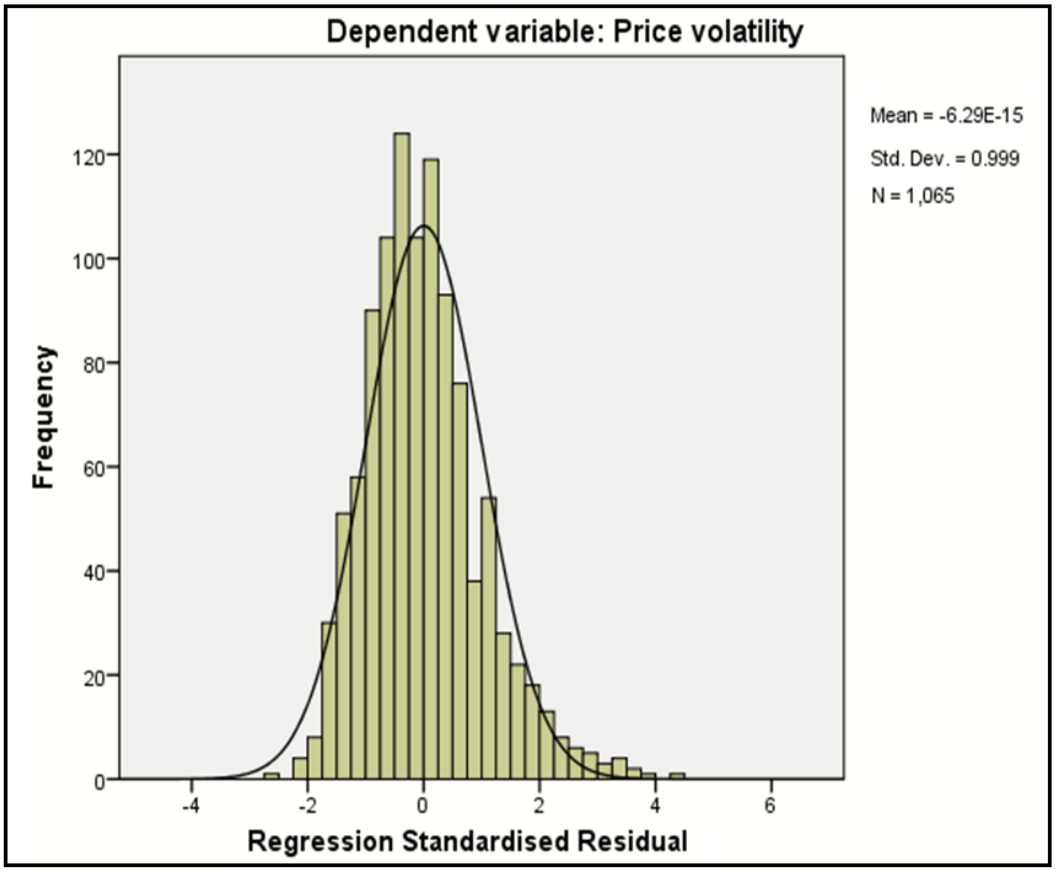

Figure 4.1: Histogram for dividend policy and share price volatility 2003-2014 for model (1)

Source: Author's own compilation

4.2.2 Results output for 2003-2014: multiple regression model (2)

The descriptive statistics (Table 4.6) and correlations (Table 4.7) for the period 2003-2014 (2) are presented in the tables below.

Table 4.6: Descriptive statistics: Multiple Regression model (2) results output 2003-2014

Descriptive statistics

Variable	Mean	Standard deviation	Observations
Price volatility	0,666	0,154	970
Dividend yield	0,286	0,216	970
Dividend payout	0,334	0,236	970
Earnings volatility	0,051	0,044	970
Size	8,817	0,846	970
Debt	0,112	0,135	970
Growth	0,123	0,166	970

Table 4.7: Correlations: Multiple Regression model (2) results output 2003-2014

Correlations

Statistic	Variable	Price volatility	Dividend yield	Dividend payout	Earnings volatility	Size	Debt	Growth
Pearson Correlation	Price volatility	1,000						
	Dividend yield	-0,192	1,000					
	Dividend payout	-0,312	0,757	1,000				
	Earnings volatility	0,199	-0,202	-0,141	1,000			
	Size	-0,230	-0,051	0,198	-0,087	1,000		
	Debt	-0,027	-0,122	-0,112	0,042	0,063	1,000	
	Growth	-0,006	0,008	-0,023	-0,035	0,062	0,085	1,000
P-value (1-tailed)	Price volatility							
	Dividend yield	0,000						
	Dividend payout	0,000	0,000					
	Earnings volatility	0,000	0,000	0,000				
	Size	0,000	0,057	0,000	0,003			
	Debt	0,202	0,000	0,000	0,095	0,024		
	Growth	0,425	0,404	0,233	0,138	0,026	0,004	
Observations	Price volatility	970						
	Dividend yield	970	970					

Statistic	Variable	Price volatility	Dividend yield	Dividend payout	Earnings volatility	Size	Debt	Growth
	Dividend payout	970	970	970				
	Earnings volatility	970	970	970	970			
	Size	970	970	970	970	970		
	Debt	970	970	970	970	970	970	
	Growth	970	970	970	970	970	970	970

Table 4.6 presents the explanatory descriptive statistics (mean, standard deviation and observations). A total of 970 observation were noted after outliers were removed and the assumptions for multiple regression were met. The independent variable Size had the largest standard deviation from the mean (0,846).

Table 4.7 represents the correlations between the dependent variable (price volatility) and all other control independent variables (dividend yield, dividend payout, earnings volatility, size, debt and growth).

The tables below present the model summary (Table 4.8), ANOVA (Table 4.9) and coefficients (Table 4.10) for the period 2003–2014 (2):

Table 4.8: Model summary: Multiple Regression model (2) results output 2003-2014

Model summary

R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
0,391	0,152	0,147	0,142	1,480

Table 4.9: ANOVA: Multiple Regression model (2) results output 2003-2014

ANOVA

Statistic	Sum of Squares	Degrees of freedom	Mean Square	F	P-value
Regression	3,484	6	0,581	28,880	0,000
Residual	19,361	963	0,020		
Total	22,845	969			

The strongest positive correlation is between the independent variables: dividend yield (D_Yield) and dividend payout (r = 0,757), the correlation is significant (p-value < 0,05). PVol is negatively correlated with the variables, dividend yield (r = -0,192), dividend payout (r = -0,312), and Size (r = -0,230), and is slightly correlated to debt (r = -0,027) and growth (r = -0,006), and is positively correlated to earnings volatility (r = 0,199). The independent variables Debt and Growth are not considered significant contributors to explaining the movement of the dependent variable (PVol) as both p-values >0,05.

Table 4.10: Coefficients: Multiple Regression model (2) results output 2003-2014

Coefficients

Coefficient	Unstandardised Coefficients		Standardised Coefficients	t	P-value	95,0% Confidence Interval for B		Collinearity Statistics	
	B	Standard Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	0,937	0,052		17,889	0,000	0,834	1039		
Dividend yield	0,045	0,035	0,062	1,283	0,200	-0,024	0,113	0,371	2,694
Dividend payout	-0,204	0,032	-0,313	-6,386	0,000	-0,266	-0,141	0,366	2,729
Earnings volatility	0,556	0,108	0,158	5,165	0,000	0,345	0,767	0,945	1,058
Size	-0,027	0,006	-0,149	-4,607	0,000	-0,038	-0,015	0,846	1,183
Debt	-0,059	0,034	-0,052	-1,724	0,085	-0,126	0,008	0,972	1,029
Growth	0,005	0,028	0,005	0,178	0,858	-0,049	0,059	0,984	1,017

Due to the fact that Equation (1) only provided a crude test for the relationship between dividend policy and share price volatility, the regression equation model (2) accounts for factors that affect both dividend policy and share price volatility. These additional independent variables include: earnings volatility (EVol), firm size (Size), debt (Debt) and growth in assets (Growth).

A multiple linear regression was calculated to predict price volatility (PVol) based on dividend yield (D_Yield) and dividend payout (Payout), earnings volatility (EVol), firm size (Size), debt (Debt) and growth in assets (Growth). A significant regression equation was found ($F(6,963) = 28.880$, $p<0,000$), with an R^2 of 0,152. The study predicted that price volatility (PVol) is equal to 0,937 + 0,005 (Growth) – 0,059 (Debt) – 0,027 (Size) + 0,556 (EVol) – 0,204 (Payout) + 0,045 (D_Yield). Thus, if price volatility (PVol) increases by 1%, all the other independent variables would proportionally increase or decrease with their coefficient values, given that all other independent variables are held constant.

Note that the largest increase or decrease in price volatility is associated with an increase in earning volatility (beta = +0,556) and a decrease in dividend payout (beta = -0,204), given that all other variable are held constant.

Of the independent variables, only dividend payout, dividend yield, earnings volatility and size were significant predictors of PVol (P-Values < 0,05). Of these variables, dividend payout (Payout), with a beta of -0,313, makes the strongest unique contribution to explaining the changes in the dependent variable (PVol) for multiple regression equation (2) for 2003–2014.

Earnings volatility made the second largest contribution (beta 0,158) in explaining the variance in PVol when controlling for all other variables. It should be noted that growth in assets (Growth) presented the lowest beta (0,005), even though it is not significant. The tolerance and VIF values are within the acceptable limits, indicating no presence of multicollinearity.

Figure 4.2 below and the scatterplot for the reviewed period (Appendix B) confirm the multiple regression assumptions around normality and homoscedasticity, therefore strengthening the discussion of the results. The Durbin-Watson value (1,480) indicates no auto-correlation.

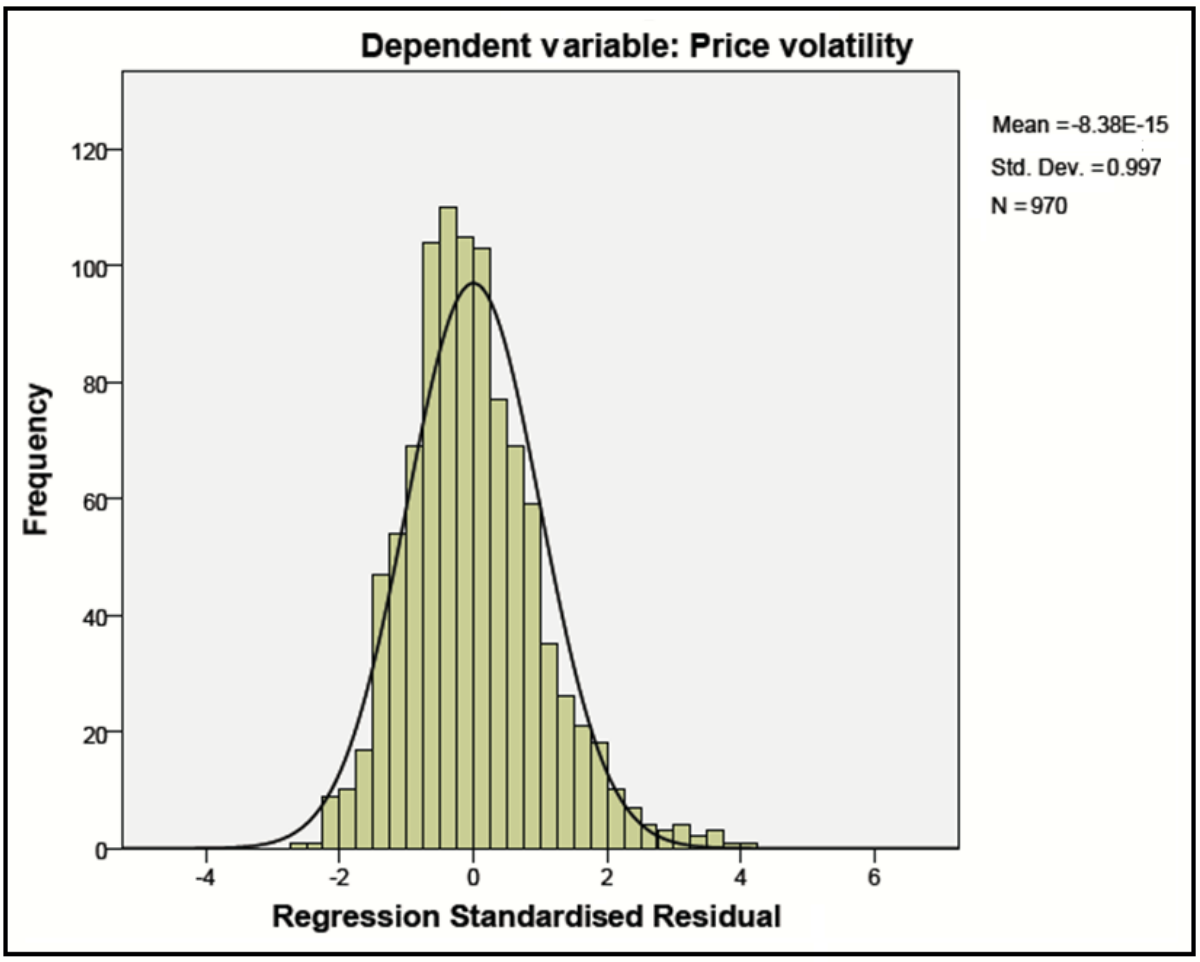

Figure 4.2: Histogram for dividend policy and share price volatility 2003-2014 for model (2)

Source: Author's own compilation

4.2.3 Results output for 2003-2007: multiple regression model (1)

The descriptive statistics (Table 4.11) and correlations (Table 4.12) for the period 2003-2007 (1) are presented in the tables below.

Table 4.11: Descriptive statistics: Multiple Regression model (1) results output 2003-2007

Descriptive statistics

Variable	Mean	Standard Deviation	Observations
Price volatility	0,686	0,137	391
Dividend yield	0,315	0,222	391
Dividend payout	0,341	0,230	391

Table 4.12: Correlations: Multiple Regression model (1) results output 2003-2007

Correlations

Statistic	Variable	Price volatility	Dividend yield	Dividend payout
Pearson Correlation	Price volatility	1,000		
	Dividend yield	-0,194	1,000	
	Dividend payout	-0,313	0,728	1,000
P-value (1-tailed)	Price volatility			
	Dividend yield	0,000		
	Dividend payout	0,000	0,000	
Observations	Price volatility	391		
	Dividend yield	391	391	
	Dividend payout	391	391	391

Table 4.11 presents the explanatory descriptive statistics (mean, standard deviation and observations). A total of 391 observation were noted for the period 2003–2007 after outliers were removed and the assumptions for multiple regression were met. The independent variable, dividend payout had the largest standard deviation from the mean (0,230).

Table 4.12 represents the correlations between the dependent variable (price volatility) and the independent variables, dividend yield and dividend payout. As noted in the previous interpretation, the Pearson's correlation coefficient (r) should have a value of between -1 and +1 to indicate a correlation. The former (r = -1) indicating a strong negative and the latter (r = +1) a strong positive linear correlation between the variables. Zero (r = 0) indicates that there is no correlation between the variables at all.

The strongest correlation between price volatility (PVol) and the two independent variables is -0,313 with dividend payout (Payout). A negative correlation exists between PVol and D_Yield -0,194. However, it should be noted that there is a strong positive correlation between the two independent variables D_Yield and Payout (r = 0,728). It should also be noted that a reasonable amount of shared variance was also removed in the SPSS model, if both variables are included in Equation (1) for 2003-2007.

The tables below present the model summary (Table 4.13), ANOVA (Table 4.14), coefficients (Table 4.15) and Mahalanobis Distance (Table 4.16) for the period 2003–2007 (1).

Table 4.13: Model summary: Multiple Regression model (1) results output 2003-2007

Model summary

R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
0,317	0,101	0,096	0,130	1,412

Table 4.14: ANOVA: Multiple Regression model (1) results output 2003-2007

ANOVA

Statistic	Sum of Squares	Degrees of freedom	Mean Square	F	P-value
Regression	0,734	2	0,367	21,739	0,000
Residual	6,554	388	0,017		
Total	7,289	390			

Table 4.15: Coefficients: Multiple Regression model (1) results output 2003-2007

Coefficients

Coefficient	Unstandardised Coefficients		Standardised Coefficients	t	P-value	95,0% Confidence Interval for B		Collinearity Statistics	
	B	Standard Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	0,746	0,012		61,198	0,000	0,722	0,770		
Dividend yield	0,046	0,043	0,074	1,054	0,293	-0,039	0,131	0,469	2,131
Dividend payout	-0,218	0,042	-0,367	-5,227	0,000	-0,300	-0,136	0,469	2,131

Table 4.16: Residual statistics: Multiple Regression model (1) results output 2003-2007

Residual statistics

Statistic	Minimum	Maximum	Mean	Standard Deviation	Observations
Mahalanobis Distance	0,008	13,251	1,995	2,250	391

A multiple linear regression was calculated to predict price volatility (PVol) based on dividend yield (D_Yield) and dividend payout (Payout). A significant regression equation was found (F(2,388) = 21,739, p<0,000), with an R^2 of 0,101. The study predicted that price volatility (PVol) is equal to 0,746 – 0,218 (Payout) + 0,046 (D_Yield), where dividend yield is measured as the annual dividend per share as a percentage of the annual share price, and dividend payout is measured as the percentage of the company's earnings that are paid out to its shareholders. Thus, price volatility (PVol) increased 0,046% for each percentage increase in dividend yield and decreased by 0.218% for each percentage change in dividend payout, given that all other variables are held constant. For the period 2003–2007 only dividend payout was a significant predictor of PVol (P-Values < 0,05). D_Yield with a P-Value of 0,293 (P-Value > 0,05) is not considered a significant predictor of PVol for 2003–2007 (pre-economic crisis).

