

DIVIDEND POLICY AND WEALTH MAXIMISATION: THE EFFECT OF MARKET MOVEMENTS ON DIVIDEND-INVESTING RETURNS

by

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DECLARATION

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ABSTRACT

This study sets out to evaluate the possible influence of increasing and declining markets on the returns of dividend-investing strategies. This study's objective, therefore, was to evaluate the possible influence dividend pay-out policy has on share return. Secondary objectives serve to investigate how the size of cash dividend payments, measured in dividend yield (DY), influence share value, especially during bull and bear markets respectively.

In order to address the stated objectives of this study and prevent possible survivorship bias, the sample included listed and delisted shares for the period 1995 to 2010. Initially, all firms that were listed on the Johannesburg Stock Exchange (JSE) during the period under review were considered, both that were listed at the end as well as firms that delisted. However, due to the nature of the financial structures of firms in the financial and basic industries, the study did not include their data. The final sample consisted of 291 firms, providing 22 927 monthly observations. Dividend-investing strategies were constructed using non-dividend-paying (Portfolio one) and dividend-paying firms (Portfolio two). Portfolio one and two were then further deconstructed into four groups based on monthly DY rankings. Portfolio one was represented by Group 1, whilst Portfolio two was grouped into the lowest, medium, and highest DYs and classified as Group 2 to Group 4 accordingly.

The results obtained from statistical analyses performed in this study indicate that the level of DY appears to influence returns positively. Furthermore, after investigating the results obtained during opposing market scenarios, some important findings resulted. During bear markets no significant difference in abnormal risk-adjusted returns was observed for the portfolios and four groups, however, in bull markets the return for Portfolio two, specifically Group 4, was more than double the result for the non-dividend payers. This study, therefore proposes that firms should have a DY in the range of the highest market DY average for bull markets specifically. From the perspective of the potential investors, the study suggests that dividend-investing could allow for the generation of positive risk-adjusted returns during bull markets.

OPSOMMING

Hierdie studie evalueer die moontlike invloed van stygende en dalende markte aangaande opbrengs op dividend-investerings strategieë. Die studie se primêre doelwit is om die invloed van dividend uitbetalings op aandeel opbrengste te bestudeer. Sekondêre doelwitte ondersoek hoe die grootte van 'n kontant dividend, soos gemeet in dividend opbrengs, die aandeel-waarde beïnvloed, spesifiek tydens bul en beer markte.

Om oorlewingsydigheid te voorkom, sluit die steekproef genoteerde sowel as gedenoteerde firmas in vir 'n tydperk van 1995 tot 2010. Aanvanklik was alle sektore van die Johannesburg Aandele-beurs (JSE) ondersoek, maar weens die komplekse kapitaal struktuur van finansiële en die basiese nywerheid sektore was hul aandeel inligting uitgesluit. Die finale steekproef het 'n totaal van 291 firmas ingesluit en 22 927 maandelike waarnemings verskaf. Dividend-investerings strategieë was saamgestel deur nie-dividend-betalende firmas (Portefeulje een) teenoor dividend-betalende firmas (Portefeulje twee) te vergelyk. Die twee portefeuljes was ook verder onderdeel in vier groepe volgens maandelikse dividend opbrengstes. Portefeulje een was verteenwoordig deur Groep 1, terwyl Portefeulje twee opgedeel was volgens laag, medium, en hoë dividend opbrengstes en geklasifiseer as Groep 2 tot 4 onderskeidelik.

Die resultate van die statistiese ontleding van hierdie studie dui moontlik daarop dat die vlak van dividend opbrengs aandeel waarde positief beïnvloed. Nadat die spesifieke bul en beer markte ontleed is, was belangrike resultate waargeneem. Tydens beer markte was daar geen beduidende verskil tussen die risiko-aangepaste opbrengstes van die twee portefeuljes en vier groepe nie, maar tydens bul markte het die opbrengstes van Portefeulje twee, spesifiek Groep 4, meer as dubbel dié van die nie-dividend betalers getoon. Die studie stel dus voor dat 'n firma tydens bul markte moet poog om 'n dividend opbrengs te handhaaf wat die hoogste gemiddeld van die mark verteenwoordig. Vanuit die belegger se oogpunt, stel die studie voor dat dividend investering strategieë moontlik gebruik kan word om positiewe risiko-aangepaste opbrengstes te genereer, veral tydens bul markte.

TABLE OF CONTENTS

DECLARATION	ii
ABSTRACT	iii
OPSOMMING	iv
TABLE OF CONTENTS.....	v
LIST OF FIGURES	viii
LIST OF TABLES	ix
Chapter 1 : INTRODUCTION TO THE STUDY	1
1.1 INTRODUCTION	1
1.2 BACKGROUND OF THE STUDY.....	2
1.3 THE RESEARCH PROCESS	5
1.3.1 IDENTIFYING THE RESEARCH PROBLEM.....	6
1.3.1.1 Primary research objective	7
1.3.1.2 Secondary objectives	8
1.3.2 DATA COLLECTION AND RELEVANCE OF DATA.....	8
1.4 IMPORTANCE OF THE STUDY.....	11
1.5 ORIENTATION OF THE STUDY	12
Chapter 2 : CAPITAL BUDGETING	16
2.1 INTRODUCTION	16
2.2 FIRM VALUE AND THE FINANCIAL FUNCTION.....	17
2.2.1 THE CAPITAL BUDGETING PROCESS	18
2.2.2 CAPITAL BUDGETING PRINCIPLES	20
2.3 THE INVESTMENT DECISION	23
2.3.1 THE HURDLE RATE	23
2.3.2 INVESTMENT ANALYSIS TECHNIQUES.....	28
2.4 CONCLUSION	33
Chapter 3 : CAPITAL STRUCTURE.....	34
3.1 INTRODUCTION	34

3.2	CAPITAL STRUCTURE AND THE DIVIDEND DECISION.....	35
3.3	TRADITIONAL CAPITAL STRUCTURE THEORIES.....	36
3.4	MARKET IMPERFECTIONS AND CAPITAL STRUCTURE THEORY .	41
3.4.1	AGENCY COST AND PREVENTATIVE MEASURES.....	41
3.4.2	FINANCIAL DISTRESS AND TRADE-OFF THEORY	44
3.4.3	ASYMMETRIC INFORMATION AND PECKING-ORDER THEORY ...	46
3.5	CONCLUDING REMARKS ON THE FINANCIAL STRUCTURE.....	49

Chapter 4 : THE DIVIDEND DECISION.....51

4.1	INTRODUCTION	51
4.2	BACKGROUND TO THE DIVIDEND DECISION AND POLICY.....	52
4.2.1	TYPES OF DIVIDEND PAYMENTS	53
4.2.2	THE CASH DIVIDEND PAYMENT CHRONOLOGY.....	55
4.2.3	MEASURES OF DIVIDEND POLICY AND VALUATION.....	56
4.3	THE DIVIDEND POLICY DECISION	60
4.3.1	DIVIDEND IRRELEVANCE VERSUS RELEVANCE	60
4.3.2	MODERN THEORIES ON DIVIDEND PAYMENTS.....	65
4.4	DIVIDEND POLICY OBSERVATIONS	69
4.4.1	DIVIDEND PAYMENTS ARE MAINTAINED.....	69
4.4.2	DIVIDENDS ARE LESS VOLATILE THAN EARNINGS	70
4.5	DIVIDEND-INVESTING AND MARKET MOVEMENTS.....	71
4.5.1	DIVIDEND-INVESTING PORTFOLIOS	72
4.6	CONCLUSION	73

Chapter 5 : RESEARCH METHODOLOGY.....75

5.1	INTRODUCTION	75
5.2	RESEARCH DATA	75
5.2.2	TIME PERIOD OF THE STUDY	80
5.3	RESEARCH OBJECTIVES AND HYPOTHESIS	83
5.4	STATISTICAL ANALYSIS TECHNIQUES	84
5.4.1	DESCRIPTIVE STATISTICS	84
5.4.2	INFERENCEAL STATISTICS.....	88
5.5	VALIDITY AND RELIABILITY	91
5.6	CONCLUSION	93

Chapter 6 : EMPIRICAL RESULTS	94
6.1 INTRODUCTION	94
6.2 DESCRIPTIVE STATISTICS	95
6.2.1 CENTRAL TENDENCY	97
6.2.2 DEGREE OF DISPERSION.....	99
6.2.3 SHAPE OF THE DATA SET	101
6.2.4 MARKET MOVEMENTS ANALYSIS	102
6.3 INFERENCE STATISTICS.....	106
6.3.1 COMPARATIVE ANALYSIS OF INFERENCE RESULTS.....	106
6.3.2 COMPARATIVE ANALYSIS FOR MARKET MOVEMENTS.....	109
6.4 CONCLUSION	111
Chapter 7 : CONCLUSION AND RECOMMENDATIONS	112
7.1 INTRODUCTION	112
7.2 SUMMARY.....	113
7.3 CONCLUSIONS AND DIVIDEND POLICY IMPLICATIONS.....	117
7.4 LIMITATIONS AND FUTURE RESEARCH POSSIBILITIES	121
REFERENCES	123

LIST OF FIGURES

Figure 1.1: Interactions of the financial functions.....	3
Figure 1.2: The research process.....	6
Figure 1.3: The literature review framework	13
Figure 2.1: The capital budgeting process.....	18
Figure 2.2: Capital budgeting principles	20
Figure 2.3: Optimal investment decision.....	24
Figure 3.1: Cost of capital with zero taxes	38
Figure 3.2: Cost of capital if there are taxes	40
Figure 3.3: Cost of capital considering financial distress	44
Figure 4.1: The dividend payment timeline.....	55
Figure 4.2: Life cycle analysis of earnings and revenue	59
Figure 4.3: DY of major S&P's industry groups September 2004	66
Figure 5.1: Relevance of dividend payments investigated.....	77
Figure 5.2: Comparative analysis of various DY groups.....	78
Figure 5.3: Volume traded on the JSE in Million 1990-2005.....	81
Figure 5.4: Earnings and DY growth 1990-2005.....	82
Figure 5.5: Closing values for the JSE ALSi 1990-2005.....	82
Figure 5.6: Shape of the data	85
Figure 5.7: Kurtosis in a data set.....	87
Figure 6.1: Relative annual TSR for the two portfolios	98
Figure 6.2: Relative TSR for dividend-investing groups.....	99

LIST OF TABLES

Table 2.1: Factors that affect the MCC	26
Table 4.1: STC rates on dividends declared	63
Table 4.2: STC versus a classical taxation system.....	63
Table 4.3: Comparison of STC and the withholding tax.....	64
Table 6.1: Descriptive statistics for Portfolio one and Portfolio two	96
Table 6.2: Descriptive statistics for DY groups	96
Table 6.3: Comparative market analysis for the two portfolios	103
Table 6.4: Comparative market analysis for the dividend-investing groups.....	104
Table 6.5: Regression results for the two portfolios.....	107
Table 6.6: Regression results for dividend-investing groups	108
Table 6.7: Regression results for the four groups during bear markets	109
Table 6.8: Regression results for groups during bull markets.....	110

Chapter 1 : INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

The relevance (or irrelevance) of dividend payments has been the topic of much discussion for the past eight decades, ever since Graham and Dodd (1934) established that the payment of a liberal portion of earnings as dividends adds to the attractiveness of a share. Statements such as this caused academics to investigate a new field of finance, focusing on dividend policy, as more and more researchers started to question the role of dividends and its supposed effect on share values (Henne, Ostrowski, and Reichling, 2008). This study specifically aims to analyse the relevance of dividend information during bull and bear markets and the potential influence it has on share returns. Focus is placed on the perspective of an investor seeking to utilise a dividend-investing strategy to enhance return on investment. From a firm's perspective, the study can potentially assist its management in their formulation of dividend policy during market movements.

It can be argued that through the greater integration of capital markets, the effects of economic changes and the way it influences dividend policies have managed to influence a far greater audience than it ever did before. This is particularly the case in the South African capital markets with the Johannesburg Stock Exchange (JSE) and the enhanced liquidity in the market (Gidlow, 2009). Considering the interwoven network of investors and corporate entities present on the JSE, this study will investigate how two portfolios and four representative groups, based on pre-determined dividend-investing strategies using dividend yield (DY) information, performed over the 192 month period of 1995 to 2010. Dividend-investing strategies, a.k.a. "dividend-investing" (Knowles and Petty, 1992:29), are accordingly evaluated during market increases and declines to determine if dividend policy has an effect on share returns.

Before investigating the performance of the DY portfolios and groups, it is important that the variables that could influence a firm's dividend policy are considered. These include the influence of the capital budgeting and capital structure decisions, taxation, traditional and modern theories pertaining to dividend policy formulation and the effect of market sentiment.

To set the scope for the rest of the study, the remainder of this chapter consists of four sections. The first provides for the background of the study and introduces the foundation of the dividend decision when the role of the financial function is provided. The next section then provides the research design, which specifies the type of research performed and the research objectives of the study. These objectives provide the foundation for the penultimate section, which serves to formally identify the importance and need for the study. The chapter is concluded with an overview of important topics discussed, and provides guidelines for the following chapters of this study.

1.2 BACKGROUND OF THE STUDY

“A firm seeking to maximise wealth has to invest wisely, find the right kind and mix of financing to fund these investments and return cash to the owners if there are not enough good investments in order to increase shareholders' wealth” (Damodaran, 2011:1).

Considering the value of analysing the dividend decision of firms in line with capital markets conditions, the role of the optimal financial structure needs to be introduced. By providing an overview of the various functions performed and how they can interact, the opportunity to utilise dividend information will be better understood.

An optimal financial structure constitutes three elements, namely the investment, financing and dividend decisions financial managers take in order to increase firm and share value (Bierman and Smidt, 2007:5). How these various functions interact, in relation to the quote above, is depicted in figure 1.1.

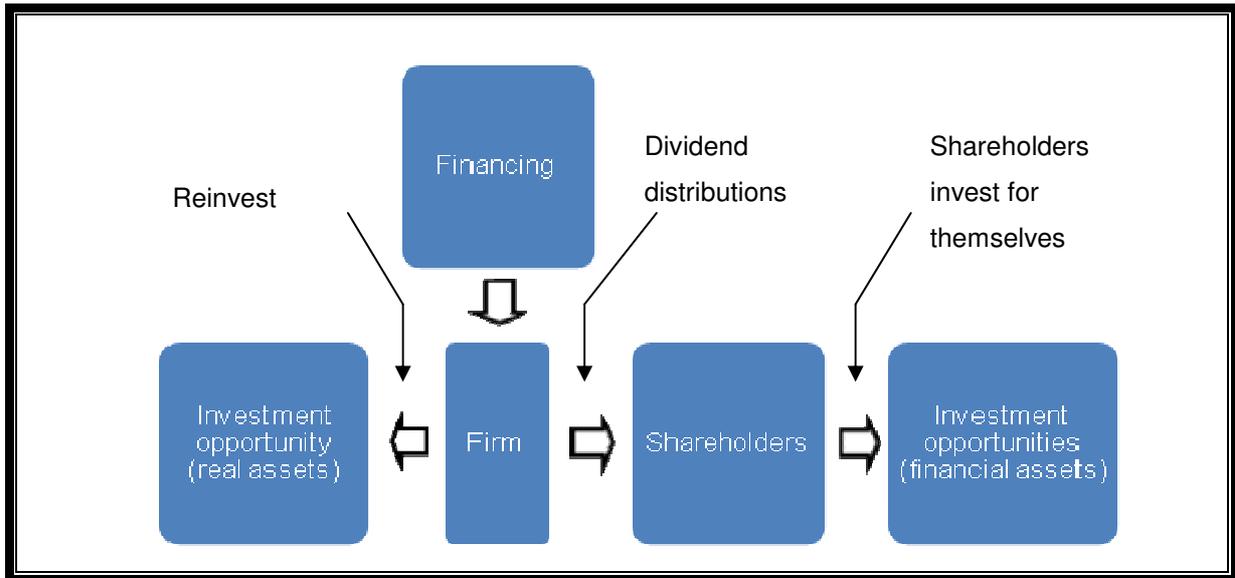


Figure 1.1: Interactions of the financial functions

Source: Brealey, Myers, and Allan (2008:117)

Figure 1.1 indicates how a firm needs to balance future growth requirements against shareholders' demands for returns over the short term. The purpose of the investment or capital budgeting decision is to invest in projects that will generate returns. However, in order to maximise shareholders' wealth the return must be greater than a risk-adjusted, firm-specific hurdle rate after considering all positive and negative side-effects of the investment and timing of incremental cash flows (Damodaran, 2011:2). The investment decision specifically includes the identification and selection of investable opportunities to maximise value to the firm and shareholders. The purpose of the financing decision is then to find the right mix of financing to fund the investments selected in the capital budget, which further contributes to the shareholders' value management.

At the centre of these interactions the hurdle rate serves as an important benchmark when deciding on how beneficial financing from various sources can possibly be, if investments are advisable, or if earnings should be redistributed to shareholders (Brealey *et al.*, 2008:117; Correia, Flynn, Uliana, and Wormald, 2007:1-20). If reinvestment provides a rate of return lower than the hurdle rate, a firm must determine whether to keep the earnings as reserves for future investment funding, or distribute it as dividends to the shareholders.

Many academics have, however, questioned if the dividend policy has any real effect on share prices and as Clayman, Fridson, and Troughton (2008) state “It is one of the longest and most contended debates in finance.” Accordingly, many dividend theories have been conceived, starting with the more traditional, which ultimately provided the foundation of modern beliefs. Clayman *et al.* (2008) posit that three traditional schools of thought can be traced regarding the relevance of dividends and policy formulation. These are briefly identified next, but discussed in greater detail later in the study.

The first school of thought believed that dividends are irrelevant to the value of a share. This school of thought was propositioned in studies performed by Modigliani and Miller (1963; 1961; 1958). They based their arguments on the assumptions of zero taxes, symmetrical markets and no transaction costs (to name but a few). They came to the conclusion that since the cost of equity does not affect a firm’s value, only debt financing should be used. Thus, dividends would not be of any concern.

These assumptions were seen as extreme in any economy and created the basis of arguments for the second school of thought, which state that dividends do matter since higher dividend payments are likely to improve a firm’s market value. Traditionalists in this second school included Gordon (1963; 1959), Lintner (1962; 1956), and Graham and Dodd (1962). Graham and Dodd’s (1962:480) viewpoint was that “the typical dollar of reinvestment has less economic value to the shareholder than a dollar paid in investments.”

Stemming from the above arguments, the third school believed that dividends do matter (Pettit, 1977). However, this school of thought propositioned that high dividend pay-out ratios will lead to a lower share price, because dividend income is usually taxed at a higher rate than capital gains. The modern beliefs regarding dividend policy build from the traditional schools. Mostly, the theories see dividend information to be very valuable in the analysis of shares, as they are able to influence value through signalling, or other channels that affect the share price. As stated previously, all of these are discussed in greater detail throughout the study.

What needs to be understood at this point is that there is a great variety of beliefs and theories regarding the use of dividend information. These stem from a myriad of contrasting studies that indicate different conclusions regarding the relevance of dividends, or even how they influence share value. This study seeks to improve on this current body of knowledge by considering DY levels in times of bull and bear markets and the possible effect thereof on share prices. Accordingly, for the firms analysed in this study, the relevant measure of shareholder wealth centres on the risk-adjusted returns generated from dividend-investing strategies. These returns are measured in relation to respective total share return (TSR) values of a publically traded firm's ordinary shares on the JSE during 1995 to 2010. In this manner, dividend-investing strategies will be investigated to determine whether positive risk-adjusted returns can be generated during both bull and bear markets.

A holistic overview of each of the financial functions, i.e. the investment, financing and dividend decisions, is provided in Chapter two, three and four respectively. However, before the literature review is presented, the next section of this chapter provides the research process followed in this study.

1.3 THE RESEARCH PROCESS

According to Collis and Hussey (2009:3) research can be defined as “a systematic and methodical process of enquiry and investigation with a view to increase knowledge.” The authors state that the objectives of research should be as follows:

- To review and synthesise existing knowledge.
- To investigate, and provide a solution for some existing situation or problem.
- To generate new knowledge.
- A combination of any of the above.

Collis and Hussey (2009:10) further state that in performing research, “several fundamental stages in the research process exist that are common to all scientifically

based investigations.” Figure 1.2 illustrates an adapted version of a traditional research process identified by the authors noted previously and utilised in this study.



Figure 1.2: The research process

Source: Collis and Hussey (2009:10)

The steps involved in designing a study depend to some extent on the nature of the specific research. Stated differently, a study’s research design should always consider the specific needs of the type of research being performed. The stages identified above and how they were tailored for the research performed in this study is discussed in the next two sections. Stages one to three identify the research problem, followed by a section on the relevant data collected for the research to be performed and how it was utilised through stages five and six.

1.3.1 IDENTIFYING THE RESEARCH PROBLEM

Opportunities to enhance shareholder wealth stem from many sources. By identifying the source of such an opportunity and specifying the problem, a researcher is able to gain greater direction and purpose for the study that needs to be performed (De Vries, 2010:87). Cant, Gerber-Nel, Nel, and Kotze (2005:40) indicate the importance of performing an accurate in-depth analysis of possible gaps

in knowledge by stating that “if the diagnosis of the problem or opportunity is weak, the research may also lead to an insufficient solution.”

Previously, it was stated that the purpose of the financial function, performed by a firm’s management, should be to maximise the shareholders’ wealth (Bierman and Smidt, 2007:5). Thus the financial function seeks to not only enhance value, but also correct a manager’s shortcomings when value is not being maximised. It was also stated that the financial function consisted out of the investment, financing and dividend decisions managers make (Brealey *et al.*, 2008:117; Correia *et al.*, 2007:1-20). Moreover, in Chapter two and three it is indicated how the various components interact and provide for the dividend decision discussed in Chapter four.

Chapter four presents some of the past studies performed to investigate the effect of the dividend decision. However, as indicated previously, the impact that bull and bear markets can have on the dividend policies of firms does not seem to have received the same level of attention in South Africa. This study is specifically performed in order to address this apparent gap in knowledge when considering local markets. The next stage in the research process is to formulate the research objectives necessary to address the research problem identified.

Cant *et al.* (2005:42) state that by adequately specifying the primary and secondary objectives, the purpose of the research to be conducted can be crystallised, which guides the research in the right direction. This study’s research objectives are therefore formally specified next.

1.3.1.1 Primary research objective

- To evaluate the possible influence dividend pay-out policy has on share return.

1.3.1.2 Secondary objectives

- To determine whether returns on shares differ between dividend-paying firms and non-dividend-paying firms.
- To determine whether the various dividend pay-out policies regarding the size of dividend payments, as per DY, affect share returns.
- To evaluate the possibility of using dividend-investing strategies during market movements to earn a higher than market return on a risk-adjusted basis.

Considering these specific research objectives, and as depicted in figure 1.2, the methodology of the research is identified in stage three by stating the type of data to be collected, the type of research that will be performed, how the sample is identified and represented, as well as how data is measured (Coldwell and Herbst, 2004:36). The following section explains these topics further.

1.3.2 DATA COLLECTION AND RELEVANCE OF DATA

Research can be classified as being exploratory or descriptive (Collis and Hussey, 2009:5). In this study the research performed is in the form of a descriptive study and, to a degree explanatory. According to Blumberg, Cooper and Schindler (2008:14) “a descriptive study tries to discover answers to questions such as who, what, where, and sometimes how.” Explanatory research, also known as analytical research, is a continuation of descriptive research (Collis and Hussey, 2009:6). According to the authors descriptive research is performed in order to describe a phenomenon as it exists. Explanatory research attempts to understand the phenomenon further by discovering and measuring causal relationships found between variables. Within these relationships dependent and independent variables are identified to test a hypothesis.

A hypothesis describes the relationship or differences among variables (Cooper and Schindler, 1998:448). The authors further state that a good hypothesis is one that can explain what it claims to explain, is testable, and has greater range, probability and simplicity than its rivals. Cooper and Schindler (1998:449) state the null

hypothesis (H_0) is used to test statistical significance and is valid when no difference exists between a population parameter and a sample statistic being compared to it. Alternatively, the alternative hypothesis (H_A) is valid when differences do exist.

O'Leary (2005:236-237) stated that the dependent variable is the variable that the researcher wants to study and possibly measure. The independent variable is then the variable that might be causing an effect on the dependent variable. Accordingly, for this study the independent variables used are dividend distributions during bull and bear markets. The dependent variable is the monthly risk-adjusted returns measured for the two portfolios and four groups. These are represented by using the following financial properties throughout the study: firm-specific dividend distribution measured via DY, market return and movements as changes in the All Share index (ALSi) on the JSE.

Based on the before-mentioned research objectives and these variables the null hypothesis and alternative hypothesis of the study can be stipulated as follows:

H_0 : Dividend distributions have no significant influence on share returns.

H_A : Dividend distributions have significant influence on share returns.

Therefore, statistical analysis performed in this study will review the relationships, or differences, between the dependent and independent variables to determine whether the null hypothesis can be rejected.

Using these hypotheses, the relevant data applicable to the study needs to be collected and processed into a usable format. In this study the sample included listed and delisted shares for the period 1995 to 2010. Therefore, all firms that were listed during the period under review were initially considered, both those that were listed at the end as well as firms that delisted during it, in order to reduce survivorship bias. Eventually the financial and basic material firms were excluded from the sample data due to the nature of the balance sheets of these firms, specifically their capital structures. Financial firms are usually highly regulated in terms of capital requirements, which can influence dividend policy. Basic material firms on the other

hand are also heavily biased due to the amount of assets and nature of operations. The final sample consisted of 291 firms providing 22 927 monthly observations.

In order to ensure consistency in data analysis all financial data was finally sourced from the McGregor BFA (2010) database. Information was collected and imported into Excel (2007), and further analysed and tested with the statistical analysis software, Statistica Version 9 (2009). Through the use of these programs, data analysis could be performed. Expanding on the previous stages depicted in figure 1.2, stage five is central to achieving the objectives of the study as it provides the answers to the research problem. According to Blumberg *et al.* (2008:75) “data analysis involves the reducing of accumulated data into meaningful amounts, developing summaries, looking for patterns and applying statistical techniques.”

The statistical techniques referred to are classified as descriptive and inferential statistics. Collis and Hussey (2009:221) define descriptive statistics as “a group of statistical methods used to summarise, describe or display quantitative data.” Inferential statistics on the other hand, is defined as “a group of statistical methods and models used to draw conclusions about a population from quantitative data relating to a sample” (Collis and Hussey, 2009:222).

If data is carefully collected and methodically structured for optimal data analysis, then descriptive and inferential statistics provide for meaningful information on the research problem identified. However, the statistical analysis performed should also be checked for validity and reliability. These topics are discussed in greater depth in Chapter five before being applied in Chapter six. Finally, building from all the previous stages, the final stage of the research process involves reporting the results found after all the preceding stages have been completed.

The following sections provide an explanation of the importance of the study performed, before the chapter is concluded with an overview of the chapters presented throughout the rest of this study.

1.4 IMPORTANCE OF THE STUDY

As mentioned previously, this study's objective is to evaluate the possible influence dividend pay-out policy has on share return. This is performed by using DY as a measure of cash dividends distributed by a firm to shareholders. Secondary objectives serve to investigate how the size of DY levels influence share value and whether there is a possibility of using dividend-investing, especially in times of market movements, to earn positive risk-adjusted returns. From the perspective of the firm, by analysing the performance of dividend-investing strategies over time, a possibility exists that dividend policy formulation might be used to maximise share value.

According to investors and management who believe dividends to be relevant, the dividend policy serves as the middle ground between the management of a firm and its shareholders. Management should apply sound financial theories in order to maximise shareholders' wealth, and investors evaluate their performance by using valuation models that incorporate dividends. The issue, however, that contributes to the need for the analysis of dividend-investing, is that South African firms has been found to be very conservative and sensitive towards dividend payments (Firer, Gilbert, and Maythan (2008). These authors further found that, at times, many South African managers have paid out a negative dividend simply to maintain their market value of shares at the time. A negative dividend is defined as the situation where a larger amount of dividends is paid out to shareholders than the earnings for the period, by issuing new ordinary shares to fund the dividend payments. Naturally, this action does not make economic sense, yet it is sometimes occurring in the South African economy.

This investigation is also of particular significance in the South African markets, since the most common dividend policy used by firms listed on the JSE remains the constant-paying dividend policy (Van der Merwe, 2010:29). Accordingly, firms appear not only to be conservative regarding dividend payments, but have also built up large reserves of cash for a variety of reasons, spanning from financial crises to the various leverage strategies employed by firms (Bates, Kahle, and Stultz,

2009:1985). These cash reserves have the potential to influence capital budgeting and financing decisions significantly. Therefore, the role of dividend distributions may become increasingly important in time to come. Wolmarans (2003:243) stated that “it is generally accepted that the payments of dividends is the most important and most widely used instrument for the distribution of value to shareholder.” Furthermore, as stated by Firer *et al.* (2008:10):

“An argument can be made that dividends are more important than ever before, since it is the one number that a shareholder can trust. Earnings per share and even cash flow per share can be manipulated by management, but dividend cheques can be cashed.”

