

**Value-based management considerations in the listing  
of an agricultural company on the food producers  
sector of the JSE Ltd**

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## **Abstract**

In order for a company to operate effectively it needs to have sufficient capital, structured to such an extent that capital charge in the form of interest cost and required return is minimised. A strong capital base lays the foundation for the ability to generate revenue by implementation and management of a well laid out strategy to trade in either goods or services. Capital is a depletable resource and usually limited in respect of availability. The use of capital for income generation will be a process applying the capital to the most profitable project or venture. The cost of capital can be defined as the possible profit generated from an alternative application. This cost is defined as opportunity cost and it is mitigated by the risk involved in its application. Opportunity cost can also be related to the various investment choices which owners of capital have. Investors will base a decision on the risk return relationship of possible investments. Should an investment yield an acceptable return for the perceived risk, an investor will choose that particular investment. This will obviously depend on whether there are alternatives producing similar or better yields at similar or lower risk levels.

Having an appropriate strategy will only yield acceptable returns through effective balance sheet management and decision-making. Balance sheet management entails the use of debt and equity finance in a way which results in the most profitable financing method or the lowest cost of capital. Equity finance entails the use of shareholders' funds for financing capital requirements. This is usually done by issuing and selling shares over the counter or in the official market in order to finance operating requirements or to fund investments. For a company to list it means offering its shares to the public on an open trading system. In essence this means that investors have to be recruited. In South Africa, this trading system is the Johannesburg Securities Exchange (JSE)

The purpose of this research is to identify the financial variables or value drivers through which management of farming product traders or food-producer companies can evaluate the expected performance of its shares, should it be listed on the JSE. The results were achieved by defining a comprehensive set of financial diagnostic, accounting and valuation ratios and testing it against the response of the share price. The test was done on the basis of developing multiple linear regression models for each relevant year and

all companies listed in the particular sector on the JSE, in the defined period. Net Operating Profit after Tax (NOPAT) per share emerged as the most reliable measure of share performance.

Second on the list was residual income calculations and more specifically, derivatives of EVA® principles as developed by Stern and Steward. Research into factors influencing share prices resulted in non-financial factors also coming to light. These factors, however, impact on the long term financial performance.

The end result was a proposal to break down NOPAT into its key elements and identify the operations where these elements can be managed. A system of incentive driven measures is to be developed to drive behaviour, possibly through a balanced score card in order to introduce share value-based management. This will ensure that there are no surprises by the time shares are introduced to the open market.

## **Bestuursopsomming**

Vir 'n maatskappy om effektief bedryf te word, moet dit voldoende kapitaal hê wat sodanig gestruktureer is dat die drakoste in die vorm van rente en vereiste opbrengs geminimaliseer word. 'n Sterk kapitaalbasis lê die fondasie vir die vermoë om inkomste te genereer deur die implementering en bestuur van 'n weldeurdragte strategie om in goedere of dienste te handel. Kapitaal is 'n uitputbare hulpbron en normaalweg beperk ten opsigte van beskikbaarheid. Die gebruik van kapitaal vir die generering van inkomste sal 'n proses wees van die aanwending daarvan tot die mees winsgewende projek of geleentheid. Die koste van kapitaal kan gedefinieer word as die moontlike wins wat gegenereer kan word uit alternatiewe aanwending daarvan. Hierdie koste word gedefinieer as geleentheidskoste en word gemitigeer deur die risiko betrokke by die aanwending daarvan. Geleentheidskoste kan ook gekoppel word aan beleggingskeuses wat eienaars van kapitaal het. Beleggers baseer hul besluite op die risiko-opbrengsverwantskap van moontlike beleggings. Sou 'n belegging 'n aanvaarbare opbrengs teenoor die ervaarde risiko lewer, sal 'n belegger in daardie opsie belê. Die keuse sal bepaal word deur die beskikbaarheid van alternatiewe wat soortgelyke of beter opbrengste lewer teen soortgelyke of laer risikovlakke.