Dividend payout (Payout), with a beta of -0.367, makes the strongest unique contribution to explaining changes in the dependent variable (PVol) for multiple regression Equation (1) for 2003–2007. Dividend yield (D_Yield) made significant less of a contribution (beta 0.074) in explaining the variance in PVol when controlling for other all other variables. This may be due to the overlap between the D_Yield and Payout, which will be controlled for in regression Equation (2) for 2003–2007.

Note the maximum Mahalanobis distance is less than the critical value of 13,82 for two variables.

The tolerance and VIF values are within the acceptable limits, indicating no presence of multicollinearity.

Figure 4.3 and the corresponding scatterplot for the period (Appendix B) confirm the multiple regression assumptions around normality and homoscedasticity, therefore strengthening the discussion of the results. The Durbin-Watson value (1,412) indicates no autocorrelation.

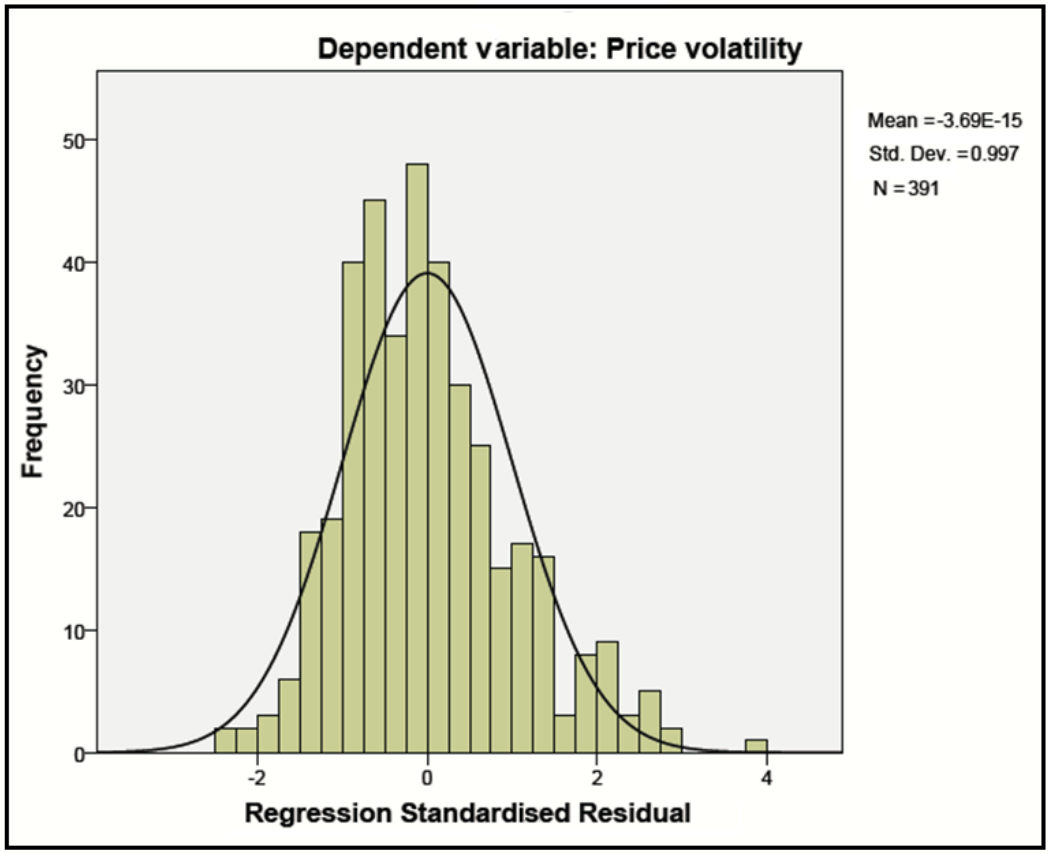

Figure 4.3: Histogram for dividend policy and share price volatility 2003-2007 for model (1)

Source: Author's own compilation

4.2.4 Results output for 2003-2007: multiple regression model (2)

The descriptive statistics (Table 4.17) and correlations (Table 4.18) for the period 2003–2007 (2) are presented in the tables below.

Table 4.17: Descriptive statistics: Multiple Regression model (2) results output 2003-2007

Descriptive statistics

Variable	Mean	Standard Deviation	Observations
Price volatility	0,682	0,135	380
Dividend yield	0,321	0,221	380
Dividend payout	0,346	0,227	380
Earnings volatility	0,050	0,041	380
Size	8,635	0,849	380
Debt	0,099	0,124	380
Growth	0,159	0,170	380

Table 4.18: Correlations: Multiple Regression model (2) results output 2003-2007

Correlations

Statistic	Variable	Price volatility	Dividend yield	Dividend payout	Earnings volatility	Size	Debt	Growth
Pearson Correlation	Price volatility	1,000						
	Dividend yield	-0,166	1,000					
	Dividend payout	-0,289	0,728	1,000				
	Earnings volatility	0,199	-0,144	-0,076	1,000			
	Size	-0,327	-0,074	0,197	-0,054	1,000		
	Debt	-0,030	-0,197	-0,172	0,068	0,065	1,000	
	Growth	0,007	-0,111	-0,097	0,033	0,069	0,173	1,000
P-value (1-tailed)	Price volatility							
	Dividend yield	0,001						
	Dividend payout	0,000	0,000					
	Earnings volatility	0,000	0,002	0,069				
	Size	0,000	0,074	0,000	0,146			
	Debt	0,283	0,000	0,000	0,093	0,103		
	Growth	0,445	0,015	0,029	0,261	0,090	0,000	
Observations	Price volatility	380						
	Dividend yield	380	380					
	Dividend payout	380	380	380				

Statistic	Variable	Price volatility	Dividend yield	Dividend payout	Earnings volatility	Size	Debt	Growth
	Earnings volatility	380	380	380	380			
	Size	380	380	380	380	380		
	Debt	380	380	380	380	380	380	
	Growth	380	380	380	380	380	380	380

Table 4.17 presents the explanatory descriptive statistics (mean, standard deviation and observations). A total of 380 observation were noted after outliers were removed and the assumptions for multiple regression were met, 11 observation less than regression Equation (1) for the same period. The independent variable Size once again had the largest standard deviation from the mean (0,849), with a mean of 8,635.

Table 4.18 represents the correlations between the dependent variable (price volatility) and all the other control independent variables (dividend yield, dividend payout, earnings volatility, size, debt and growth).

The strongest significant correlation is between independent variables: dividend yield and dividend payout (r = 0,728). PVol is moderate negatively correlated with variables D_Yield, Payout and Size, and positively correlated to EVol (r= 0,199). The independent variables Debt and Growth are not considered significant contributors to explaining the movement of the dependent variable (PVol) as both p-values>0,05. The strongest correlation exists between price volatility (PVol) and dividend payout (Payout) (-0,289).

The tables below present the model summary (Table 4.19), ANOVA (Table 4.20), coefficients (Table 4.21) and Mahalanobis Distance (Table 4.22) for the period 2003-2007 (2).

Table 4.19: Model summary: Multiple Regression model (2) results output 2003-2007

Model summary

R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
0,437	0,191	0,178	0,122	1,506

Table 4.20: ANOVA: Multiple Regression model (2) results output 2003-2007

ANOVA

Statistic	Sum of squares	Degrees of freedom	Mean Square	F	P-value
Regression	1,322	6	0,220	14,697	0,000
Residual	5,590	373	0,015		
Total	6,912	379			

Table 4.21: Coefficients: Multiple Regression model (2) results output 2003-2007

Coefficients

Coefficient	Unstandardised Coefficients		Standardised Coefficients	t	P-value	95,0% Confidence Interval for B		Collinearity Statistics	
	B	Standard Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	1,079	0,071		15,258	0,000	0,940	1,218		
Dividend yield	-0,004	0,045	-0,006	-0,089	0,929	-0,091	0,084	0,408	2,448
Dividend payout	-0,136	0,044	-0,229	-3,111	0,002	-0,222	-0,050	0,401	2,491
Earnings volatility	0,569	0,158	0,171	3,605	0,000	0,259	0,879	0,967	1,034
Size	-0,043	0,008	-0,269	-5,319	0,000	-0,059	-0,027	0,845	1,183
Debt	-0,072	0,053	-0,066	-1,360	0,175	-0,175	0,032	0,931	1,074
Growth	0,007	0,038	0,008	0,176	0,861	-0,067	0,081	0,959	1,042

Table 4.22: Residual statistics: Multiple Regression model (2) results output 2003-2007

Residual statistics

Statistic	Minimum	Maximum	Mean	Standard Deviation	Observations
Mahalanobis Distance	0,070	25,563	5,984	4,866	380

The following regression equation model (2) accounts for factors that affect both dividend policy and share price volatility. These additional independent variables include: earnings volatility (EVol), firm size (Size), debt (Debt) and growth in assets (Growth). A multiple linear regression was calculated to predict price volatility (PVol) based on dividend yield (D_Yield) and dividend payout (Payout), earnings volatility (EVol), size (Size) debt (Debt) and growth (Growth).

A significant regression equation was found ($F(6,373) = 14,697$, $p<.000$), with an R^2 of 0,191. The study predicted that price volatility (PVol) is equal to 1,079 + 0,007 (Growth) – 0,072 (Debt) – 0,043 (Size) + 0,569 (EVol) – 0,136 (Payout) – 0,004 (D_Yield). Thus, the largest movement in price volatility is associated with a 0.569 movement in earnings volatility, given that all other variables are held constant. Of the independent variables, only dividend payout, earnings volatility and size were significant predictors of PVol (P-Values < 0,05). Of these variables, size (Size) with a beta of -0,269 makes the strongest unique contribution to explaining changes in the dependent variable (PVol) for multiple regression equation (2) for 2003–2007. Dividend payout made the second largest contribution (beta -0,229) in explaining the variance in PVol, when controlling for other all other variables. It should be noted that growth in assets (Growth) presented the lowest beta (0,008) and showed no significance.

The tolerance and VIF values are within the acceptable limits, indicating no presence of multicollinearity. It is noted that the Mahalanobis maximum distance for 6 independent variables slightly exceeds the critical value of 22,46, but is still within limits.

Figure 4.4 and the corresponding scatterplot for the analysis period (Appendix B) confirm the multiple regression assumptions around normality and homoscedasticity, therefore strengthening the discussion of the results. The Durbin-Watson value (1,506) indicates no auto-correlation.

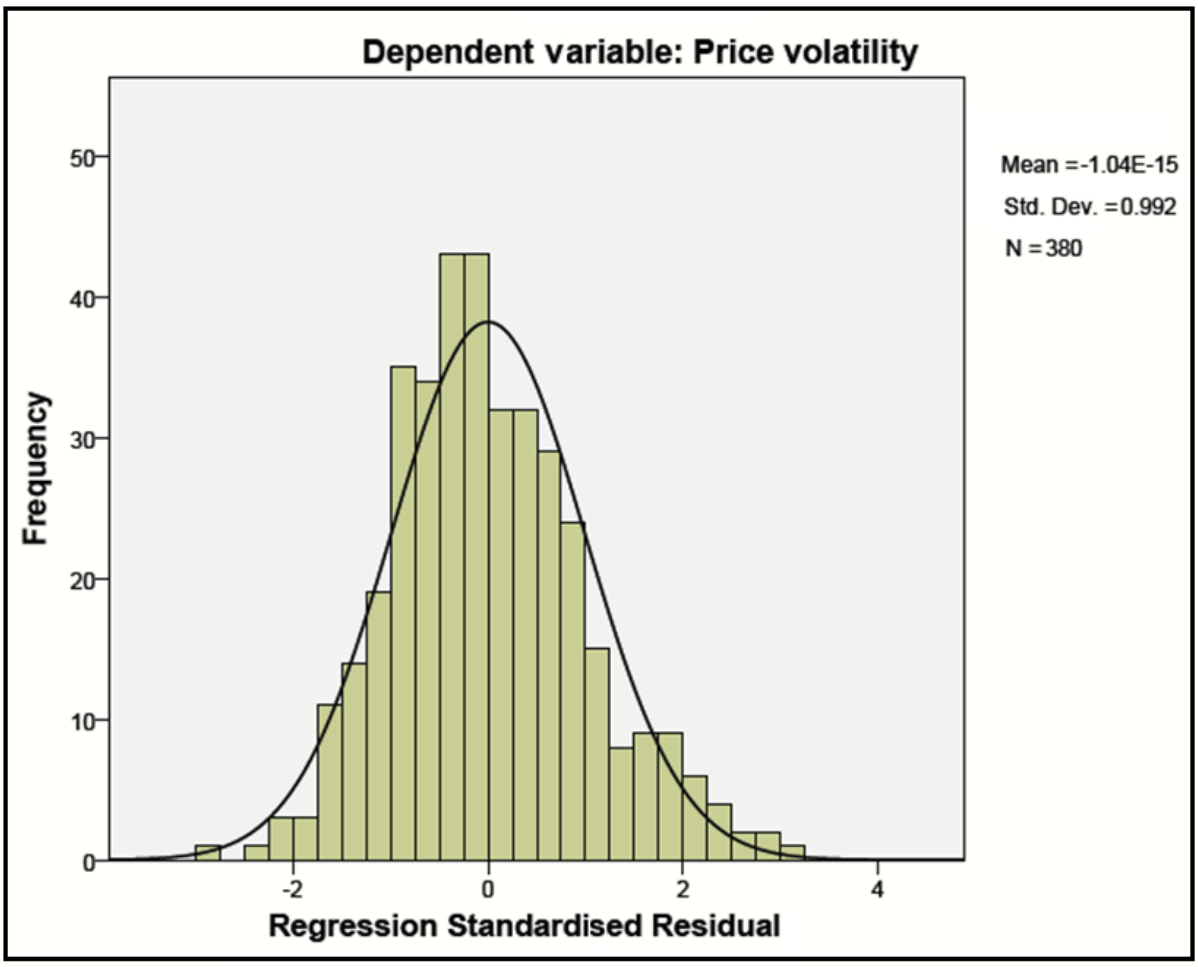

Figure 4.4: Histogram for dividend policy and share price volatility 2003-2007 for model (2)

Source: Author's own compilation

4.2.5 Results output for 2008-2009: multiple regression model (1)

The descriptive statistics (Table 4.23) and correlations (Table 4.24) for the period 2008–2009 (1) are presented in the tables below.

Table 4.23: Descriptive statistics: Multiple Regression model (1) results output 2008-2009

Descriptive statistics

Variable	Mean	Standard Deviation	Observations
Price volatility	0,781	0,178	158
Dividend yield	0,300	0,250	158
Dividend payout	0,296	0,240	158

Table 4.24: Correlations: Multiple Regression model (1) results output 2008-2009

Correlations

Statistic	Variable	Price volatility	Dividend yield	Dividend payout
Pearson Correlation	Price volatility	1,000		
	Dividend yield	-0,288	1,000	
	Dividend payout	-0,295	0,807	1,000
P-value (1-tailed)	Price volatility			
	Dividend yield	0,000		
	Dividend payout	0,000	0,000	
Observations	Price volatility	158		
	Dividend yield	158	158	
	Dividend payout	158	158	158

Table 4.23 presents the explanatory descriptive statistics (mean, standard deviation and observations). It should be noted that there was a total of 158 observation after outliers were removed and the assumptions for multiple regression were met.

Table 4.24 represents the correlations between the dependent (price volatility) and independent variables (dividend yield and dividend payout). Pearson's correlation coefficient (r) should have a value of between -1 and +1. The former indicating a strong negative and the latter a strong positive linear correlation between the variables. Zero indicates that there is no correlation at all.

The strongest correlation of -0,295 is between price volatility (PVol) and dividend payout (Payout). A negative correlation exists between PVol and dividend yield (D_Yield) of -0,288. However, it should be noted that there is a strong positive correlation between the two independent variables D_Yield and Payout (r = 0,807). It should also be noted that a reasonable amount of shared variance was also removed in the SPSS model if both variables are included in Equation (1) for 2008-2009 as noted earlier.

The tables below present the model summary (Table 4.25), ANOVA (Table 4.26), coefficients (Table 4.27) and Mahalanobis Distance (Table 4.28) for the period 2008-2009 (1).