Therefore, this study seeks to investigate whether there is a possibility that investors are able to maximise returns from investments after considering the effect of market movements and firm dividends on share value. As a result, market movements in particular, and the way they can be used to manage dividend policy, could possibly be scrutinised in greater detail in future as to ensure value enhancement of investment portfolios.

The two portfolios and four DY groups that are constructed to test the dividend-investing strategies are explained in greater detail later in the study. The next section concludes this chapter by providing an overview of the chapters discussed in this study.

1.5 ORIENTATION OF THE STUDY

The investment decision, financing decision and dividend decisions should be made with great care and consideration. Figure 1.3, which is adapted from Damodaran (2011:9), depicts how each function serves to maximise value and how the following chapters of the study interact.

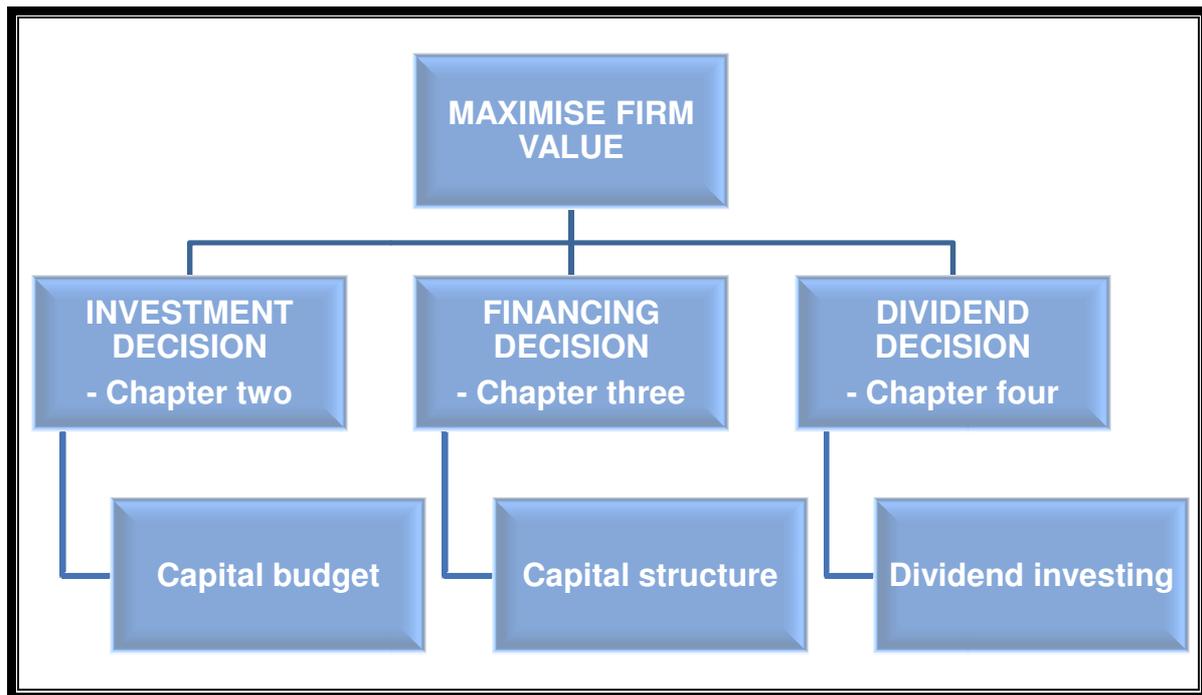


Figure 1.3: The literature review framework

Source: Damodaran (2011:9)

As depicted in figure 1.3, how these functions interact, and how they create the value of managing dividend policy in line with market movements, are discussed in greater detail throughout this study. Next the orientation of the study and its respective chapters are reviewed.

Chapter one's purpose is to introduce the topic of this study. This chapter considered the background for the study, the research design and the importance, and need, for this specific research to be performed. The research process was discussed, which outlined the formal approach followed to conduct structured research in this study. Topics discussed in the research design included the research problem, research objectives and the design of the study. Chapter two to Chapter four serve as the literature review for this study. According to Blumberg *et al.* (2008:106-107) the literature review aims:

"To establish the context of a problem by referencing to previous work done on the topic at hand, to understand the structure of the problem, and to rationalise the significance of the problem and the study presented."

Thus, the literature review of this study establishes the role of the optimal capital structure and how it potentially influence dividend pay-out and share value. As discussed previously, the optimal capital structure consists of two sections that involve the investment and financing decisions. Accordingly, Chapter two will review the capital budget and investment decision and discuss key components of it.

Chapter three then considers the financing decision and the role that leverage can play. How these financial functions influences the dividend decision and share returns will be explained throughout the chapters, in order to establish the required foundation for the role of the dividend decision and dividend-investing discussed in Chapter four.

Chapter four encompasses the dividend decision and the potential role market movements can play in dividend policy formulation. It provides for an accurate definition of dividends and the dividend payment chronology before providing an extended, in-depth background on dividend policy and the dividend decision. Trends in dividend policies and theories are also identified. Understanding these tenets of the dividend decision should provide for a holistic understanding of how DY can affect share value, and more specifically how investors and firm management can use dividend information to potentially enhance value.

Chapter five contains the research methodology of the study, which considers the two DY portfolios and four groups constructed and evaluated. Specifically, how data collection was performed in order to perform statistical analyses is also explained in this chapter. Furthermore, the data analysis methods regarding descriptive and inferential statistics are formally introduced which serve to provide for the data findings portrayed in Chapter six.

All the relevant findings regarding the descriptive statistics and inferential statistical analyses are examined in great depth in Chapter six, through the use of illustrative figures and tables. Both statistically significant and insignificant results are highlighted in order to establish the findings of the study and to provide possible solutions to the research problem identified.

Finally, in Chapter seven several integral topics discussed in the study are summarised and together with the results obtained from previous chapters ensure that the entire study is rounded and concluded. Limitations to the study performed are also specified and future research opportunities proposed. The next chapter serves to introduce the capital budgeting decision, and reviews how it can influence the dividend decision and share value.

Chapter 2 : CAPITAL BUDGETING

2.1 INTRODUCTION

In the previous chapter it was mentioned that the financial function consists of three decisions. How these decisions interact and provide for the foundation of effective dividend policy management is discussed in this chapter and Chapter three. This chapter serves to identify the importance and role that the investment decision and capital budgeting can have in the determination of current and future dividend payments by a firm.

Capital budgeting is a multi-faceted activity. It includes searching for new and more profitable investment opportunities, investigating possible consequences of such investments if accepted, and performing economic analyses. These activities are performed in order to determine the profit potential of each investment proposal, and should be compared to the expected rate of return demanded by shareholders (Bierman and Smidt, 2007:3). Naturally, due to the inherent uncertainty inextricably involved in predicting the future, capital budgeting decisions need to be performed with great care. This balance between investing for the future of the firm and maintaining dividend payouts is discussed in this chapter.

The remainder of this chapter consists out of four sections. Firm value and how the financial function, specifically the capital budgeting decision influence it is discussed next. Afterwards, capital budgeting tenets are discussed, providing for a section on the investment decision. In this third section various capital budgeting techniques and the rationale for them are explained. Before the chapter is concluded some evidence of how capital budgeting and the investment decision is made in practice is elaborated upon. How these topics influence the dividend decision is addressed throughout the chapter.

2.2 FIRM VALUE AND THE FINANCIAL FUNCTION

Lambrechts (1992:165) stated that the capital budget plays a key role in the future capacity and earnings power of a firm, as it integrates the investment and financing decisions. This importance can also be observed in how the capital budget influences the dividend decision, since if there are no viable long-term investments identified in the capital budget, more dividends would be expected by the shareholders of the firm (Cleary, 1999). The marginal cost of capital (MCC) plays an integral part in these interactions and ultimately in the determination of the dividend pay-out policy.

It is accepted (according to Brealey *et al.*, 2008:258; Clayman *et al.*, 2008:128; Bierman and Smidt, 2007:7; and Brigham and Daves, 2007:331) that the MCC is the most appropriate cost-of-capital rate to use for the evaluation of these incremental cash flows. The reason for this is that the MCC represents the marginal cost of using one more unit of financing in the firm's current capital structure, and therefore, also represents the incremental costs associated with new investments (Clayman *et al.*, 2008:128). Brigham and Daves (2007:438) defined expected cash flow or incremental cash flow, as the cash flow that is realised if, and only if, the project is accepted. It is therefore good practice to use incremental cash flows and the MCC to conduct feasibility analyses on investments. However, before the investment decision and the MCC impacts on dividends are discussed more formally, it is first necessary to discuss various capital budgeting tenets. A proper understanding of these concepts will serve as an invaluable foundation when making decisions aimed at increasing shareholders' wealth.

In order to better reflect the value and importance of the capital budget on the dividend decision, this chapter next discusses the process of creating an optimal capital budget briefly, and reference is made to some challenges that might be faced.

2.2.1 THE CAPITAL BUDGETING PROCESS

The goal of the capital budgeting process is to prevent costly mistakes, especially when considering the long-term nature of capital investments. In most instances these investments are made to ensure profitable returns to fund further investments or to provide returns to shareholders in the forms of dividend payments. Naturally capital budgeting is a dynamic and intricate function performed on a firm-specific basis. Firms' capital budgets should therefore vary over industries due to factors such as the size of the firm's management team, size of the organisation, diversification of investments and other industry-specific factors, which are inimitable to every individual firm (Verbeeten, 2006:109). Furthermore, a capital budget should not be created from year to year from scratch, but should rather be an ongoing concern. Mintzberg, Raisinghani, and Theoret (1976:248) created a four-stage model to capital budgeting. This model is depicted in figure 2.1.

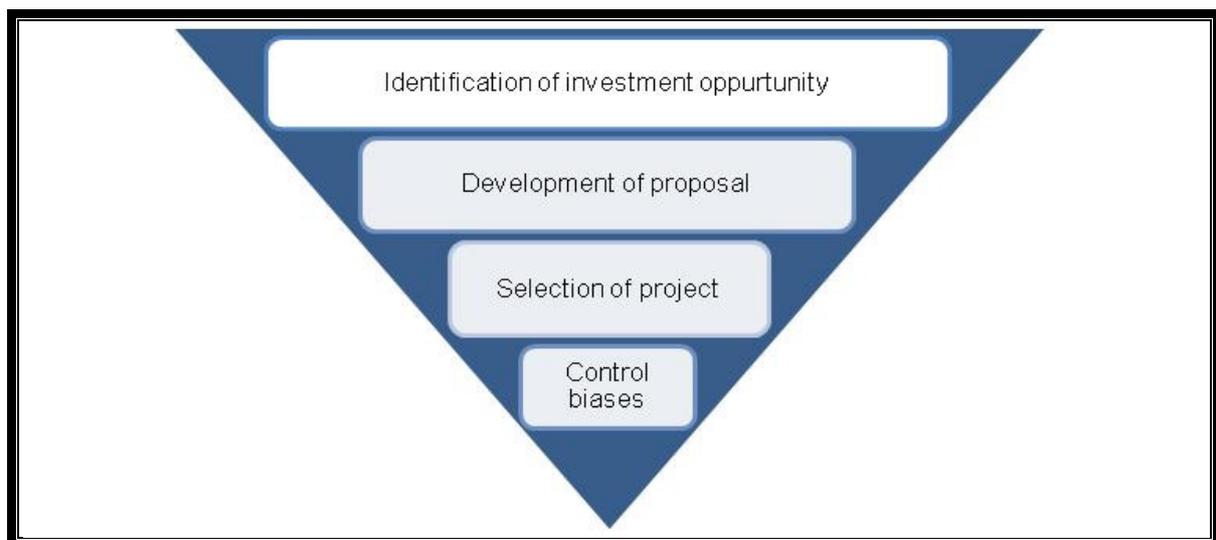


Figure 2.1: The capital budgeting process

Source: Mintzberg *et al.* (1976:248)

Since the first step is considered to be the most important in the capital budgeting process, Mintzberg *et al.* (1976:248) assert that management must utilise all departments of the organisation in generating ideas. Creativity at this stage is of the utmost importance, as many of the ideas that are generated could potentially increase shareholder wealth. The second stage, as per figure 2.1, involves gathering information and forecasting the incremental cash flows of various projects proposed.

Furthermore, screening processes, discussed later in the investment analysis section, are used in this stage so as to eliminate non-value adding projects as well as projects that are inconsistent with the strategic direction of the firm.

Topics of interest in the selection stage include risk assessment, the extent of capital rationing, and the use of cost of capital measures such as the MCC. This stage involves the interaction between the investment and financing decisions more formally, as this is where the capital is raised and allocated. Chapter three elaborates upon this in greater detail when the literature is expanded to consider the financial decision. Finally, stage four represents controlling estimation biases. Here post-audits are used, which compare actual results to planned or predicted results. Brigham and Daves (2007:417) state that the post-audit has three main purposes: first, it can improve forecasts as managers can learn from their mistakes as past biases are indicated and eliminated, and forecasting models are improved upon. Secondly, it can improve operations by holding decision-makers responsible for the decisions they make. Thirdly, the post-audit can seek to identify termination opportunities. The need for the post-audit becomes clear as illustrated by the numerous studies conducted to identify capital budgeting problems.

Bierman and Smidt (2007:64-65) present a series of studies showing that overly optimistic forecasts are regarded as a serious problem by financial officers of Fortune 500 corporations. Ross (1986:21) found that over 80% of the respondents in his survey felt that revenue forecasts are typically overestimated. Also Statman and Tyebjee (1985:28) state that managers are usually very optimistic in forecasts and thus above-normal returns seem achievable. In order to resolve such problems in the process of creating an optimal capital budget, a number of capital budgeting principles should always be followed. The heuristic tendencies of South African managers have been found to be similar to these studies, and are elaborated upon later in the study. It is important to consider these tendencies when evaluating investment decisions, especially how the dividend policy is impacted when managers attempt to maximise shareholder wealth by implementing capital budgeting.

Again, it must be emphasised that only when an optimal capital budget is used a dividend policy's influence on firm value and shareholder wealth can be truly

understood. This is simply because firms need to understand their growth, as well as shareholder requirements, in order to ensure sustainable profitability. The next section briefly identifies which principles have been proposed to implement an optimal budget. The section serves furthermore as a summary of concepts identified already such as incremental cash flows and the MCC.

2.2.2 CAPITAL BUDGETING PRINCIPLES

According to Clayman *et al.* (2008:50) optimal capital budgeting involves four crucial principles. These principles serve as a foundation of the investment decision, and if utilised properly can result in more realistic projections of risks and rewards. These principles are indicated below in figure 2.2, and discussed accordingly.

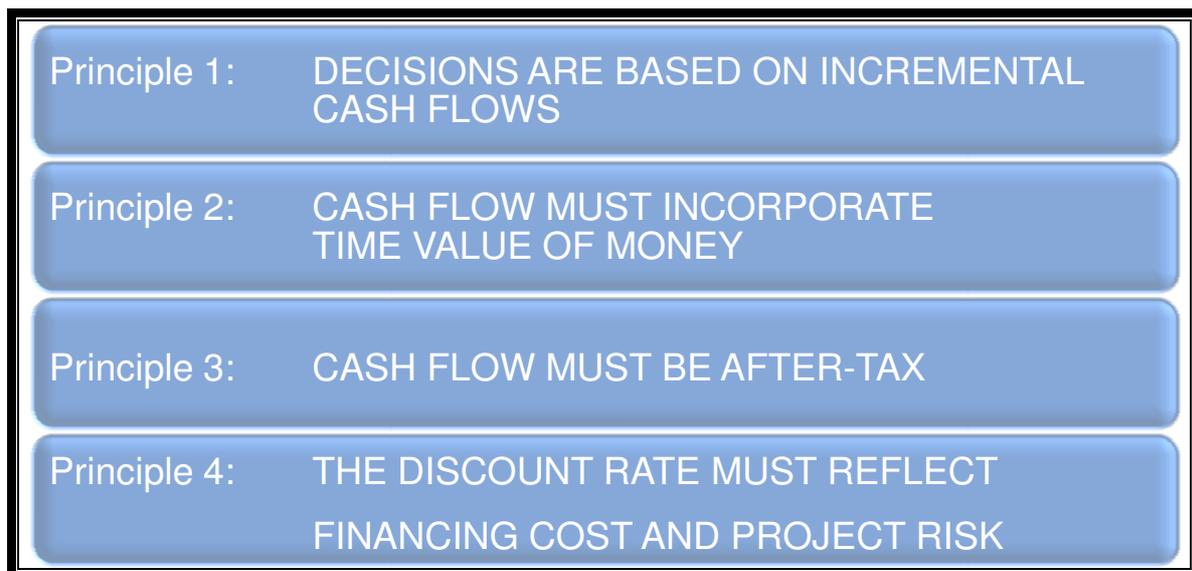


Figure 2.2: Capital budgeting principles

Source: Clayman *et al.* (2008:50)

The first principle states that decisions must be based on cash flows, as opposed to accounting income. As identified in the previous section, the relevant cash flow to consider is the incremental cash flow. Although not discussed in this study, four special considerations need to be taken into account when analysing incremental cash flows to prevent problems in the project analysis stage. They are sunk costs, opportunity cost, the effect of externalities and the effect of non-conventional cash flows (Clayman *et al.*, 2008:9).

The second principle of the investment decision states that by identifying the exact times where cash flows occurs, the value of money can be fully appreciated, since earlier cash flows contribute greater value to projects than later cash flows. This principle is also particularly relevant to the dividend decision in terms of preferences exhibited by shareholders for the timing of dividend payments. Some investors might prefer a cash dividend, while others prefer a capital dividend in the form of share appreciation. Another important principle is that cash flows should be analysed on an after-tax basis. This is because of the fact that the tax revenue is not a benefit to the firm itself, but the governmental authority. These last two principles are, however, discussed in Chapter four, where it will be illustrated how they can have significant effects on the dividend decision.

Finally, the fourth principle identified by Clayman *et al.* (2008) state that financing costs must also be considered when determining the required rate of return needed to compensate for a project's risk. Financing costs are included in the discount rate simply to prevent double counting of costs. As indicated, this discount rate is the MCC and is used in determining the net present value (NPV) of projects as well as in the dividend decision. The investment analysis section will reflect that if the firm's rate of return does not exceed the MCC, the proposed investment should not be undertaken. In these cases the cash should rather be paid to shareholders in the form of a dividend or possibly retained as internal reserves.

Unfortunately, even if these principles are followed and applied stringently, some challenges still do arise in the incremental cash flow analysis when projects interact. Clayman *et al.* (2008:51) identify the following interactions of cash flows that complicate the capital budgeting process: independent versus mutually exclusive projects; project sequencing; and unlimited funds versus capital rationing.

As indicated by Brigham and Daves (2007:339), independent projects do not compete for the same resources, whereas mutually exclusive projects do. This can become a complex problem when mutually exclusive projects look attractive but only one can be selected. Project sequencing can, however, be utilised to address this problem arising from mutually exclusive projects. Unfortunately, it can also create an

unwanted interaction between projects since funds that are predetermined for implementation have been known to create capital rationing in some severe cases.

Capital rationing occurs when management places a constraint on the size of the firm's capital budget during a particular period (Brigham and Daves, 2007:423). This practice goes against conventional finance theory, where it is believed that all value-adding projects should be accepted. In the competitive economy, however, it occurs seldom that managers have unlimited funds and for this reason the practice of capital rationing is quite common especially during bear markets (Brealey *et al.*, 2008:131). The occurrence of capital rationing can have severe effects on the dividend decision. Since the firm might not be capable of distributing dividends at the time of rationing, it could possibly affect share values through the dividend pay-out policy of the firm. Consider for example if a firm implements more debt financing to its capital structure as a measure of rationing. This would result in less equity being used and therefore shareholders will have less influence on the dividend pay-out policy. According to Brigham and Daves (2007:423), a factor influencing capital rationing is controlling estimation biases.

Controlling estimation bias is performed to limit overconfident and overly optimistic managers when they perform cash flow estimations. This is prevalent in the studies by Statman and Tyejee (1985:28), Bierman and Smidt (2007:64-65), and Ross (1986:21). Firms have been found to counter over-optimistic biases by increasing the cost of capital and thus making the perceived risks greater than what they are in reality (Brealey *et al.*, 2008:270-271). This is known as adding fudge factors to the cost of capital and many studies, as indicated above, indicate that adding fudge factors to the hurdle rate has been proven to critically affect the appeal of projects. This is because it penalises longer-lived projects by favouring quick-payback projects. Accordingly, from a dividend policy perspective, this practice might result in favourable dividend payments in the short-term, but not necessarily sustainable in nature. Another method to control biases is to limit the capital budgets of managers who have proven a tendency to over-eagerness. These two methods are in reality not as effective as they seem in theory (Mukherjee and Henderson, 1987). Managers quickly learn how to counteract them and again increase their own estimates, which may have been biased upward to begin with (Brigham and Daves, 2007:423). This is

where the before-mentioned post-audit plays such a crucial role, as it can link the accuracy of forecasts to the compensation that the managers apply.

As mentioned earlier, the investment decision incorporates the capital budgeting process and principles in order to identify which projects are worthy of investment. It serves a valuable function in the screening of proposed projects and maximising shareholder value (Hirshleifer, 1958). The next section of this chapter provides an overview of various investment analysis techniques and the interaction between the MCC and return on investment, which allows for the role of the dividend decision.

2.3 THE INVESTMENT DECISION

“The result of the investment decision is measured by the improvement in the cash flow and eventually in the market price of the ordinary shares. In this manner, the attempt to satisfy the primary objective of the financial management function, to maximise shareholder wealth is also served” (Lambrechts, 1992:65).

In this chapter reference was made to the MCC as the most appropriate hurdle rate to use in the investment decision. The following topic of discussion elaborates on this rate by considering the factors that influence it, its role in creating the optimal capital budget, and the effect it has on the investment and dividend decision.

2.3.1 THE HURDLE RATE

As mentioned previously, the hurdle rate or MCC can potentially play an important role in the determination of dividend payments and investment decisions. It is generally accepted that when the return on additional investments is greater than what shareholders could generate on their own, a firm should reinvest cash flow rather than paying a dividend. Figure 2.3 depicts this theory by indicating an hypothetical relationship between MCC and the investment opportunity schedule (IOS).

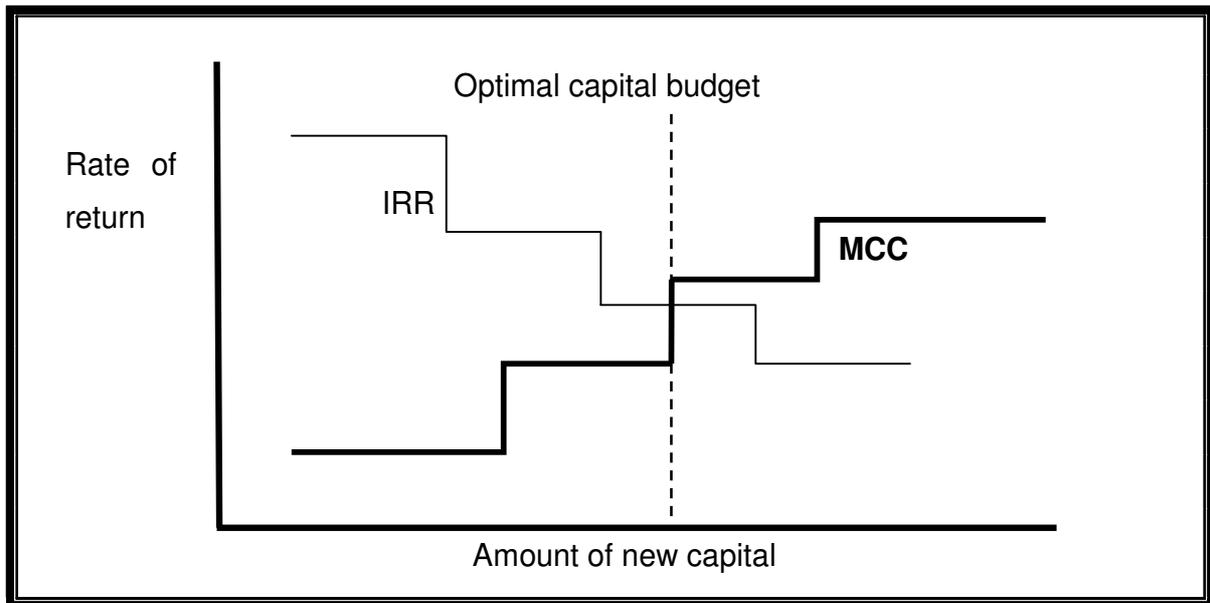


Figure 2.3: Optimal investment decision

Source: Researcher's own construction

"The MCC increases as additional capital is raised, whereas returns to a firm's investment opportunities are generally believed to decrease as the firm makes additional investment, greater than the optimal" (Courtios et al., 2008:42).

The figure thus illustrates that an optimal capital budget occurs where the MCC intersects the IOS of the capital budget. Firms finding themselves on the left side of this intersection are under-invested and should invest in those projects identified in the IOS. This is because the rate of return is greater than the MCC at that stage, and wealth is not being maximised. In this scenario investors would expect to receive fewer dividends since the funds would be better utilised to enabling long-term growth and profitability. Firms that fall to the right of this intersection, however, are over-invested and should instead pay out dividends to shareholders.

The MCC represents the rate associated with using one more unit of a financing source to fund investments. However, even though the MCC is accepted as the hurdle rate, the exact method of calculating it is not perfect. One method to calculate the MCC that is used extensively by firms is known as the weighted-average cost of capital (WACC) method. The WACC is usually estimated as follows:

$$WACC = \left(\frac{D}{V}\right)r_d(1 - t) + \left(\frac{E}{V}\right)r_e$$

Where:

- D = represents the optimal target weight of outstanding debt;
- E = represents the optimal target weight of shareholders equity;
- r = represents the cost of capital when using debt and equity;
- V = total firm value = (D + E);

From this method the WACC is defined as the average rate of return required by a firm's capital providers, such as debt, equity, retained earnings and mezzanine securities (Brealey *et al.*, 2008:258). The reason why firms use an optimal target weight for these capital components stems from the principle of maximising shareholders' wealth. Another measure that is sometimes used to quantify capital structure is market values but the volatile nature of such values makes accurate forecasts very troublesome. When managers are able to identify what the optimal weights are, they can adjust the capital structure accordingly. This is discussed further in Chapter three. As can be seen in the WACC equation, all the capital components of a firm are analysed to calculate their component costs. Unfortunately, these component costs are not always easy to calculate and thus the optimal capital budget cannot always be used since its exact level is difficult to find (Correia *et al.*, 2007:7-24; Pocock, Correia, and Wormald, 1991:28).

It has been found that many business managers tend to under-invest in order to be conservative (Harris and Raviv, 1996:1139). These authors cited Porter (1992:14), which stated that U.S. firms have in the past used hurdle rates that were higher than the estimated MCC to evaluate investment projects. Accordingly Correia *et al.* (2007:8-3) state that the balance between over- and under-investment is very difficult to strike, and the consequences of each can be severe. This is especially the case when maximising share values since managers need to compare the benefit of making further capital investments to meet future demand, or rather distribute dividends to shareholders in the short term. Over-investment can lead to higher capital costs and reduced flexibility (as indicated by Brigham and Daves (2007:397)). Under-investment, however, may result in the firm losing market share due to not having sufficient capacity to meet the demand (Correia *et al.*, 2007:8-3).

The use of the MCC is, however, not only complicated by the estimation processes followed, but also in the manner it is affected by other variables. Table 2.1 attempts to illustrate some of these, by indicating over which variables a firm's management does have a degree of control and over which variables it does not. The latter is explained first.

Table 2.1: Factors that affect the MCC

FACTORS THE FIRM CANNOT CONTROL	FACTORS THE FIRM CAN CONTROL
Level of interest rates	Investment policy
Market risk premium	Capital structure policy
Tax rates	Dividend policy

Source: Brigham and Daves (2007:335)

According to Brigham and Daves (2007:335), when interest rates increase in an economy the MCC usually also increases, since firms have to pay higher interest rates to new bondholders to obtain debt financing. Correia *et al.* (2007:7-20) define the market risk premium as the amount of return necessary to compensate investors for the increased risk of investing their funds in the firm. They state that it can be measured by simply deducting the risk-free rate of a market from the cost of equity for ordinary shares. Correia *et al.* (2007:7-20) further state that an increase in the market risk premium results in an increase in the MCC. The final factor which the firm cannot control is taxation. The effect of taxation depends on a wide variety of factors, including, but not limited to, the current tax rate, the market preferences between debt and equity, and investor preference between DY and capital gains. A full explanation is provided in Chapter four in order to achieve a better conceptualisation of the effect of tax on the dividend policy of a firm.

When the factors that a firm does have control over are identified, the financial structure is highlighted yet again. According to Brigham and Daves (2007:335) the investment policy affects the MCC to the degree to which project risks differ from the firm's risk profile in general. They state that if a firm invests in similar risk-profile projects as its existing assets, the effects can be small, but if the investment policy

changes drastically the effect might be larger. The authors state that the capital structure policy affects the MCC through the manner in which projects are funded. Furthermore, the capital structure also determines the weighting of the capital components used to finance investments. If a firm has a greater weighting of equity in the capital structure, the shareholders have greater influence and would expect the dividend pay-out policy to be scrutinised carefully. The balance between these capital components has always been a controversial topic. This will be discussed in Chapter three, which explains the role of the financing decision in the financial structure. Finally, dividend policies can affect the MCC by means of the magnitude of dividend payments, frequency of issuing dividends, and pay-out policy among others. This is because the amount of dividends that are not paid out in cash forms part of retained earnings in a firm. These retained earnings then serve as internal financing and can then be used to re-invest in the firm in order to increase value (as will be illustrated in the financing section later). If dividends do increase, it can lead to a change in the cost of equity, which will ultimately affect the MCC as well, and result in less retained earnings available for internal financing.