Deur 'n toepaslike strategie te hê, sal opbrengste slegs aanvaarbaar wees met effektiewe balansstaatbestuur en besluitneming. Balansstaatbestuur behels die gebruik van skuld en ekwiteitsfinansiering tot so 'n mate dat dit die mees winsgewende finansieringsmetode of laagste koste van kapitaal meebring. Ekwiteitsfinansiering is die gebruik van aandeelhoudersfondse vir die finansiering van bedryfs- of beleggingskapitaalbehoefte of projekte. Dit word normaalweg gedoen deur aandele uit te reik en oor die toonbank of in 'n amptelike mark of oop verhandelingsstelsel te verkoop. In wese beteken dit dat beleggers gewerf moet word. In Suid-Afrika is die Johannesburgse Sekuriteitebeurs (JSB) so 'n amptelike mark.

Die doel van hierdie navorsing is om finansiële veranderlikes of waardedrywers te identifiseer waardeur bestuur van boerderyprodukverhandelaars en voedselprodu-seerders die verwagte prestasie van hulle aandele kon evalueer, sou dit op 'n openbare platform soos die JSB verhandel. Hierdie resultaat is bereik deur 'n omvattende stel finansiële-, rekeningkundige- en waardasieverhoudings te definieer en te toets teen die

beweging van die aandeleprys. Die toets is gedoen aan die hand van 'n veelvoudige liniêre regressiemodel vir elke relevante jaar vir al die maatskappye genoteer in die bepaalde sektor van die JSB vir die bepaalde periode. Netto bedryfswins na belasting (NBWNB) het na vore gekom as die mees betroubare maatstaf van aandeleprestasië. Tweede op die lys was residuele inkomsteberekeninge en meer spesifiek, afgeleides van ekonomiese waardetoevoeging (EWT) modelle soos ontwikkel deur Stern en Steward. Navorsing na faktore wat aandelepryse beïnvloed het daartoe gelei dat nie-finansiële faktore wat aandelepryse beïnvloed, ook aan die lig gekom het. Hierdie faktore impakteer egter veral op langtermyn finansiële prestasie.

Die eindresultaat was 'n voorstel om NBWNB af te breek in sleutelelemente en die bedrywe te identifiseer waar hierdie elemente bestuur kon word. 'n Sisteem van insentiefgedrewe maatstawwe moet dan ontwikkel word om gedrag te bestuur, moontlik deur 'n gebalanseerde telkaart om bestuur gebaseer op aandeelwaarde in te stel. Dit sal verseker dat daar geen verrassings is teen die tyd dat die aandele op die oop mark genoteer word nie.

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## Table of abbreviations

| Acronym | Term                                                         |
|---------|--------------------------------------------------------------|
| CEO     | Chief executive officer                                      |
| CFROI   | Cash flow return on investment                               |
| CVA     | Cash value added                                             |
| DCF     | Discounted cash flow                                         |
| EBITDA  | Earnings before interest, tax, depreciation and amortisation |
| EBIT    | Earnings before interest and tax                             |
| EP      | Economic profit                                              |
| EPS     | Earnings per share                                           |
| EVA(R)  | Economic value added                                         |
| FCF     | Free cash flow                                               |
| IRR     | Internal rate of return                                      |
| JSE     | Johannesburg Securities Exchange                             |
| MVA     | Market value added                                           |
| NOPAT   | Net operating profit after tax                               |
| PE      | Price earnings ratio                                         |
| ROE     | Return on equity                                             |
| ROI     | Return on investment                                         |
| RI      | Residual income                                              |
| WACC    | Weighted average cost of capital                             |

# **CHAPTER 1**

## **Food sector share prices: An overview**

The objective of this chapter is to present the study. Firstly, the background will be presented and the subject will be put into perspective, then the problem will be presented and the study parameters laid-out. Finally the layout of the document is set in order to provide a clear understanding of the processes followed.

### **1.1 INTRODUCTION**

The study was necessitated by a choice of an agriculture-related business (agri-business) to list on the Johannesburg Securities Exchange (JSE). This means that company would stop selling its shares in-house and offer it to an official market as will be clarified further in this document. To determine whether it will be accepted by investors on the JSE as a company that will meet or exceed the expectations of the shareholders, it is important to compare the performance of the company and its shares with companies it will be joining in the same sector.