Table 4.25: Model summary: Multiple Regression model (1) results output 2008-2009

Model summary

R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
0,307	0,094	0,083	0,171	2,002

Table 4.26: ANOVA: Multiple Regression model (1) results output 2008-2009

ANOVA

Statistic	Sum of Squares	Degrees of freedom	Mean Square	F	P-value
Regression	0,470	2	0,235	8,067	0,000
Residual	4,518	155	0,029		
Total	4,989	157			

Table 4.27: Coefficients: Multiple Regression model (1) results output 2008-2009

Coefficients

Coefficient	Unstandardised Coefficients		Standardised Coefficients	t	P-value	95,0% Confidence Interval for B		Collinearity Statistics	
	B	Standard Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	0,851	0,022		38,439	0,000	0,807	0,894		
Dividend yield	-0,101	0,092	-0,142	-1,095	0,275	-0,284	0,081	0,349	2,863
Dividend payout	-0,134	0,096	-0,181	-1,401	0,163	-0,324	0,055	0,349	2,863

Table 4.28: Residual statistics: Multiple Regression model (1) results output 2008-2009

Residual statistics

Statistic	Minimum	Maximum	Mean	Standard Deviation	Observations
Mahalanobis Distance	0,033	14,613	1,987	2,252	158

A multiple linear regression was calculated to predict price volatility (PVol) based on dividend yield (D_Yield) and dividend payout (Payout). A regression equation was found ($F(2,155) = 8,067$, $p<0,000$), with an R^2 of 0,094. The low R^2 indicates that only 9.4% of the model explains the variance in price volatility. The study predicted that price volatility (PVol) is equal to 0,851 – 0,134 (Payout) – 0,101 (D_Yield), where dividend yield is measured as the annual dividend per share as a percentage of the annual share price, and dividend payout is measured as the percentage of the company's earnings that are paid out to its shareholders.

Thus, price volatility (PVol) decreased by 0,134 percent for each percentage increase in dividend payout, given that dividend yield is held constant. For the period 2008-2009 neither D_Yield nor Payout were significant predictors of PVol (P-Values > 0,05). D_Yield has a P-Value of 0,275 (P-Value > 0,05) and Payout a P-Value of 0,163, thus not considered significant predictors of PVol for 2008–2009 (during economic crisis). Dividend payout (Payout) with a beta of -0,181 makes the strongest unique contribution to explaining changes in the dependent variable (PVol) for multiple regression Equation (1) for 2008–2009.

Dividend yield (D_Yield) made significant less of a contribution (beta -0,142) in explaining the variance in PVol when controlling for all other variables. This may be due to the overlap between the D_Yield and Payout, which will be controlled for in regression Equation (2) for 2008–2009.

The data was normally distributed, irrespective of the time periods. The tolerance and VIF values are within the acceptable limits, indicating no presence of multicollinearity.

Figure 4.5 and the corresponding scatterplot for the reviewed period (Appendix B) confirm the multiple regression assumptions around normality and homoscedasticity, therefore strengthening the discussion of the results. The Durbin-Watson value (2,002) indicates no autocorrelation. The Mahalanobis distance maximum slightly exceeds the critical value, but is still considered within limits.

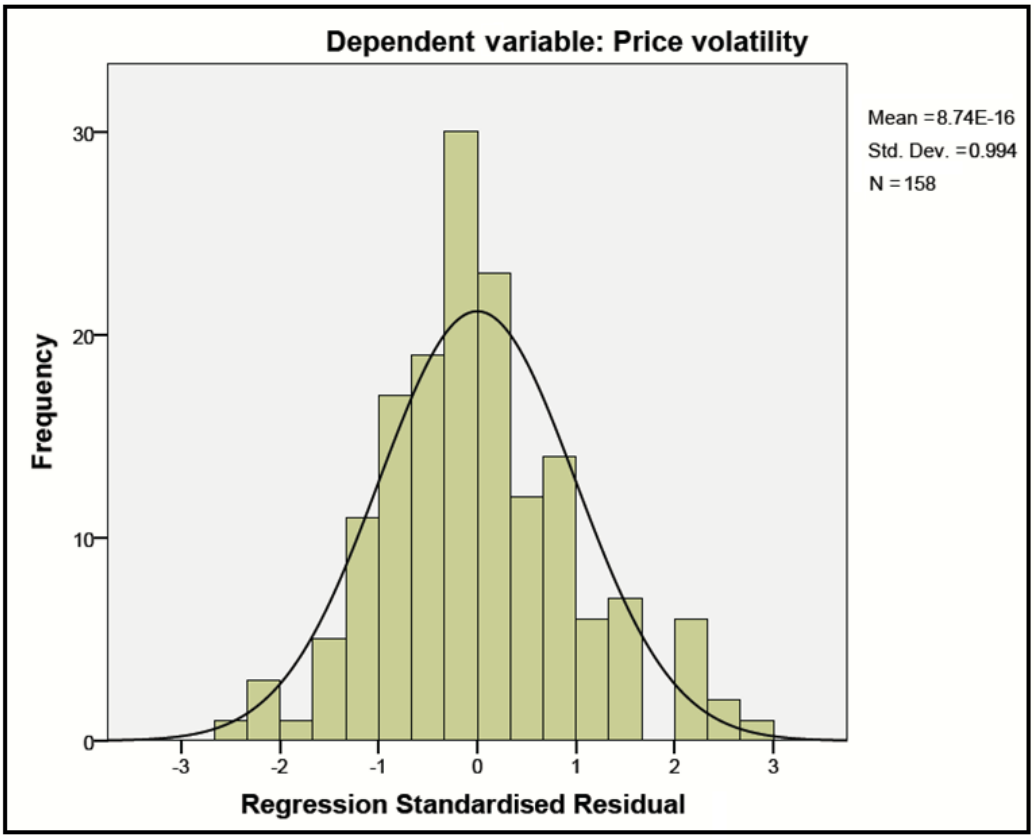

Figure 4.5: Histogram for dividend policy and share price volatility 2008-2009 for model (1)

Source: Author's own compilation

4.2.6 Results output for 2008-2009: multiple regression model (2)

The descriptive statistics (Table 4.29) and correlations (Table 4.30) for the period 2008-2009 (2) are presented in the tables below.

Table 4.29: Descriptive statistics: Multiple Regression model (2) results output 2008-2009

Descriptive statistics

Variable	Mean	Standard Deviation	Observations
Price volatility	0,781	0,178	158
Dividend yield	0,300	0,250	158
Dividend payout	0,296	0,240	158
Earnings volatility	0,049	0,041	158
Size	8,827	0,843	158
Debt	0,131	0,149	158
Growth	0,118	0,192	158

Table 4.30: Correlations: Multiple Regression model (2) results output 2008-2009

Correlations

Statistic	Variable	Price volatility	Dividend yield	Dividend payout	Earnings volatility	Size	Debt	Growth
Pearson Correlation	Price volatility	1,000						
	Dividend yield	-0,288	1,000					
	Dividend payout	-0,295	0,807	1,000				
	Earnings volatility	0,152	-0,199	-0,156	1,000			
	Size	-0,018	-0,050	0,157	-0,052	1,000		
	Debt	0,019	-0,062	-0,065	0,151	-0,046	1,000	
	Growth	0,085	0,090	0,043	0,063	0,074	-0,104	1,000
P-value (1-tailed)	Price volatility							
	Dividend yield	0,000						
	Dividend payout	0,000	0,000					
	Earnings volatility	0,028	0,006	0,025				
	Size	0,413	0,268	0,025	0,257			
	Debt	0,407	0,218	0,210	0,029	0,282		
	Growth	0,145	0,131	0,297	0,216	0,179	0,096	
Observations	Price volatility	158						
	Dividend yield	158	158					
	Dividend payout	158	158	158				

Statistic	Variable	Price volatility	Dividend yield	Dividend payout	Earnings volatility	Size	Debt	Growth
	Earnings volatility	158	158	158	158			
	Size	158	158	158	158	158		
	Debt	158	158	158	158	158	158	
	Growth	158	158	158	158	158	158	158

Table 4.29 presents the explanatory descriptive statistics (mean, standard deviation and observations). A total of 158 observation were noted, indicating that no outliers needed to be removed between regression Equation (1) and (2) for 2008–2009. All assumptions for multiple regression were met. The independent variable Size once again had the largest standard deviation from the mean (0,843), with a mean of 8,826.

Table 4.30 represents the correlations between the dependent variable (price volatility) and all other control independent variables (dividend yield, dividend payout, earnings volatility, size, debt and growth).

The strongest significant correlation is between independent variables: dividend yield (D_Yield) and dividend payout (r = 0,807). PVol is moderately negatively correlated with variables D_Yield and Payout, with dividend payout representing the strongest correlation between the two (r = -0,295). PVol is positively correlated to EVol (r= 0,152). The independent variables Size, Debt and Growth are not considered significant contributors to explaining the movement of the dependent variable (PVol), as both p-values >0,05.

The tables below present the model summary (Table 4.31), ANOVA (Table 4.32), coefficients (Table 4.33) and Mahalanobis Distance (Table 4.34) for the period 2008–2009 (2).

Table 4.31: Model summary: Multiple Regression model (2) results output 2008-2009

Model summary

R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
0,337	0,113	0,078	0,171	2,004

Table 4.32: ANOVA: Multiple Regression model (2) results output 2008-2009

ANOVA

Statistic	Sum of Squares	Degrees of freedom	Mean Square	F	P-value
Regression	0,566	6	0,094	3,219	0,005
Residual	4,423	151	0,029		
Total	4,989	157			

Table 4.33: Coefficients: Multiple Regression model (2) results output 2008-2009

Coefficients

Coefficient	Unstandardised Coefficients		Standardised Coefficients	t	P-value	95,0% Confidence Interval for B		Collinearity Statistics	
	B	Standard Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	0,819	0,156		5,234	0,000	0,510	1,128		
Dividend yield	-0,099	0,099	-0,138	-0,996	0,321	-0,294	0,097	0,306	3,270
Dividend payout	-0,129	0,102	-0,174	-1,262	0,209	-0,332	0,073	0,308	3,249
Earnings volatility	0,397	0,344	0,092	1,154	0,250	-0,282	1,076	0,927	1,079
Size	0,000	0,017	0,000	0,003	0,998	-0,034	0,034	0,872	1,147
Debt	-0,005	0,093	-0,005	-0,059	0,953	-0,190	0,179	0,962	1,039
Growth	0,091	0,073	0,098	1,256	0,211	-0,052	0,235	0,959	1,042

Table 4.34: Residual statistics: Multiple Regression model (2) results output 2008-2009

Residual statistics

Statistic	Minimum	Maximum	Mean	Standard Deviation	Observations
Mahalanobis Distance	0,871	22,381	5,962	4,433	158

Regression equation model (2) in this instance accounts for factors that affect both dividend policy and share price volatility. These additional independent variables include: earnings volatility (EVol), size (Size), debt (Debt) and growth in assets (Growth). A multiple linear regression was calculated to predict price volatility (PVol) based on dividend yield (D_Yield) and dividend payout (Payout), earnings volatility (EVol), size (Size) debt (Debt) and growth (Growth).

A significant regression equation was found ($F(6,151) = 3,219$, $p<0,000$), with an R^2 of 0,113. The study predicted that price volatility (PVol) is equal to 0,819 + 0,091 (Growth) – 0,005 (Debt) – 0,000 (Size) + 0,397 (EVol) – 0,129 (Payout) – 0,099 (D_Yield).

For the period 2008–2009 (during the economic crisis) none of the independent variables were significant predictors of PVol (p-values > 0,05). Despite the insignificance of the variables in predicting PVol, dividend payout remained the largest contributor in explaining the changes in PVol for 2008–2009 (beta -0,174). It should be noted that Size presented no effect on the change in PVol for 2008–2009.

The tolerance and VIF values are within the acceptable limits, indicating no presence of multicollinearity.

Figure 4.6 and the corresponding scatterplot for the reviewed period (Appendix B) confirm the multiple regression assumptions around normality and homoscedasticity, therefore strengthening the discussion of the results. The Durbin-Watson value (2,004) indicates no autocorrelation. The Mahalanobis distance maximum is less than the critical value.

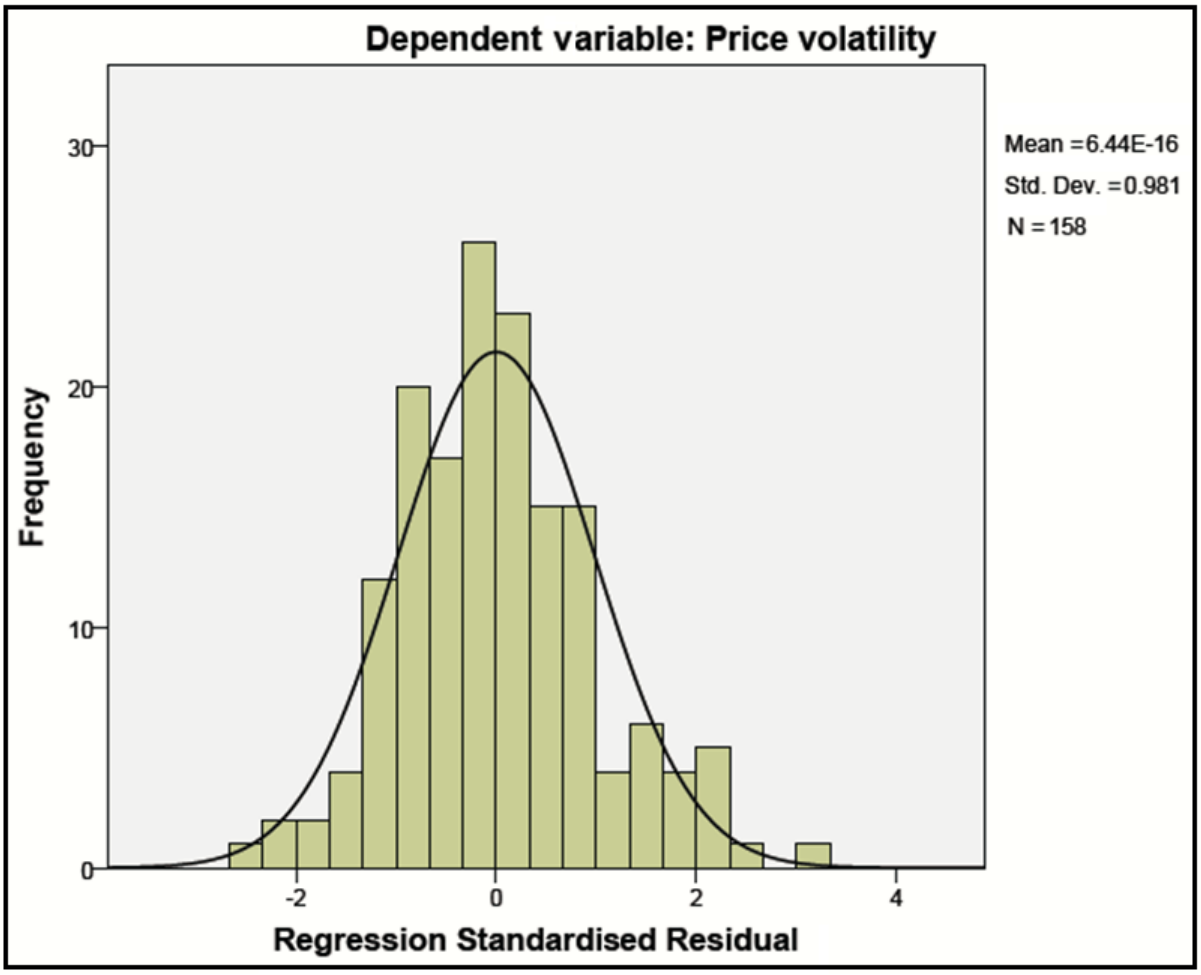

Figure 4.6: Histogram for dividend policy and share price volatility 2008-2009 for model (2)

Source: Author's own compilation

4.2.7 Results output for 2010-2014: multiple regression model (1)

The descriptive statistics (Table 4.35) and correlations (Table 4.36) for the period 2010–2014 (1) are presented in the tables below.

Table 4.35: Descriptive statistics: Multiple Regression model (1) results output 2010-2014

Descriptive statistics

Variable	Mean	Standard Deviation	Observations
Price volatility	0,609	0,131	432
Dividend yield	0,249	0,190	432
Dividend payout	0,337	0,242	432

Table 4.36: Correlations: Multiple Regression model (1) results output 2010-2014

Correlations

Statistic	Variable	Price volatility	Dividend yield	Dividend payout
Pearson Correlation	Price volatility	1,000		
	Dividend yield	-0,341	1,000	
	Dividend payout	-0,362	0,801	1,000
P-value (1-tailed)	Price volatility			
	Dividend yield	0,000		
	Dividend payout	0,000	0,000	
Observations	Price volatility	432		
	Dividend yield	432	432	
	Dividend payout	432	432	432

Table 4.35 presents the explanatory descriptive statistics (mean, standard deviation and observations). A total of 158 observations were noted after outliers were removed and the assumptions for multiple regression were met.