Considering the broad range of influencing variables on the MCC, it becomes clear how optimal capital budgets are difficult to apply. Not only must managers follow stringent capital budgeting principles and understand how the financial function is inter-connected to maximise shareholder value, they must also be able to identify the correct level of the MCC and accurately identify investment opportunities. These investment opportunities should, furthermore, generate returns greater than the shareholders' required rate of return and the firm's MCC. According to Brealey *et al.* (2008:258) in a perfect market, and assuming that investment opportunities have the same risk profiles as the firm's existing assets, these two hurdle rates used for deciding on investments by shareholders and the firm would be identical. Stated differently when a proposed project has the same perceived risk as the firm's perceived risk of all its assets, the firm's MCC will be the same as the shareholders' required rate of return. Unfortunately, the markets are not perfect and this causes distortions in actual hurdle rates and what they are perceived to be, which allows for biased expectations (Miller and Rock, 1985:1031).

In order to prevent such expectations and to protect the shareholders, managers must perform steadfast investment analysis. The investment analysis section discussed next attempts to explain how this can be done by using various capital budgeting techniques that incorporate all the capital budgeting principles mentioned previously.

2.3.2 INVESTMENT ANALYSIS TECHNIQUES

The previous sections have identified the need for effective capital budgeting principles and the critical components that should be managed in order to create an optimal capital budget. More specifically, the need for the MCC and incremental cash flows were highlighted. These two components allow for the maximisation of shareholders' wealth when using appropriate investment analysis techniques. These techniques represent the investment decision and incorporate screening and selection criteria of potential investments that could enhance firm value.

The next two topics of discussion provides for a summary of basic capital budgeting techniques and more modern approaches used in business practice. These techniques influence the valuation of ordinary shares, and therefore should be used to compare the benefit of enabling future growth through investments or growth through shareholders preferences to dividend payments.

2.3.2.1 Capital budgeting techniques

Basic techniques represent the NPV, internal rate of return (IRR), payback period (PP), discounted payback period (DPP), accounting rate of return (ARR) and the profitability index (PI) techniques (Stow, Robinson, Pinto, and McLeavey, 2007).

The NPV technique incorporates the time value of money as it is the present value of the future after-tax cash flows minus the investment outlay. The decision rule for the NPV technique states that projects with positive NPVs should be accepted as it increase firm value and shareholders' wealth, and negative NPV projects should be discarded as it will decrease shareholders' wealth (Clayman *et al.*, 2008:54). Brealey

et al. (2008:118) posits that the money invested today is worth more than the same amount invested tomorrow due to the time value of money. Naturally, from the perspective of dividend policy, it can be argued that if a firm cannot generate a return on investments greater than the expected return required by shareholders, the investors should be enabled to invest for themselves.

Another well-known capital budgeting technique that is very similar to the NPV technique is the IRR. The IRR is one of the most frequently used concepts in capital budgeting and security analysis (Clayman *et al.*, 2008:55). It is defined as the rate that would ensure that the NPV of a project is equal to zero (Brealey *et al.*, 2008:121). The IRR is determined after incorporating timing and size of cash flows, where the MCC is determined by the firm-specific characteristics such as risk and capital structure. Again, as can be seen in figure 2.1, these two rates are compared in the investment decision in order to determine if the project would add benefit through investing or if distributing dividends would better contribute to the creation of shareholders' wealth. The decision rule for the IRR is to invest in a project if the IRR exceeds the required rate of return, or MCC for a project (Clayman *et al.*, 2008:56).

Finally, other basic investment analysis techniques used to analyse proposed investment viability are the PP, DPP, ARR, and the PI. These measures are referred to as rule of thumb techniques as they are easy to follow and understand. Unfortunately they all have severe limitations when used in the investment decision if used alone and accordingly it is recommended that they should be accompanied by NPV, IRR, or more modern techniques. Ryan and Ryan (2002:3) quote Pike (1996:82), Schall, Sundem, and Geijsbeek (1978:287), and Miller (1960:76), who identify PP as the most preferred technique at the time, whilst Istvan (1961:45) found preference for the ARR. According to these studies DCF techniques were not popular and not used by most survey respondents. Mao (1970:359) and Schall *et al.* (1978:286) specifically indicate that DCF was the least popular method at the time. Later studies performed by Pike (1996:83) and Jog and Srivastava (1995:38) indicate decreased acceptance for the ARR.

Preferences for non-DCF methods, which mostly cannot provide economical decision rules, have always been seen as a puzzle by academics. Thus, many

academics such as Brounen, De Jong, and Koedijk (2004), Graham and Harvey (2002), and Ryan and Ryan (2002) re-examined these findings to identify if this puzzle has changed. They found that modern management now utilise NPV and IRR more frequently and it is also found to be superior to previous non-DCF methods. Furthermore, global trends seem to indicate that modern techniques incorporating the DCF analysis techniques are definitely becoming more evident (Ryan and Ryan, 2002:13). They state that the increased computational power available to managers in the modern technological era has created a greater following of more sophisticated capital budgeting methods and DCF techniques. Even though the NPV is considered the most conservative and realistic technique to use, Graham and Harvey (2002:3) state that NPV has always trailed IRR in popularity.

From these studies it can be seen that there still exists great controversy over which method is used the most, and provides for the most accurate estimates. Global trends do, however, indicate that the NPV technique has been growing in popularity and that other methods such as the ARR has been decreasing in popularity and made way for EVA and real-option analysis. Accordingly, the role of modern techniques has become more evident. Verbeeten (2006:107) quotes a study performed by Chatterjee, Wiseman, Fiegenbaum, and Devers (2003), which suggest that modern, more sophisticated capital budgeting practices must be considered in a wider context than merely assisting the traditional DCF analyses of the IRR and NPV. By improving the decision-making process, modern techniques also increase managers' ability to increase shareholders' value. The next section of this chapter provides for a brief overview of modern analyses.

2.3.2.2 Modern capital budgeting techniques

Verbeeten's (2006:107) empirical results indicate that sophisticated techniques appear to augment rather than replace the traditional capital budgeting techniques indicated earlier. These sophisticated techniques include the use of economic value added (EVA), market value added (MVA), real option analysis and risk analysis techniques such as sensitivity analysis, scenario analysis, and simulation analysis. EVA has been used increasingly over the past decades to measure firm performance in terms of maximising wealth or, more specifically, managers'

performance through MVA (Correia *et al.*, 2007:8-16). Recently it has, however, also been implemented in capital budgeting decisions as EVA has a close connotation to NPV (Clayman *et al.*, 2008:105). EVA is defined by Correia *et al.* (2007:8-15) as the economic profit for a period. MVA is closely related to EVA as it also calculates the value added with the only difference being that it is calculated from a specific point of time onwards. According to the MVA theory, if a firm's return on capital (ROC) is greater than its WACC, it has added value to shareholders (Correia *et al.*, 2007:8-15). This is equivalent to a positive NPV. Accordingly, a ROC which is less than WACC will result in a loss of value, similar to a negative NPV. Shareholders frequently use the components of EVA in decision-making since it can be analysed with ease due to its accounting data nature (Correia *et al.*, 2007:8-16). From a managerial perspective, in order to increase EVA they have to either increase ROC, reduce invested capital, or decrease the firm's cost of capital.

Another modern approach to capital budgeting investment decision-making is the use of real-option analysis. Brealey *et al.* (2008:283) state that "the value of real-option analysis is due to the fact that the projects can, and often do lose their economic value due to changes in competitive market forces." Real options refer to budgeting options that allow managers to make decisions in the future, and thereby alter the original NPV of a project, as more flexibility is granted to the option holder (Clayman *et al.*, 2008:95; Amran and Kulatilaka, 1999; Trigeorgis, 1986). In this sense, should a firm decide on an investment and due to adverse market conditions find that it will not be profitable, they can terminate it and rather consider a dividend distribution to shareholders. This technique of investment analysis was usually used for projects where the uncertainty of the cash flows involved made it very difficult to apply the DCF techniques (Brown and Eisenhardt, 1995:343). Studies, however, indicate that the use of such real options in the investment decision has been growing rapidly, even for projects whose risks can be determined with a relative degree of certainty (Verbeeten, 2006:110). The importance of such options can also be seen in studies such as Myers (1987), Trigeorgis and Mason (1987), Mason and Merton (1985), and Kester (1984) amongst others, who suggest the use of option-based techniques to value the managerial flexibility implicit in investment opportunities.

In South Africa, many studies have attempted to identify the most favourable capital budgeting method. Correia *et al.* (2007:9-29) indicate that the global trend regarding the increased use of DCF techniques is similar in South Africa. This can be seen in studies performed by Gilbert (2003:13), Parry and Firer (1990:52), and Andrews and Butler (1986:33). The puzzle regarding the use of PP is also present in South Africa. Coltman (1995) identified the PP as the most commonly used technique in the 1990s, followed by the IRR, NPV, and ARR. This might, however, have been the result of a majority of smaller firms in the author's samples. Smaller firms tend to use rule-of-thumb capital budgeting methods in order to identify projects (Tyrrall, 1998). To determine if this were in fact the case, Gilbert (2003) performed a study on manufacturing firms in South Africa between 1997 and 2003, with differing levels of annual sales. His results indicated similar findings to Coltman (1995), since PP was still at the top of the list. Gilbert's (2003:14) study did, however, indicate greater acceptance of NPV in relation to the IRR method.

The question of which of the NPV and IRR techniques are used the most, however, is still not resolved as some studies indicate mixed results. Andrews and Butler (1986:33) and Parry and Firer (1990:56) found that respondents to their surveys used the IRR over NPV, and increasingly from the period of 1971 to 1982 as its use grew from 27% to 45.3%. Studies performed by Coltman (1995) indicate a preference for NPV over IRR as well. A more recent study performed by Du Toit and Pienaar (2005:23) indicate equal usage between IRR and NPV, with PP this time in the last place. According to the authors, however, IRR was still preferred as the primary capital budgeting method with 37.1% of the firms using it, compared to the 27.4% who used NPV as the primary technique. Unsurprisingly, studies indicate the common principle that the varieties of capital budgeting techniques complement one another (Chenhall and Langsfield-Smith, 1998:18).

An important consideration is that when investors and firms apply such investment analysis techniques, the goal of maximising shareholder value must be maintained. This chapter has therefore indicated the trade-off between the MCC and IOS, as well as explained how the investment decision and dividend decision interacts. The next section of this chapter serves to conclude this discussion.

2.4 CONCLUSION

As has been stated throughout this chapter, there are many interactions between the components of the financial function, defined as the investment, financing and dividend decisions. Up to this point, this chapter has focused on which investments should be accepted and how the analysis is performed to identify those projects that add to shareholders' wealth. If prudent financial analysis is not performed when deciding on investable opportunities the dividend decision might be made on biased information. Furthermore, how the capital budget influences the dividend decision was also explained, since if there are no viable long-term investments identified in the capital budget, more dividends would be expected by the shareholders of the firm.

In order to fully explain the role of the optimal financial structure, which balances the investment, financing, and dividend decisions, the capital structure needs to be discussed. Thus, the study now turns to the role of the capital structure and how the accepted investments are financed in order to further maximise shareholders' value. A firm's capital structure refers to the type, and degree of capital components to finance its investments. Detailed financing components and their specific characteristics are not elaborated upon, but their effect on dividend policy and share prices is rather explained.

Therefore, the goal of Chapter three is to indicate the effect leverage can have on firm value and how an optimal capital structure affects dividends. The potential influence market movements might have on leverage is also investigated.

Chapter 3 : CAPITAL STRUCTURE

3.1 INTRODUCTION

“The ultimate goal of the financing, or capital structure decision, is to determine the degree of financial leverage in the capital structure that maximises the value of the firm by minimising the MCC” (Clayman et al., 2009:121).

The term “leverage” is used in this study to describe the proportion of fixed-obligation financial component costs present in a firm’s capital structure, where fixed costs refer to the interest component of financing such as bonds, preference shares and debentures. Leverage could have a profound effect on the MCC of a firm and ultimately the value of its shares. This is because the MCC is often calculated by using the WACC method, which is directly influenced by all the capital components. Recall that in the previous chapter the equation for WACC was provided, and how the MCC and IOS interact also depicted. An improper balance between the capital components can create increased risk, which in turn increases the MCC and decreases firm value. From a dividend pay-out perspective, shareholders would expect to be compensated for the increased risk and increase their minimum expected rate of return (De Haan, 1996). The effect of such an increase, as indicated in the previous chapter, can be significant.

Before the effect of leverage on the MCC is discussed further, it is necessary to identify how a firm’s capital structure can affect the dividend policy or share price of a firm. Following this section, traditional capital structure theories are identified. Modern approaches that incorporate the basic underlying principles next provide further explanation on how firm value is influenced by the use of leverage. Finally, the chapter is then concluded with a discussion of important topics addressed in the capital structure and how it influence the dividend decision of a firm.

3.2 CAPITAL STRUCTURE AND THE DIVIDEND DECISION

By following a predetermined dividend pay-out policy a firm's needs to be very cognisant of the extent of equity financing it utilises in its financial structure. This importance can be observed in the significant demand shareholders can have to be compensated for any change in a firm's risk profile of its debt to equity ratios. Two important characteristics need to be considered in the interaction of the capital structure and the dividend decision.

Firstly, when equity is used in the capital structure of a firm, the demand for dividends may arise. For this reason, greater equity financing will usually lead to the dividend decisions being of greater importance, and topics such as investors' preferences between DYs and capital gains become relevant. Secondly, the dividend field of study was initiated due to the influential work done by Lintner (1962; 1956), Gordon (1963) and Modigliani and Miller (1963; 1961; and 1958). These academics played a significant part in formulating the traditional capital structure theories. In these authors proposed and argued over the dividend irrelevance theorem, which at the time created great controversy and caused many academics to study the impact of dividends more meticulously. From their later studies, many of the modern capital structure theories have been found to have a direct relationship to the dividend decision, which is the topic of discussion in Chapter four.

This chapter discusses capital structure formally in order to better explain the potential role dividend policy can have during market movements. Most of these theories attempt to propose how shareholder value can be maximised by identifying an optimal capital structure. The purpose, therefore, of the financial structure is to find the right proportions of debt and equity financing to fund investments and maintain shareholders' expectations of return. The capital structure is thus of vital importance during the decision-making process of the investment and dividend decision (Clayman *et al.*, 2009:130).

As stated previously, the theories relating to the importance of leverage as a determinant of firm value partly originate from Modigliani and Miller (1958), who

stated their capital structure irrelevance proposition. Their infamous propositions caused researchers during the past half century to study whether their assumptions held, in order to identify whether firm value was, in fact, dependent on the capital structure as previously believed (Stern and Chew, 2003:125). Stern and Chew (2003:126) posit that researchers particularly focused on market imperfections such as the proposed effect of taxation, transaction costs and the effect of signalling that was present in the market. The results of the studies indicated that large costs were associated in creating and maintaining capital structures. These costs are categorised as indirect market costs, which include agency costs, cost of asymmetric information, bankruptcy-related costs, and direct transaction-related costs such as taxation costs and brokerage.

In order to explain how these costs affect firm value, the following section discusses the traditional capital structure theories by focusing on the Modigliani and Miller propositions. The section following then considers market-related costs and their effect on the capital structure more formally. Chapter four build upon these traditional and modern theories further by discussing how they affect dividend policy formulation. Therefore, in this chapter the capital structure and its influence on the dividend pay-out policy needs to be considered from a holistic view. Most investors select shares based on key characteristics such as risk profile, DYs and the debt to equity ratios. If the proportions between debt and equity changes all of the mentioned characteristics will be affected to some extent.

3.3 TRADITIONAL CAPITAL STRUCTURE THEORIES

The effect of leverage on the capital structure has been a topic of discussion for the last 60 years, ever since Modigliani and Miller published their propositions in 1958. Modigliani and Miller's (1958:268) proposition 1 states: "The market value of a firm is not affected by its capital structure." This proposition, known as the separation theorem, originated from a set of strict assumptions that in the modern economy would be difficult to apply (Brigham and Daves, 2007:550). Never the less, in the above proposition, Modigliani and Miller (1958) proved that as long as their

assumptions held true, the value of an unlevered firm will equal the value of a levered firm. Proposition 1 therefore posits that the capital structure of a firm is of no relevance, since the value of a firm using 100% leverage should be equal to a firm using 100% equity. Accordingly, the value of a firm is calculated as the value of debt and equity combined. Modigliani and Miller (1958:269) also formulated a second proposition in order to explain how the WACC or MCC could be calculated. Proposition II states that:

“The cost of equity to a levered firm is equal to the cost of equity of an unlevered firm in the same risk class plus a risk premium whose size depended on both the difference between the unlevered cost of debt and equity and the amount of debt used.”

With this proposition Modigliani and Miller (1958) argued that the total return distributable to the providers of the firm’s capital will not be affected by a changing risk level from the use of a specific capital source. They proved this assertion using arbitrage principles and believed that increased leverage will only result in greater risk that would have to be compensated for to the shareholders. To be compensated for this increased risk a greater portion of the operating earnings are allocated to them, which is exactly the same size as the amount of operating earnings taken away from debt holders (Clayman *et al.*, 2009:123). Thus, the one component simply makes up for the other and the net effect is a zero change in the MCC.

In these propositions no reference was made to the influence of taxation, since it was thought to have no bearing. Later studies, however, improved upon this shortfall in theory. The methodology in the estimations of the WACC and its relation to the cost of equity and debt is depicted according to Modigliani and Miller (1958) in figure 3.1.

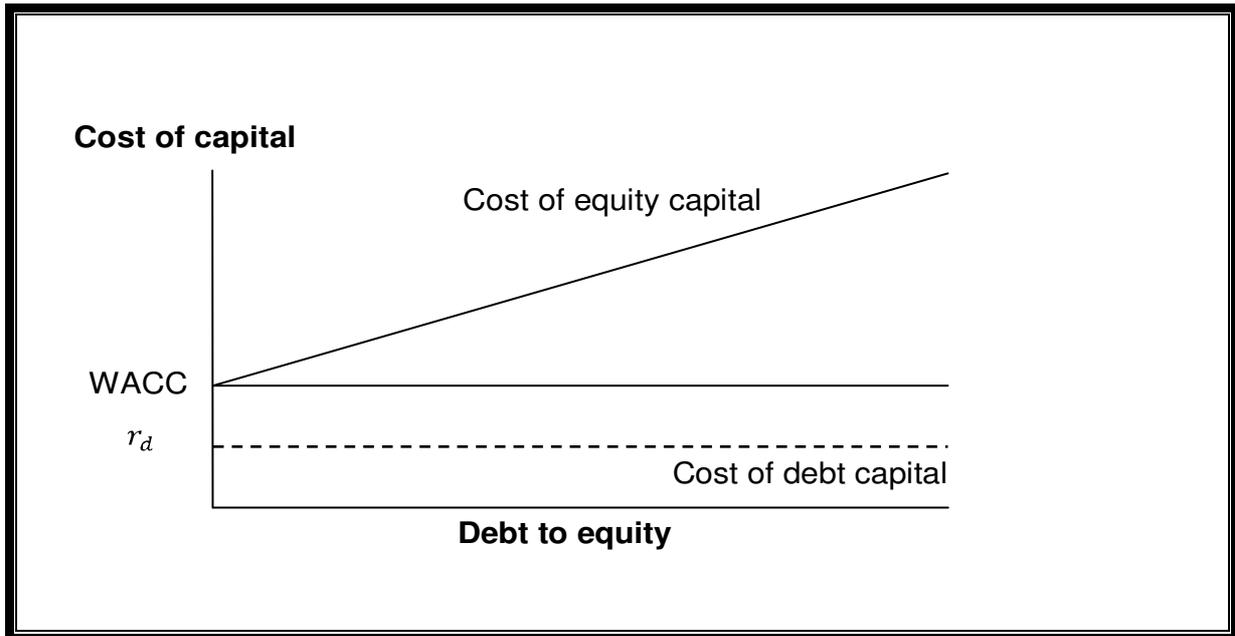


Figure 3.1: Cost of capital with zero taxes

Source: Clayman *et al.* (2009:126)

From the figure it can be seen how the MCC is calculated as the WACC indicated in the previous chapter but without considering the effect of taxation. Furthermore, it can be seen that the cost of equity increases as the amount of debt, or leverage, increases and that the cost of debt remains constant. Modigliani and Miller's (1958) WACC had important implications for management since it stated that management could not simply change or cleverly manage the capital structure in order to affect the value of the firm (Clayman *et al.*, 2009:122).

As mentioned previously, Modigliani and Miller (1963:434) later improved on the first proposition when they incorporated corporate taxes, yet keeping all previous assumptions constant. With this second paper they stated that with corporate taxes the use of leverage will increase the value of the firm. This is due to the added tax benefit, or tax shield, that is created when using debt financing due to the interest-payable characteristic of debt that is tax-deductible. Accordingly, a leveraged firm's value was now the sum of the value of an identical risk class unleveraged firm plus a tax shield as seen in the equation below:

$$V_L = V_U + T_D$$

T_D in this equation represents the tax shield debt financing provides, which is a significant component in the capital structure theories discussed in this chapter. In most countries interest is tax-deductible, whereas dividends are not. Contributing even more to this benefit that debt receives is that in some countries a double taxation principle is imposed on dividends. This is because firms who pay out dividends to shareholders have to pay a dividend withholding tax (DWT) on behalf of their shareholders, and then the shareholders are taxed on their personal assets as well, which include the dividends received. In South Africa however, things were a quite different up to April 2012, since dividends were taxed with a secondary tax on companies (STC), instead of a withholding tax. Dividends in the hands of the South African shareholders were then exempt from income tax according to Section 10 (1)(k)(i) of the South African tax legislation 2010 (SAICA, 2010). Considering this double taxation effect and the relevance of dividends, a popular theory, the clientele theory in dividend policy, has been proven to some extent in the international arena (Pettit 1977:420). This theory in relation to the implementation of a DWT is discussed in greater detail in Chapter four, especially its effect on South African firms.

Again it is possible to see the influence of the use of leverage on the dividend decision as taxes impose multiple facets in the determination of a firm's capital structure. Modigliani and Miller (1963) stated that since the cost of equity does not share in such tax benefit that the cost of equity is a linear function of the firm's debt to equity ratio. More specifically they believed that the effect of the increased use of debt would be directly offset by the change in the cost of equity resulting in the same risk profile for the firm, but which now had a benefit due to taxation. Thus, the MCC of the firm will decrease as more debt is used. The estimation of WACC under Modigliani and Miller (1963) after incorporating the effect of taxation is indicated in figure 3.2.

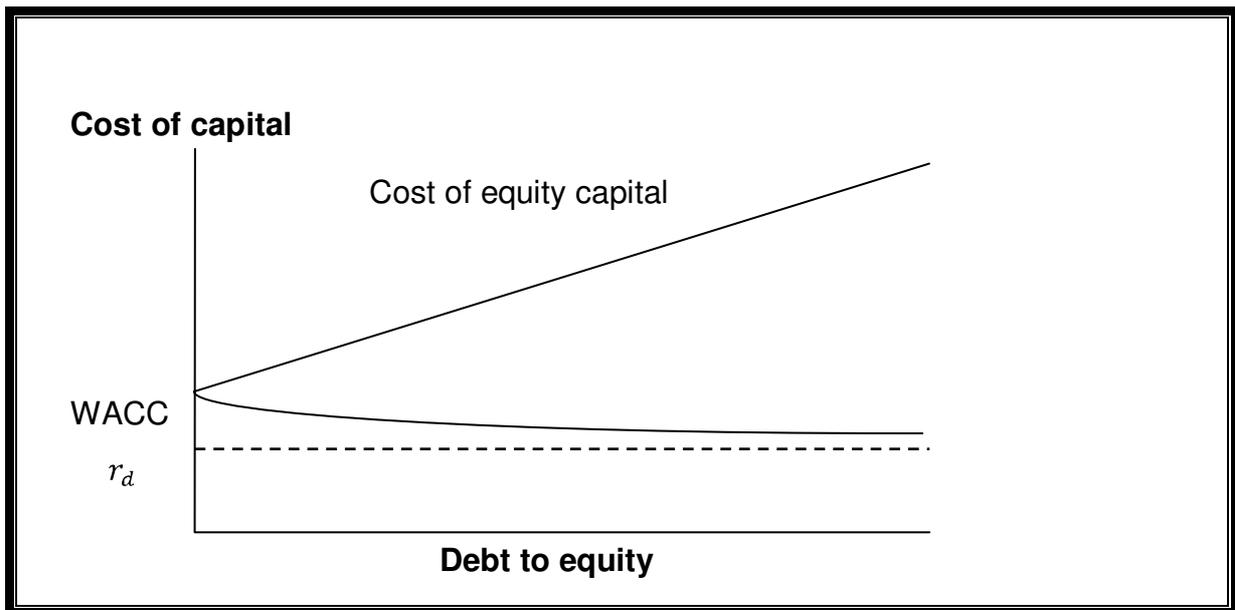


Figure 3.2: Cost of capital if there are taxes

Source: Clayman *et al.* (2009:126)

From figure 3.2 it can be seen that firms should use 100% debt financing. Naturally, using 100% debt financing would result in no dividend decision at all since zero equity financing would be used. In practice, however, these assumptions do not seem to hold true. Accordingly, the results of the Modigliani and Miller studies forced sceptics to identify which of their assumptions could be rejected or modified (Stiglitz, 1988:122). Studies have consequently identified errors with some assumptions as costs came to light that challenged them, and therefore modern theories that incorporate the other direct and indirect costs into the capital structure decision were formulated.

These specific market-related costs are discussed in the next section. Firstly, agency costs are considered and the implications of controlling measures on dividends explained. Secondly, bankruptcy-related costs and the static trade-off theory are explained. Finally, the cost of asymmetric information and the pecking-order hypothesis are discussed. These modern theories provide for a possible explanation why firms have predetermined dividend pay-out policies. Furthermore, by understanding the rationale for these theories investors can potentially make informed decisions when they apply dividend-investing strategies.

3.4 MARKET IMPERFECTIONS AND CAPITAL STRUCTURE THEORY

The previous section introduced traditional capital structure theories propositioned by Modigliani and Miller (1963; 1961; and 1958) which posits that only debt financing should be used in a firm's capital structure. Market related costs discussed in this section, however, indicate that a firm can use equity capital to offer greater value to shareholders (Hubbard, 1998). In the next section the topic of agency costs is introduced which explains the interaction between providers of capital and firm management. Following the discussion of agency costs, the trade-off and pecking order hypothesis and their implications on the dividend decision is briefly discussed.

3.4.1 AGENCY COST AND PREVENTATIVE MEASURES

Agency costs arise from the market imperfection that not all parties in the market have homogeneous expectations, and originate from the conflict of interests between the owners and the management of a firm (Jensen and Meckling, 1976:305). The owners, or the shareholders and debt holders of a firm, are referred to as the principals, and the managers are known as the agents. Owners want their value maximised, which requires the agents to perform accurate investment analysis and then responsibly invest in value-added projects, whilst financing the projects in a manner that does not destroy the expected benefit. Agents, however, could have different goals, such as to increase their own wealth by investing in prerequisites and unnecessarily expanding the size of the firm to ensure job safety (Jensen, 2010:33). In order to keep the interest of management and capital owners in line, agency costs can be incurred.

According to Harris and Raviv (1990:321) managers do not always behave in the best interest of their investors and, therefore, need to be disciplined. They state that leverage can be used to achieve this and minimise agency cost. Even when dividend policy can be affected severely by using more leverage, it has been found that the use of debt can restrict managers' unwanted actions, since the use thereof deprives

the managers of the practice of spending on prerequisites (Firer *et al.*, 2008:10; Lie, 2000). By restricting the reinvestment of earnings, however, managers need to approach the suppliers of capital and thus the shareholders have more control over the funding of new projects and they are provided with greater information on the current operation of the firm (Harris and Raviv, 1990:322; Jensen, 1986:324). This leads to greater involvement of shareholders, which can positively affect dividend decisions, and lead to greater value projects (Jensen and Meckling, 1976:351). Unfortunately, as stated before, there can also be conflicts of interest between the owners of a firm.

A conflict of interest between principals is quite serious and occurs often when capital structures are implemented or changed. Shareholders receive the residual cash flows after bondholders have been paid. Shareholders also have no claims on any assets, whereas debt holders do. This means that shareholders are more willing to accept risks so that the value of their shares can increase, even if it is at the cost of the debt holders' welfare (Childs, Mauer, and Ott, 2005). If the risk profile is rewarded in returns they also receive further compensation in the form of dividends. Debt holders, on the other hand, want to preserve their claim on assets and increase the security thereof (Damodaran, 2011:367).

According to Damodaran (2011:368) the conflict between debt holders and shareholders can affect all three aspects of the financial function in corporate finance. Firstly, in the investment decision risky investments can be selected by the shareholders in order to increase firm value at greater risk. Secondly, during the financing decision, new projects could be financed with a variety of sources that again affect the risk faced by the parties involved. Finally, during the dividend decision, if the firm chooses to pay dividends, it might be sacrificing potential value-adding investments. As can be seen, if there is mismanagement in any of these areas of corporate finance, a misalignment can be created between the shareholders and management. Not only will greater risks to debt holders create greater interest costs, but it can also result in more preventative measures being insisted upon by the new debt holders in order to shift these additional risks. These preventative measures include restrictions on managers' actions by using covenants and indentures, which then result in even more direct and indirect costs.

Restrictions placed on managers could result in them not being able to perform at their optimum level. According to Bernanke (1989:11), by adding such restrictions the shareholders are “putting a dagger on the steering wheel of a car.” The dagger motivates the managers to drive more carefully, “but you may be stabbed if someone drives into you.” Damodaran (2011:369) states that this reduction in managerial flexibility can result in serious consequences for shareholders. This is supported by a study performed by Graham and Harvey (2002:10) where financial flexibility was identified as the most important factor that managers consider when making capital budgeting and financing decisions. Damodaran (2011:369) identifies two possible reasons for this. Firstly, the value of a firm may be maximised by keeping the option to invest in projects that are not anticipated, but that add value. Also, the flexibility allows managers more breathing space and power. However, as Graham and Harvey (2002) warn, the reasons why firms never fully utilise debt may be based on sound financial principles, but it may also serve as camouflage for managers pursuing their own interests.

Ultimately, the best defence against agency costs is perceived to be proper corporate governance (Gompers, Ishii, and Metrick, 2003:107). By implementing a corporate governance programme, managers can be held responsible for wasteful spending and unethical behaviour, which was found to be the case in the 2008 sub-prime crisis when firms utilised excessive levels of leverage (Duchin, Ozbas and Sensoy, 2010:418). Leverage needs to be in balance in order to reap the benefits, but, as previously stated, when the management is too conservative, the firm could forgo wealth, and when too eager, they might create financial distress.

In summary, when managers use too much leverage they tend to magnify the outcome of earnings performance (Clayman *et al.*, 2009:127). Correia *et al.* (2007:18-2) state that if agency costs are managed, the shareholders will benefit from the fact that management can raise financing at a cheaper rate. Harris and Raviv (1990:323) state that the use of leverage can offer greater promised yields to investors as earnings can be compounded during robust growth periods due to high levels of leverage. Unfortunately, poor performance can lead to extreme losses, which can place the management of firms in great financial distress. Managers can then expect a variety of costs, such as possibly bankruptcy, because of this.

Financial distress costs and the static trade-off theory, which incorporates them, are therefore discussed next.

3.4.2 FINANCIAL DISTRESS AND TRADE-OFF THEORY

The trade-off theory set out to improve on earlier work done by Modigliani and Miller (1958) by incorporating the effects of bankruptcy costs. The trade-off theory asserts that a firm originally starts off with little or no debt financing (Myers, 1977). As more leverage is utilised, its firm value is increased by the amount of tax savings it accumulates, until the financial costs associated with the increased use of debt surpasses these benefits. Therefore, this theory is used to identify an optimal debt ratio for a firm. From the perspective of dividend-investing, the degree of leverage can compound return and have a significant effect on dividends.

Brealey *et al.* (2008:503), Brigham and Daves (2007:523), and Myers (1977) explains how the trade-off theory can be used to manage leverage and maximise firm value by balancing the value of the tax shields with the costs of financial distress. Figure 3.3 indicates how the WACC will change as more leverage is used in a firm's capital structure according to the trade-off theory.

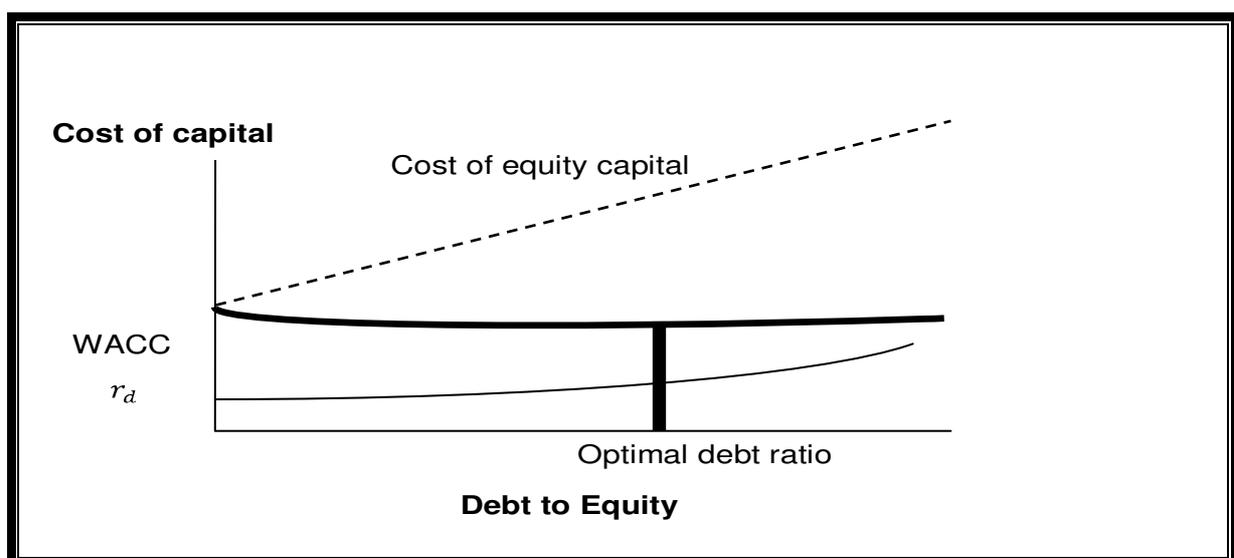


Figure 3.3: Cost of capital considering financial distress

Source: Clayman *et al.* (2009:126)

As can be seen from figure 3.3, a value-maximising firm would want to be on the top of the curve where the two sides balance out and the optimum debt ratio can be found. In comparing figure 3.2 with figure 3.3, the difference that bankruptcy-related costs can have on firm value becomes clear. In figure 3.3 it can be seen how the cost of debt increases due to increased risk associated with the use of leverage over the target debt ratio, and how the WACC is ultimately adjusted upward due to the threat of financial distress that materialises.

The probability of financial distress is an important component in the cost of the distress. This probability is mostly a function of the leverage used by a firm and the degree of marketability of their assets (Wruck, 1990; Altman, 1984). Generally, the greater the leverage of a firm, the greater the risk will be, and the more marketable the assets the less chance there is for financial distress (Weiss and Wruck, 1998:56). One must not forget, however, that the greater the risk, the greater the potential reward of using leverage. This reward can be in the form of both capital growth and dividend distributions to shareholders willing to accept such risks. Andrade and Kaplan (1998:1443) studied 31 highly leveraged transactions that became financially distressed and found that managers increased the value of their firms by using leverage in the period of 1988 to 1996. Considering this possible benefit, Graham (2002:1903) found that large firms at the time did not, however, capitalise on potential interest tax shields, since firms could on average increase their firm value by 7.5 % by leveraging up and still be considered to be conservative.

The trade-off theory has received mixed support for its proposition to enhance firm value. For example, Brealey *et al.* (2008:516) quote studies performed by Graham and Harvey (2001), Wald (1999), Fama and French (1998), and Mackie-Mason (1990), which indicate that firms rarely make major shifts in their capital structure just because of taxes, since it is inherently difficult to calculate the present value of interest tax shields in a firm's market value. Brealey *et al.* (2008:516) further state that some highly profitable firms usually use very low levels of debt. Recent studies by Leary and Roberts (2010), Fama and French (2005), and Frank and Goyal (2003) suggest that equity issues can be more attractive than debt issues even for firms with ample debt capacity.

However, studies performed by Shyam-Sunder and Myer (1999:220), Smith and Watts (1992), Mackie-Mason (1990), Long and Malitz (1985), and even Modigliani and Miller (1966) form part of the majority of academics who supports the trade-off theory. Bradley, Jarrell, and Kim (1984:885) state for example that the debt ratio is “negatively related with the volatility in annual operating earnings, as predicted by the bankruptcy cost component of optimal capital structure trade-off.”

Contrasting the trade-off theory, which implies an optimal debt range, Majluf and Myers (1984) introduce the pecking-order theory. This theory originates from the cost borne from asymmetric information present in the market. Asymmetric information is another violation of the Modigliani and Miller (1958) assumption of all parties involved having the same information. In practice, this is seldom the case as managers are usually privy to information to which other parties are not. Asymmetrical information has given rise to many diverging theories relating to capital structure and dividend decisions. The signalling theory is in all probability the most famous, due to managers having access to private information, as opposed to the public, who does not (Brickley, 1983). Managers can therefore influence firm value by strategically releasing information or taking certain actions. The next part of this chapter discusses asymmetric information and the pecking-order theory in more detail.

3.4.3 ASYMMETRIC INFORMATION AND PECKING-ORDER THEORY

Asymmetric information is the final violation of the Modigliani and Miller (1958) assumptions covered in this chapter. It lies at the heart of many theories regarding dividend and capital structure decisions. One of these, for example, is market timing. It asserts that management uses economic cycles and trends as indicators of when to take action when they want to change the firm’s capital structure or decide on dividends (Baker and Wurgler, 2002:2). Market timing explains why firms tend to issue shares after run-ups in share prices and why aggregate share issues are concentrated in bull markets and fall sharply in bear markets (Brealey *et al.*, 2008:521). For this reason, this study investigates how dividend-investing can be

used to generate positive risk-adjusted returns during market movements. How this is done is elaborated upon in the next chapters. In this chapter the use of asymmetric information and its influence on the capital structure is explained using the pecking-order theory.

According to Brigham and Daves (2007:525) the pecking-order hypothesis states that when firms need financing for investments they will firstly use internal sources of funding such as retained net income, or selling off its short-term marketable securities. When the internal financing is depleted, managers then turn to debt issues or even to issue preference shares instead of using equity. The last resort for obtaining financing is to issue equity capital. Internal financing is also referred to as cash flow generated by a firm's existing assets, whilst external financing is cash flow that is generated from the financial markets or private financing (Brealey *et al.*, 2008:517). The pecking-order theory holds important implications for dividend policies, as well as firm value.

Brealey *et al.* (2008:519-520) name four such implications. Firstly, there is a natural tendency to rely heavily on internal financing, which creates greater reserves than what would ordinarily be necessary. This means some capital is not optimally utilised to enhance shareholder value. Secondly, firms adapt their target dividend pay-out ratios to their investment opportunities, whilst trying to avoid sudden changes in dividends. This goes hand in hand with the third implication. This is that sticky dividend policies and unpredictable fluctuations in profitability and investment opportunities create the possibility of cash flow generated by operations that can exceed capital expenditures, or not cover it fully. When there is a deficit, firms have to sell marketable securities or alternatively use cash reserves, which can increase the business risk of the firm and negatively impact on firm value. Finally, when external financing is required, firms will issue the safest security first, being debt, followed by hybrid securities, and finally ordinary shares. This trend complicates the dividend decision since financially strong firms who pursue a pecking order will ultimately have relatively few ordinary shares to which dividends can be paid.

Damodaran (2011:340) alleges that firms usually prefer internal financing for several reasons. The author states that when firms use external financing they have to

relinquish a degree of control, especially in the case of smaller firms. For large firms, signalling theory asserts that the market can perceive share offers as a negative signal and adjust the value of shares detrimentally, but this is not the case with debt financing. Therefore, by using debt financing first the firms are hoping to send a signal to the market that they are in a stronger position, since weak firms would not be able to do the same. The author secondly asserts that managers might perceive share issuing costs to be too high when issuing ordinary shares and that internal financing is generally safer. The use of internal financing should, however, not imply that managers are to be less concerned with the firm value, since internal financing has limitations as well. There is an inherent limit to availability, as well as the consideration that projects financed with internal financing are nonetheless subject to performance standards, as identified in the investment analysis techniques, just as is the case with external financing. Furthermore, when managers use internal financing for reinvestments, as opposed to paying dividends or building reserves, they run the risk of losing shareholder confidence if investments do not perform and market prices fall.

Shyam-Sunder and Myers (1999:220) suggest that another reason for firms applying the pecking-order theory is because debt financing is normally the easiest to use for short-term deficits. They further argue that it is an excellent first-order descriptor of corporate financing behaviour for mature firms since they found that debt levels change when there is an imbalance of internal cash flows, net of dividends, and real investment opportunities. They further state that the pecking-order theory explains why successful firms generally borrow less than distressed firms, as they do not require outside financing as often. According to Rajan and Zingales (1995:1430), the level of leverage of individual firms is dependent on four factors: size of the firm, tangible assets on the balance sheets, profitability of the firm, and the firm's market-to-book ratio. Larger firms, firms with greater fixed assets, unprofitable firms, and low market-to-book ratio firms all had greater use of debt financing and vice versa (Gomes, 2001:1264, Ross, Westerfield, and Bradford, 1993, Jensen and Meckling, 1976). Booth, Aivazian, Demircug-Kunt, and Maksimovic (2001) found similar results for developing countries. The next section serves to conclude this chapter by discussing important topics raised thus far.

3.5 CONCLUDING REMARKS ON THE FINANCIAL STRUCTURE

Throughout this chapter, reference was made to the role the financial structure has on the financial function performed by managers. In this financial function managers decide where to invest funds to generate profitable returns over the long run (investment decision and capital budget). Financing to fund these investments is then collected from either internal or external capital sources of the firm (financing decision and the capital structure). If the return of the proposed investments does not exceed the hurdle rate (MCC), or when returns are greater than expected from past investment, the financial managers must decide if funds should be reinvested into real assets or distributed to shareholders (the dividend decision).

Specifically, the use and the influence that leverage can have on the capital budgeting, financing and dividend decision was discussed in this chapter. In summary, there are two broad benefits of using debt in the capital structure (Damodaran, 2011:360). The first is that the use of debt financing provides a tax benefit over the use of equity financing. According to Firer *et al.* (2008:10), Harris and Raviv (1990:322), Bernanke (1989:11), Jensen (1986:324), and Jensen and Meckling (1976:351) to name but a few, the second benefit of using debt in the capital structure is that it can be used to discipline managers. Debt financing improves managers' efficiency in generating higher returns on investments, and is portrayed in the examples of leveraged buy-outs, leveraged recapitalisations and acquisitions of low-leveraged targets (Kaplan 1994:192, Denis and Denis 1993:63, Palepu, 1990:247; Smith, 1990:143). The benefits of leverage, however, can be counteracted by the costs of using debt financing. When the firm incurs these direct or indirect costs the equity providers face increased risk to the value of their shares. Accordingly they require greater returns in relation to the perceived risk as indicated in their expected rate of return.

Market-related costs, such as agency costs, bankruptcy-related costs due to financial distress, and asymmetric information costs were highlighted. These costs allow for the development of modern capital structure theories, which further

expanded the available knowledge of the effect of leverage on firm value and dividends. The overall purpose of these modern theories, as indicated, have been to improve on the Modigliani and Miller studies by incorporating market imperfections encountered in practice into capital structure theories. These traditional and modern capital structure theories can be used to understand why firms have predetermined dividend pay-out ratios and whether dividend policy can be used to generate firm value. When managers implement these theories they do so for the benefit of the shareholders of the firm. The theories are unique in many ways, but also have the attribute of being complementary to one another.

By using a predetermined dividend pay-out policy a firm can possibly send signals to the market and shareholders. Shareholders can also use such information to make investment decisions, and use the cash flow to increase their personal wealth. Only by using such information in a holistic view can they attempt to analyse the dividends, and using dividend-investing strategies can possibly identify how to select investments. This is the topic of discussion in Chapter four.

Chapter 4 : THE DIVIDEND DECISION

4.1 INTRODUCTION

“The framework for allocating cash is built around the ideal capital structure of the firm and the sustainability of cash flows. If cash flow generation is constant, one has much more flexibility on the balance sheet” (Van der Merwe, 2010:23).

Chapter three provided for an overview of the capital structure and how it influences the dividend decision. It was stated that an optimal capital structure is one that balances the future growth demand of the firm and short term shareholders' demand for returns. Damodaran (2011:5) states that at some point, firms reach a stage where the cash flow generated by existing investments is greater than the funds required to make value-enhancing investments. From that point, the managers must decide on the appropriate dividend policy, which determines the amount, type and frequency of distributions to the shareholders. The firm then has three basic choices to make regarding its earnings for any given year:

- It can reinvest the earnings for future growth.
- It can build up its internal financing reserves.
- It can pay out earnings in the form of dividends.

Chapter two and Chapter three related to the first two options, while this Chapter – the last in the discussion of the financial function – considers the latter.

This chapter focuses on the possible effect dividend payments have on share value and provides a basis for the analysis performed in the next chapters. The purpose of this chapter is, therefore, to conclude the discussion of the financial function and its components. Furthermore this chapter introduces the possibility of using dividend information in conjunction with market movements (bull and bear markets) to generate positive risk-adjusted share returns. The influence that investor preferences, especially during bull and bear markets, have on the dividend decision

is discussed and serves as the basis for the analysis of dividend-investing strategies used in the following chapters of analysis.

The remainder of this chapter is structured into four parts: the first provides a background of dividend decisions and policy by considering the type of dividend paid to shareholders and the dividend payment chronology, i.e. how dividends are paid out to shareholders. The second part provides for a discussion on three prominent schools of thought on dividend policy and the dividend decisions firms make. The third part identifies various patterns that have been observed with dividend policies over the past decades. Before the chapter is concluded by means of a summary, the penultimate part discusses dividend-investing and market movements. Dividend-investing strategies are identified, which serve to clarify whether dividend information and certain market conditions could be used to enhance shareholder value during market movements. Based on South African literature reviewed it would appear as if this aspect had received relatively little attention in previous years of studies. This study seeks to provide more clarity.

4.2 BACKGROUND TO THE DIVIDEND DECISION AND POLICY

“Managers who do not have good investment opportunities and do not pay dividends quickly create a situation where they have very little debt and enormous cash balances. These managers can then easily use their cash balances to benefit themselves at the expense of the shareholders” (DeAngelo, DeAngelo, and Stulz, 2006:227).

As discussed in Chapter three, debt is used by many firms to limit managers' financial freedom in the hope of protecting shareholder wealth. However, following the financial crisis that hit global markets in 2008 many firms have attempted to de-leverage their debt, resulting in large cash reserve balances in most firms internationally. Van der Merwe (2010:24) also states that the excessive cash balances in South African firms at the time were as a result of the financial crisis the South African market experienced. Internationally, Bates *et al.* (2009:1985) identified

new trends in increased cash-to-asset ratios over the past couple of years, indicating that firms have been increasing cash balances even before the financial crises.

It can thus be argued that the dividend decision has become critical in order to manage shareholders' wealth by distributing dividends, when appropriate. The questions which then arise are which type of dividend should be paid, how it should be paid and how to measure its relevance. Unfortunately, deciding on this has never been an easy undertaking. The next three sections of this chapter are dedicated to each of these pertinent questions.

4.2.1 TYPES OF DIVIDEND PAYMENTS

Dividend payments can either be in the form of cash dividends or capital appreciation on the shares owned by investors. Cash dividends include regular, special, extra, or liquidating dividends (Damodaran, 2011:547). Dividends in the form of capital gains include share dividends, splits, as well as share repurchases. Studies by Brav, Graham, Harvey, and Michealy (2005), and a subsequent study by Firer *et al.* (2008), indicate that many firms use a combination of the above methods of payments. There are, however, some noteworthy consequences of using the various forms of dividends and managers must balance the benefits with the negative side-effects in order to add value to shareholders.

Both cash dividends and share repurchases reduce the overall market value of firms' shares, but the way they affect market value is different. Damodaran (2011:548) states that cash dividends reduce the market price per share on ex-dividend day and do not change the amount of shares outstanding. A share repurchase reduces the amount of shares and may cause an increase in share prices. Furthermore, unlike a cash dividend a share repurchase returns cash selectively to investors who choose to sell their shares back to the firm. The remaining shareholders only gain from the repurchases when there is a gain in the market price of the remaining shares.

Van der Merwe (2010:25) identifies cash dividends as the most common type of dividends in use in South Africa when she states that most often South African firms

do not have access to cheap debt to fund repurchases. Furthermore, she states that due to empowerment deals done in South Africa, the use of cash dividends is more preferable since “many empowerment structures rely on predictable dividend flows to pay off debt.” Share repurchases have also caused the decline of many share prices over the past years, which evince the criticism of its use. Van der Merwe (2010:25) illustrates this by quoting Kooyman (2010) when he says:

“Managers need to behave as investors and value the shares appropriately in order to purchase shares below their fair value. Unfortunately, in my experience, management at firms are poor judges of share valuation.”

An appropriate South African example of such a decline in share value subsequent to a share repurchase is that of Anglo American who initiated a scheme prior to the financial crisis in 2008 and whose share value plummeted, which in turn dried up cash reserves and forced the firm’s management to interrupt its proud dividend-paying history (Van der Merwe, 2010:24). Saville (2010) argues Kooyman’s (2010) point and states that “empirical evidence from South African firms suggests that, on average, firms have a better sense of their own value than the market.” However, Kooyman (2010) argues further that the practice of share repurchases goes against the grain of investing since investors’ decisions are being made for them and that “investors would prefer to be the ones choosing how to apply this cash.” He goes on to argue against the use of share repurchases by asserting that managers can use this method to manipulate the value of shares for their own benefit. Both Kooyman (2010) and Saville (2010) state that cash dividends have great signalling power since firms with good track records of dividend payments usually have higher (share) valuations (Van der Merwe, 2010:29). Furthermore, both posit that dividends and dividend growth contribute about three quarters of total investment returns over five- to 10-year periods across countries, over time, and across a given firm’s history (Van der Merwe, 2010:30). These signals are elaborated on in sections to come.

Considering these arguments, the lack of availability of share repurchases data, and the difficulty in the accounting thereof (Bester, Wesson, and Hamman, 2010:17), the rest of this study’s focus will be placed on cash dividends and its possible influence on share price.

4.2.2 THE CASH DIVIDEND PAYMENT CHRONOLOGY

Cash dividends are usually determined by a firm's board of directors and paid out to shareholders a few weeks later (Damodaran, 2011:506). There are key dates in this process that are of importance to investors, since there are time differences between the dates that the dividends are declared and actually paid out. Figure 4.1 illustrates the important dates in the dividend payment chronology.

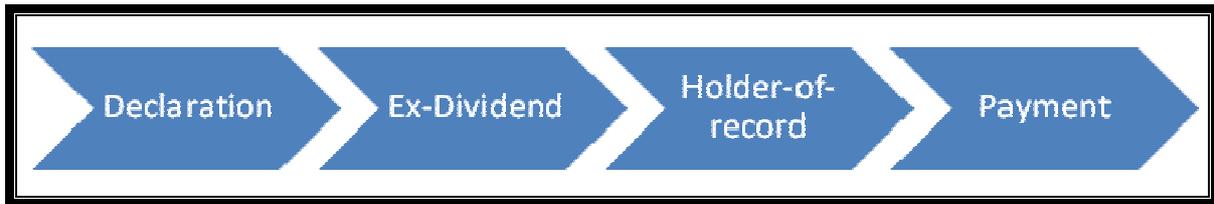


Figure 4.1: The dividend payment timeline

Source: Damodaran (2011:507)

The first date of importance is known as the dividend declaration date and is when the firm's board of directors decide whether or not to distribute dividends to shareholders. This is the foundation of the signalling theory mentioned in previous chapters and further explored later in this chapter. According to Damodaran (2011:506), this date is important because:

“By announcing its intent to increase, decrease, or maintain dividend size, the firm conveys information to financial markets. Thus, if firms choose to change dividend payments size, this would be the date that the reaction to the change is most likely to occur.”

The second noteworthy date is called the ex-dividend date, which occurs about two to three weeks post declaration. By this date investors had to have purchased shares in order to obtain the specified dividends. Share prices usually decline on this day since dividends are not received by investors who purchase the share after this day. To these investors the value must decline since the firm is spending cash that they will not receive. On this date or a few days later the firm will close its books and compile a list of shareholders on the holder-of-record date. Finally dividends are paid to shareholders on the dividend payment date. This usually occurs two to three

weeks after the previously mentioned date. On this day no effect on share prices should occur since nothing has changed at the firm and the markets have already had ample time to respond to the dividend announcement (Asquith and Mullins, 1983).

Reactions to dividend announcements have been studied for many years, and many academics and practitioners have proposed theories regarding the information content of dividend payments. However, in order to introduce and explain the various dividend theories the next section identifies several dividend measures used to analyse the effect dividend payments might have on share value.

4.2.3 MEASURES OF DIVIDEND POLICY AND VALUATION

Three widely used measures of dividend policy are identified and explained in this part, namely the DY, dividend stability, and the dividend pay-out ratio (DPR).

The first dividend measure of importance is the DY, which relates the dividend amount paid in relation to the share price (Damodaran, 2011:507). According to the author, many investors used the DY as a measure of risk and as an investment screen. In support of the use of such a screen, studies do indicate that higher-than-usual DY shares tend to outperform lower DY shares in value over time, as previously stated by Kooyman (2010) and Saville (2010).

Fuller and Goldstein (2003) studied the effects of market movement on dividend policies and whether signalling was indeed observed in the market when selecting shares for investing. Their study revealed that dividend-paying firms provided better returns than non-dividend-paying firms during both scenarios of market movements – bull and bear markets - and that the level of dividend payments was not the influencing factor, but rather whether the firm made any payments at all.

Another study of dividend relevance was performed by Erasmus (2011), who built on previous studies of Wolmarans (2003; 2000), Ap Gwilym, Morgan, and Thomas (2000), and Kleim (1985), to name a few. An important result obtained by Kleim

(1985) was that an U-shaped non-linear relationship was observed between DY and share returns. This relationship dictates that the highest returns were found for firms with the highest and zero DYs. The results of Erasmus (2011) and Ap Gwilym *et al.* (2000), however, do not indicate that such an U-shaped relationship exists. This is of specific relevance for the current study since the Erasmus (2011) study was based on South African firms. Erasmus (2011) also indicate that share value can potentially be influenced by not only the size of dividend payment, but also its stability. In support of these findings, the DeAngelo and DeAngelo (2012) and Fuller and Goldstein (2003) studies provide empirical evidence that during financial distress, commonly associated with bear markets, managers were more willing to reduce dividend payments, but not to stop them in their entirety.

From these previous studies, some of the major factors pertaining to the dividend decision appear to be the size of the payments, measured in terms of DY, the form of the payments and the recent stability of payments (Erasmus, 2011:3). This study uses the methodology incorporated by Erasmus (2011), Ap Gwilym *et al.* (2000) and Kleim (1985) who used DYs as an indicator of dividend size. DY is calculated on a monthly basis as follows:

$$DY_t = \frac{1}{P_{t-1}} \sum_{T=t-12}^{t-1} DIV_t$$

Where DY_t is the DY in month t , DIV_t is the dividend paid during month t , and P_{t-1} is the share price in month $t-1$. This methodology enabled the construction of various dividend-investing groups based on DY levels discussed later in the chapter.

The second measure of dividend policy pertains to the stability of cash dividends. Hobbs (2006:5) found that “permanent [cash dividend] payers enjoy significantly higher earnings in the years subsequent to initiation than temporary payers do.” Hobbs (2006:5) states that even though it appears that permanent payers enjoy greater earnings, investors at the time did not differentiate between the constantly paying firms and the temporary dividend-paying firms.

Previously, in the South African market, Gevers and Hamman (1988), and Du Plessis, Archer, and Affect-Graves (1986) found support that dividend payments are usually very stable, through the discovery that during periods of high inflation firms paid dividends in excess of their real earnings. Firer *et al.* (2008) revealed supporting evidence that South African firms and their managers appear to be conservative with dividend payments, and seemed to maintain stable levels of pay-outs.

The third measure of dividend policy is known as the DPR. This measure relates to the amount of dividends paid in relation to earnings of a firm, or:

$$DPR = \frac{\text{Dividends}}{\text{Earnings}} = \text{Dividends paid per period} / \text{Earnings per period};$$

The DPR is used in a number of different settings. Firstly, it is used in valuations as a method of predicting future dividends. Secondly, it allows for greater analysis of earnings by using the retention ratio to predict future growth in earnings. The retention ratio is the proportion of earnings not paid out as dividends. The third use of the DPR is to identify where a firm is in its life cycle, since firms tend to follow a certain pay-out policy dependent on its age and historical growth.

According to life cycle analysis – a possible source of clientele theory – if an investor can determine the age and growth potential of a firm it is possible to identify what type of dividend payments the firm could make in the future. The dividend policy, however, is not the only financial component that can be analysed with a firm's life cycle analysis. Capital structures and investment decisions also interact in this model. Figure 4.2 illustrates how this analysis can be used in order to identify what dividend policy growing firms might use.