Table 4.36 represents the correlations between the dependent (price volatility) and independent variables (dividend yield and dividend payout). The strongest correlation of -0,362 is between price volatility (PVol) and dividend payout (Payout). However, it should be noted that there is a strong positive correlation between the two independent variables D_Yield and Payout (r = 0,801). It should also be noted that a reasonable amount of shared variance was removed in the SPSS model if both variables are included in Equation (1).

The tables below present the model summary (Table 4.37), ANOVA (Table 4.38), coefficients (Table 4.39) and Mahalanobis Distance (Table 4.40) for the period 2010–2014 (1).

Table 4.37: Model summary: Multiple Regression model (1) results output 2010-2014

Model summary

R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
0,372	0,138	0,134	0,122	1,679

Table 4.38: ANOVA: Multiple Regression model (1) results output 2010-2014

ANOVA

Statistic	Sum of Squares	Degrees of freedom	Mean Square	F	P-value
Regression	1,022	2	0,511	34,436	0,000
Residual	6,365	429	0,015		
Total	7,387	431			

Table 4.39: Coefficients: Multiple Regression model (1) results output 2010-2014

Coefficients

Coefficient	Unstandardised Coefficients		Standardised Coefficients	t	P-value	95,0% Confidence Interval for B		Collinearity Statistics	
	B	Standard Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	0,679	0,010		66,377	0,000	0,659	0,699		
Dividend yield	-0,099	0,051	-0,144	-1,932	0,054	-0,200	0,002	0,359	2,785
Dividend payout	-0,133	0,041	-0,246	-3,290	0,001	-0,213	-0,054	0,359	2,785

Table 4.40: Residual statistics: Multiple Regression model (1) results output 2010-2014

Residual statistics

Statistic	Minimum	Maximum	Mean	Standard Deviation	Observations
Mahalanobis Distance	0,000	16,937	1,995	2,591	432

A multiple linear regression was calculated to predict price volatility (PVol) based on dividend yield (D_Yield) and dividend payout (Payout). A significant regression equation was found (F(2,429) = 34.436, p<,000), with an R^2 of ,138. The study predicted that price volatility (PVol) is equal to 0,679 – 0,133 (Payout) – 0,099 (D_Yield), where dividend yield is measured as the annual dividend per share as a percentage of the annual share price, and dividend payout is measured as the percentage of the company's earnings that are paid out to its shareholders. Only dividend payout was a significant predictor of PVol (P-Value < 0,05).

Dividend payout (Payout) with a beta of -0,246 makes the strongest unique contribution to explaining changes in the dependent variable (PVol) for multiple regression equation (1). Dividend yield (D_Yield) made significant less of a contribution (beta -0,144) in explaining the variance in PVol when controlling for all other variables. This may be due to the overlap between the D_Yield and Payout, which will be controlled for in regression equation (2).

The tolerance and VIF values are within the acceptable limits, indicating no presence of multicollinearity.

Figure 4.7 and the corresponding scatterplot for the reviewed period (Appendix B) confirm the multiple regression assumptions around normality and homoscedasticity, therefore strengthening the discussion of the results. The Durbin-Watson value (1,679) indicates no autocorrelation. The Mahalanobis distance maximum slightly exceeds the critical value.

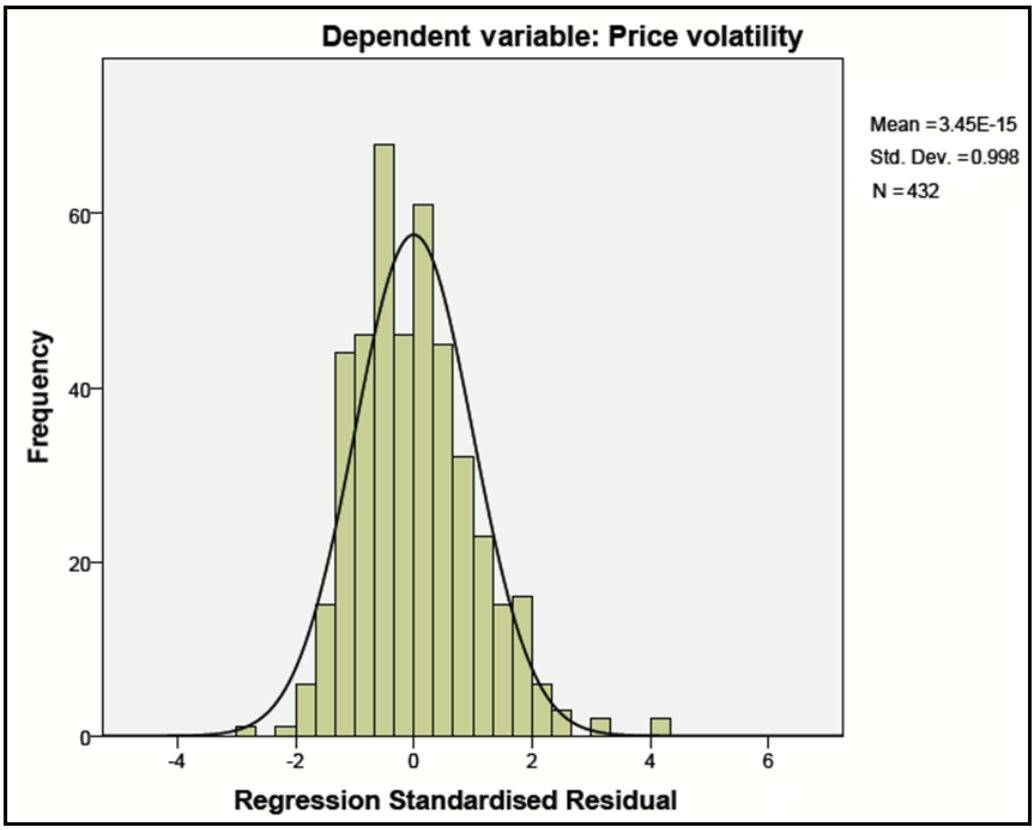

Figure 4.7: Histogram for dividend policy and share price volatility 2010-2014 for model (1)

Source: Author's own compilation

4.2.8 Results output for 2010-2014: multiple regression model (2)

The descriptive statistics (Table 4.41) and correlations (Table 4.42) for the period 2010–2014 (2) are presented in the tables below.

Table 4.41: Descriptive statistics: Multiple Regression model (2) results output 2010-2014

Descriptive statistics

Variable	Mean	Standard Deviation	Observations
Price volatility	0,609	0,131	432
Dividend yield	0,249	0,190	432
Dividend payout	0,337	0,242	432
Earnings volatility	0,052	0,047	432
Size	8,973	0,814	432
Debt	0,115	0,139	432
Growth	0,094	0,146	432

Table 4.42: Correlations: Multiple Regression model (2) results output 2010-2014

Correlations

Statistic	Variable	Price volatility	Dividend yield	Dividend payout	Earnings volatility	Size	Debt	Growth
Pearson Correlation	Price volatility	1,000						
	Dividend yield	-0,341	1,000					
	Dividend payout	-0,362	0,801	1,000				
	Earnings volatility	0,293	-0,256	-0,185	1,000			
	Size	-0,209	0,044	0,232	-0,137	1,000		
	Debt	-0,080	-0,076	-0,076	-0,013	0,087	1,000	
	Growth	-0,182	0,020	0,004	-0,130	0,143	0,135	1,000
P-value (1-tailed)	Price volatility							
	Dividend yield	0,000						
	Dividend payout	0,000	0,000					
	Earnings volatility	0,000	0,000	0,000				
	Size	0,000	0,183	0,000	0,002			
	Debt	0,049	0,057	0,058	0,393	0,036		
	Growth	0,000	0,338	0,467	0,003	0,001	0,002	
Observations	Price volatility	432						
	Dividend yield	432	432					
	Dividend payout	432	432	432				

Statistic	Variable	Price volatility	Dividend yield	Dividend payout	Earnings volatility	Size	Debt	Growth
	Earnings volatility	432	432	432	432			
	Size	432	432	432	432	432		
	Debt	432	432	432	432	432	432	
	Growth	432	432	432	432	432	432	432

Table 4.41 presents the explanatory descriptive statistics (mean, standard deviation and observations). A total of 432 observation were noted, indicating that no outliers needed to be removed between regression equation (1) and (2) for 2010–2014. All assumptions for multiple regression were met. The independent variable Size once again had the largest standard deviation from the mean (0,814) with a mean of 8,973.

Table 4.42 represents the correlations between the dependent variable (price volatility) and all other control independent variables (dividend yield, dividend payout, earnings volatility, size, debt and growth).

The strongest positive correlation is between independent variables: dividend yield (D_Yield) and dividend payout (r = 0,801). PVol is negatively correlated with variables D_Yield, Payout, Size, Debt and Growth and positively correlated to Evol (r= 0,293). All the independent variables are considered significant contributors to explaining the movement of the dependent variable (PVol), as all p-values <0,05. The strongest correlation exists between price volatility (PVol) and dividend payout (r= -0,362) for 2010–2014.

The tables below present the model summary (Table 4.43), ANOVA (Table 4.44), coefficients (Table 4.45) and Mahalanobis Distance (Table 4.46) for the period 2010–2014 (2).

Table 4.43: Model summary: Multiple Regression model (2) results output 2010-2014

Model summary

R	R Square	Adjusted R Square	Standard Error of the Estimate	Durbin-Watson
0,474	0,225	0,214	0,116	1,799

Table 4.44: ANOVA: Multiple Regression model (2) results output 2010-2014

ANOVA

Statistic	Sum of Squares	Degrees of freedom	Mean Square	F	P-value
Regression	1,661	6	0,277	20,549	0,000
Residual	5,726	425	0,013		
Total	7,387	431			

Table 4.45: Coefficients: Multiple Regression model (2) results output 2010-2014

Coefficients

Coefficient	Unstandardised Coefficients		Standardised Coefficients	t	P-value	95,0% Confidence Interval for B		Collinearity Statistics	
	B	Standard Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	0,810	0,067		12,052	0,000	0,678	0,943		
Dividend yield	-0,086	0,052	-0,125	-1,664	0,097	-0,188	0,016	0,321	3,111
Dividend payout	-0,112	0,041	-0,207	-2,728	0,007	-0,193	-0,031	0,316	3,165
Earnings volatility	0,532	0,126	0,190	4,233	0,000	0,285	0,779	0,901	1,109
Size	-0,017	0,007	-0,104	-2,246	0,025	-0,031	-0,002	0,847	1,181
Debt	-0,072	0,041	-0,076	-1,750	0,081	-0,152	0,009	0,968	1,033
Growth	-0,116	0,039	-0,129	-2,942	0,003	-0,193	-0,038	0,949	1,054

Table 4.46: Residual statistics: Multiple Regression model (2) results output 2010-2014

Residual statistics

Statistic	Minimum	Maximum	Mean	Standard Deviation	Observations
Mahalanobis Distance	0,197	31,542	5,986	5,011	432

Regression equation model (2) accounts for factors that affect both dividend policy and share price volatility after the crude test was provided by model (1). These additional independent variables include: earnings volatility (EVol), size (Size), debt (Debt) and growth in assets (Growth). A multiple linear regression was calculated to predict price volatility (PVol) based on dividend yield (D_Yield) and dividend payout (Payout), earnings volatility (EVol), size (Size) debt (Debt) and growth (Growth). A significant regression equation was found ($F(6,425) = 20,549$, $p<0,000$), with an R^2 of 0,225. The study predicted that price volatility (PVol) is equal to 0.810 - 0.116 (Growth) – 0,072 (Debt) – 0,017 (Size) + 0,532 (EVol) – 0,112 (Payout) + 0,086 (D_Yield). Of the independent variables, only dividend payout, earnings volatility, size and growth were significant predictors of PVol (P-Values < 0,05).

Of these variables, dividend payout (Payout) with a beta of -0,207 makes the strongest unique contribution to explaining changes in the dependent variable (PVol) for multiple regression equation (2) for 2010–2014. Earnings volatility made the second largest contribution (beta 0,190) in explaining the variance in PVol when controlling for all other variables.

It should be noted that debt presented the lowest beta (0,076), even though it is not significant.

The tolerance and VIF values are within the acceptable limits, indicating no presence of multicollinearity.

Figure 4.8 and the corresponding scatterplot for the reviewed period (Appendix B) confirm the multiple regression assumptions around normality and homoscedasticity, therefore strengthening the discussion of the results. The Durbin-Watson value (1,799) indicates no autocorrelation. The Mahalanobis distance maximum is slightly higher that the critical value.

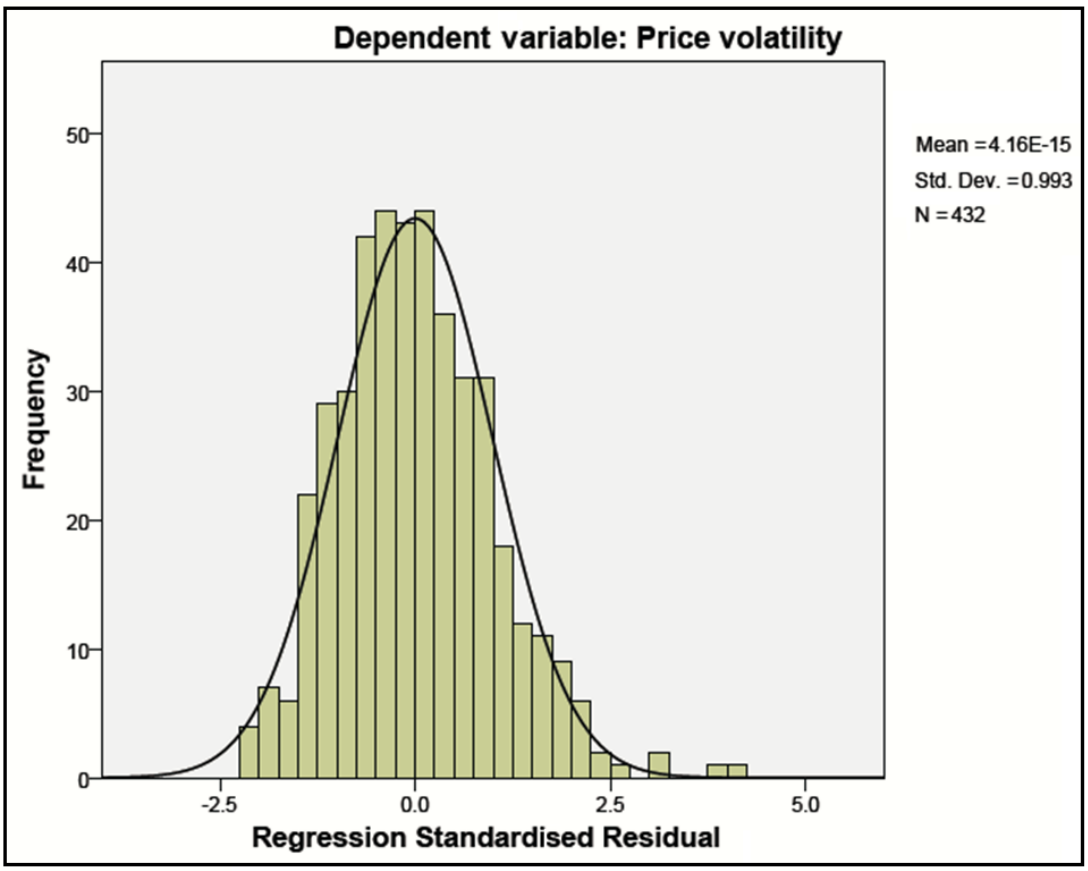

Figure 4.8: Histogram for dividend policy and share price volatility 2010-2014 for model (2)

Source: Author's own compilation

4.3 CONCLUSION

Chapter 4 depicted and interpreted the two multiple regression models in a structured format. Model **(1)** was regressed for the entire period of analysis followed by regression model **(2)** for the identical period. The structure of presenting model **(1)** and model **(2)** for the same periods is so that the two models can be clearly compared and the differences observed if any are noted. The following chapter discusses the results and concludes with suggestions for future research on the topic.

CHAPTER 5:
CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Chapter 4 provided a summary and analysis of the empirical results for the relationship between dividend policy and share price volatility for a sample of JSE-listed firms. The chapter provided detailed results for both regression estimation techniques, and the corresponding interpretations thereof. This chapter has a multifaceted purpose in the sense that it will firstly discuss and summarise the empirical results from the previous chapter in such a way that it is comparable to other similar studies done in developed and emerging markets. Comparisons and contrasts will be drawn from previous literature on the relationship between the dependent and independent variables. Secondly, the chapter expands on the contribution made by the study to the body of knowledge, which includes the policy implications for emerging markets on the different dividend theories. The final part of the chapter concludes the study, mentions its limitations and makes suggestions for future research.

5.2 THE EMPIRICAL RESULTS

For many analysts the relationship between dividend policy and share price volatility remains inconclusive. However, it is clear from the results that a firm's dividend policy is indeed relevant and has an effect on share price volatility. The purpose of this study was to ascertain whether the relationship between dividend policy and share price volatility for JSE-listed firms differs from previous research in different markets. It answered the research question and discovered what the relationship is between dividend policy and share price volatility for a representative sample of JSE-listed firms. In addition, it met the objective of finding and evaluating the relationship between dividend policy and share price volatility for a selection of JSE-listed firms, under various economic conditions. These periods represent a 12-year period with more than 1065 observations being noted. Two standard multiple regression models were used to regress dividend policy and share price volatility, with the first regression model only providing a crude test between the variables. The second regression model accounted for factors that affect both variables, and was included to provide a more accurate test estimation. The relationship between the dividend payout ratio and share price

volatility, and the relationship between dividend yield and share price volatility were evaluated and reported on, considering all the different economic conditions mentioned in the study.

The evidence in Chapter 4 indicates that there is a significant negative relationship between dividend policy and share price volatility, meaning that an increase in dividend policy would lead to a decrease in volatility. This occurrence held true for both regression models **(1)** and **(2)** and for all the different periods that were reviewed (pre, during and post the 2008 economic crisis). These results are therefore in contrast to what Miller and Modigliani (1961) argued regarding the irrelevance of dividends, and indicates that investors do indeed monitor the paying of dividends for JSE-listed firms in South Africa, given that markets are not perfect. It can be argued that firms listed on the JSE strive to achieve some sort of a signalling dividend equilibrium (John & Williams, 1985) in order to balance share price increases and internal liquidity.

For JSE-listed firms in South Africa, the volatility, and therefore, the risk of a share can be regarded as lower if dividends are paid out on a regular basis, thereby strengthening support for the bird-in-hand theory among investors investing on the particular market. The results for all periods under review indicated that the most significant variable causing a decrease in share price volatility is the dividend payout ratio. These results concur with results obtained by the authors Al-Malkawi *et al.* (2010) and Pettit (1972), and shows that dividend payout sends a positive message to the market about the possibility of an increased future cash flow. The price reaction to dividend changes noted on the JSE proposes that investors interpret and react to these change in both positive and negative ways, depending on whether the ‘signal’ was an increase or a decrease in dividend payments.

The dynamic shareholding of JSE-listed firms makes it difficult to ascertain whether ‘agency costs’ can be eliminated by the dividend decisions utilised in listed firms. As mentioned earlier in the literature review, the composition of shareholding on the JSE is skewed towards large institutional investors. These institutional investors, such as pension funds, tend to favour dividend payments to remain sustainable and to effectively manage their asset and liability payments. Regardless of investor preferences, and the fact that dividend and capital gains taxes for corporates and individuals are treated differently by the South African Revenue Services (SARS,

2017), shareholders still prefer high dividend paying shares, in agreement with Abor and Fiador (2013).

In many cases related to JSE-listed firms, directorships and board members are identified and appointed based on the shareholding and control that large institutional investors exert on the firms. The decision to pay out additional cash in the form of dividends could lead to greater agency costs, as discussed by Jensen (1986). The results of the study indicate that the signalling theory holds and can be used as a proxy to identify agency costs. What this means is that managers can manipulate the market. The market assumes that the managers know more about the future cash flows of the firm, and when the managers declare dividends, it 'sends' a positive message to the market. This theory holds true as the results show that an increase in dividend payments lead to a reduction in share price risk. These results are supported by Baskin (1989), Koch *et al.* (1999) and Linter (1956).

Due to regulatory restrictions in South Africa, many of these institutional investors are limited in the amount of investment risk they are allowed to take, therefore they view dividend payments as their main source of income, as opposed to volatile share trading. Many investors ignore the fact that capital expenditure usually decreases with dividend payments (Grullon, Michaely & Swaminathan, 2002)

From the empirical findings and the results presented in Chapter 4, the following additional conclusions can be drawn. The relationship between share price volatility and the dividend payout ratio for all the reviewed periods seems to make the single largest significant contribution to the change or risk associated with a firm's share price. The results held true, even when regression model **(2)** controlled for variables that affected both dividend yield and the dividend payout ratio. The results support the evidence found by Hussainey *et al*. (2011) on the London Stock Exchange in the UK, as well as the way dividend payouts are viewed by Fama (1997), which is contrary to that of Amidu and Abor (2006) and Gill *et al.* (2010). Profilet and Bacon (2013) also found the exact opposite relationship between share price volatility and the dividend payout ratio for the developed US equity market. The results therefore imply that there is a correlation between the findings of the research between developed and emerging markets, which was clearly indicated in Chapter 4. It should be kept in mind that there

is a big difference between the developed financial sector in South Africa and those of other developing African economies, such as Ghana.

In addition to the dividend payout ratio, dividend yield as an independent variable, also had a significant negative relationship with share price volatility, however, to a much smaller extent for all the periods under review, even when control variables were included. In contrast with, among others, Rashid and Rahman (2010) and later Nazir *et al.* (2010), the results in Chapter 4 showed the exact opposite for the JSE, when compared to the KSE, where the authors found positive relationships between the mentioned variables. The results again indicating different outcomes for both emerging market economies.

From multiple regression model **(2)** the following interesting factors should be noted under the different economic conditions: For 2003–2014, price volatility (PVol) and earnings volatility (EVol) were positively correlated. The findings regarding these two variables are in contrast with the findings by Sadiq *et al.* (2013) who found no relationship. The correlation between these two variables remained positive throughout the four review periods. The control variable for firm size (Size) was negatively correlated with price volatility for all four reviewed periods. As expected, and in line with the literature, the bigger the firm, the lower its risk, and therefore its share price volatility (Hooi *et al.*, 2015).

For the JSE-listed firms in this study, debt (Debt) did not seem to have any significant relationship with share price volatility. However, there was a significant negative relationship between debt and dividend payout ratio for the periods 2003–2014 and 2003–2007 (pre-economic crisis). This confirms the expectation that firms with higher leverage pay out lower dividends than those with less debt. This expectation holds true for the capital structure composition as well. For the periods 2008–2009 (during the 2008 economic crisis) and 2010–2014 (post-economic crisis) these relationships were not significant. In addition, the only significant negative relationship found between share price volatility and growth in assets (Growth) was after the economic crisis (2010–2014), which is also in contrast to the results found by other researchers (Sadiq *et al.,* 2013).

5.3 CONTRIBUTION OF THE STUDY

The study confirmed the relationship between a firm's dividend policy and share price volatility in firms listed on the JSE in South Africa. It is therefore important for analysts and investors to note the effect that these variables have on each other when deciding whether to buy or sell shares. Given that different investors have different investment needs, purely looking at a firm's dividend policy might not be the ultimate indicator or estimator for future growth.

The results showed how price volatility acted under different economic conditions and that a firm's dividend payout ratio seemed to be a better indicator of price volatility movements instead of the dividend yield ratio. Investors should use caution and inspect a variety of facts under many different conditions during their decision-making process.

The study did not investigate the changes in investment returns and should not be seen as an indication thereof. The study provides investors with the opportunity to analyse and decrease their exposure to firms that have volatile share prices, thereby ensuring that they are not over-exposed to risky investments that will not necessarily provide higher returns. Managers of listed firms on the JSE could review their own current dividend policies to ensure that their share prices remain stable, which could have a ripple effect and cause overall market stability.

5.4 LIMITATIONS OF THE STUDY

The results are limited in the sense that only firms who had company data available for the entire period were included. The multiple regression employed in SPSS also removed many outliers that could have provided good explanations as to why there was such a big movement in the different variables. Furthermore, investors and firms must be aware that the multiple regression models **(1)** and **(2)** indicated that the independent variables that were mentioned only explained the following variances in share price volatility:

Table 5.1: Variances in share price volatility

Period of analysis	Regression model 1	Regression model 2
	R^2	R^2
2003-20014 (Total period of analysis)	0.106	0.152
2003-2007 (Pre economic crisis)	0.101	0.191
2008-2009 (During economic crisis)	0.094	0.113
2010-2014 (Post economic crisis)	0.138	0.225

Evidence from the table above shows that very few of the variances are explained which could indicate that linear regression may not be the best way of analysing the relationship. The research study would therefore suggest that the data be tested by using non-linear methods, and would also suggest that Baskin's (1989) model be relooked at in its entirety to provide consensus between authors with regards to the calculations of the different variables. Furthermore, multiple regression model **(2)** was a good way of minimising the error, and ultimately explained 22.5% of the variance in price volatility after controlling for variables that affected both dividend policy and share price volatility post the economic crisis.

5.5 POLICY IMPLICATIONS OF THE STUDY

Investors should exercise caution when reviewing the literature on the 2008 economic crisis. During the economic crisis many different factors, such as internal and external political changes, affected markets, especially in South Africa. As an emerging market, South Africa's economy is susceptible to global economic changes. For example, during the 2008–2009 period many companies had to close down and the local currency depreciated against the US dollar. The increase in interest rates during the crisis also had an effect on debt levels, dividend payments and growth. All these factors would therefore need to be taken into account when reviewing the research. Investors who invest in JSE-listed firms should always analyse the shareholding composition and make sure that correct and strict oversight and governance structures are in place, even if it means delaying investment decisions.

The purpose of these suggestions is not to impose policy decisions on firms, nor is it intended to dictate to investors what a "perfect" dividend policy should look like. Investors, as well as firms, should be guided by well formulated investment strategies to maximise shareholders' wealth. However, the statistics indicate that the market favours firms that have a higher dividend payout ratio, which subsequently leads to

share price stability. Managers have a moral duty not to abuse the power they have to implement decisions for their own gain (agency problem), but should be guided by sound financial management theory in favour of all stakeholders. Good and practical corporate governance principles could be used to make sure that a firm's board of directors have independent, non-partisan oversight in all dividend policy decision-making.

5.6 CONCLUSION AND RECOMMENDATIONS

The overall conclusion of the study is that an increase in a firm's dividend payout ratio leads to a decrease in share price volatility for firms listed on the JSE in South Africa. The dividend payout ratio, and not the dividend yield ratio, remains the single largest contributor to explaining the variance in share price volatility. These two variables that constitute a firm's dividend policy, should therefore be managed in such a way that it maximises shareholders' wealth.

Based on the results and the discussion, the dividend yield ratio explains very little about the future direction in which a firm's share price could move. This study concurs with Kenyoru *et al.* (2013), Travlos *et al*. (2001) and Hooi *et al.* (2015), all of whom found that dividend policy has a negative relationship with share price volatility. The dividend payout ratio as a proxy variable had the most significant effect on share price volatility.

The study further showed that listed firms should actively manage their free cash flow to ensure that future investment can be made without over-capitalising on debt and equity payments. Firms operating in emerging markets should remain wary of all the challenges that such markets present and should remain committed to unlocking long-term value. The findings of the study confirm that the JSE in South Africa associates directly with developed markets, and not the developing markets in many other emerging economies.

5.7 SUGGESTIONS FOR FUTURE RESEARCH

This study evaluated the relationship between dividend policy and share price volatility for a sample of JSE-listed firms under different economic conditions. Besides dividend policy, share price volatility is affected by many other factors in emerging markets. In-

country or political risk remains a big challenge and the movement of emerging market currencies against the likes of the US dollar seems to add to share price volatility.

Due to the fact that emerging economies are reliant on foreign direct investments (FDIs) for development, currency fluctuations could lead to a total collapse of the financial markets. The study therefore recommends that additional research is necessary to study other variables that might have a bigger or more significant influence on share price volatility, such as exchange rate volatility between the developed and emerging markets over the reviewed periods.

Additional research could also be initiated to study whether JSE-listed firms issue new and/ or repurchase shares when dividend announcement are made, and how share price volatility would be affected in such instances.

The study did not focus on sector or industry-specific firms, therefore more research could be done on separate industries or focused firms on the JSE.

REFERENCES

Abor, J. 2005. The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *The Journal of Risk Finance,* 6(5):438-445.

Abor, J., and Fiador, V. 2013. Does corporate governance explain dividend policy in Sub-Saharan Africa? *International Journal of Law and Management*, 55(3): 201-225.

Aharony, J., & Swary, I. 1980. Quarterly Dividend and Earnings Announcements and Stockholders Returns: An Empirical Analysis. *Journal of Finance,* 35(1):1-12.

Ali, M.B., & Chowdhury, T.A. 2010. Effect of Dividend on Stock Price in Emerging Stock Market: A Study on the Listed Private Commercial Banks in DSE*. International Journal of Economics and Finance*, 2(4):52-64.

Al-Kuwari, D. 2009. Determinants of the Dividend Policy in Emerging Stock Exchanges: The Case of GCC Countries. *Global Economy & Finance Journal*, 2(2):38-63.

Allen, D.E., & Rachim, V.S. 1996. Dividend policy and stock price volatility: Australian evidence. *Applied Financial Economics*, 6(2):175-188.

Allen, F., Bernardo, A.E. & Welch, I. 2000. A Theory of Dividends Based on Tax Clienteles. *Journal of Finance*, 55(6):2499-2536.

Al-Malkawi, H.N., Rafferty, M., & Pillai, R. 2010. Dividend Policy: A Review of Theories and Empirical Evidence. *International Bulletin of Business Administration*, 9(9):171-200.

Ambarish, R.J.K. & Williams, J. 1987. Efficient signalling with dividends and investments. *Journal of Finance,* 42(2):321-343.

Amidu, M., & Abor, J. 2006. Determinants of dividend payout ratios in Ghana. *The Journal of Risk Finance*, 7(2):136-145.

Andres, C., Betzer, A., Goergen, M. & Renneboog, L. 2009. Dividend policy of German firms a panel data analysis of partial adjustment models. *Journal of Empirical Finance*, 16(2):175–187.

Anwar, S., Singh, S., & Jain, P.K. 2015. Cash Dividend Announcements and Stock Return Volatility: Evidence from India. *Procedia Economics and Finance*, 30(1):38-48.

Baker, H.K., & Weigand, R. 2015. Corporate dividend policy revisited. *Managerial Finance*, 41(2): 126-144.

Ball, R., Brown, P., Finn, F.J. & Officer, R.R. 1979, Dividend and the Value of the Firm: Evidence from the Australian Equity Market. *Australian Journal of Management.*

4(1):13-26.

Baskin, J. 1989. Dividend policy and the volatility of common stock. *Journal of Portfolio Management*, 15(3):19-25.

Belo, F., Collin-Dufresne, R., & Goldstein, R.S. 2015. Dividend Dynamics and the Term Structure of Dividend Strips. *The Journal of Finance,* 70(3):1115-1160.

Benavides, J., Berggrun, L., &, Perafan, H. 2016. Dividend payout policies: Evidence from Latin America. *Finance Research Letters*, 17(C):197-210.

Bhattacharya, S. 1979. Imperfect Information, Dividend Policy, and "The Bird in the Hand" Fallacy. *The Bell Journal of Economics*, 10(1):259-270.

Black, F. 1976. The Dividend Puzzle. *The Journal of Portfolio Management,* 2(2):8-12.

Black, F. & Scholes, M. 1974. The effects of dividend yield and dividend policy on common stock prices and returns. *Journal of Financial Economics,*1(1):1-22.

Bodmer, E. 2015. *Corporate and project finance modeling*. John Wiley & Sons, Inc. Hoboken, New Jersey, USA.

Bohart, A. 2007. The Top 6 Stock Price Volatility Causes. *EzineArticles.* Available online http://ezinearticles.com/?expert=Allen_Bohart. [Date of access: 12/09/2015].

Brav, O. 2009. Access to Capital, Capital Structure, and the Funding of the Firm. *The Journal of Finance*, LXIV (1): 263-307.

Brennan, M. J. 1970. Taxes, Market Valuation and Corporate Financial Policy. *National Tax Journal,* 23(4):417-427.

Campbell, J., & Cochrane, J.H. 1999. By force of habit: A consumption-based explanation of aggregate stock return behaviour. *Journal of Political Economy* 107(2):205-251.

Chang, K., Kang, E., & Ying, L. 2016. Effect of institutional ownership on dividends: An agency-theory-based analysis. *Journal of Business Research,* 69(7):2551–2559.

Cheng, S, & Shiu, C. 2007. Investor protection and capital structure: International evidence. *Journal of Multinational Financial Management,* 17(1):30–44.

Chinzara, Z. & Aziakponoy, M.J. 2009. Dynamic Returns Linkages and Volatility Transmission Between South African and World Major Stock Markets. Rhodes University (Working paper). Available online http://www.econrsa.org/system/files /publications/ working_papers/ wp146.pdf. [Date of access: 12/09/2015].

Chittenden, F, Hall, G, & Hutchinson, P. 1996. Small Firm Growth, Access to Capital Markets

and Financial Structure: Review of Issues and an Empirical Investigation. *Small Business Economics*, 8(1): 59-67.

Clifford W., Smith, Jr. & Ross, L.W. 1991. The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32(3):263-192.

Cochrane, J.H. 1991. Volatility tests and efficient markets. *Journal of Monetary Economics*, 27(3):463-485.

Creswell J.W. 2003. *Research Design: Qualitative, Quantitative and Mixed Methods Approaches.* (2nd ed.) Lincoln: Sage Publications Inc.

Cronk, B.C. 2012. *How to use SPSS Statistics: A step-by-step guide to analysis and interpretation.* Glendale, CA: Pyrczak Pub.