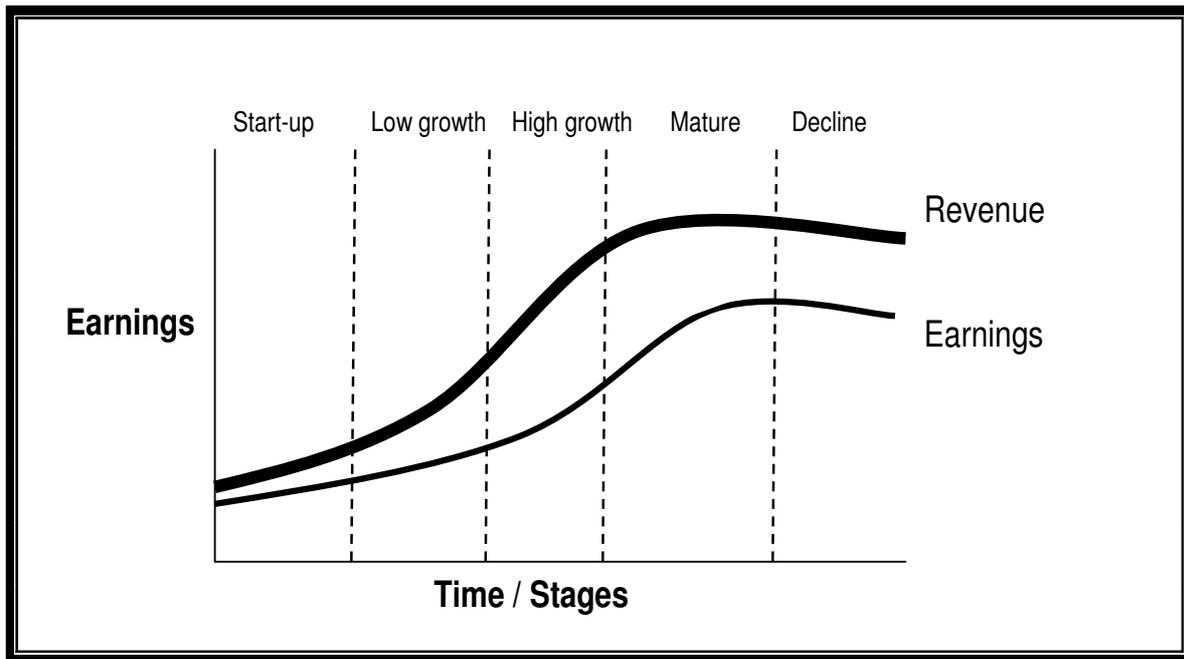


Figure 4.2: Life cycle analysis of earnings and revenue
Source: Researchers own construction

Firms follow various stages of growth ranging from start-up to decline. In the start-up stage firms tend to not have any dividend payments as most earnings realised are reinvested in order to facilitate greater growth in assets. In this stage internal financing is almost impossible. As the firm becomes more successful it becomes more capable of making dividend payments as their need for making further investments for growth declines.

In analysing DPRs Damodaran (2011:509-510) found that many firms in the U.S. paid out dividends to shareholders in excess of their earnings in January 2009. In South Africa this was also found to be the case for certain periods (Gevers and Hamman, 1988; Du Plessis *et al.*, 1986). When firms pay out dividends in excess of earnings, it loses value in two ways (Damodaran, 2011:571). It creates a cash shortfall that has to be made up by issuing more securities, and the cash shortfall in turn creates capital-rationing constraints that limit new investments in value-adding projects. Clearly this practice destroys firm value, so the question is why is it being done and to what extent.

In order to provide a possible rationale for such behaviour the next part of the chapter explains the reasoning and beliefs relevant to dividend policy formulation in

a firm. Historic theories and modern improvements in policy formulation are explained before the most recent trends are identified in the following part of the chapter.

4.3 THE DIVIDEND POLICY DECISION

It is understandable that the dividend decision is not an easy decision to make. Many factors influence the decision and the effect it has on all parties affected by the decision must be considered. In order to do so this section identifies the various schools of thought regarding the dividend decision. Reference is made to capital dividends (for example share repurchases) but this is only done in order to fully reflect the complexity of this decision. The next section firstly discusses the traditional three schools of dividend policy, before modern theories are identified.

4.3.1 DIVIDEND IRRELEVANCE VERSUS RELEVANCE

The dividend irrelevance theorem was developed by Modigliani and Miller (1961) who stated that the dividend policy has no significant effect on a firm's share price or cost of capital – its MCC. Recalling from chapter three, this first school of thought argued that as the amount of debt financing increased, the MCC will decrease. Accordingly, dividends could not be used to enhance firm value as there would almost not be any equity capital in the firm.

Modigliani and Miller's (1961) arguments, however, were contradictory to Lintner (1956:98) who conducted a series of interviews with finance managers and examined the dividend policies of the firms they managed. Lintner's (1956:98) findings are summarised, as interpreted by Marsh and Merton (1987:5):

“Firms have long-term target dividend pay-out ratios. Secondly, managers focus more on dividend changes than on absolute levels and that dividend changes follow shifts in long-term sustainable earnings. This trend implies that managers tend to “smooth” dividends so that changes in transitory earnings are unlikely to affect

dividend payments over the short term. Finally, managers are reluctant to make changes to dividends that might have to be revised. They are particularly concerned about having to rescind a dividend increase.”

Major debates followed between academics who argued dividends to be irrelevant like Modigliani and Miller (1961) and others such as Lintner (1962) and Gordon (1963, 1959), who believed dividends to be relevant to a firm's market value. Gordon and Lintner, who propositioned the second school of thought, argued that the cost of equity will decrease as dividend pay-outs are increased, resulting in a lower MCC. The reason for this is that investors are less certain to benefit from capital gains and potential future growth from reinvestments, than they are of receiving dividend payments. Lintner (1962) and Gordon (1963; 1959) therefore believed investors prefer DYs over and above capital gains as DYs are less risky. Academics supporting the first school of thought disagreed with these assertions and viewed the Gordon-Lintner argument as a “bird-in-the-hand” fallacy. In Modigliani and Miller's (1961) view most investors plan to reinvest their dividends in the shares of the same or similar firms, and in any event, the risk of cash flows to investors in the long run is determined by the risk of the operating cash flow, and not by the dividend pay-out policy (Brigham and Daves, 2007).

Finally, the third school of thought, based on tax preferences, differs from the previous schools. It recognises the relevance of dividends and that it can be used to influence shareholders' value. Thus, it partly supports the second school of thought in the sense that equity financing can enhance shareholder value, but it opposes the idea that investors prefer DYs over capital gains. This is due to differential tax treatments for the two scenarios and the fact that capital gains tax (CGT) rates in many countries are lower than dividend taxes. Pettit (1977:419) states that even at identical tax rates, a CGT can still be preferred over a dividend tax for two reasons.

Firstly, the time value of money causes the cost of the tax to be lower for capital gains than for dividends, since CGTs are only paid at some future date when the sale of the share is brought about. As long as this time period is longer than the period until the next dividend payment, the equal rates would not result in equal monetary costs. Secondly, if a share is held until maturity by a South African

investor, some tax advantages would come into play since an annual tax exemption can be enforced up until a specified value for the assets, which will decrease the tax liability (Vanek, 2009).

Taxation holds particular significance for South African investors and there have been many changes regarding the taxation of dividends and capital gains in South Africa. The next part of this section provides a summary explaining various taxation trends South African investors have been exposed to before modern approaches to dividend policy formulation are introduced.

4.3.1.1 Taxation in the South African market

According to Firer *et al.* (2008) the dividend taxing systems worked on a withholding basis where only the final declaration of dividends to the shareholders was taxed up until March 1990. The responsibility of settling the liability rested on the receiver of the dividends, but was paid by the distributing firm (Vanek, 2009). Between the periods of 1990 to 1993 there did not exist any form of tax, be it a DWT or CGT. In the 1993 budget speech, things changed yet again, as the Minister of Finance announced that STC will be implemented. This subsequently became effective as of 1 April 1993. More recently the STC methodology has also been replaced by a DWT system effective as of 1 April 2012.

In Chapter three references was made to STC, and CGT (Correia *et al.*, 2007:1-10). STC was different to taxation levied in most other countries that use a DWT. For South African shareholders this meant that they were privileged in that no taxation was paid on ordinary dividends received from local firms, as can be seen in Section 10 (1)(k)(i) of the South African Institute of Chartered Accountants (SAICA) legislation handbook (2010). Local firms were, however, burdened with a double taxation, since they had to pay corporate taxes in general and additional STC when they wanted to pay dividends (Correia *et al.*, 2007:1-11).

The implementation of STC, according to Ellis (2001), was to encourage the reinvestment of profits into the firm in the hope that the firm could grow further and contribute more to the growth in gross domestic production (GDP). It was believed,

at the time of implementation, that dividend payments would decline drastically, since STC places greater emphasis on such payments. Table 4.1 indicates the STC rates that were paid by firms who declared dividends during the different time periods since its inception in 1993.

Table 4.1: STC rates on dividends declared

From	Until	Rate
17-Mar-93	21-Jun-94	15%
22-Jun-94	13-Mar-96	25%
14-Mar-96	30-Sep-01	12.50%
1-Oct-01	31-March-12	10%

Source: Researchers own construction

Table 4.2 illustrates how firms would be taxed under STC, and how it also created a lower total effective tax rate. In the table, an example is used of a firm that pays out all net income as cash dividends and does not hold any internal reserves.

Table 4.2: STC versus a classical taxation system

	<i>Tax rate</i>	Classical	STC
Taxable income		100,000	100,000
Taxation	<i>28%</i>	(28,000)	(28,000)
		72,000	72,000
STC [10% of total dividends paid by the firm]	<i>10%</i>	0	(7,200)
Dividends paid by the firm		72,000	64,800

Source: Correia *et al.* (2007:1-11)

Under the classical system, firms only paid a corporate income tax, and shareholders paid personal income tax on the dividends acquired. Under STC, the firm had to pay both portions but because of this double taxation, fewer taxes were paid in total since the STC rate of 10% is much less than the personal income tax rate of 40%. The table also indicates how fewer dividends became available for distribution, and why firms should possibly consider to reinvest in their own firm. In the March 2007 budget speech, Trevor Manuel, then Minister of Finance proposed the phasing out of STC, and the subsequent implementation of a withholding tax at 10% to South African individuals, and a discounted rate of 5% to 10% to foreign

investors. This was scheduled to commence in 2009, as written in the Revenue laws and Amendment Act, 60 of 2008, but was only introduced in the 2012 budget year and at a rate of 15% instead of 10%. The phasing out of STC and eventual implementation of the new tax structure would be enacted to make the South African capital market more attractive and competitive, and bring South Africa in line with international tax regimes (Vanek, 2009).

The full effect of the implementation of a new withholding tax is as of yet too difficult to determine as there are many criticisms, as well as support for the tax. It is believed that the benefits will be predominantly to the firms, as they no longer are liable for the payment of the taxes, and at some instance do not have to pay it at all (Vanek, 2009). Examples include firms such as public benefit organisations (PBOs), and tax exempt organisations. Another example is inter-firm dividend distributions, which will not be taxed as only the final recipient is liable and not the firm passing on the dividends (Brislin, 2009).

Table 4.3 indicates how the implementation of the withholding tax can affect shareholders and firms, as the difference between the current STC structures is compared with firms using the different rates of withholding tax.

Table 4.3: Comparison of STC and the withholding tax

	Firm with 10% STC	Firm with a 5% DWT	Firm with a 10% DWT	Firm with a 15% DWT
Income	100	100	100	100
Normal tax	(28)	(28)	(28)	(28)
Distributable income	72	72	72	72
STC (10/110)	(6.55)	0	0	0
Withholding	0	(3.6)	(7.2)	(10.8)
Paid to shareholder	65.45	68.4	64.8	61.2

Source: Brislin (2009)

By comparing the scenarios of a firm paying STC, and a firm with a 15% DWT, it can be seen how the shareholders receive less cash. The precise implications for

shareholders and other firms will only be apparent when the tax is implemented fully and the relevant stakeholders have had enough time to react. For the purpose of this study, however, the question arises whether the corporate income tax or STC has had any effect on South African dividend decisions in the past.

According to Ellis (2001) STC did not have much impact on the cash dividend payments of South African firms in early years, as many firms followed international trends and did not incorporate STC into their dividend policies. Studies performed by Firer *et al.* (2008), Wolmarans (2003; 2000) and Marx (2001) also indicate that taxation did not affect dividend policy by as much as would be expected. Finally, Correia *et al.* (2007:1-11) state that “surveys of practice indicate that firms use their corporate tax rate when accounting for tax in the financing and investment decisions.” Thus the corporate tax rate is of importance, but not necessarily STC.

Considering the various dividend policy beliefs discussed thus far, modern dividend theories originate from statements such as the following from an unnamed stockbroker (Firer *et al.*, 2008:10):

“Just what was De Beers playing at? With one dividend cut to save less than R90 million cash it has destroyed the market rating it has been building for over 50 years.”

These market reactions and efforts by managers in managing dividends are the preceding factors of the modern theories and are the topic of the next discussion.

4.3.2 MODERN THEORIES ON DIVIDEND PAYMENTS

Modern dividend policy theory provides for extended reasoning on the relevance of dividends. In this section three specific theories are explained. They are the clientele, catering and signalling theory.

4.3.2.1 Clientele theory

The clientele effect is justified by the preference some investors have for shares that exhibit certain characteristics that favour their taxable income (Clayman *et al.*, 2009). Examples of such clienteles are individuals who are tax exempt and thus would prefer high DY firms, as opposed to higher capital gains (Pettit, 1977:420). Studies indicate that the clientele effect has much to do with the age of the investors, as well as the tax status of the investor. For example, many retired investors prefer higher current income than capital gains since they prefer to use the dividends for daily expenditures. Accordingly, Clayman *et al.* (2009), state that age and tax status cause certain investors to prefer different types of industries as the industries have differing characteristics. Figure 4.3 below represents the different DYs for industries on the Standard & Poor's 500 Index for 2004, and highlights the difference in dividend policy observed between sectors.

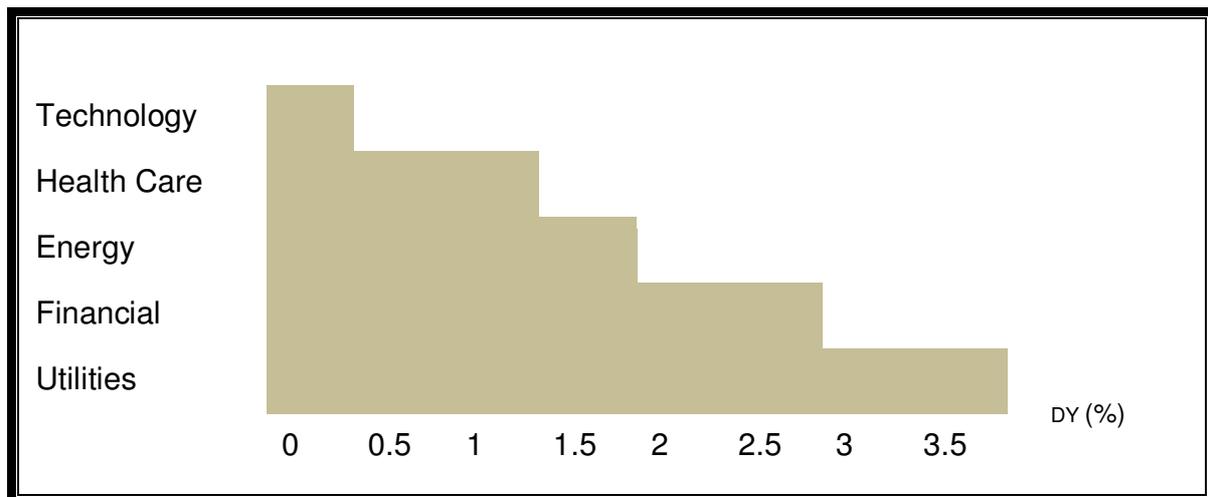


Figure 4.3: DY of major S&P's industry groups September 2004

Source: Clayman *et al.* (2009)

Damodaran (2011:585) states that one of the consequences of the clientele effect is that changes in dividends, even if entirely justified by the firm's cash flow, may not be well received by the shareholders. He states that this is particularly evident when firms have unhappy shareholders as a result of a cut in dividends. Also, when firms have not paid any dividends in the past and suddenly initiate them, shareholders may also be dissatisfied.

4.3.2.2 Catering theory

Another modern theory that is very similar to the clientele theory is the catering theory (Baker and Wurgler, 2004). Where the clientele theory posits that investors select shares based on predetermined firm characteristics, the catering theory proposes that firms formulate dividend policy based on its respective shareholders' demands. Both of these theories share the key characteristic of shareholder importance and market conditions, and posit that the dividend decision should be actively used to manage firm value (Erasmus, 2011). This element of market sentiment is the main tenet of the signalling theory discussed next.

4.3.2.3 The signalling theory

Recalling from the previous chapter, signalling theory suggests that firms with good future prospects regarding their earnings should undertake actions to illustrate this as investors will react positively to these actions. The rationale behind this is that firms with poor prospects would not be able to replicate these actions especially when the dividends are relatively large (Hobbs, 2006:2). The origins of the signalling hypothesis can be found in the study performed by Lintner (1956). Recalling the findings mentioned previously, Lintner found that not only were dividend payments dependent upon the amount of cash needed to finance projects in the short term, but that they also represented management's belief in the sustainability of firm earnings over the long term (Hobbs, 2006:1).

Empirical evidence provides support for the signalling theory as it indicates that investors respond favourably to dividend increases and initiations, and negatively when dividends are decreased (Van der Merwe, 2010:24; Grullon, Michealy, and Swaminathan, 2002; Benartzi, Michealy, and Thaler, 1997; Michealy, Thaler, and Womack, 1995; Healy and Palepu, 1988; and Knight and Affect-Graves, 1987, to name a few). Hobbs (2006:27) on the other hand did not find any support for the signalling theory as dividend initiations were not found to be significant. According to him, the more important variable was long-term commitment to dividend payments and not the dividend itself. This might be the reason why investors' reactions to

dividend changes are not always the same, since negative signals are perceived as more severe.

Brav *et al.* (2005) argue that managers are “conservative with dividends” as they are reluctant to increase payments if there is a chance that long-term earnings will not be able to sustain those payments. This finding is supported by several studies performed on South African firms listed on the JSE. One of the most important surveys was performed by Seneque and Gourlay (1983), who established that management pursued dividend policy as an active variable. They state that management strongly believed in the continuity of payments and that a stable pay-out ratio was crucial for the preservation of shareholder value. When setting dividend policy, respondents were chiefly influenced by “recorded earnings and the prospect of future earnings” (Firer *et al.*, 2008). Marx (2001) found supporting evidence for this. According to his survey, just over 70% of respondents agreed that a firm should avoid making changes in its dividend policy when the risk may arise of reversing the decision at a future date.

As mentioned previously, Gevers and Hamman (1988), and Du Plessis *et al.* (1986) found support that dividend payments are being maintained at almost any cost, through the discovery that during periods of high inflation firms paid dividends in excess of their real earnings. Firer *et al.* (2008) reveal supporting evidence that South African firms and their managers appear to be conservative with dividend payments, and seemed to maintain the level of pay-outs. They used a questionnaire designed by Brav *et al.* (2005), who performed the same studies on firms listed on the New York Stock Exchange (NYSE). Results indicate that the evidence for the signalling approach was more nuanced, with managers clearly recognising that dividends convey information to the market, but that they did not use this as a tool of communicating to the market.

The current study seeks to illustrate the implications of the signalling theory further by indicating how market movements affect this over- and under reaction by investors. However, before dividend-investing strategies are introduced, the next section of this chapter provides a brief summary of some noteworthy dividend policy observations discussed thus far.

4.4 DIVIDEND POLICY OBSERVATIONS

Previous studies have reported that dividends and earnings are positively correlated over time (Damodaran, 2011:511). This correlation is not surprising, since earnings are used to pay out dividends; however, from this correlation some noteworthy trends have been noticed. Firstly, dividends appear to be sticky in the sense that dividend changes seem to be trailing earnings changes. Secondly, the dividend series appears to be much smoother than earnings, or in other words less volatile. Both of these trends are discussed in the following sections.

4.4.1 DIVIDEND PAYMENTS ARE MAINTAINED

“Managers dread cutting dividends, which might explain why this happens so infrequently” (Van der Merwe, 2010).

There are several reasons why firms tend to be conservative with dividend payments. One is that firms might be concerned about future capabilities of maintaining the level of payments. Another is that markets tend to dislike any dividend cuts that might occur. As indicated previously, South African firms have apparently been hesitant to cut the level of dividends. However, even when there are sound reasons for cutting dividends, there are reasons why firms delay doing so.

Firstly, indiscriminate investors tend to treat firms that cut dividends due to operational difficulties the same way as firms that cut dividends due to lucrative investment opportunities (Benatzi *et al.*, 1997). The second reason is known as share price drift. Michealy *et al.* (1995) analysed 887 dividend omissions between 1964 and 1987 in the U.S. market and found evidence that share prices continue to drift downward in the weeks after the announcement of a dividend cut. For firms who do need to reduce dividends, it is important that they frame dividend decreases in terms that appeal to shareholders (Bulan, Subramaniam, and Tanlu, 2005). They found that firms who confront dividend omissions and deal with them accordingly by

retiring debt have share prices that recover faster than firms who do not manage the situation and misuse cash from dividend omissions.

Hobbs (2006:5) suggests that dividends have become less sticky in U.S. markets, as originally believed by Fama and French (2002). However, Van der Merwe (2010) states that this is not the case for South African firms. Thus, it appears that dividend policies might be influenced by preferences in various markets, since investors on the JSE most probably differ from investors on the S&P 500.

4.4.2 DIVIDENDS ARE LESS VOLATILE THAN EARNINGS

Ambarish and Williams (1987) suggest that dividends are less volatile than earnings due to the impact dividends have on share prices. Investors see dividend announcements as indications of the firm's future performance, since they believe that management is privy to information that they do not have. Ambarish and Williams (1987) further state that:

"In a repeated game with reputations, dividends might reveal corporate characteristics, with or without dissipative costs. In a sequential equilibrium, outsiders would recognise the relationship between current dividends and future returns, pay higher prices for stocks with historically higher dividends, other things equal, and thereby induce to smooth dividends over time relative to corporate cash inflows."

As previously indicated many studies reveal that firms do attempt to smooth dividend payments over time in order to maintain a stable dividend policy (Firer *et al.*, 2008; Brav *et al.*, 2005). Cyert and March (1993) also state that managers generally attempt to prevent drastic changes in the level of dividends. They believe managers analyse industry-wide norms of dividend payments in relation to earnings and then use heuristics to apply conservative adjustments to the dividend payments. These predictions are also in line with Lintner's (1956) findings discussed previously. These two observations pertaining to dividend observations highlight the importance of the stability of dividend payments, and whether it can influence share prices over time.

As mentioned previously in this chapter the Erasmus (2011) study analysed a sample of firms on the JSE during the period of 1990 to 2010. His findings supported previous studies in that the level of dividend payments influenced share returns, but furthermore the stability of payments seemed to share the same relationship.

These findings regarding dividend policies over the years are meant to provide for better understanding of the different schools of thought. They serve as basic building blocks of dividend policy theory and have allowed the creation of more modern theories that seek to explain the role and influence dividends have on share value. The next part of the chapter specifically looks at how the dividend policy might be influenced by market movements. It formally provides for the research topic of the study, and the data used for statistical analysis performed later.

4.5 DIVIDEND-INVESTING AND MARKET MOVEMENTS

The term “dividend-investing” was coined by Knowles and Petty (1992:29) when they showed that focusing on the top five DY firms resulted in a portfolio which outperformed the Dow Jones Industrial Average (DJIA) between 1957 and 1990. Arguably, the use of dividend-investing strategies are derived from statements similar to those of Kooyman (2010) and Saville (2010), mentioned earlier, who stated that “firms with good track records of dividend payments usually have higher [share] valuations.” Furthermore, “dividends and dividend growth contribute about three quarters of total investment returns over five- to 10-year periods across countries, over time, and across a given firm’s history” (Van der Merwe, 2010:25).

Previous studies performed to test the use of dividend-investing include Fuller and Goldstein (2003), Wolmarans (2003, 2000), Bhana (1991), and Seneque and Gourlay (1983) to name a few. Using the findings obtained in previous studies, this study seeks to update and enhance results obtained. How this is done is discussed briefly in the next section, before being elaborated upon further in the next chapter.

4.5.1 DIVIDEND-INVESTING PORTFOLIOS

In this study the Wolmarans (2000) study is adapted in the sense that the dividend-paying portfolio has been subdivided according to a firm's DY level. Wolmarans (2000) considered the share returns for 20 shares included in the then Top 30 JSE shares, and ranked them according to DY and EY. The analysis performed on the portfolios suggested that using dividend-investing on the JSE did not yield better-than-market returns over the period of 1979 to 1999. From his findings Wolmarans (2000) suggests that the DY could not be used to outperform the market. The Wolmarans (2003; 2000) studies, however, reported higher share returns for South African firms with higher dividend payments than for the lower-dividend-paying firms. In the Wolmarans (2000) study the data analysed was for a different time period and did not consider major changes in the capital market since. This study also broadens the scope of the Wolmarans (2000) study by considering a greater selection of firms, including delisted firms that were not included in the previous study and furthermore analysing their returns over both bull and bear markets specifically.

Another study of particular significance is the Fuller and Goldstein (2003) study. As previously mentioned, Fuller and Goldstein (2003) studied the effects of market movement on dividend policies. Their aim was to determine the extent to which signalling was observed in the market when selecting shares for investing. Their study revealed that dividend-paying firms provided better returns than non-dividend-paying firms during periods covering both market movements, and that the level of dividend payments was not the influencing factor, but rather if the firm made any payments at all.

The next chapter will introduce how each portfolio was constructed using market data and why the specific time period of the study was chosen. Using the dividend measures introduced in this chapter, statistical analysis tools are identified to address the research objectives of the study. Next, the final part of this chapter serves to summarise important topics discussed thus far and its implication for data analysis.

4.6 CONCLUSION

This chapter served the concluding remarks on the financial function performed by a firm's management and how the financial components – the investment decision, the financial decision, and the dividend decision – interact.

As mentioned in Chapter one, this study's objective is to investigate the possibility of using dividend information, especially over various bull and bear markets, to enhance investment returns. From the perspective of the firm, by analysing the performance of dividend-investing strategies over time a possibility exists that dividend policy formulation might be used to maximise share value. This investigation is of particular significance in the South African market, since the most common dividend policy used by firms listed on the JSE remains the constant-paying-dividend policy (Van der Merwe, 2010:29; Gidlow, 2009; Firer *et al.*, 2008). Accordingly, firms appear to be conservative regarding dividend payments and considering the recent financial crisis and other cash-to-asset ratio trends, have built up large reserves of cash (Bates *et al.*, 2009).

In summary, this chapter discussed the different types of dividends that firms pay. The three fundamental schools of thought pertaining to the dividend decision were discussed and introduced unique differences to the various theories pertaining to the dividend decision. Naturally, these differences in theories provided for the formation of modern finance theories regarding dividend policies such as the clientele and signalling theories.

In order to set the scope for dividend policy formulation during bull and bear markets various patterns and trends in dividend policies were highlighted. Considering these observations and specifically the implication of the signalling and catering theories, the next chapter provides insight into the research methodology identified in Chapter one.

As previously mentioned, the methodologies of the Erasmus (2011), Fuller and Goldstein (2003), Wolmarans (2000), and Ap Gwilym *et al.* (2000) studies are

replicated and adapted in part. Specific results of these previous studies are updated and potentially improved by focusing on an additional element, being the effect of market sentiment during bull and bear markets on the JSE. The result of such analyses could indicate whether the signalling theory does have support in the South African market. Furthermore, whether dividend-investing can be used to generate positive risk-adjusted returns is investigated to determine which dividend payment strategy delivers the best returns to shareholders.

Chapter 5 : RESEARCH METHODOLOGY

5.1 INTRODUCTION

Chapter one established the research design utilised throughout this study, and provided for the framework of research performed thus far. This chapter specifically builds on the foundation established by the previous chapters. The purpose of the research methodology is to set the guidelines on how relevant information is acquired for research. Accordingly, this chapter's objective is to illustrate how relevant information was gathered, grouped, processed and used in order to achieve the stated objectives of this study. Furthermore, statistical techniques used to analyse the data are introduced before the next chapter provides the empirical results thereof.

The remainder of this chapter consist of five sections. The next section establishes the orientation of the research performed. The timeline of the study is also discussed, and its relevance explained. Then the research objectives and hypotheses are provided, which serve to introduce the statistical techniques. Both descriptive and inferential statistical analysis techniques are introduced, which serve to identify common descriptive features of the data gathered and to test relationships between dependent and independent variables. Before the chapter is concluded, a brief discussion on the validity and reliability of the data is provided.