DeAngelo, H., DeAngelo, L. & Skinner, D.J. 1996. Reversal of fortune Dividend signalling and the disappearance of future earnings growth. *Journal of Financial Economics*, 40(3):341-371.

Dichev, I.D. & Tang, V.W. 2009. Earnings volatility and earnings predictability. *Journal of Accounting and Economics*, 47(1):160–181.

Diamond, J.J., 1967, Earnings Distribution and the Valuation of Shares: Some Recent Evidence. *Journal of Financial and Quantitative Analysis* 2(1):15-30.

Dhanani, A. 2005. Dividend Policy: The Views of British Financial Managers. *Journal of Business Finance & Accounting*, 32(7) & (8).

Easterbrook, F. H. 1984. Two Agency Costs Explanations of Dividends. *American Economic Review,* 74(4):650-659.

El-Sayed Ebaid, I. 2009. The impact of capital-structure choice on firm performance: empirical evidence from Egypt. *The Journal of Risk Finance*, 10(5): 477-487.

Elton, E.J., & Gruber, M.J. 1970. Marginal Stockholder Tax Rates and the Clientele Effect. *Review of Economics and Statistics,* 52(1):68-74.

Eriotis, N. 2007.How firm characteristics affect capital structure: an empirical study. *Managerial Finance*, 33(5):321-331.

Fama, E.F. 1974. The Empirical Relationships between the Dividend and Investment Decisions of Firms. *The American Economic Review*, 64(3):304-318.

Fama, E.F. 1997. Market Efficiency, long-term returns Stock Return in the Dhaka Stock Exchange, Available and behavioural Finance. *Journal of Financial Economics*,

49(1):283-306.

Fama, E.F., & Babiak, H. 1968. Dividend Policy: An Empirical Analysis. *Journal of the American Statistical Association*, 63(324):1132-1161.

Fama, E.F, & French, K.R. 1989. Business conditions and expected returns on stocks and bonds. *Journal of Financial Economics*, 25(1):23-49.

Fama, E.F., & French, K.R. 1999. The Corporate Cost of Capital and the Return on Corporate Investment. *The Journal of Finance*, LIV (6):1939-1967.

Fama, E. F., & French, K.R. 2001. Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay? *Journal of Financial Economics* 60(1):3–44.

Fama, E.F., & Miller, M. 1972. *The theory of finance* New York: Holt, Rinehart and Winston.

Fathi, S., Ghandehari, F., & Shirangi, S.Y. 2014. Comparative Study of Capital Structure Determinants in Selected Stock Exchanges of Developing Countries and Tehran Stock. International Journal of Academic Research in Accounting, Finance and Management Sciences, 4(1):67-75.

Fenn, G.W., & Liang, N. 2001. Corporate payout policy and managerial stock incentives. *Journal of Financial Economics,* 60(1):45-72.

Field, A. 2009. *Discovering Statistics using SPSS.* London: Sage Publications Ltd. p1-857.

Firer, C., Gilbert, E. & Maytham, A. 2008. Dividend policy in South Africa. *Investment Analysts Journal*, 37(68):5-20.

Fisher, G.R. 1961. Some Factors Influencing Share Prices. *The Economic Journal*, 71(281):121-141

Floyd, E., Li, N. & Skinner, D.J. 2011. Payout policy through the financial crisis: The growth of repurchases and the resilience of dividends. *Chicago Booth Research Paper*, 12(1):1-39.

Friend, I., & Puckett, P. 1964. Dividends and stock prices. *The American Economic Review*, 54(5):656-682.

Gill, A., Biger, N. & Tibrewala, R. 2010. Determinants of Dividend Payout Ratios: Evidence from United States. *The Open Business Journal*, 3(1):8-14.

Gordon, M.J. & Shapiro, E. 1956. Capital equipment analysis: the required rate of profit. *Management Science*, 3(1):102-110.

Gordon, M.J. 1959. Dividends, Earnings, and Stock Prices. *The Review of Economics and*

Statistics, 41(2):99-105.

Guo, H. 2002. Stock market returns, volatility and future output. 1:75-86. Available Online www.research.stlouisfed.org/publications/review/02/09/75-86Guo.pdf. [Date accessed: 24/08/2015].

Gugler, K., & Yurtoglu, B.B. 2003. Corporate governance and dividend pay-out policy in Germany. *European Economic Review* 47(4): 731-758.

Gustafsson, G. 2016. The Dividend Policy Issue and its Impact on the Risk in a Stock: A study of the relationship between the dividend policy and the volatility of the stock price on the Swedish market. Unpublished Master's Thesis. Jönköping International Business School, Sweden.

Green, C.J., Maggioni, P., & Murinde, V. 2000. Regulatory lessons for emerging stock markets from a century of evidence on transactions costs and share price volatility in the London Stock Exchange. *Journal of Banking & Finance,* 24(1): 577-601.

Grullon, G., & Michaely, R. 2002. Dividends, Share Repurchases and the Substitution Hypothesis. *The Journal of Finance,* 57(4):1649-1684.

Grullon, G, Michaely, R & Swaminathan, B. 2002. Are Dividend Changes a Sign of Firm Maturity? *The Journal of Business*, 75(3):387-424.

Habib, Y., Kiani, Z.I. & Khan, M.A. 2012. Dividend Policy and Share Price Volatility: Evidence from Pakistan. *Global Journal of Management and Business Research,* 12(5):78-84.

Hauser, R. 2013. Did dividend policy change during the financial crisis? *Managerial Finance,* 39(6):584-606.

Higgins, R.C. 1972. The Corporate dividend-saving decision. *Journal of financial and quantitative analysis*, 7(2): 1527-1541.

Hoberg, G., & Prabhala, N.R. 2009. Disappearing Dividend, Catering, and Risk. *The Review of Financial Studies,* 22(1):79-116.

Hooi, S.E., Albaity, M. & Ibrahimy, A.I. 2015. Dividend Policy and Share Price Policy. *Investment Management and Financial Innovations*, 12(1):226-234.

Hull, J. & White, A. 1987. The Pricing of Options on Assets with Stochastic Volatilities. *The Journal of Finance*, XLII(2):281-300.

Hung, C.Y., Albert, C.P.C., & Eddie, H.C.M. 2002. Capital structure and profitability of the property and construction sectors in Hong Kong. *Journal of Property Investment & Finance,* 20(6):434-453.

Hurdle, G.J. 1974. Leverage, Risk, Market Structure and Profitability. *The Review of Economics and Statistics*, 56(4):478-485.

Hussainey, K., Mgbame, C.O. & Chijoke-Mgbame, A.M. 2011. Dividend Policy and share price volatility: UK evidence. *Journal of Risk Finance,* 12(1):57-98.

Ilaboya, O.J. & Aggreh, M. 2013. Dividend Policy and Share Price Volatility. Journal of Asian Development Studies, 2(2):109-122.

Jambawo, T. 2014. Leverage and Corporate Market Value: Empirical Evidence from Zimbabwe Stock Exchange. *International Journal of Economics and Finance*, 6(4):185-195.

Jensen, M.C. 1986. Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review*, 76(2):323-329.

Jensen, M.C. 2002. Value Maximization, Stakeholder Theory, and the Corporate Objective Function. *Business Ethics Quarterly*, 12(2):235-256.

John, K. & Williams, J. 1985. Dividends, Dilution, and Taxes: A Signalling Equilibrium. *The Journal of Finance*, 40(4):1053-1070.

Kalay, A. 1982. The Ex-Dividend Day Behaviour of Stock Prices: A Re-Examination of the Clientele Effect. *Journal of Finance* 37(4):1059-1070.

Kenyoru, N.D., Kundu, S.A., & Kibiwott, L.P. 2013. Dividend Policy and Share Price Volatility in Kenya. *Research Journal of Finance and Accounting,* 4(6):115-120.

Khan, K.I. 2012. Effect of Dividends on Stock Prices–A Case of Chemical and Pharmaceutical Industry of Pakistan. *Management*, 2(5):141-148.

Kim, JB., Luo, L., & Xie, H. 2016. Dividend payments and Stock Price Crash Risk. American *Accounting Association Annual Meeting*. Atlanta , United States.

Koch, P.D., & Shenoy, C. 1999. The Information Content of Dividend and Capital Structure Policies. *Financial Management,* 28(4):16-35.

Kyereboah-Coleman, A. 2007. The impact of capital structure on the performance of microfinance institutions. *The Journal of Risk Finance*, 8(1): 56-71.

Lang, L.H.P., & Litzenberger, R.H. 1989. Dividend Announcements; Cash Flow Signalling vs. Free Cash Flow Hypothesis? *Journal of Financial Economics,* 24(1):181-191.

Lambert, R.A., Lanen, W.N., & Larcker, D.F. 1989. Executive Stock Option Plans and Corporate Dividend Policy. *Journal of Financial and Quantitative Analysis*, 24(4):409-425.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R.W. 2000. Agency Problems and Dividend Policies around the World. *The Journal of Finance*, 55(1):1-33.

Levina, A., Chien-Fu, L., & Chia-Shang, J.C. 2002. Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of Econometrics,* 108(1):1-24.

Li, H., & Rosser, J.B.R. 2004. Market dynamics and stock price volatility. *The European Physical Journal*, 39(1):409–413.

Liljeblom, E., Mollah, S., & Rotter, P. 2015. Do dividends signal future earnings in the Nordic stock markets? *Review of Quantitative Finance and Accounting*, 44(3):493–511.

Lintner, J. 1956. The distribution of incomes of corporations among dividends, retained earnings and taxes. *American Economic Review*, 46(2):97-113.

Litzenberger, R. H., Ramaswamy, K.1979. The Effect of Personal Taxes and Dividends on Capital Asset Prices. *Journal of Financial Economics* 7(2):163-195.

Ma, Y., & Liu, D. 2017. Introduction to the special issue on Crowdfunding and FinTech. *Financial Innovation* 3:8.

Michaelas, N., Chittenden, F., & Poutziouris, P. 1998. A model of capital structure decision making in small firms. *Journal of Small Business and Enterprise Development*. 5(3): 246-260.

Michaelas, N., Chittenden, F., & Poutziouris, P.1999. Financial Policy and Capital Structure Choice in U.K. SMEs: Empirical Evidence from Company Panel Data. *Small Business Economics*, 12(2): 113-130.

Miller, M.H. & Modigliani, F. 1961. Dividend policy, growth and the valuation of shares. *The Journal of Business,* 34(4): 411-433.

Miller, M.H. & Rock, K. 1985. Dividend Policy under Asymmetric Information. *The Journal of Finance*, XL(4):1031-1051.

Miller, M.H., & Scholes, M.S. 1978. Dividends and Taxes. *Journal of Financial Economics*, 6(4):264-333.

Modigliani, F.1982. Debt, Dividend Policy, Taxes, Inflation and Market Valuation. *The Journal of Finance* 37(2):255-273.

Modigliani, F. & Miller, M.H. 1958. The Cost of Capital, Corporation Finance, and the Theory of Investment. *American Economic Review*, pp.261-297

Mohammadzadeh, M, Rahimi, F, Rahimi F, Aarabi, S.M, & Salamzadeh, J. 2013. The Effect of Capital Structure on the Profitability of Pharmaceutical Companies The Case of Iran.

Iranian Journal of Pharmaceutical Research, 12(3): 573-577.

Montgomery, R. 2002. Volatile Behaviour. *Wealth* July 2002.

Morgan, G., & Thomas, S. 1998. Taxes, Dividend Yields and Returns in the UK Equity Market. *Journal of Banking and Finance* 22(4):405-423.

Moyo, V., Wolmarans, H., & Brummer, L. 2013. Dynamic capital structure determinants: Some evidence from South African firms. *Journal of Economic and Financial Sciences*, 6(3):661-682.

Moyo, V., Wolmarans, H., & Brummer, L. 2014.The discounted value premium: A new way of looking at the capital structure puzzle. *Management Dynamics,* 23(1):2-25.

Myers, S.C. 1984. The Capital Structure Puzzle. The Journal of Finance, XXXIX(3) 575-592.

Nazir, M.S., Nawaz, M.M., Anwar, W., & Ahmed, F. 2010. Determinants of Stock Price Volatility in Karachi Stock Exchange: The Mediating Role of Corporate Dividend Policy. *International Research Journal of Finance and Economics,* 55(1):100-107.

Nel, I. & De Kruger, W. 2001. Equity index futures contracts and share price volatility: A South African perspective. *Meditari Accountancy Research*, 9(1):217-229.

Noulas, A.G., Genimakis, G. 2014. How do CFOs make capital structure decisions? A survey of Greek listed companies. *Studies in Economics and Finance,* 31(1):72-87.

Nuhu, E., Musah, A., & Senyo, D.B. 2014. Determinants of Dividend Payout of Financial Firms and Non-Financial Firms in Ghana. *International Journal of Academic Research in Accounting, Finance and Management Sciences,* 4(3):109-118.

Ojeme, S., Mamidu, A.I., & Ojo, J.A. 2015. Dividend Policy and Shareholders Wealth in Nigerian Quoted Banks. *Canadian Social Science***,** 11(1):24-29.

Ohlson, J.A. 1995. Earnings, Book Values, and Dividends in Equity Valuation. *Contemporary Accounting Research*,11(2):661-687.

Page, M.J. & Reyneke, I. 1997. The timing and subsequent performance of initial public offerings (IPOs) on the Johannesburg Stock Exchange. *Journal of Business Finance & Accounting*, 24(9) & (10):1401-1420

Pallant, J. 2011. SPSS Survival Manual. Australia: Allen and Dunwin, p148-167.

Parkinson, M. 1980. The Extreme Value Method for Estimating the Variance of the Rate of Return. *The Journal of Business*, 53(1):61-65

Pettit, R.R. 1972, Dividend Announcements, Security Performance, and Capital Market

Efficiency. *Journal of Finance* 27(5):993-1007.

Pettit, R.R. 1977, Taxes, Transactions costs and the Clientele Effect of Dividends. *Journal of Financial Economics* 5(3):419-436.

Profilet, K.A., & Bacon, F.W. 2013. Dividend policy and stock price volatility in the US equity capital market. *Proceedings of ASBB 20(1) ASBBS Annual Conference: Las Vegas 19 February 2013*

Ravi, B., & Yaron, A. 2004, Risks for the long run: A potential resolution of asset pricing puzzles. *Journal of Finance* 59(4):1481-1509.

Ramadan, I.Z. 2013. Dividend Policy and Price Volatility. Empirical Evidence from Jordan. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 3(2):15–22.

Rashid, A. & Rahman, A. 2008. Dividend Policy and Stock Price Volatility: Evidence from Bangladesh. *Journal of Applied Business and Economics*, 8(4):71-80.

Richardson, G., Sefcik, S.E., & Thompson, R. 1986. A Test of Dividend Irrelevance Using Volume Reactions To A Change In Dividend Policy. *Journal of Financial Economics,* 17(2):313-333.

Rothonis, S., Tran, D., & Wu, E. 2016. Does national culture affect the intensity of volatility linkages international equity markets? *Research in International Business and Finance*, 36(c):85–95.

Sadiq, M. Ahmad, S.,Anjun, M.J., Suliman, M., Ul-Abrar, S. & Khan, S. 2013. Stock Price Volatility in Relation to Dividend Policy; A Case of Karachi Stock Market. *Middle East Journal of Scientific Research,* 13(3):426-431.

Salkind, N.J. 2012. *Exploring Research*. (8th ed.) Boston: Pearson

Saunders, M., Lewis, P., & Thornhill, A. *et al* . 2011. *Research Methods for Business Students*. 7th edition. Boston: Pearson Education.

Scholz, J.K. 1992. A Direct Examination of the Dividend Clientele Hypothesis. *Journal of Public Economics* 49(1):261-285.

Sharif, I., Ali, A., & Jan, F.A. 2015. Effect of Dividend Policy on Stock Prices. *Journal of Management Info*, 6(1):55-85.

Sharma, S. 2011. Determinants of equity share prices in India. *International Refereed Research Journal*, 4(2):51-60.

Shubita, M.F, & Alsawalhah, J.M. 2012. The Relationship between Capital Structure and

Profitability. *International Journal of Business and Social Science*, 3(16):104-112.

Soczo, C. 2003. Estimation of Future Volatility *Periodica polytechnica ser. Soc. Man. SCI.,* 11(2):201–214.

Soter, D., Brigham, E., & Evanson, P. 1996. The Dividend Cut Heard Round The World: The Case of FPL, *Journal of Applied Corporate Finance,* 9(1):4-15.

SOUTH AFRICAN REVENUE SERVICE. 2017. Available from: http://www.sars.gov.za/Tax-Rates/Income-Tax/Pages/Capital-Gains-Tax-(CGT).aspx

Stuart, P., Whittam, G., & Wyper, J. 2007. The pecking order hypothesis: does it apply to start-up firms?. *Journal of Small Business and Enterprise Development,* 14(1):8-21.

Tabachnick, B.G. & Fidell, L.S. 2007. *Using multivariate statistics.* 5th edition. Boston: Pearson Education.