5.2 RESEARCH DATA

This study used the McGregor BFA (2010) database for ex-dividend payments sourced for both listed and delisted firms on the JSE. Some rules were enforced in the data collection. In this study the sample included listed and delisted shares for the period 1995 to 2010. Therefore, all firms that were listed during the period under review were considered, both those that were listed at the end of the period as well as firms that delisted during it, in order to reduce survivorship bias. Initially all sectors

on the JSE were considered, but eventually the financial and basic material firms were excluded. The reasons for the exclusions are due to the nature of the financial statements of these firms, specifically their capital structures. Financial firms are usually highly regulated in terms of capital requirements, which can also influence dividend policy. Basic material firms on the other hand are heavily biased due to the amount of assets required and the nature of their operations. The final sample consisted of 291 firms providing 22 927 monthly observations. However, as with most financial data analysed over time, extreme outliers that could have allowed for the data to be skewed and non-representative of its true nature were initially evident. Accordingly, the process of winsorizing was utilised in order to ensure that the outliers did not invalidate the study, nor discard any key characteristics or observations of the data set.

According to Kokic and Bell (1994) “if by chance several unusually large observations should fall in the data set then the data analysis findings of the estimator may grossly overestimate population totals.” Winsorizing is a technique used to resolve this problem by reducing sampled observations greater than a specified cut-off limit, and then calculating the estimators for the transformed data set. The resulting estimator is called the winsorized estimator of a total. Naturally, if a data set is adjusted inappropriately by winsorizing it, the data can become biased, potentially invalidating the study. Therefore, careful consideration should be placed on the extent of transformation when determining the limits for cut-off. Kokic and Bell (1994) further state that a winsorized estimator may considerably improve the accuracy and validity of statistical analysis results. They further posit that different winsorizing cut-offs should be used for different strata to find the most relevant result, while not compromising the nature of the observations. Therefore, in this study the data was originally analysed to identify and remove extreme outliers. Observations in excess of eight standard deviations were identified as extreme outliers and discarded, which allowed for the remaining top and bottom five per cent of the data set’s observations to be winsorized.

Recalling from Chapter one, the primary objective of this study was to evaluate the possible influence dividend pay-out policy has on share returns. The secondary objectives were also formulated as the following:

- To determine whether returns on shares differ between dividend-paying firms and non-dividend-paying firms.
- To determine whether the various dividend pay-out policies regarding the size of dividend payments, as per DY, affect share returns.
- To evaluate the possibility of using dividend-investing strategies during market movements to earn a higher than market return on a risk-adjusted basis.

Considering the data set utilised and the research objectives stated above, two portfolios were constructed in this study. They were created based on monthly DY levels. Portfolio one contained non-dividend-paying firms and was compared against the second portfolio containing dividend-paying firms (Portfolio two). Figure 5.1 provides for a graphical depiction of the two portfolios constructed.

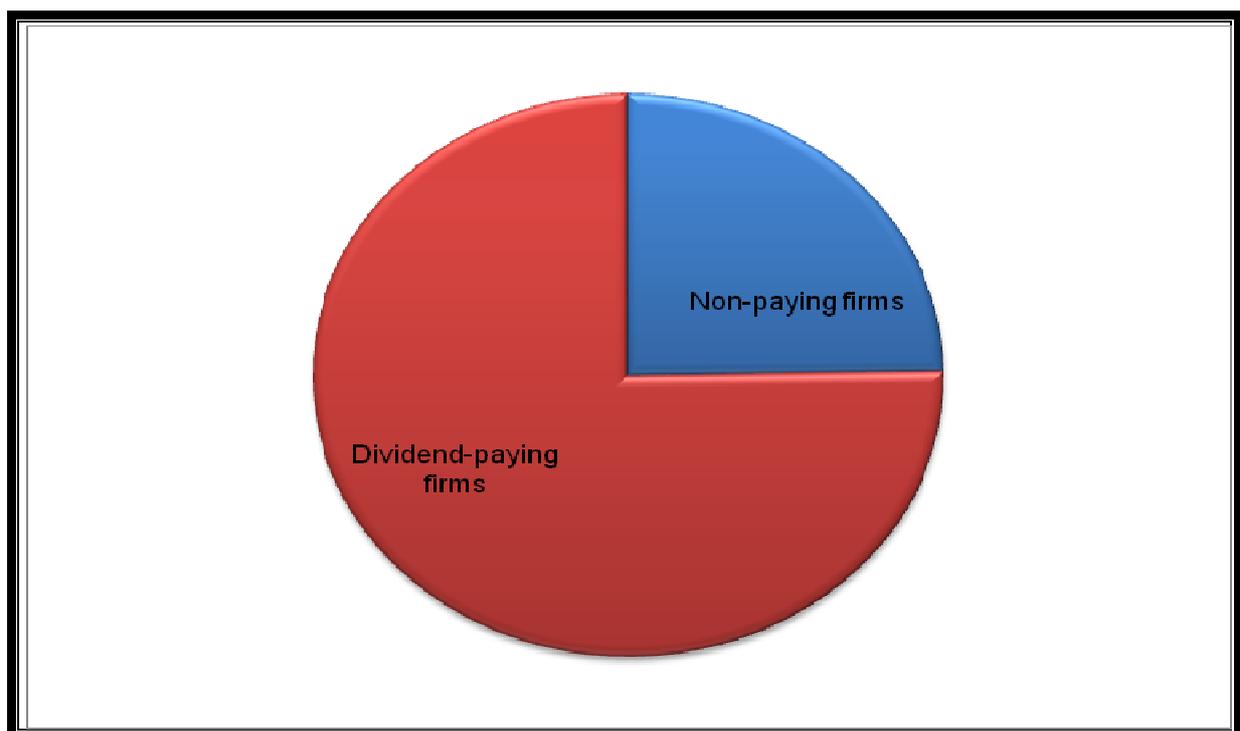


Figure 5.1: Relevance of dividend payments investigated

Source: Researcher's own construction

In total 22 927 monthly observations were analysed over the 192 months in the study. Of this total amount, 24.774% of the observations were found to be non-dividend-paying and the resulting 75.226% dividend-paying observations, identified by zero and positive DYs accordingly.

In the next step Portfolio two, representing the dividend-paying firms, were further sub-categorised to further compare share returns over various DY levels. The creation of the sub-portfolios, or groups, provided the opportunity to investigate whether dividend-investing strategies based on DY levels can allow for abnormal returns, especially during market movements. Therefore, Portfolio one and two were further analysed by deconstructing the portfolios into four groups. As previously specified the non-dividend payers were represented by Group 1 and Portfolio two was grouped into the lowest, medium, and highest DYs for monthly relative DY rankings and classified as Group 2 to Group 4 accordingly. Figure 5.2 summarises the classification into the four groups.

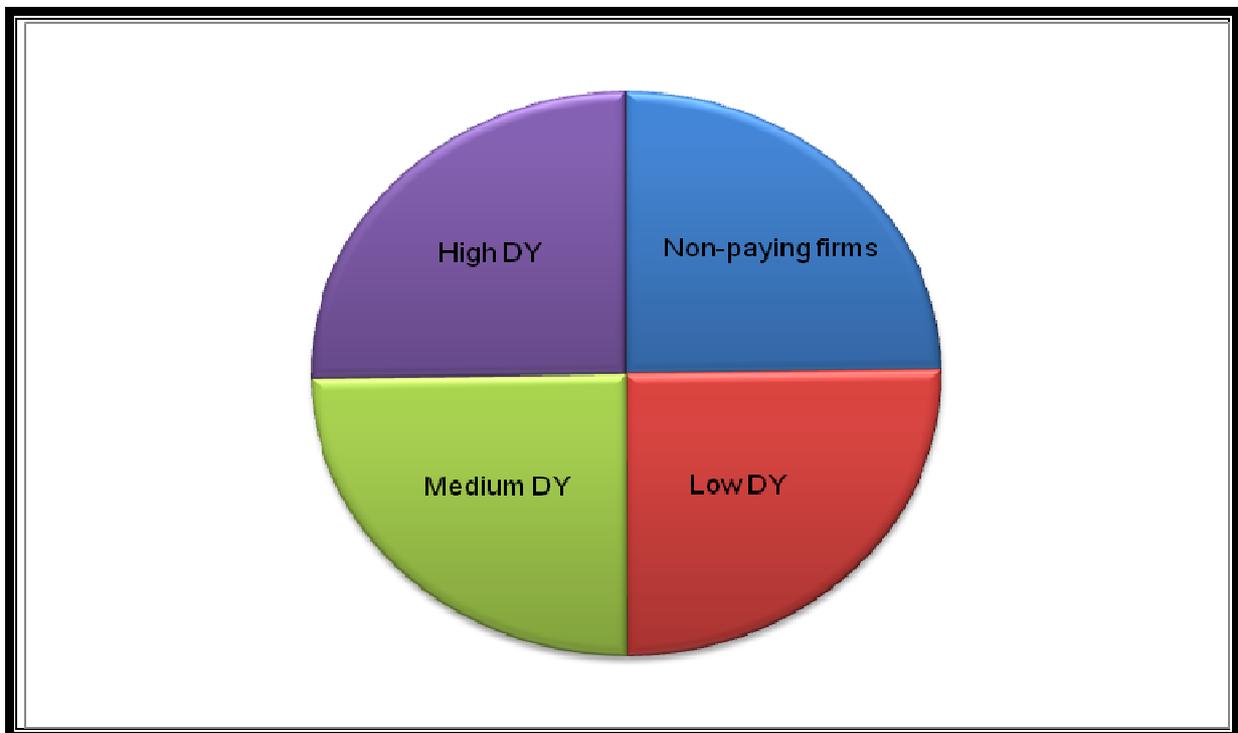


Figure 5.2: Comparative analysis of various DY groups

Source: Researcher's own construction

On a monthly basis, all DYs for listed and delisted firms were ranked according to size and allocated to the various groups. In this manner, a firm might have been allocated to various groups over the time period of the study, but will never have been allocated to more than one group at the same time. These groups collectively represent the various dividend-investing strategies, which investors can use to identify with in terms of DY. Their share returns over time provides for the statistical results provided in the next chapter. Firstly, each DY observation was used to

calculate a TSR in order to provide descriptive data for analysis. Inferential analysis provided the opportunity to measure risk-adjusted returns for all portfolios and groups accordingly.

The reason why DY, and not the absolute size of dividend is used, is to prevent size bias in the study as larger firms can afford to make larger dividend payments yet in relation to its price will actually be smaller than other smaller firms' dividend payments. In order to observe the effect of market movements the JSE ALSi is used as a proxy for market return. If the return of the market during a month was negative in relation to the previous month's value, the month is classified as a bear market. If the ALSi's monthly closing level is higher than the previous month, it is classified as a bull market. By using these classifications, monthly data was captured from the McGregor BFA (2010) database.

As previously mentioned, the TSRs of each of the portfolios and groups were calculated for the monthly observations to evaluate the relative performance of the firms' shares over time. The descriptive results are discussed later in this chapter, but used these TSR values to identify key characteristics of the data set. The equation for the TSR calculation is as follows:

$$TSR_t = \frac{(Price_t - Price_{t-1} + Dividends_t)}{Price_t}$$

Where:

- $Price_t$ = Share price at the end of the month;
- $Price_{t-1}$ = Share price at the beginning of the month;
- $Dividends$ = Dividends paid out to investor during the month;
- t = months.

Using the results obtained from the average TSR and incorporating dividend stability, measured as the standard deviation of monthly DY observations, provided for the inputs required to estimate the Sharpe ratio (1966). Sharpe (1966) formulated a reward-to-variability ratio, which served to provide an estimate of returns over and above the stated risk associated in returns. This ratio has had a variety of names over the years such as the Sharpe index, the Sharpe measure, and the reward-to-

variability ratio (Sharpe, 1966). However, the most recent term used is the “Sharpe ratio”, and it is calculated using the previously mentioned average TSR and dividend stability as follows:

$$S_t = \frac{R_{TSR_t} - R_f}{SD_t}$$

Where S_t represents the Sharpe ratio for the time period t , R_{TSR_t} the return on the specified portfolio, or group being investigated, R_f the return on a risk-free short-term South African bond, and SD_t the dividend stability measure as explained previously. This ratio was applied in the descriptive analysis of data in order to compare the performances of the various portfolios and groups during bull and bear markets. These descriptive results are then further tested and analysed using inferential analyses discussed later in the study when risk-adjusted returns are calculated.

As mentioned, data was collected on a monthly basis over the period of 16 years, ranging from 1995 to 2010. The reasons why no observations were taken from previous periods are briefly explained in the following part of the chapter before statistical analysis techniques are introduced.

5.2.2 TIME PERIOD OF THE STUDY

There are a couple of noteworthy reasons for the choice of the period under review in this study. Firstly, a vast array of trade sanctions was imposed on South African firms before 1994, which created severe market conditions not conducive for healthy trade. Prior to 1994, listed firms on the JSE were unable to invest unrestrictedly in foreign markets. The sanction’s impact on the JSE firms was worsened due to the exchange controls that were in place at the time, and as a result listed firms had no other choice but to invest only in the domestic market. This subsequently caused severe “in-breeding” in the capital market as the majority of shares were owned by a select few firms (Du Toit, 2009; Msweli-Mbanga and Mkhize, 2006). Figure 5.3 illustrates this notion.

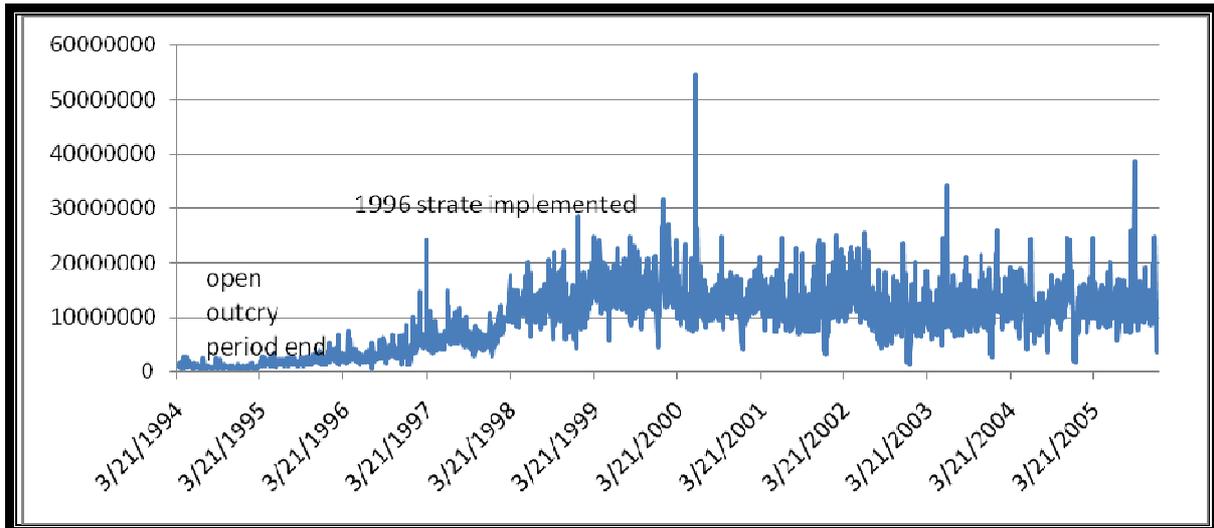


Figure 5.3: Volume traded on the JSE in Million 1990-2005

Source: Du Toit (2009)

As depicted in the figure, these sanctions caused the market to be very thinly traded in years prior to 1995. To illustrate this, it was found that the top four firms on the JSE comprised roughly 80% of the capitalised value of the JSE at the time (Du Toit, 2009). In this figure, increased trading activity post the sanctions can be observed from 1994 onwards in terms of volume traded on the JSE. Therefore, in order to improve reliability of the data findings, only years from 1995 and onwards were considered in this study.

A second reason for the time period is due to significant infrastructure changes on the JSE in 1994, which would have compromised data prior and post the implementation. Figures 5.4 and 5.5 provide for further support for the selected time period when the volatility in the DY and EY, and growth in value are illustrated from 1994 onwards. Prior to 1995, it can be observed that the data did not fluctuate significantly.

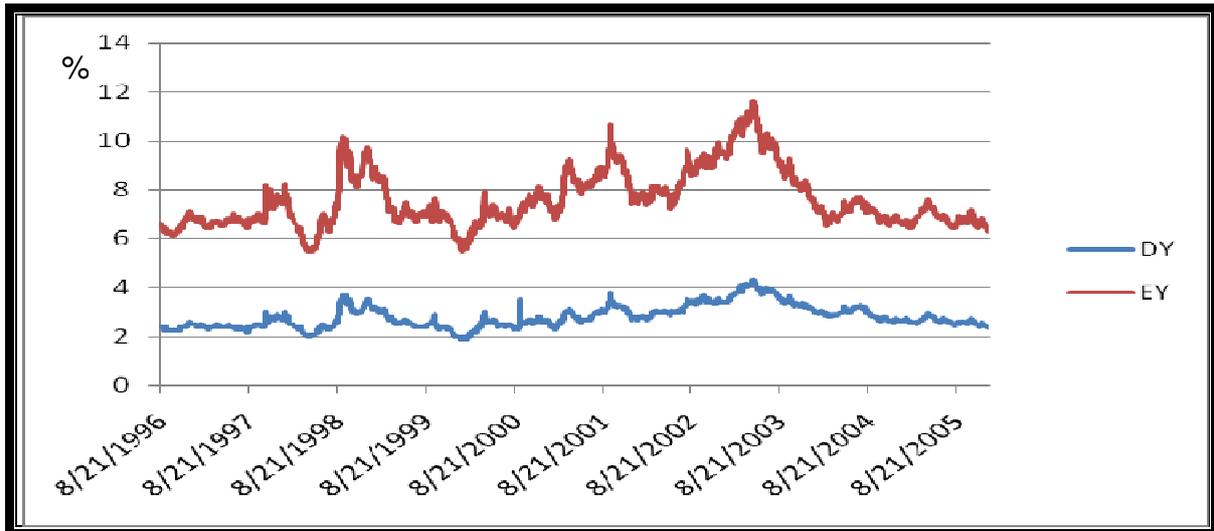


Figure 5.4: Earnings and DY growth 1990-2005

Source: Du Toit (2009)

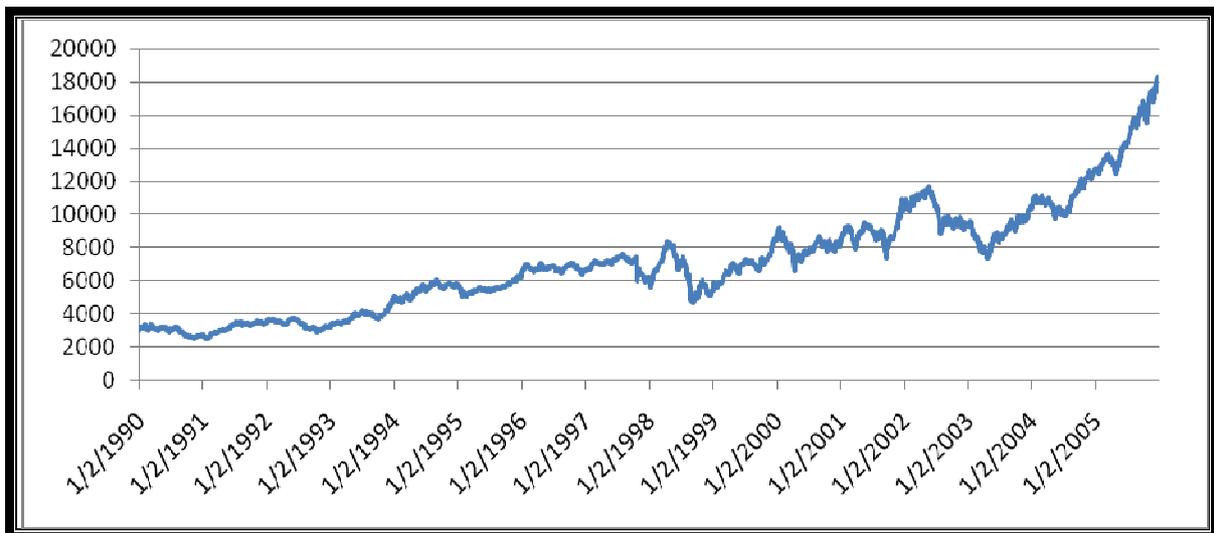


Figure 5.5: Closing values for the JSE ALSi 1990-2005

Source: Du Toit (2009)

Accordingly, only 1995 onwards to 2010 were considered in this study, since it can be seen from the figures that this is when trade and activity increased significantly. This time frame is expected to improve prior information gathered by Wolmarans (2000), and make the study more representative of the possible use of dividend-investing in South Africa. In comparison to the Wolmarans (2000) study, simulations also include the implementation of STC, CGT, the effects of the financial crisis of 2008, and new trends in cash-to-asset ratios identified by Bates *et al.* (2009:1985).

Chapter four previously identified valuation measures used in this study. Reference was made to how DY and dividend stability is calculated in this study. In this chapter the TSR and Sharpe ratio have been introduced. However, in order to convert these data inputs into useful information, the use of statistical analysis techniques are introduced. The analysis serves to formally address the research objectives and hypothesis identified next.

5.3 RESEARCH OBJECTIVES AND HYPOTHESIS

As indicated in previous chapters, for this study the independent variables used are dividend distributions measured in DY during bull and bear markets. The dependent variable is the monthly risk-adjusted share return measured for the various DY groups.

Based on the before-mentioned research objectives and these variables the null hypothesis and alternative hypothesis of the study were stipulated in Chapter one as follows:

H_0 : Dividend distributions have no significant influence on share returns.

H_A : Dividend distributions have significant influence on share returns.

Cooper and Schindler (1998:449) state that the null hypothesis is valid when no difference or relationship exists between a population parameter and a sample statistic being compared to it. The alternative hypothesis is valid when differences or relationships do exist. Therefore, inferential statistical analysis conducted in this study will determine whether statistically significant positive risk-adjusted returns can be generated in order to reject the null hypothesis.

In line with the stated hypothesis the need for statistical analysis becomes clear. In the following section of this chapter, statistical analysis techniques are introduced. Descriptive statistics will consider basic characteristics inherent in the data set, before the inferential analyses determine the degree of differences or relationships

between observations (O’Leary 2005:238). The results of these statistics are then portrayed and discussed in Chapter six.

5.4 STATISTICAL ANALYSIS TECHNIQUES

5.4.1 DESCRIPTIVE STATISTICS

Descriptive statistics can be broken into three main components, consisting of the spread, location and shape of the data set (Blumberg *et al.*, 2008). O’Leary (2005) provides for a similar description when he refers to the measures of central tendency, dispersion, and shape of the data. These descriptive statistics are introduced next, and the results when applied to TSRs and DY provided in Chapter six.

5.4.1.1 Measuring central tendency

Central tendency can be evaluated by means of the mean, median and mode of a data set. The mode of a data set is the most common observation, but not always the most significant. Given the size of the data set, this study does not consider the mode further. On the other hand the mean and median can provide for valuable information. The mean of a data set can be referred to as the mathematical average (O’Leary, 2005:239). It is calculated by adding the observations and dividing it by the number of observations (Keller, 2005:90).

The median identifies the mid-point of a range (Coldwell and Herbst, 2004:103). According to the authors it is calculated by rearranging the data in ascending, or descending order and then to find the middle value. Figure 5.6 illustrates how these measures can be distributed in relation to one another.

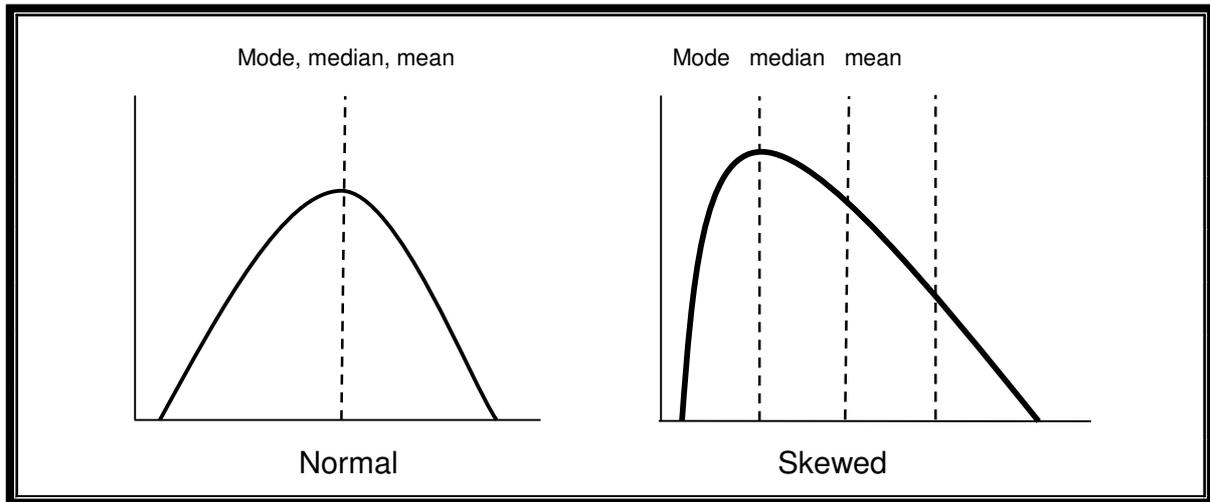


Figure 5.6: Shape of the data

Source: Researcher's own construction

As illustrated in figure 5.6, the measures of central tendency can be used to determine whether or not a data set is normally distributed. When the mean of the data set is larger than the median the data set can be described as positively skewed. On the other hand, if the median is found to be larger than the mean, the data set is negatively skewed. The skewness of a data set can have significant implications on data analysis, but this topic is discussed later when the shape of the data set is discussed.

5.4.1.2 Measuring dispersion

While measures of central tendency are useful for data descriptions in general they need to be complemented with information on response variability. The methods used in this study to indicate dispersion around the mean and median are the range, variance and standard deviation (O'Leary, 2005:240-241).

The range defines the spread of the data and is the distance between the largest and smallest values of a sample frequency distribution (Hair, Money, Samouel, and Page, 2007:319). Hair *et al.* (2007:319) further state that it can be used to identify the end-points of the sample distribution. The shortcoming of this measure is that it is a very rough indicator as it only considers two values – the minimum and maximum (Blumberg *et al.*, 2008). Accordingly the range may indicate homogeneity (small standard deviations) or heterogeneity (large standard deviations) of the distribution

(Cooper and Schindler, 1998:467). Therefore, the range is useful but a limited measure of all the data in the distribution.

The other measures used to identify dispersion are variance and standard deviation. These are known as measures of variability, and are used to characterise the dispersion of a set of data points around its mean (Blumberg *et al.*, 2008). O'Leary (2005:240) states that it represents the average squared deviation from the mean. This can be illustrated in the equation:

$$\sigma = \sqrt{\sigma^2} = \frac{\sum(x - \bar{x})}{n - 1}$$

Where:

- σ = historic standard deviation;
- σ^2 = variance;
- x = each value in the data set;
- \bar{x} = mean of all the values in the data set; and
- n = total number of values in the data set.

Unfortunately the problem with using the variance is that it can provide for large values that complicate analysis. To address this problem the standard deviation is used, which is the square root of variance. As previously specified standard deviation could be used in financial analysis, and this study, as an indication of riskiness since it provides an indication of the degree of variation around the mean. Hence if the variation is large, inherent risk is present that returns can deviate substantially from the expected return. Lastly, the shape of the data set can also be assessed with descriptive statistics.

5.4.1.3 Measuring the shape of the data

The final component of descriptive statistics relates to the shape of the data. This also complements the previous measures by identifying how data is distributed. Two measures considered in this study are skewness and kurtosis.

Skewness measures the departure from a symmetrical (or balance) distribution (Hair *et al.*, 2007:320). Figure 5.6 identified in the previous part of the section provided for an illustration of when data is symmetrical. Specifically, this was when the median, mean and mode were equal to one another. If the data is skewed, then the estimated values will differ. Hair *et al.* (2007) further state that when the tail of the curve stretches left it is said to be negatively skewed. If it stretches to the right it is then positively skewed. If the kurtosis estimator is greater than +1, or less than -1 the data exhibits a substantially skewed distribution. The skewness of a distribution is relevant to researchers as it indicates whether a given value in the data set will be more or less than the mean and will allow the researcher to see if the data is parametric or non-parametric. These observations can influence the data analysis as relevant techniques must be utilised for data to produce relevant findings. Kurtosis is a measure of a distribution's peakedness or flatness. This is illustrated in figure 5.7.