Titman, S, & Wessels R. 1988. The Determines of Capital Structure Choice. *The Journal of Finance*, XLIII (1):1-19.

Travlos, N., Trigeorgis, L., & Vafeas, N. 2001, Shareholder Wealth Effects of Dividend Policy Changes in an Emerging Stock Market: The Case of Cyprus. *Multinational Finance Journal,* 5(2):87-112.

Ukaegbu, B. 2014. The significance of working capital management in determining firm profitability: Evidence from developing economies in Africa. *Research in International Business and Finance*, 31(1):1–16.

Venter, J.C. 2009. Business cycles in South Africa during the period 1999 to 2007. *Quarterly Bulletin September 2009*, *SARB, Pretoria*, 1(3):61-69.

Vermeulen, M. & Smit, E.v.d.M. 2011. Dividend payout and future earnings growth: A South African study. *South African Journal of Business Management*, 42(4):33-46.

Von Eije, H., & Megginson, W.L. 2008. Dividends and share repurchases in the European Union. *Journal of Financial Economics,* 89(2):347–374.

Walter, J.E. 1963. Dividend policy; its influence on the value of the enterprise. *Journal of finance*, 18(2):280-291.

Welch, I. 2004. Capital Structure and Stock Returns. *Journal of Political Economy*, 112(1): 106-131.

APPENDICES

APPENDIX A: ETHICAL CLEARANCE CERTIFICATE

UNISA university of south africa

UNISA DEPARTMENT OF FINANCE, RISK MANAGEMENT AND BANKING ETHICS REVIEW COMMITTEE

Date: 27 March 2018

ERC Ref # : 2018/CEMS/FRMB/007
Name : Mr FC Wehncke
Student #: 46108874

Dear Mr Wehncke

Decision: Ethics Approval from 01 April 2018 to 31 March 2023

Researcher(s): Name Mr FC Wehncke

E-mail **address wehncfc@unisa.ac.za**, telephone 012 429 4548

Supervisor (s): Name Mr PN Kotze
E-mail address kotzepn@unisa.ac.za, telephone 012 429 2040

Working title of research:

Dividend policy and share price volatility: Evidence from the JSE

Qualification: MCOM

Thank you for the application for research ethics clearance by the Unisa DFRB Ethics Review Committee for the above mentioned research. Ethics approval is granted for the period **01 April 2018 to 31 March 2023**

*The Negligible **risk application** was **reviewed** by the DFRB Ethics Review Committee on 27 March 2018 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment*

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The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the DFRB Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No field work activities may continue after the expiry date (xxx). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number 2018/CEMS/FRMB/007 *should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Signature

Chair of DFRB ERC : Mr G Grebe

E-mail: grebegpm@unisa.ac.za

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Signature

Executive Dean: Prof T Mogale

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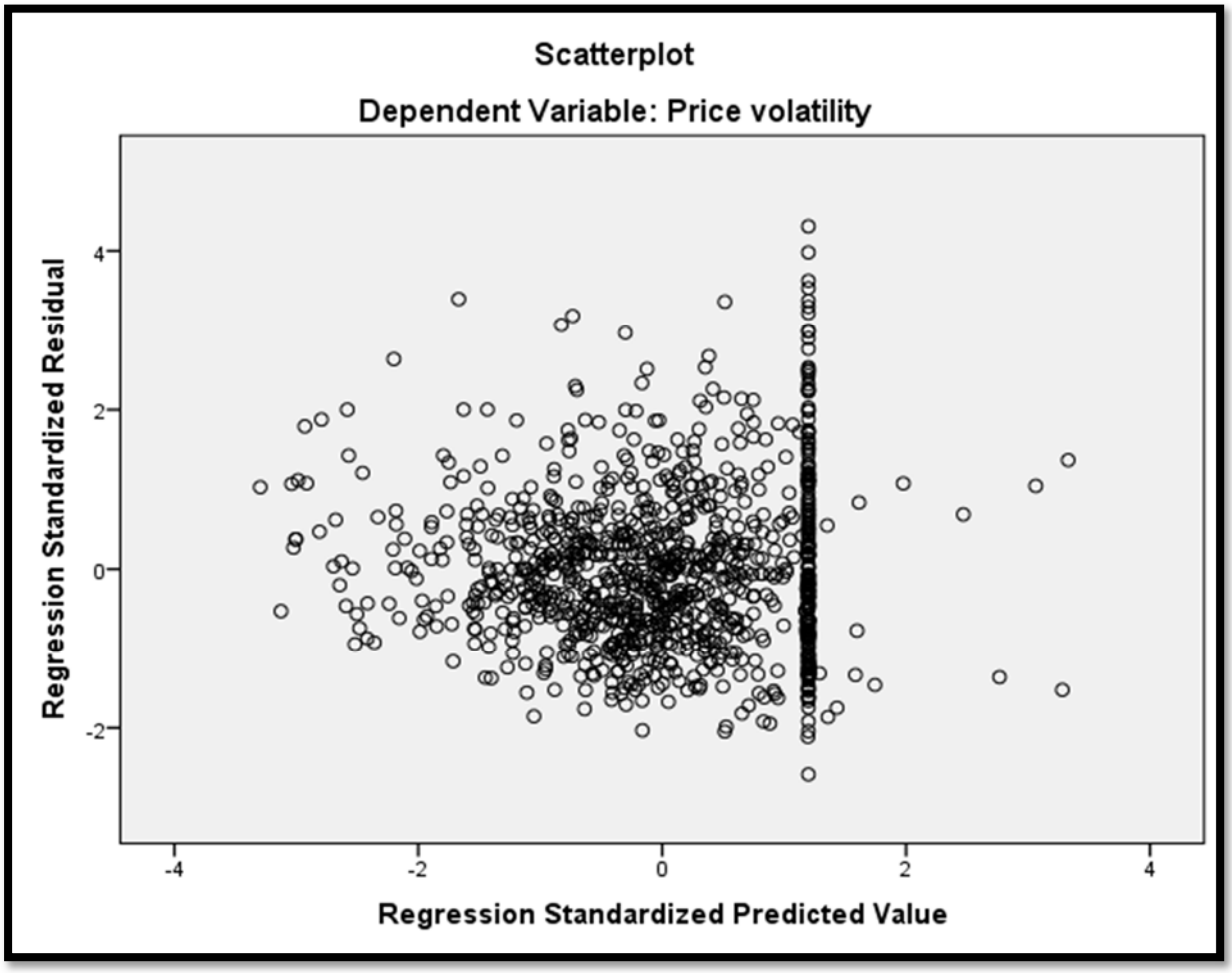
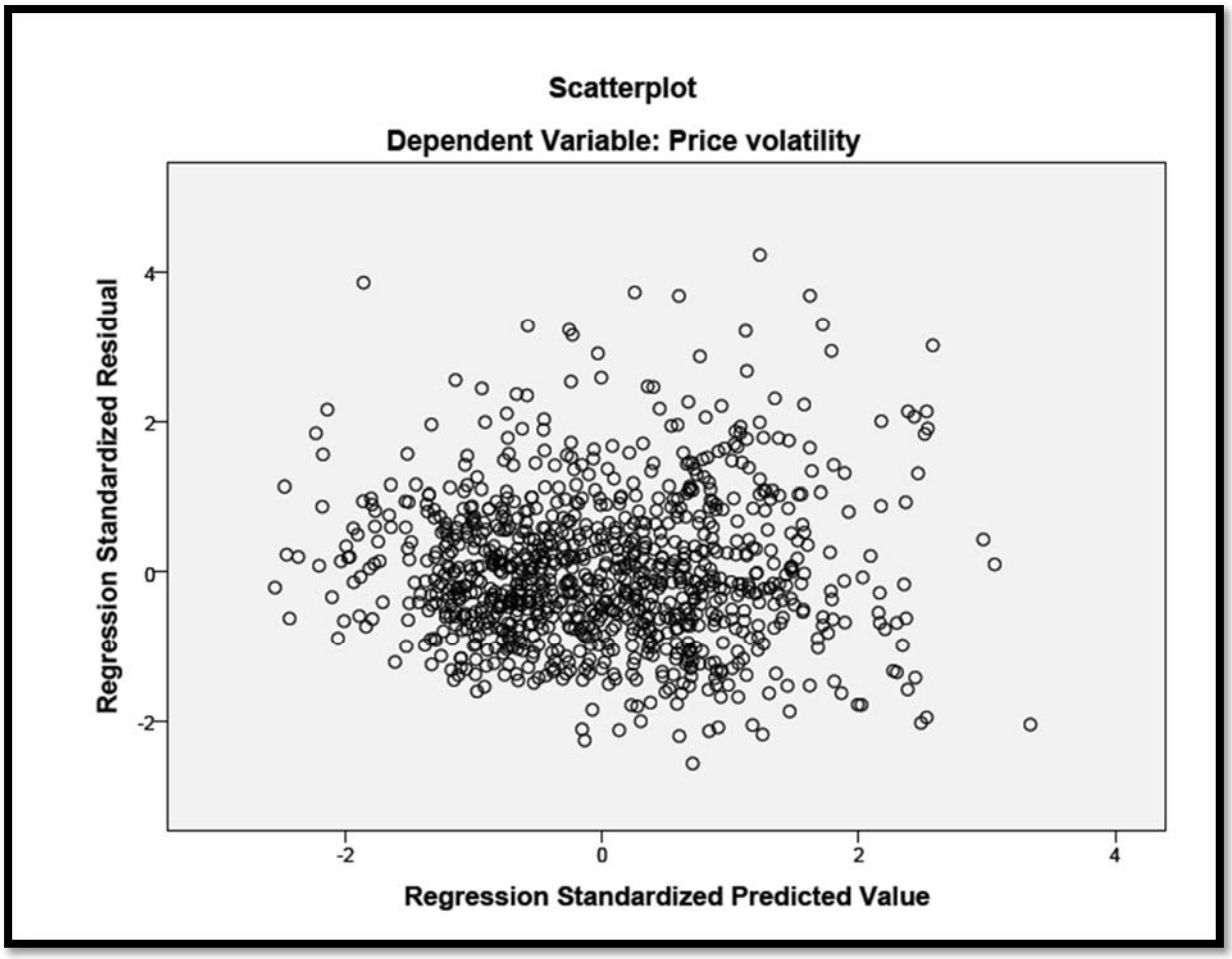
APPENDIX B: SCATTERPLOT OUTPUT RESULTS FOR MULTIPLE REGRESSION MODELS

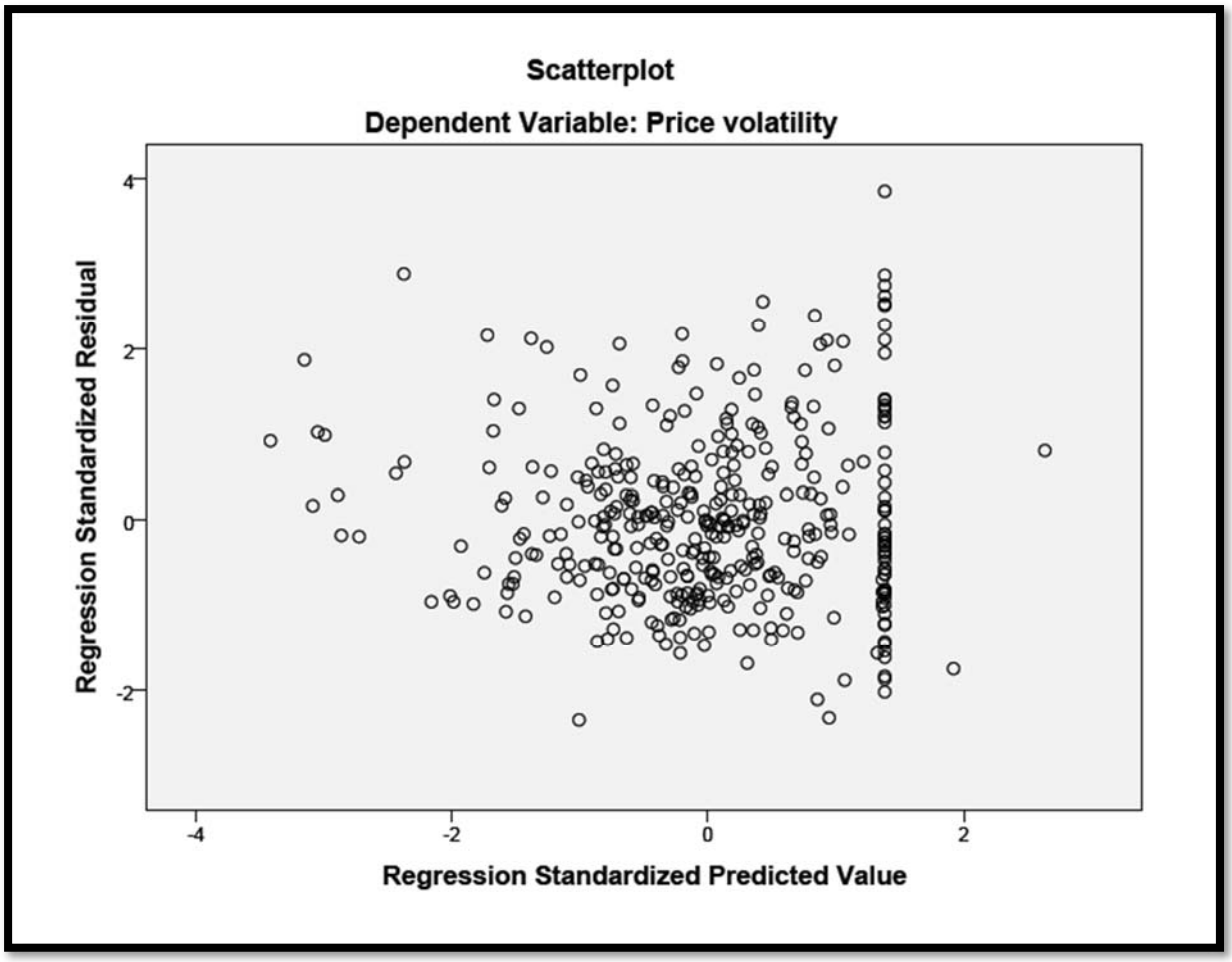
Scatterplot output results for multiple regression model (1) and (2) for the different periods of analysis.



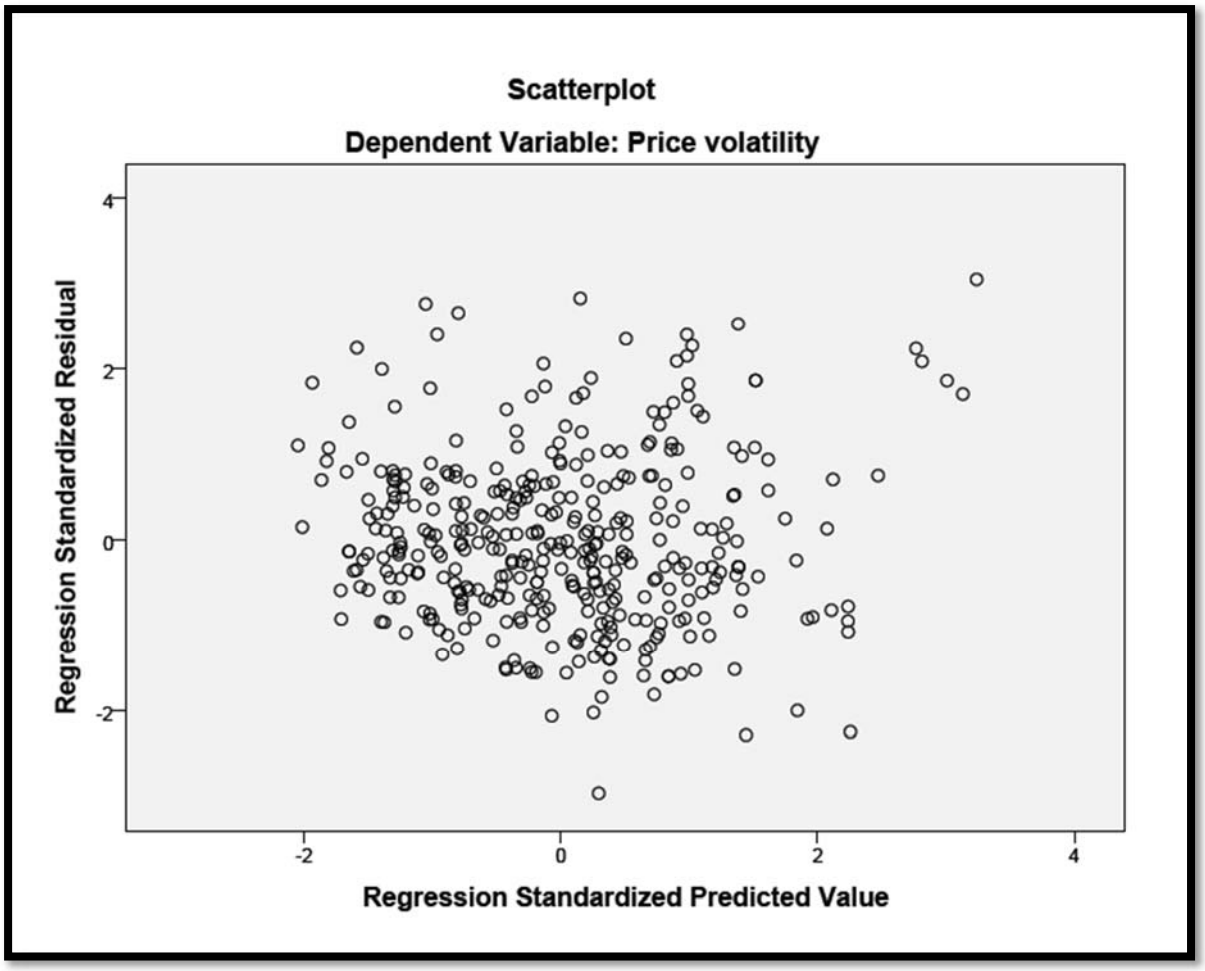
Model 1 scatterplot for period 2003-2014