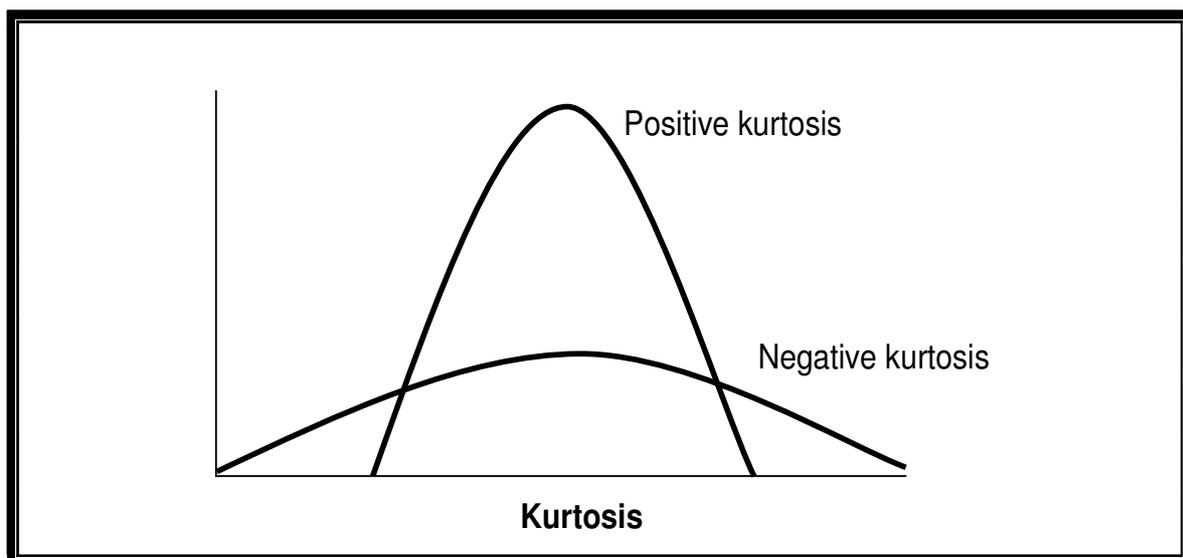


Figure 5.7: Kurtosis in a data set

Source: Researcher's own construction

Kurtosis is used in relation to a normally distributed data set and is implemented to identify by how much the distribution deviates from the standard normal distribution. If the curve is more peaked than the normal distribution curve, it indicates positive kurtosis. On the other hand, if it is flatter in comparison, it illustrates negative kurtosis. A curve is too peaked when the kurtosis exceeds +3 and too flat when it is below -3 (Hair *et al.*, 2007:321). As previously mentioned, these two measures allow the researcher to identify the effect of outliers and the nature of the data set. A data

set containing excessive flatness will indicate many outliers to the left and right of the mean; whereas a peaked shape indicates that most observations are close to the mean of the study.

As previously mentioned, these descriptive statistics are applied to TSRs calculated for the DY observations to identify key characteristics of the data set. In order to measure the significance of these the study requires inferential analysis to be performed. The inferential statistics, therefore, serve the function of confirming results found in descriptive statistics.

5.4.2 INFERENCE STATISTICS

Inferential statistics are used to test relationships and differences between dependent and independent variables. According to McDaniel and Gates (2001:413) the basic principle of statistical inference is that it is possible for numbers to be different in a mathematical sense (as identified in the descriptive statistics), but not significantly different in a statistical sense. Statistical differences are identified by a chosen level of significance or alternatively, a confidence level (Blumberg *et al.*, 2008). This level of significance identifies how probable a result is due to chance. In this study a 5% level of significance was used, which means that the confidence level would be stated as 95%.

Cant *et al.* (2005:223) posit that the level of significance should always be compared with the p -value of a test statistic. This p -value, according to them, is the “probability of obtaining a test statistic value equal or greater than the value actually obtained if the null hypothesis is actually true.” Accordingly the p -value represents the level of significance where the null hypothesis can be rejected. Since this study uses a 5% level of significance, any p -value smaller than 0.05 is significant. Blumberg *et al.* (2008) furthermore state that the lower the p -value, the stronger the evidence against the null hypothesis and *vice versa*.

The inferential statistic used in this study relates to regression analyses. These tests are referred to as inferential statistics, because they analyse relationships between

variables as per the properties of the target population. In order to understand the relationships between the independent and dependent variables four concepts must be understood (Hair *et al.*, 2007:356). They are the presence and nature of the relationship, and then the direction and strength of association.

According to Hair *et al.* (2007) presence assesses whether a systematic relationship exists between two variables. This is measured in terms of the level of statistical significance mentioned previously. The chosen level of significance in a study is an inverse function of the risk the researcher is willing to accept. In other words, a large level of significance will require a low level of risk, and *vice versa*. The second important concept is how variables are related to one another. Usually it would be either linear (a straight line), or non-linear (curvilinear). The strength and nature of the relationship will be the same over the range of variables if the relationship is linear. Alternatively, the relationships vary according to the curvature present. The direction of a relationship can be positive or negative. Positive relationships indicate that the variables move in the same direction and negative relationships the opposite. The direction has great impact on the data finding, especially for financial data as it has been found in previous studies that financial data and economic data are closely linked (Fuller and Goldstein, 2003). Finally, the strength of the relationship measures the association between the variables (Hair *et al.*, 2007:357). This is where correlation analysis becomes most valuable in the sense that when variables are linked together, they exhibit covariation. The correlation coefficient measures the degree of covariation between two variables. It indicates the relationship and strength. Unfortunately, sometimes these answers do not provide enough information for managers to make proper decisions and this is why regression analysis is performed (Hair *et al.*, 2007:367).

As indicated, this study does not consider correlation analysis, but rather regression analysis. More specifically an ordinary least squares (OLS) regression was applied based on the capital asset pricing model (CAPM) using risk-adjusted share returns. The next section discusses this inferential statistic further.

5.4.2.1 Regression analysis

Previously, the independent variables used in this study were identified as dividend distributions during bull and bear markets. They are estimated by firm-specific DY and market movements as changes in the ALSi on the JSE respectively. The dependent variable is the monthly risk-adjusted share return measured for the various DY groups.

Hair *et al.* (2007:177) state that the objective of regression analysis is to predict a single dependent variable by using the independent variables. These regressions are either identified as being simple or multiple, depending on the number of independent variables present. If a regression model considers only one independent variable, it is classified as a simple regression.

In simple regressions the regression coefficient identifies the variation in the dependent variable in terms of the one independent variable (Blumberg *et al.*, 2008). The regression model used in this study can be expressed as follows:

$$(R_{Pt} - R_{ft}) = \alpha_p + \beta_p (R_{Mt} - R_{ft}) + \varepsilon_t$$

Where:

- $(R_{Pt} - R_{ft})$ = represents the risk-adjusted return on a portfolio or group;
- α_p = represents the intercept;
- β_p = represents the regression coefficient;
- $(R_{Mt} - R_{ft})$ = represents the market-risk premium;
- t = time;
- ε_t = a random-error term.

The intercept and the regression coefficient represent the y-axis intercept and the slope of the regressions trend line. They are both calculated using the OLS model. Given that the CAPM holds, α and β values represent risk-adjusted returns and systematic risk for both portfolios and four groups respectively. From the equation R_{Pt} equals the average monthly R_{TSRt} as per sub-portfolio or group specified in the portfolios. R_f represent the monthly risk-free rate, and R_{Mt} the monthly return

available in the market. This market rate is the corresponding monthly return on the ALSi as specified earlier in the chapter.

This regression is conducted on both portfolios and respective DY groups to investigate whether or not α and β can be positive and statistically significant, which will indicate that using dividend-investing can result in positive risk-adjusted returns.

Chapter six is devoted to performing the data analysis, but to ensure that the findings are relevant, validity and reliability need to be assured.

5.5 VALIDITY AND RELIABILITY

As a general rule, truly scientific statements should be both reliable and valid (Coldwell and Herbst, 2004:17). Research performed in this study was analysed in great depth to ensure validity. Care was taken in deciding on the data used for analysis and how the results were portrayed in an ethical manner. As all data used were from public sources and as such in the public domain, the research had minimal ethical risks and as such no ethical clearance was needed. Standardised financial reports were used in order to ensure that the information of firms was in uniform accounting formats. Usually different databases have different rules in the processing of information and thus, by using only one database, the reliability of the information is improved. Accordingly, the data for this study was finally sourced from the McGregor BFA database (2010), as to ensure consistent information.

By considering both listed and delisted firms in the analysis any level of survivorship should be maintained. As previously mentioned, the study also only considered financial data post 1995 in order to limit the effect of any external factors and unsystematic risks present in the market prior to this date.

In order to ensure that the regression model applied was valid assumptions were required. The assumptions used for the OLS regression include the following Hair *et al.* (2007):

- Observations are independently distributed.
- The regression error for one period is uncorrelated with the regression error for all other periods.
- The time series analysed is covariance stationary.
- Seasonality in the observations is not present.
- There is no random walk, unit root or drift present in the time series data.

For a data set to be covariance stationary it must satisfy three principal requirements (Clayman *et al.*, 2009:404). Firstly, the expected value of the time series must be constant and finite over all periods. Secondly, the variance of the time series must be constant and finite in all periods. Lastly, the covariance of the time series with itself for a number of periods in the past or future must be constant and finite over all periods. As long as these assumptions are held, an autoregressive (AR) model could be estimated using OLS.

Generally, auto-correlation can significantly influence the inferential statistics used in a study. It refers to the observance of error terms correlated over time. In other words, one observation will have an influence on the next value. In order to test for auto-correlation the Durbin Watson value can be used. If this value is estimated as two, then auto-correlation is not significant and the OLS assumptions held. Accordingly, preliminary regression results based on the data used in the two portfolios and four groups indicated that the Durbin Watson statistic for the data set was found to be appropriate. Hence, auto-correlation was not significant and OLS regression could be applied.

The next section serves to conclude this chapter by referring to important topics discussed thus far, and also introduces Chapter six more formally.

5.6 CONCLUSION

The research performed in this study attempts to provide more clarity on the influence dividend distributions have on share value. Shareholders and investors should be able to use the information gathered from this study to actively manage their expectations of dividend information. Similarly, management of firms could make more informed decisions regarding their dividend pay-out decision by taking into consideration the effect of market movements on share returns. Academics could possibly use this study as a benchmark, specifically for analysing South African dividend pay-out policies of firms listed on the JSE.

This chapter in particular identified how all relevant data was acquired and analysed using descriptive and inferential statistics. It was also mentioned that in order to standardise the data set, a single primary source was used – McGregor BFA (2010). Due to the nature of listed and delisted firms on the JSE for the period 1995 to 2010 and the volatility in their share data some coding was required on the data set. Firstly, observations exceeding eight standard deviations were omitted, before the process of winsorizing was utilised to the top and bottom five per cent of the data. Finally, following the appropriate transformations two portfolios and DY groups were constructed and ultimately analysed over both bull and bear markets.

Various descriptive and inferential statistics were introduced and explained. How these statistics test the data, and why the various statistical techniques are applied was explained. Regarding the descriptive statistics, the spread, location and shape were discussed. The inferential statistics discussed four crucial concepts and identified the applicable OLS regression used in this study.

This data analysis, of which the empirical results are provided for in the next chapter, will provide the relevant information needed to make concluding comments and remarks for the study. Chapter seven will conclude the study by providing for a summary of important issues identified and resolved throughout the study.

Chapter 6 : EMPIRICAL RESULTS

6.1 INTRODUCTION

This penultimate chapter discusses results found after descriptive and inferential data analyses have been performed. Findings are presented with the use of explanatory tables and figures, and are discussed in line with stated research objectives.

In order to provide any results obtained from the statistical analysis on a data set, the data first need to be sourced, coded, and prepared. Recalling from Chapter five, Blumberg *et al.* (2008) state that “data analysis involves the reducing of accumulated data into meaningful amounts, developing summaries, looking for patterns, and applying statistical techniques.”

The previous chapter explained that by using a standardised data set, two portfolios were constructed using DY information of 22 927 monthly observations. These observations were then ranked according to their relative DY level for each month and analysed in terms of their respective returns. For the descriptive analyses TSRs were estimated and compared. For the inferential analyses, the OLS regression based on the CAPM provided for estimates representing risk-adjusted returns (α) and indication of systematic risk (β). In both statistical analyses the effects of dividend distributions were investigated by comparing two portfolios and four DY groups. These four groups were specifically created in order to investigate the influence of dividend distributions during bull and bear markets and to test the results of dividend-investing strategies. The results obtained after performing the statistical analyses are discussed in this chapter.

The structure for the rest of the chapter is organised based upon the two portfolios and groups accordingly. Firstly, the results of descriptive statistical analysis are provided for each portfolio and respective groups before the findings of the inferential statistical analyses are presented. These results for the entire time span of the study

are discussed first, before elaborating upon the effect of market movements on the various groups alone. Based on the results obtained for the portfolios it should be possible to address the primary and secondary research objectives of the study. Finally, the chapter is concluded with a summary of important topics discussed.

6.2 DESCRIPTIVE STATISTICS

Collis and Hussey (2009:221) define descriptive statistics as “a group of statistical methods used to summarise, describe, or display quantitative data.” In this section of the chapter the descriptive results for the measures of central tendency, dispersion, and shape are specified. Furthermore, the Sharpe ratio’s result, as introduced in the previous chapter is also specified.

As mentioned, the basic descriptive statistical results pertaining to the TSRs for the time period under review are discussed for each portfolio before the discussion turns to the results obtained from the four DY groups. The results obtained from the portfolios and groups serves as the prelude to the inferential results, discussed later on.

In table 6.1 the results of the descriptive statistics pertaining to TSRs for the two portfolios containing non-dividend-payers (Portfolio one) and dividend-payers (Portfolio two) are provided and compared against the risk-free rate and market return. Table 6.2 also provides the TSR descriptive statistics for the four DY groups used to investigate dividend-investing, and analyse the effect of market movements later in this chapter. These tables are referred to throughout the descriptive results and explained accordingly.

Table 6.1: Descriptive statistics for Portfolio one and Portfolio two

	Portfolio one (Non-dividends)	Portfolio two (Dividends)	Risk-free rate	Market return
Average DY (%)	0.000	3.850	-	-
Average (%)	0.783	1.599	0.945	1.372
Median (%)	1.199	1.949	0.867	1.775
Minimum (%)	-16.302	-20.620	0.593	-19.573
Maximum (%)	21.508	11.888	1.525	12.330
Range (%)	37.810	32.508	0.932	31.903
Variance (%)	31.830	23.248	0.069	21.719
Std deviation (%)	5.642	4.822	0.263	4.660
Sharpe	-0.029	0.136	-	0.092
Skewness	0.149	-0.813	0.354	-0.718
Kurtosis	1.136	1.994	-1.360	1.951

Table 6.2: Descriptive statistics for DY groups

	Portfolio one	Portfolio two			Risk-free rate	Market return
	Group 1 (Zero)	Group 2 (Low)	Group 3 (Med)	Group 4 (High)		
Average DY (%)	0.000	1.901	3.519	6.148	-	-
Average (%)	0.783	1.309	1.573	1.909	0.945	1.372
Median (%)	1.199	1.967	1.482	2.186	0.867	1.775
Minimum (%)	-16.302	-24.601	-19.991	-17.287	0.593	-19.573
Maximum (%)	21.508	13.477	18.148	11.903	1.525	12.330
Range (%)	37.810	38.078	38.139	29.190	0.932	31.903
Variance (%)	31.830	27.595	27.944	26.295	0.069	21.719
Std deviation (%)	5.642	5.253	5.286	5.128	0.263	4.660
Sharpe	-0.029	0.069	0.119	0.188	-	0.092
Skewness	0.149	-0.900	-0.383	-0.753	0.354	-0.718
Kurtosis	1.136	2.644	1.305	1.131	-1.360	1.951

In both tables the first section identifies the average monthly DY found observed for the two portfolios and four DY groups. Naturally, the non-dividend payers average DY was found to be zero, indicating no data errors were made in the categorisation of non-dividend payers. Portfolio two, which is further sub-categorised into low, medium, and high DY firms, indicated an average monthly DY of 3.854%. These values are useful in the sense that it provides for a relative benchmark in identifying the average level of dividend payers. The remaining descriptive results, however, focus on the results pertains to TSR.

The descriptive results provided in table 6.1 and 6.2 contribute to meaningful inferential analysis, since the descriptive findings plays an important role when determining the relevant inferential analysis techniques to be applied. Next, these findings for central tendency, degree of dispersion, and shape of the data set as represented in table 6.1 and table 6.2 are discussed in line with the results found.

6.2.1 CENTRAL TENDENCY

As stipulated in Chapter five, for the purpose of this study, central tendency is measured in terms of the data set's mean and median. Individually, these measures can provide for valuable information, but when they are considered collectively the most meaningful data is provided. For example, when a data set is parametric, or normally distributed, the measures of central tendency for the data set will be equal. Alternatively, the data will be non-parametric - the measures of central tendency differ. The average or mean is usually the most commonly used measure of central tendency.

As mentioned previously, the mean TSR of each portfolio and group is depicted in table 6.1 and 6.2. Figure 6.1 contributes to the discussion of results obtained by providing a graphical depiction of the annualised TSR performances for Portfolio one compared to Portfolio two.

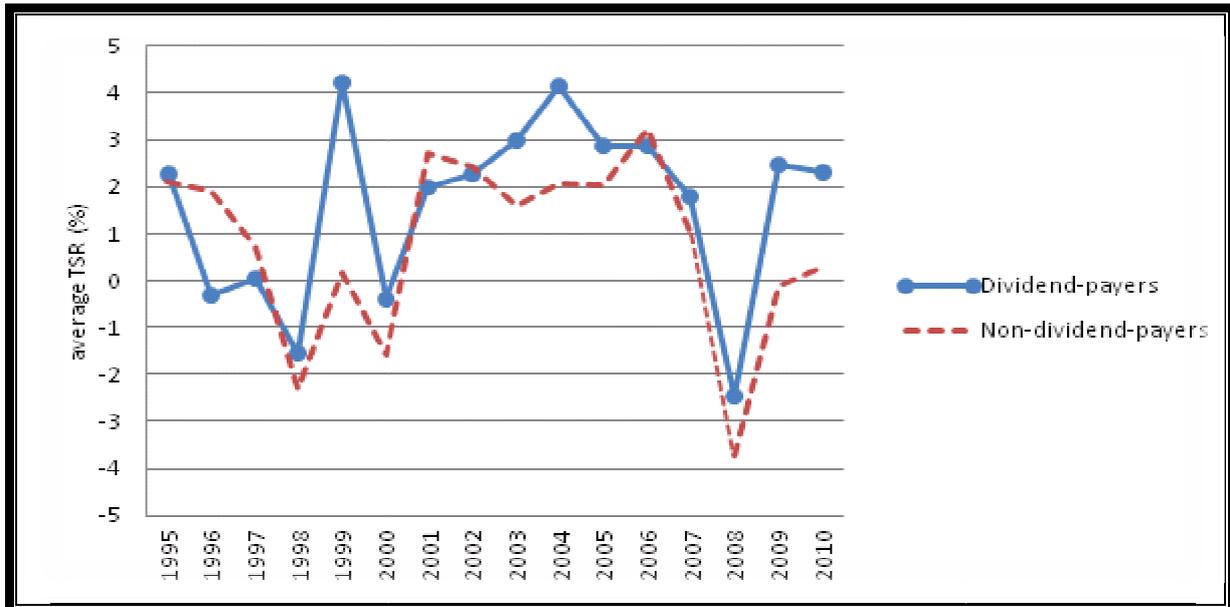


Figure 6.1: Relative annual TSR for the two portfolios

From figure 6.1 it can be seen that Portfolio two, representing the dividend-paying firms, performed better than Portfolio one with an average annualised TSR of 1.599% versus 0.783%. From table 6.1 and 6.2 the average TSRs, in relation to the risk-free rate and ALSi market return provided important results. Portfolio two's average TSR (1.599%) was greater than the risk-free rate of 0.945%, as well as that of the market return of 1.372%. On the other hand, the returns of Portfolio one was found to be less than the risk-free rate and the market return. The result provides an indication of the relative outperformance of dividend payers over the research period.

In table 6.1 the average TSR values was smaller than the medians, providing an indication of negatively skewed data. This is illustrated by Portfolio one's median of 1.199%, versus its average TSR of 0.783%. Also, the dividend-payers median was 1.949%, in relation to the average TSR of 1.599%. Later in this section the shape of the data set discusses this negative shape in more detail.

From the results reported in table 6.2, the best performing group was found to be Group 4 with an average TSR of 1.909%. Similar to previous results, these results are not entirely surprising and support studies performed on the level of dividend payments and its supposed influence on share values. The annualised TSR's for each DY group is depicted in figure 6.2 and serves as a graphical depiction of relative performances over the 192 months.

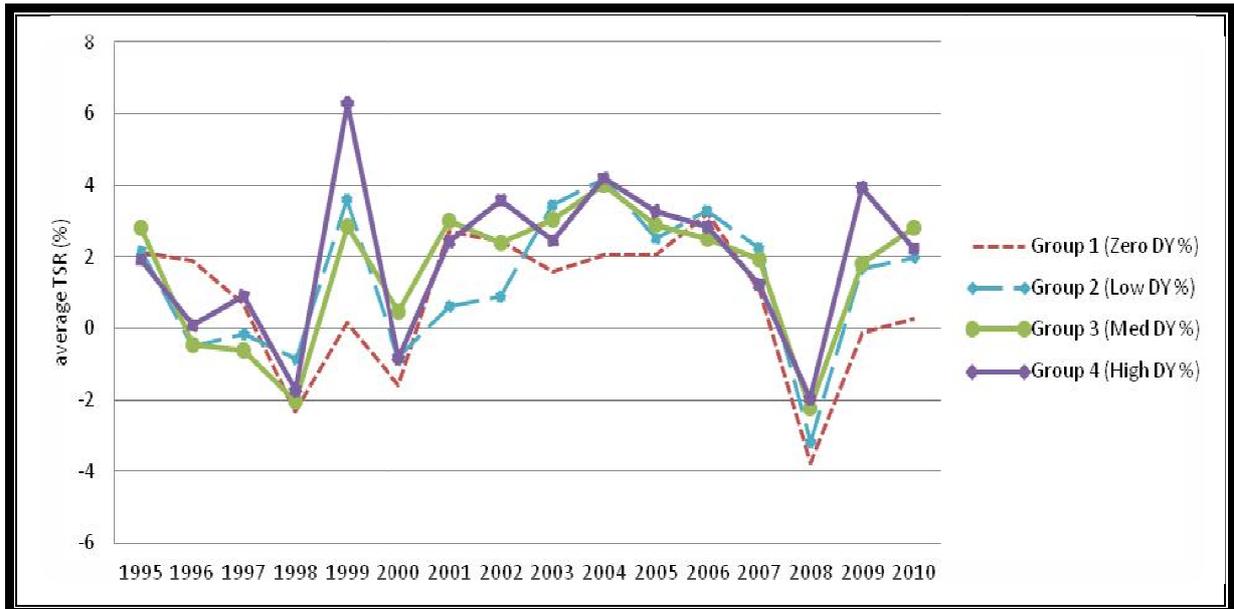


Figure 6.2: Relative TSR for dividend-investing groups

From the figure and table 6.2, the findings suggest that the second- and third-best performing groups were Group 3 and Group 2 respectively. This, therefore, provides a further indication that larger DYs provided better returns than those of smaller DY in terms of TSR. Results also suggest that each positive DY group performed better than the risk-free rate and that only Group 1 underperformed the market.

In order to further analyse the results of the descriptive statistics the next two sections provide for a discussion of results depicted in table 6.1 and 6.2 for the degree of dispersion and shape of the data set.

6.2.2 DEGREE OF DISPERSION

Measures of central tendency can, and should be, complemented with measures of dispersion. Table 6.1 and 6.2 identify the range, variances, and standard deviations for each portfolio and the respective DY groups, which is reviewed next.

In table 6.1 the range for the monthly TSR data was calculated to be 37.810% and 32.508% for Portfolio one and Portfolio two respectively. These findings suggest that, even though the data was winsorized to the top and bottom five per cent levels, there were still large deviations in TSR over the time period. The range could

therefore indicate that the data set illustrates a degree of heterogeneity. However, the range is not seen as the most useful indicator of dispersion and thus the variance and standard deviation were also considered. The variance and standard deviations for Portfolio one were calculated as 31.830% and 5.642% respectively. Portfolio two, on the other hand, yielded results of 23.248% and 4.822% for variance and standard deviation. As stated previously, due to the size of the variance, this study uses the standard deviations for risk estimates as it represents the data set more accurately when heterogeneity (large standard deviations) is present.

Considering the descriptive results obtained thus far, the findings suggest that Portfolio one contained greater risk, as per standard deviation, and less TSR compared to Portfolio two. Clearly, Portfolio two outperformed in relation, and this was proven with the use of a risk-adjusted return measure, namely the Sharpe ratio. This ratio indicated a return of 13.560% for positive DYs against a negative -2.870% return for the non-dividend-payers. In summary, the risk of Portfolio one in relation to Portfolio two was not found to be appropriately compensated for by the TSR's.

In table 6.2 the various DY groups were analysed and the descriptive statistics provided further explanation why Group 1 and Group 2 provided for the poorest results. These groups were found to exhibit the greatest degree of variability in relation to their respective returns. In other words, these groups had the greatest degree of risk, yet the lowest level of TSR. The standard deviation for Group 1 was the highest (5.642%), and for Group 4 the lowest (5.128%). Further indication of this weak relative performance between these two groups can be seen in the results indicated by the Sharpe ratio. Group 1 had a negative estimate (-2.870%) versus the positive Group 4 result (18.800%). The only groups to outperform the market average were, not surprisingly, Group 3 and Group 4.

In conclusion, for the results obtained from table 6.2 for the degree of dispersion, only Group 1 provided a negative Sharpe ratio. Again it was found that the larger DY sub-portfolios outperformed the non-dividend-payers, with Group 3 and Group 4 both outperforming the reference market-return on a risk-adjusted basis. These results support the previous results that the dividend-paying group outperformed the non-dividend-paying group, even on a risk-adjusted basis.

The final measure of descriptive analysis included the shape of the data set and this is discussed in the next section.

6.2.3 SHAPE OF THE DATA SET

The shape of the data set is the final aspect in the descriptive analysis and also complements the previous measures by identifying how the data is distributed. As explained in the previous chapter, skewness and kurtosis are the two measures used in this study to investigate the shape of the data set.

In table 6.1 it can be seen that the portfolios indicated both positive skewness (0.149) for Portfolio one and negative skewness (-0.813) for Portfolio two. These findings suggest that Portfolio one's distribution has been found to be relatively close to a normal distribution, but that Portfolio two's distribution indicates a negatively shaped distribution. This finding is supported by the previous findings for the average and median, explaining why the distribution stretches to the left. The analysis indicated a relatively flat kurtosis (1.136) for Portfolio one, and a slightly more peaked shape for Portfolio two (1.994), indicating that there was no severe peakness or flatness.

In comparing the four groups, not surprisingly, similar findings were found, indicating negative skewness and a relatively flat kurtosis, but still not excessive for the overall data set. In this analysis, the medians were also found to be greater than the averages, substantiated with the negative finding for skewness. The kurtosis for all the groups do indicate that the shape of the distribution is slightly flatter than usual, hence the effect of outliers on the outer range of the curve. Most importantly, no excessive kurtosis or skewness was found in any of the groups.

In conclusion, the descriptive statistics for both portfolios, and the respective DY groups, indicate that the distributions of the TSR observations are negatively skewed. However, the distribution is not at an excessive level. Portfolio one underperformed against Portfolio two and this result was substantiated by the outperformance of positive DY groups in relation to Group 1. Non-dividend payers

not only had a lower return in comparison, but also presented a higher level of risk. This could be interpreted as an indication that on average, dividend payment enhanced share returns. This finding links to the primary objective of the study. Furthermore, by comparing the different DY groups, the best performing group on a risk-adjusted basis was found to be the highest DY group (Group 4). This finding suggests that in order to capture the most value from dividend payments, a firm needs to consider making large dividend payments. Inferential analysis results, provided later on, will address how significant this supposed relationship is.

An important secondary objective of this study, however, was to determine the extent to which market movements influence share returns when regarding dividend payments. Accordingly, the next section of the descriptive statistics considers the impact of bull and bear market movements. First the two portfolios are compared to understand what the differences are in results obtained during the two market movements, before analysing the four groups of dividend-investing strategies in greater detail.

6.2.4 MARKET MOVEMENTS ANALYSIS

In this section the two portfolios are evaluated by considering the descriptive results obtained during market movements. In order to compare their performances over bull and bear markets, the data set comprising of 192 months were separated into subsets. Bear markets were classified in terms of a decline in the ALSi from the previous month's level, and bull markets when the ALSi increased.

An important consideration for financial markets is that market cycles tend to increase and decline over time, but not necessarily in that order. Therefore, the bull and bear markets are not necessarily sequential, and the results might not be based upon consecutive months, but rather collective monthly observations for the market classifications. In total the 192 months provided for 113 bull months, and 79 bear months. These subsets were then applied to the portfolios and groups to investigate any differences in TSR performance over the two market conditions.

Table 6.3 provides the descriptive statistics for central tendency and dispersion for portfolio one and two, split between bull and bear markets.

Table 6.3: Comparative market analysis for the two portfolios

Market movements				
	Bear		Bull	
	Portfolio one	Portfolio two	Portfolio one	Portfolio two
Average DY (%)	0.000	3.910	0.000	3.820
Average (%)	-1.861	-1.485	2.632	3.755
Median (%)	-1.639	-1.150	2.396	4.114
Minimum (%)	-16.302	-20.620	-8.730	-5.270
Maximum (%)	8.109	9.557	21.508	11.888
Range (%)	24.411	30.177	30.239	17.159
Variance (%)	28.281	21.638	26.205	13.180
Std deviation (%)	5.318	4.652	5.119	3.630
Sharpe	-0.526	-0.520	0.328	0.772

In terms of central tendency, Portfolio one again underperformed with average TSR values of -1.861% and 2.632% for bear and bull markets respectively. In comparison, Portfolio two provided an average TSR of -1.485% during bear markets and 3.755% during bull markets. Similar results previously found for the degree of dispersion around the mean were also found for the two portfolios. Portfolio two provided a lower degree of risk, measured in terms of standard deviation, with 4.652% and 3.630% for bear and bull markets respectively. Portfolio one, on the other hand, had higher standard deviations with 5.318% and 5.119% for the two market conditions.

Collectively, these measures of central tendency and dispersion are used again to calculate the Sharpe ratio. The resulting values indicate that on a risk-adjusted basis Portfolio two's return provided better results compared to Portfolio one, the risk-free rate and the market rate. In comparing the Sharpe ratio over bull and bear markets, an important finding was observed. This ratio provided very similar results for both of

the portfolios during bear markets; however, for bull markets Portfolio two's Sharpe ratio was found to be more than double that of Portfolio one. This could suggest that no abnormal return is possible during bear markets but could be possible for bull markets. In order to investigate the effect of DY levels on TSR values, table 6.4 provides for the descriptive results obtained from the four DY groups for both bull and bear markets.

Table 6.4: Comparative market analysis for the dividend-investing groups

Bear markets				
	Portfolio one	Portfolio two		
	Group 1 (Zero)	Group 2 (Low)	Group 3 (Med)	Group 4 (High)
Average DY (%)	0.000	1.927	3.568	6.222
Average (%)	-1.861	-1.995	-1.469	-1.001
Median (%)	-1.639	-1.489	-1.191	-0.270
Minimum (%)	-16.302	-24.601	-19.991	-17.287
Maximum (%)	8.109	9.277	9.440	10.539
Range (%)	24.411	33.878	29.431	27.825
Variance (%)	28.281	25.945	24.093	27.188
Std deviation (%)	5.318	5.094	4.908	5.214
Sharpe	-0.526	-0.575	-0.490	-0.371
Bull markets				
	Portfolio one	Portfolio two		
	Group 1 (Zero)	Group 2 (Low)	Group 3 (Med)	Group 4 (High)
Average DY (%)	0.000	1.881	3.480	6.098
Average (%)	2.632	3.618	3.699	3.943
Median (%)	2.396	4.053	4.109	4.327
Minimum (%)	-8.730	-7.070	-6.985	-8.635
Maximum (%)	21.508	13.477	18.148	11.903
Range (%)	30.239	20.546	25.133	20.538
Variance (%)	26.205	15.909	19.787	15.761
Std deviation (%)	5.119	3.989	4.448	3.970
Sharpe	0.328	0.669	0.618	0.754

Table 6.4 firstly reports the relative DYs for each group in the data set. These values can potentially be used as a benchmark in evaluating DYs. Accordingly, by analysing the results for the different groups, the outperformance of the dividend-paying groups in relation to the non-dividend-paying group becomes evident again. During bear markets, Group 4 was found to provide the highest TSR in comparison to the other groups. Regarding the results for central tendency, the least-dispersed group was found to be Group 3 for bear markets, and Group 4 for bull markets. Therefore, the findings suggest that not only do the highest DY levels provide for the highest average TSR, but also the lowest amount of risk measured in terms of standard deviation. The highest level of risk was again found, unsurprisingly, for Group 1, which supported previous findings. The Sharpe ratio again indicated that the different market conditions can provide abnormal returns, as any positive DY group outperformed the non-dividend-paying group during bull markets.

In summary, the best-performing group in terms of average TSR was found to be the highest-dividend-paying group during both bull and bear markets (Group 4). Consistently the medium DY sub-portfolio (Group 3) illustrated that it is the second-best portfolio in terms of average monthly TSR. In both market scenarios Group 1 performed the worst. Accordingly, the results suggest that not making a dividend payment could result in poor share performance as measured by TSR. Therefore, the descriptive statistics could possibly suggest that dividend payments do affect share value, and that the level of DYs further provides for an influencing value in share returns. The significance of this finding will be evaluated in the inferential results provided later.

In this section some key characteristics have been identified by considering the descriptive statistics. However, the statistical significance of the proposed relationships between dividend information and share return needs to be investigated with the use of inferential statistical analysis. This chapter, therefore, introduces the inferential analyses findings next.

6.3 INFERENCE STATISTICS

In this section emphasis is placed on the relationship between the dependent and independent variables inherent in the sample. As mentioned in Chapter five, for this study the independent variables used are dividend distributions over bull and bear markets. The dependent variable is the monthly risk-adjusted share return measured for the various DY groups. Therefore, based on the before-mentioned research objectives and these variables the null hypothesis and alternative hypothesis of the study was stipulated as follows:

H_0 : Dividend distributions have no significant influence on share returns.

H_A : Dividend distributions have significant influence on share returns.

Therefore, the inferential analysis attempted to determine whether positive market adjusted returns can be generated in order to reject the null hypothesis. The next two sections provide for the results obtained. Again these following sections are structured in a similar manner to the descriptive statistical sections, in the sense that Portfolios one and two are discussed first. Secondly, for the four DY groups inferential statistical findings are presented and analysed. Finally, the potential effect of market movements is analysed over bull and bear markets.

6.3.1 COMPARATIVE ANALYSIS OF INFERENCE RESULTS

Chapter five specified the assumptions used to apply the OLS model. It was also stated that all assumptions held when the data set was evaluated. Accordingly, the regressions for each portfolio and group were based on the following OLS model specified in the previous chapter.

What is important to consider is that this regression is conducted to investigate whether or not risk-adjusted returns (α) and estimates of systematic risk (β) can be statistically significant, which will indicate that using dividend-investing can result in positive risk-adjusted returns.

The following sections contain summarised tables discussing the results obtained for both portfolios and DY groups. Key characteristics addressed include the previously mentioned inputs to the OLS model such as α and β as well as estimates indicating the goodness of fit for regressions (Cant *et al.*, 2005). Furthermore, since no substantial autocorrelation is prevalent, there is no need to consider the adjusted goodness of fit value. The level of significance, measured by the p -value, is finally used to determine if the relationships between the variables are significant. Table 6.5 provides the results for the first analysis conducted for Portfolio one and two.

Table 6.5: Regression results for the two portfolios

Portfolios	Market model estimate of α	Market model estimate of β	R^2
Portfolio one (Non-dividends)	-0.582*	0.983*	0.668
Portfolio two (Dividends)	0.223*	1.009*	0.951

The first two columns in Table 6.5 indicate the market model estimates for abnormal risk-adjusted returns (α) and systematic risk (β). The asterisk symbol is used in the table to identify statistically significant results at five per cent. In analysing the results obtained, it was noted that Portfolio one did not have a positive abnormal return (-0.582), even though its systematic risk (0.983) was very similar to that of Portfolio two (1.009). The dividend payers' abnormal return (0.223), in relation to its systematic risk, would therefore suggest that investing in the dividend-payers would have provided better returns than investing in the non-dividend payers.

The last column of table 6.5 indicates the goodness of fit values for the regressions, and as can be seen for the dividend payers it is high (0.951). All estimates for β using the market model was significant at a 5% level. These findings address an element of the research objectives to determine whether returns on shares differ between dividend-paying firms and non-dividend-paying firms. In order to analyse if this significance holds true for different DY levels, the various DY groups are investigated next in table 6.6.

Table 6.6: Regression results for dividend-investing groups

DY groups	Market model estimate of α	Market model estimate of β	R^2
Group 1 (Zero)	-0.582*	0.983*	0.951
Group 2 (Low)	-0.072	1.022*	0.824
Group 3 (Med)	0.189	1.029*	0.824
Group 4 (High)	0.547*	0.978*	0.793

From the table it can be seen that Group 4 (0.547) was found to present the largest abnormal return, followed by the Group 3 (0.189), then Group 2 (-0.072) and lastly Group 1 (-0.582). These results support previous findings and indicate that the higher the DY was, the larger the abnormal returns. In other words, the risk-adjusted returns decrease in line with the corresponding decline in DY. Considering the p -values for each group, it can be seen that the estimates of abnormal return for Group 1 and Group 4 are statistically significant.

Table 6.6 also provides for support of Ap Gwilym *et al.* (2000) regarding the systematic risk. For the high DY shares, the systematic risk was found to be very similar to that of the non-dividend shares. This would suggest that there is a non-linear relationship between the abnormal return and systematic risk for dividend-payers and non-dividend payers. The goodness of fit results was also found to be relatively good for all the groups.

These results are consistent with the Erasmus (2011) and Ap Gwilym *et al.* (2000) findings where statistically significant findings were only found for the highest DY group and the non-dividend group for estimates of abnormal risk-adjusted returns. For the estimates of systematic risk all results were statistically significant.

Up to this point of the chapter the two portfolios and four DY group's results have been portrayed for the entire 192 month time period of the study. The next section considers the comparative analysis for both bull and bear markets for the four DY groups.

6.3.2 COMPARATIVE ANALYSIS FOR MARKET MOVEMENTS

Thus far in this chapter an attempt has been made to address the research objectives pertaining to the influence of dividend payments on share returns. In order to address the secondary objectives of this study, this section investigates the possible influence of market movements on the dependent and independent variables. In order to do so, the four DY groups that represent the dividend-investing strategies are used. First, the results for the bear market are provided in table 6.7, followed by the analysis for the bull market in table 6.8. A comparison between the two markets is discussed later.

Table 6.7: Regression results for the four groups during bear markets

DY groups	Market model estimate of α	Market model estimate of β	R^2
Group 1 (Zero)	-0.407	0.948*	0.644
Group 2 (Low)	-0.389	1.008*	0.781
Group 3 (Med)	0.101	0.993*	0.815
Group 4 (High)	0.691*	1.041*	0.801

Recalling from the previous descriptive results, although no group provided a positive TSR during bear markets, Group 4 did provide the highest average TSR in this market scenario (-1.006%). Therefore, during declining markets the highest dividend paying group provided the best return in comparison to other groups. The previous descriptive statistics also indicated that if a firm paid the lowest amount of dividends as measured in the lowest market average for DY, instead of making no dividends available, they actually performed worse in terms of TSR. This result could potentially provide contradicting views for the signalling hypothesis. However, in performing the inferential analysis the p -values for α indicated no significance for Group 1 to 3 during the bear markets. Recalling from Chapter four, the signalling hypothesis states that any payment of dividends is usually taken as a positive sign by investors, resulting in a favourable increase in share price (Van der Merwe, 2010:24; Hobbs, 2006:1; Grullon *et al.*, 2002; Benartzi *et al.*, 1997; Michealy *et al.*, 1995; Healy and Palepu, 1988, to name but a few). Group 4, on the other hand, indicated significant findings for both positive estimates of abnormal risk-adjusted

returns (0.691) and systematic risk (1.041). Again, consistent with the two portfolios and the various groups, all estimates for systematic risk using the market model was significant at 5%.

Considering bull markets alone, the descriptive statistics previously indicated that Group 4 provided the largest TSR during bull markets and that, of all the groups except Group 1, provided a positive risk-adjusted return as measured by the Sharpe ratio. The risk inherent in Group 1 was found to be larger than that of Group 4. Table 6.8 provides the inferential results obtained for the bull market.

Table 6.8: Regression results for groups during bull markets

DY groups	Market model estimate of α	Market model estimate of β	R^2
Group 1 (Zero)	-1.045*	1.094*	0.589
Group 2 (Low)	0.272	0.963*	0.739
Group 3 (Med)	0.090	1.067*	0.736
Group 4 (High)	0.745*	0.903*	0.660

The non-linear trend previously observed between return and variability continued during the bull markets results obtained from the regression analyses conducted for the four DY groups. Group 4 yielded the highest abnormal risk-adjusted return and also the lowest level of systematic risk. The inverse was true for Group 1, suggesting that not making dividend payments resulted in the highest level of systematic risk and the lowest rate of return. For this regression, the goodness of fit estimate was somewhat lower than for previous regressions, but still relatively high. Considering the level of significance, results are statistically significant for all estimates of β . The results are, however, only statistically significant for α in both Group 1 ($p=0.007$) and Group 4 ($p=0.007$). These findings suggest that high DY firms will outperform lower DYs not only in terms of share returns, but also in terms of the riskiness of the investment made.

6.4 CONCLUSION

In the beginning of this chapter it was mentioned that the results obtained from descriptive and inferential data analyses will be discussed. Various tables and figures were used to present these statistical results.

Throughout this chapter various descriptive and inferential analyses were performed on the two portfolios and subsequent DY groups in order to address the study's research objectives. The descriptive analyses identified mathematical relationships between the dependent and independent variables. The inferential analysis served to investigate how significant these relationships or differences were and whether positive risk-adjusted returns could be generated.

The purpose of constructing the four DY groups was to investigate the possible influence of increasing and declining markets on the returns of dividend-investing strategies. The portfolios were rebalanced monthly and ranked according to DY, and evaluated according to their respective risk-adjusted returns to identify if the performance of the strategies significantly differed during the market scenarios.

In the next chapter, a summary of the study is provided. The chapter will provide an overview of the results obtained in this chapter. It will specifically address the research objectives of the study, explain possible limitations to the study performed and identify future research opportunities originating from the results obtained.

Chapter 7 : CONCLUSION AND RECOMMENDATIONS

7.1 INTRODUCTION

Wolmarans (2003) stated that “it is generally accepted that the payments of dividends is the most important and most widely used instrument for the distribution of value to shareholder.” Furthermore, as stated at the onset of this study by Firer *et al.* (2008:10):

“An argument can be made that dividends are more important than ever before, since it is the one number that a shareholder can trust. Earnings per share and even cash flow per share can be manipulated by management, but dividend cheques can be cashed.”

Considering this supposed influence that dividends can have on shareholder value, this study set out to evaluate the possibility of using dividend pay-out policy to enhance share return, especially during increasing and declining markets. The aim was to investigate if there is a possibility that investors could maximise share returns by using predetermined dividend-investing strategies based on DY levels during bull and bear markets. In order to perform the required research the study considered a sample of both listed and delisted firms for the period 1995 to 2010. Two portfolios were first constructed, distinguishing between zero and positive DYs. Next the two portfolios were further categorised into four DY groups based on the level of DYs. By using these strategies, the study was able to investigate how dividend distributions influence share returns. A summary of how the various portfolios and groups were constructed is provided later in this chapter.

The issue, however, and the subsequent need for the analysis of dividend-investing, is that South African firms have been found to be very conservative and sensitive towards the level of dividend payments (Van der Merwe, 2010:29; Firer *et al.*, 2008). It was mentioned that at times, many South African managers borrowed funds in the market in order to make a dividend payment in the attempt to maintain the market

value of their shares (Firer *et al.*, 2008). Furthermore, considering the more recent financial crisis and international trends, firms have built up large reserves of cash, which provides for abundant resources to make dividend payments. It can thus be argued that the dividend decision has become critical in order to manage wealth by distributing dividends, when appropriate.

The rest of this chapter is structured as follows. The next section provides an overview of the chapters discussed. Throughout important dividend related topics are reviewed. The chapter then elaborates upon important results from Chapter six and implications it might have for dividend-investing and dividend policy formulation in the South African market. The chapter is finally concluded with a discussion of limitations identified in the study, and potential future research opportunities provided.

7.2 SUMMARY

Chapter one introduced the background and role of the dividend decision, when it introduced the three elements of an optimal financial function. Recalling from Damodaran (2011:1):

“A firm seeking to maximise wealth has to invest wisely, find the right kind and mix of financing to fund these investments, and return cash to the owners if there are not enough good investments in order to increase shareholders’ wealth.”

It was stated that the dividend decision stems from the interaction between the financing and investment decision, through the MCC (Damodaran, 2011:2). The MCC is at the centre of these interactions as it serves as an important benchmark when deciding on how beneficial financing from various sources can possibly be, if investments are advisable, or if earnings should be redistributed to shareholders (Brealey *et al.*, 2008:117; Correia *et al.*, 2007:1-20). If a reinvestment provides a rate of return lower than the MCC or hurdle rate, a firm must determine whether to keep the earnings as reserves for future investment funding, or distribute it as dividends to

the shareholders. Ultimately, the dividend decision should be based on whether shareholder value is being maximised or not (Bierman and Smidt, 2007:5). Chapter two to four served as the literature review on the role and origin of dividends by identifying the key characteristics of both the investment and financing decisions firms make to maximise shareholder value. Chapter two, specifically, introduced the capital-budgeting process and principles used in the investment decision to identify value-adding investment opportunities. It was stated that capital budgeting is performed in order to determine the profit potential of each investment proposal, which should then be compared to the expected rate of return demanded by shareholders (Bierman and Smidt, 2007:3). In this chapter investment analysis techniques, traditional and modern, used to evaluate investment options were also reviewed and discussed. Naturally, due to the inherent uncertainty inextricably involved in predicting the future, capital budgeting decisions need to be performed with great care. According to Lambrechts (1992:65):

“The result of the investment decision is measured by the improvement in the cash flow and eventually in the market price of the ordinary shares. In this manner, the attempt to satisfy the primary objective of the financial management function, to maximise shareholder wealth is also served.”

Chapter three next introduced the role of leverage, and how it could influence the capital structure.

“The ultimate goal of the financing, or capital structure decision, is to determine the degree of financial leverage in the capital structure that maximises the value of the firm by minimising the MCC” (Clayman et al., 2009:121).

By following a predetermined dividend pay-out policy a firm needs to be very cognisant to the extent of equity financing it utilises in its financial structure. This importance can be observed in the significant demand shareholders can have to be compensated for any change in a firm’s risk profile of its debt to equity ratios. Various theories regarding the interaction between debt and equity, and their influence on the dividend decision were explained. It was also indicated how the MCC can be derived by specifying which factors can influence it. In this chapter, the

signalling hypothesis was also introduced. Signalling power, according to this theory, is managed by firms when they financed their investments. Also, this signalling power was proposed to provide added value when making dividend payments to shareholders, ultimately enhancing returns. The role that debt restrictions can have on a firm's management was elaborated upon, and the risk of building up excessive cash reserved explained.

Chapter four shed light on some of the extensive studies previously performed based on the dividend decision. However, the impact that market movements can have on the dividend policies of firms did not seem to have received the same level of attention to date in South Africa. Studies indicate that higher-than-usual DY shares tend to outperform lower DY shares in value over time, as previously stated by Kooyman (2010) and Saville (2010). The signalling hypothesis, and its applicability to dividends, explained that investors tend to react favourably to firms that pay dividends, especially when the dividend payments were not expected. Chapter four also indicated that the clientele and catering theories would appear to have gained a greater following over the past years (Baker and Wurgler, 2004). These theories are based on market sentiment towards firm characteristics, such as DY. Firer *et al.* (2008) found that in the South African market firms are very hesitant to reduce dividend payments, as they fear destroying shareholder value. Therefore, one can argue that the hurdle rate used when determining the dividend decision is being influenced by both external factors as well as internal interactions between the investment and financing decisions.

Chapter four also reviewed Fuller and Goldstein (2003) who studied the effects of bull and bear markets on dividend policies and whether signalling was indeed observed in the market when selecting shares for investing. Their study revealed that dividend-paying firms provided better returns than non-dividend-paying firms during both periods of market movements. Furthermore, their study indicated that the level of dividend payments was not the influencing factor, but rather whether the firm made any payments at all. This chapter also reviewed a local study of dividend relevance performed by Erasmus (2011), who built on previous studies of Wolmarans (2003; 2000), Ap Gwilym *et al.* (2000), and Kleim (1985), to name a few. The results of Erasmus (2011) indicate that share value can potentially be influenced

by not only the size of a dividend payment, but also its stability. In support of these findings, and those of the Fuller and Goldstein (2003) study, DeAngelo and DeAngelo (2012) provide empirical evidence that during financial distress, commonly associated with bear markets, managers were more willing to reduce dividend payments, but not to stop them in their entirety.

This study finally reviewed and adapted the Wolmarans (2000) study in order to determine whether dividend-investing could be used to capture positive risk-adjusted returns in the South African context, by considering the effect of market movements on the performance of a number of DY portfolios.

Chapter five specified the research methodology applied in this study. How the research data was obtained and the time-period applicable to this study was also discussed. Using data sourced from McGregor BFA (2010) database, analysis techniques were introduced. It was also stated that since all the data used was sourced from public sources and as such in the public domain, the research had minimal ethical risks and as such no ethical clearance was needed. Due to the nature of listed and delisted firms on the JSE for the period 1995 to 2010 and the volatility in their share data some coding was required on the data set. Firstly, observations exceeding eight standard deviations were omitted, before the process of winsorizing was utilised to the top and bottom five per cent of the data. Finally, following the appropriate transformations, two portfolios and DY groups were constructed and ultimately analysed with descriptive and inferential statistics.

The primary research objective of this study was to evaluate the possible influence dividend payout policy has on share returns. The null and alternative hypotheses were stated as follows:

H_0 : Dividend distributions have no significant influence on share returns.

H_A : Dividend distributions have significant influence on share returns.

In terms of the above-mentioned hypotheses, the secondary objectives of the study were stipulated as:

- To determine whether returns on shares differ between dividend-paying firms and non-dividend-paying firms.
- To determine whether the various dividend pay-out policies regarding the size of dividend payments, as per DY, affect share returns.
- To evaluate the possibility of using dividend-investing strategies during market movement to earn a higher than market return on a risk-adjusted basis.

In order to address the stated objectives and hypotheses two portfolios were used in the statistical analyses. These portfolios represented the non-dividend payers (Portfolio one), and the dividend payers (Portfolio two). In total, 22 927 monthly observations were analysed over the 192 months in the study. Of this total amount, 24.774% of the observations were found to be non-dividend-paying and the resulting 75.226% dividend-paying observations, accordingly identified by zero and positive DYs. Next, the dividend-paying observations were further sub-categorised to further compare share returns over various DY levels. The creation of the four groups provided the opportunity to investigate whether dividend-investing strategies based on DY levels can allow for positive risk-adjusted returns, especially during bull and bear markets respectively.

The empirical results of the statistical analyses were then provided in the form of various tables and figures in Chapter six and discussed accordingly over the entire time period under review, as well as during bull and bear markets respectively. The next section of this chapter elaborates further on the empirical results obtained from Chapter six and the implications it might hold for dividend policy formulation as well as dividend-investing possibilities.

7.3 CONCLUSIONS AND DIVIDEND POLICY IMPLICATIONS

This section of the chapter provides for an overview of the most significant findings and their possible implications by first reviewing the descriptive results before considering the inferential statistics obtained.

Descriptive results for both portfolios indicate that the distribution of the DY observations of the data set is negatively skewed, but not excessively so. In all analyses performed, Portfolio one underperformed relative to Portfolio two over the entire time period of the study. Non-dividend payers not only had a lower TSR in comparison, but also had more risk present as measured in terms of the standard deviation of TSR. Therefore, on a risk-adjusted basis, non-dividend-paying firms underperformed any positive DY firm, as measured by the Sharpe ratio. These descriptive results potentially indicate that, on average, dividend payments could enhance share performance. This finding partly addresses the first secondary objective of the study. Furthermore, when comparing the different DY groups, the two best performing groups on a risk-adjusted basis were found to be the highest DY group (Group 4) and the second highest (Group 3) respectively. This finding supports previous research since it suggests that in order to capture the most value from dividend payments, a firm not only needs to make a dividend payment, but should attempt to pay as large a dividend as possible. This observation relates to the second secondary objective of the study in the sense that the size of a dividend payment would appear to be influencing the value of a share.

After investigating the results obtained during opposing market movements, the best-performing group was found to be Group 4 for both bull and bear markets. Consistently, the medium DY sub-portfolio (Group 3) illustrated that it is the second-best portfolio in terms of average monthly TSR. In both market scenarios Group 1 performed the worst and Group 4 the best on a risk-adjusted basis. A remarkable finding for the market scenarios was that during bear markets no significant difference in TSR was observed between the dividend-payers' Sharpe ratio and that of Group 1. However, during bull markets the ratio indicated that the risk-adjusted return for the dividend-payers was more than double the result obtained for the non-dividend payers.

In summary, the descriptive statistics suggest that not making a dividend payment could result in lower share performance as measured in TSR during any market condition. On the other hand, making large dividend payments in relation to share price could, especially during bull markets, enhance share returns. Therefore, the descriptive statistics appear to suggest that dividend payments may affect share

returns, and that the level of DYs further provides for an influencing value in share returns. At the same time, there could exist an opportunity to maximise returns by considering market conditions, given that dividend information is available. Inferential analyses were performed to test these findings.

During the inferential statistical analysis, the data set was also found to be negatively distributed, but no substantial auto-correlation was found to be present in the data. Accordingly, an OLS regression was applied based on the market CAPM. Results for the regression analyses indicate support for the Erasmus (2011) and Ap Gwilym *et al.* (2000) studies. For the high DY shares the systematic risk was found to be very similar to that of the zero-dividend shares. Yet, the risk-adjusted returns for the dividend-paying groups were significantly higher in comparison. This would suggest that there is a non-linear relationship between the abnormal return and systematic risk for dividend-payers and non-dividend payers. The goodness of fit value also indicated a relatively good result for the regression conducted on all portfolios and groups. Considering the statistical significance for risk-adjusted returns (α) and systematic risk (β), the results suggest that Portfolios one and two provided for statistical significant results for both estimates. In the analyses performed on the various dividend-investing strategies, the p -values indicated that the results for Group 1 and Group 4 are statistically significant for estimates of α . For estimates of β all p -values were found to be statistically significant.

In comparing the results obtained for the bull markets, the same results held for Group 1 and Group 4. Only in bear markets the results for Group 4 proved to be statistically significant for α . Again all estimates of β during both bull and bear markets were statistically significant. In both markets a non-linear trend between α and β was observed. The results obtained for the low and medium DY groups suggest that no statistically significant results for estimates of α could be obtained. Therefore, the research cannot prove whether a low- or medium DY strategy could outperform the zero-dividend group.

From the inferential statistic results obtained the null hypothesis and alternative hypothesis could finally be addressed. Chapter five indicated that the null hypothesis is used to test statistical significance. The null hypothesis is valid when no difference

exists between a population parameter and a sample statistic being compared to it. The alternative hypothesis is valid when differences do exist. In the analyses focusing on Portfolio one and two, the null hypothesis can be rejected, and the alternative hypothesis accepted. This can be seen in the findings for the level of significance, since it indicated that both p -values were smaller than five per cent. Therefore, DY would appear to be an influencing factor on share values in comparing dividend payers to non-dividend payers.

For the analysis of the various DY groups, the null hypothesis can be rejected for Group 1 and for Group 4 during bull markets and for Group 4 during bear markets. These results serve as a meaningful finding, since it supports the descriptive results of differences in the Sharpe ratio observed for bear and bull markets that were mentioned previously.

The implications of these findings are two-fold. From the firm's perspective, this study provides support for the signalling hypothesis since it appears as if dividend payments could influence share returns. Possible reasoning for this finding might be that firms who do not pay any dividends for a specific period might be indicating that the management do not have the resources available to do so and thus a signal might be that there is no value in the shares. The results obtained from this study would suggest that a firm should attempt to maintain its DY in lines of the highest DY average for the market during bull markets, which would provide significant risk-adjusted share performance. However, during bear markets the benefits of making the largest dividend distributions would not be as remarkable. Therefore, the study supports the catering theory for dividend policy formulation in the sense that dividend policy would appear to be influenced by market movements. In order to capitalise on this finding and maximise shareholder wealth, management should manage shareholder expectations and adjust the level of dividend payments during bull and bear markets accordingly.

From the investor's perspective, dividend-investing strategies would appear to identify value-enhancing investment opportunities. The results indicate that even if an investment was made in the highest DY group during a bear market, no positive returns would be possible. Alternatively, identifying the relevant groups in the market

by using the average DY sizes could have provided positive risk-adjusted returns over the period under review in this study. Considering these findings, the next section summarises limitations identified in the research performed, as well as future research opportunities.

7.4 LIMITATIONS AND FUTURE RESEARCH POSSIBILITIES

Initially many obstacles and limitations were present in this study. By performing in-depth research, many of these limitations were overcome. Some of the remaining limitations are provided in this section before future research opportunities are highlighted.

- As mentioned previously this study included listed and delisted firms on the JSE for the period 1995 to 2010. Initially all sectors on the JSE were considered, but eventually the financial and basic material firms were excluded. The study also excluded private firms not listed publically since their financial performance and data was not readily available.
- Data analysis for the various months was limited to an accumulation of either bull or bear markets, as defined by a market index change from month to month. This monthly classifications might, therefore, contain performance lags from previous months.
- Due to the accounting complexities involved with non-cash dividends such as share distributions, share splits, and share repurchases, this study only considered cash dividend payments.
- Considering the taxation transition from STC to the new DWT this study could not fully analyse the latest tax implications. The tax transformations were, at the time of writing this study, too new to observe any significant implications on the financial markets and dividend payments.

Following the results obtained from the data analysis, the following are recommended as future research possibilities:

- A significant finding of the study was that during bear markets no significant difference in risk-adjusted returns was present between Portfolio one and Portfolio two. This held true even between the lowest and the highest ranking DY groups. However, for bull markets, Group 4 significantly outperformed Group 1. Future research might consider an efficient portfolio strategy for capitalising on high-ranking DY shares during bull markets and risk-free or non-cyclical shares during bear markets accordingly.
- Since the latest tax structure and its supposed impact on dividend payments is not included in this study, a future study might need to consider the difference between STC and DWT on share values. The latest DWT methodology was implemented to make the South African market more attractive to foreign investors. An investigation could be made into the relevance of this notion and how dividend policy formulation has been impacted.

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