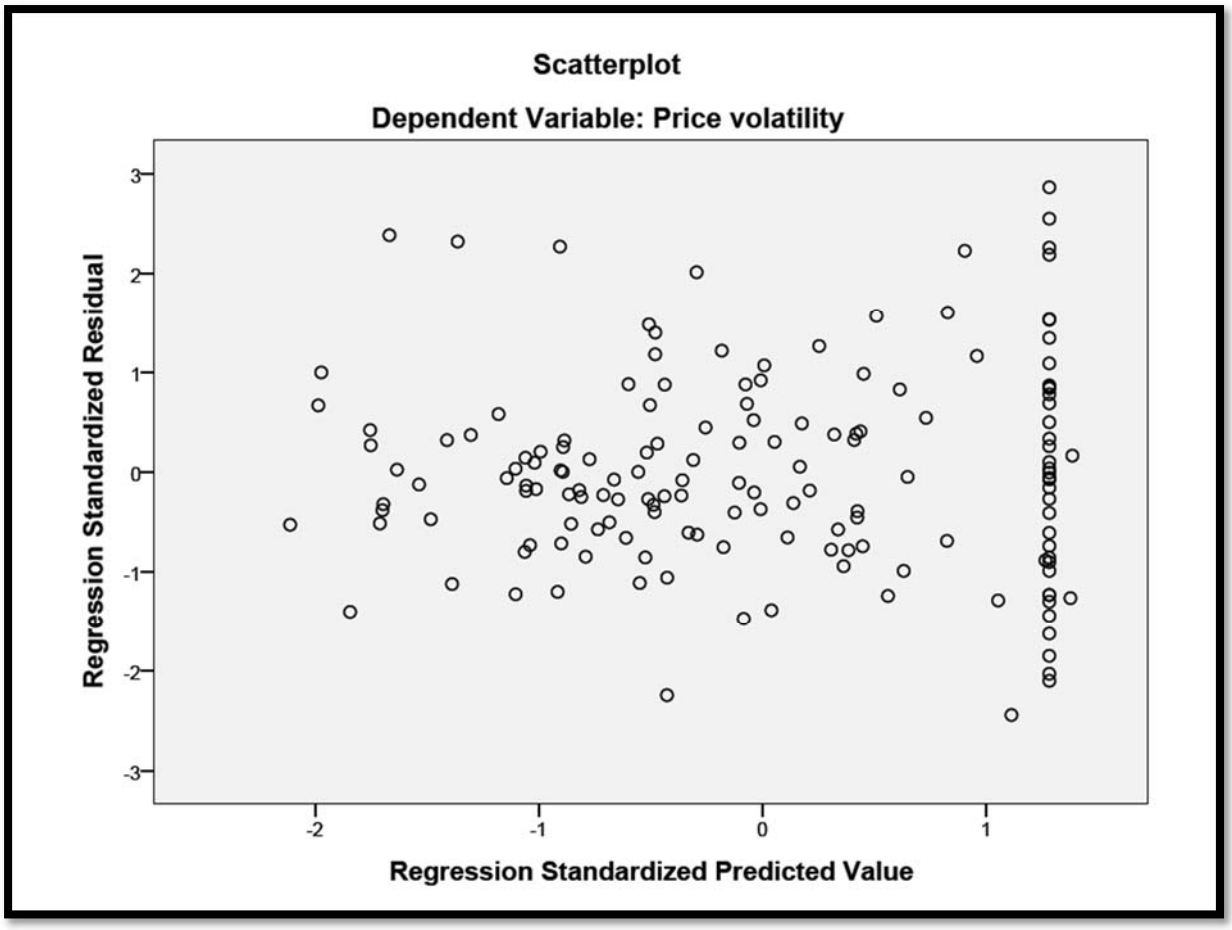
Model 2 scatterplot for period 2003-2014



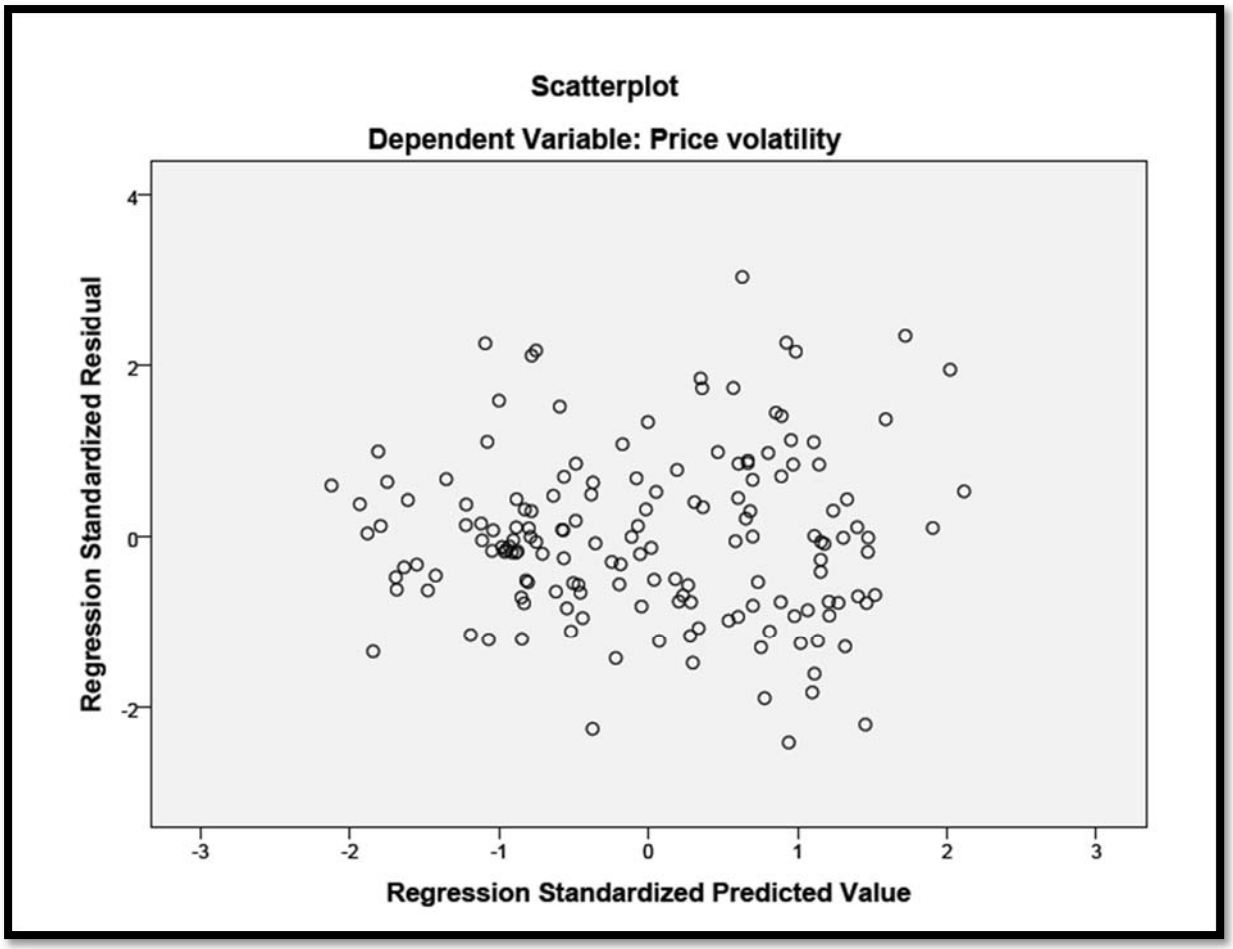
Model 1 scatterplot for period 2003-2007



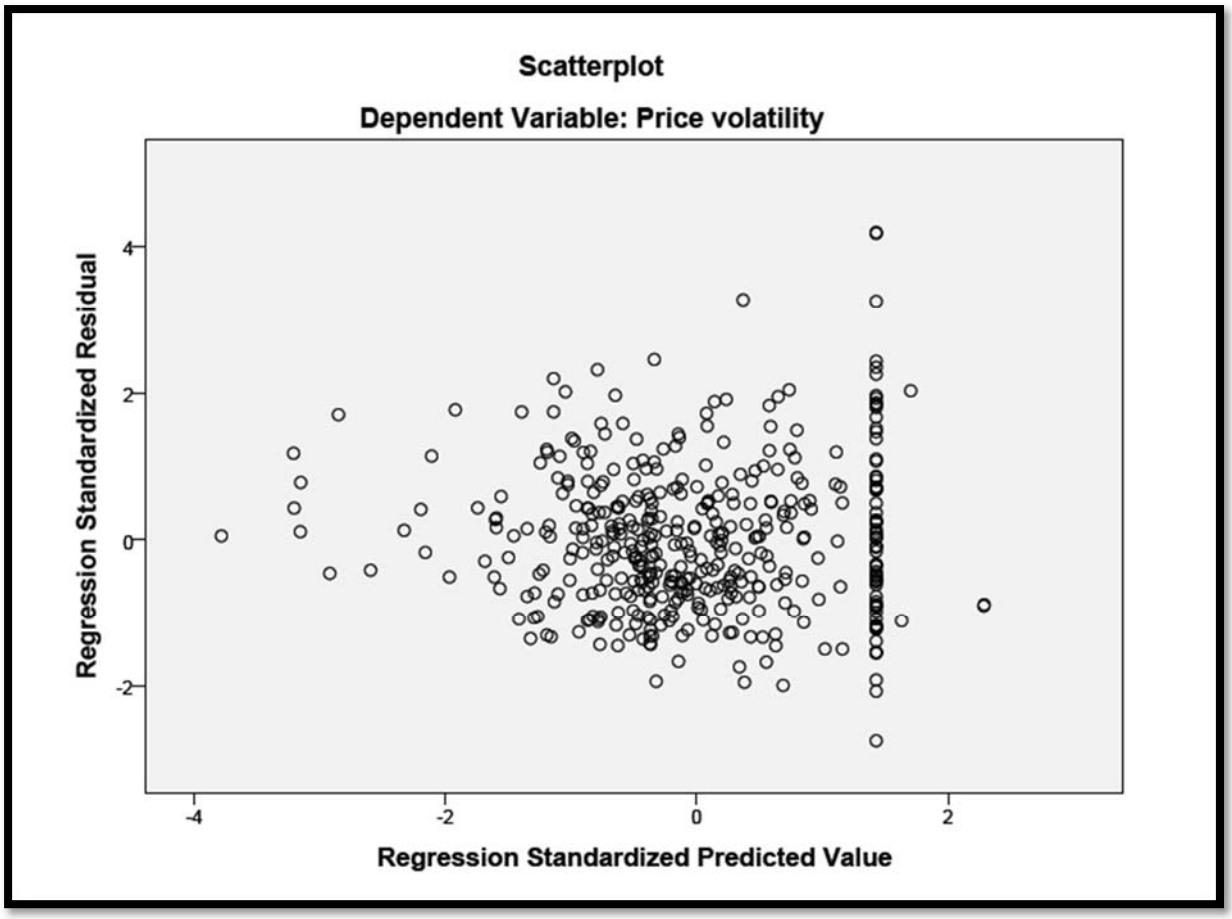
Model 2 scatterplot for period 2003-2007



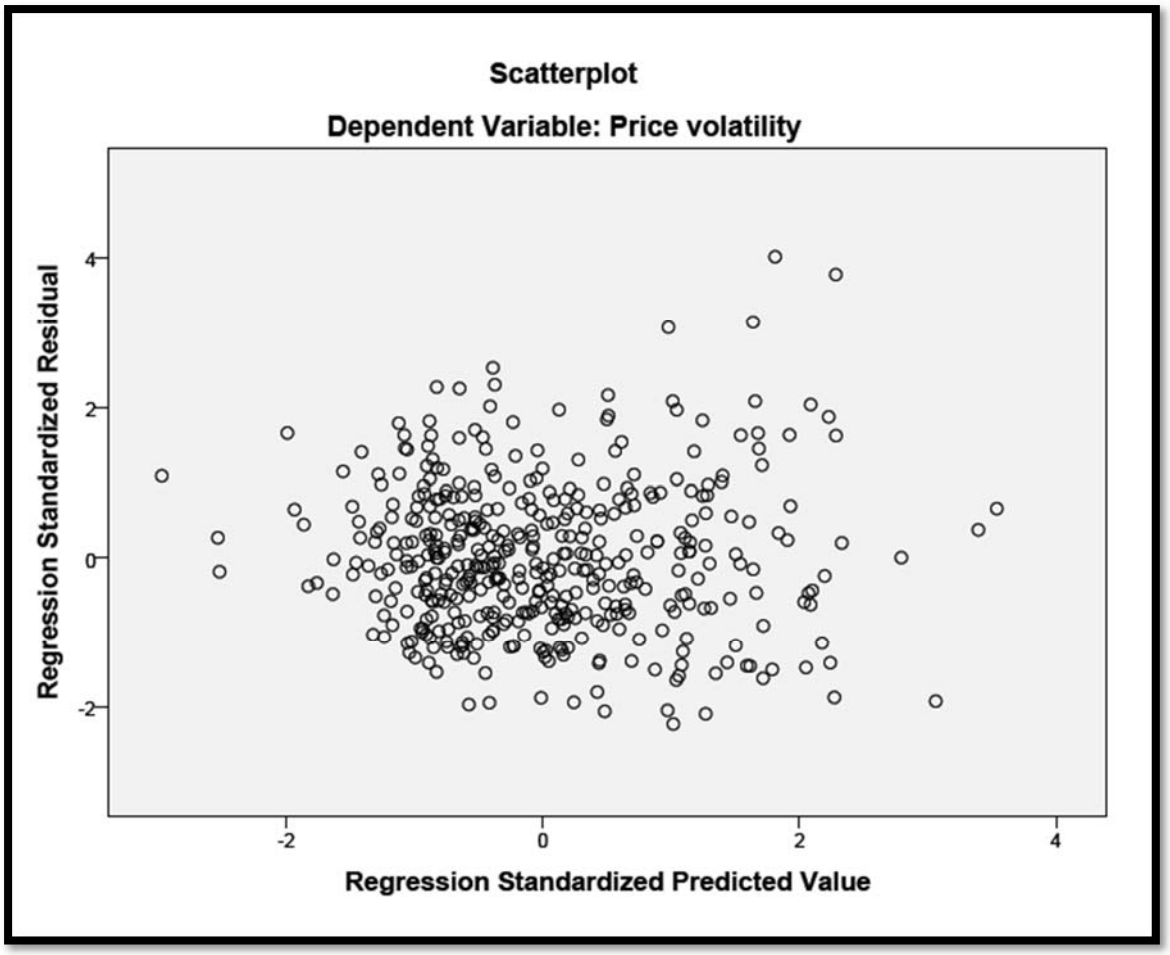
Model 1 scatterplot for period 2008-2009 (during economic crisis)



Model 2 scatterplot for period 2008-2009 (during economic crisis)



Model 1 scatterplot for period 2010-2014



Model 2 scatterplot for period 2010-2014

APPENDIX C: DECLARATION OF PROFESSIONAL EDIT

Retha Burger
SAIHRD)
tel : 012 807 3864
cell : 083 653 5255
fax : 012 807 3864
e-mail : retha@skillnet.co.za
Independent Skills Development Facilitator

Dear Mr Wehncke

This letter is to record that I have completed a language edit of your MCom dissertation entitled "DIVIDEND POLICY AND SHARE PRICE VOLATILITY: EVIDENCE FROM THE JOHANNESBURG STOCK EXCHANGE".

The edit that I carried out included the following:

-Spelling
-Grammar
-Vocabulary
-Punctuation
-Pronoun matches
-Word usage
-Sentence structure
-Correct acronyms (matching your supplied list)
-Formatting
-Captions and labels for figures and tables
-Spot checking of ten in-text references

The edit that I carried out excluded the following:

-Content
-Correctness or truth of information (unless obvious)
-Correctness/spelling of specific technical terms and words (unless obvious)
-Correctness/spelling of unfamiliar names and proper nouns (unless obvious)
-Correctness of specific formulae or symbols, or illustrations.

Yours sincerely

Retha Burger

29 September 2018