Currently there is only one company on the JSE with nearly the same business model. Unfortunately there is not much correlation between this company's share price movement and that of similar unlisted companies. The fact is that some unlisted shares are currently outperforming certain listed shares in this sector. The concern for a company with listing in mind is whether investors perceive the risk of similar companies different than other investments or whether some listed companies really did not perform as expected by investors. In order for a company to operate effectively it needs to have sufficient capital. The capital will be used to purchase assets, which in turn are used to generate income. (Megginson *et al.* 2007:49).

The company with a strong capital base has the ability to generate revenue by implementing and managing a well laid out strategy to trade either in goods or services. Capital is a depletable resource and is usually limited in respect of availability. The use of capital for income generation will be a process of allocating it to the most profitable

project or venture. The cost of capital can be defined as the possible profit generated from an alternative application. This cost is defined as opportunity cost and it is mitigated by the risk involved in its application. Opportunity cost can also be related to the various investment choices which owners of capital have (Megginson *et al.* 2007:158). Investors will base a decision on the risk return relationship of possible investments. Should an investment yield an acceptable return for the perceived risk an investor will choose that particular investment. This will depend on whether there are alternatives producing similar or better yields at similar or lower risk levels.

Having an appropriate strategy will only yield acceptable returns through effective balance sheet management and decision-making and whether the effectiveness and efficiency of companies can be optimised. Balance sheet management entails the use of debt and equity finance in a way that results in the most profitable financing method or the lowest cost of capital (Megginson *et al.* 2007:568). Equity finance entails the use of shareholder funds for financing capital requirements. This is usually done by issuing shares and selling it over the counter or in the official market. For a company to list it means offering its shares to the public in an official market to generate capital to service operating expenditure or to fund investments or projects. In essence this means that investors have to be recruited. In South Africa the official market bringing together investors and firms in need of investment, is the JSE.

Investors will have to be convinced that funds invested will realise decent returns, that these returns are sustainable and sufficient to justify the risk and also that it has the ability to enhance the investor's current portfolio. Investors have certain goals in mind when choosing investments and it is necessary for the company to understand these investment goals (Megginson *et al.* 2007:173). Convincing investors that the required investment goals are achievable or that a company can add to the achievement of these goals is of the essence. With regards to the above management of the business, there must be certainty that the business has a successful growth strategy, which will enable it to deliver the returns which are expected by the investors. In addition, the delivery of the returns should be sustainable in order to convince investors to select the company shares as investment.

Given the importance of an understanding by management of shareholders' requirements it is necessary to be sensitive to the reaction of shareholders on certain

conditions or circumstances and how certain reports delivered by the company are read and interpreted. Should the company be able to predict the reaction of the shareholders, the company would streamline its planning and execution of tasks and would confidently implement projects. This will empower the company's management to set up a successful communication channel in presenting reports. By effective communication and offering acceptable results, the management of the company will be able to lay a solid foundation for share value growth through shareholders' confidence in the company's long term sustainability.

In essence this means that a study had to be done to determine the factors influencing the share price for the companies in a sector by, in this case, doing an analysis of the companies in the food sector. Specifically important is financial performance and its influence on share price. By getting a correlation between performance measures, value drivers and share price movement, it would be possible to establish whether key drivers can be identified, based on which shareholders or potential investors will make their buying or selling decision in respect of the trading with shares.

Even though there is a possibility that it will not be possible to manage some of these measures, will make sense for a company to at least understand the direction which share trading and share prices will take when certain decisions are made or certain performance levels are delivered. With the information at hand and understanding the visible trends, an attempt will be made to model share price behaviour.

The purpose of the research will be to create an understanding of the factors that a company would have been exposed to if it was listed on JSE over that specific period and what its share price would have looked like under those circumstances. The final outcome of this study will be an attempt to create a realistic picture of what the company can expect as a listed company. The latter will allow for successful strategic planning, implementation and management, bearing in mind the fact that it will influence share prices and the way in which the share price will react.

Of the more important financial aspects to be considered is the growth in earnings per share (EPS), earnings before interest, tax depreciation and amortisation (EBITDA) and profitability (Megginson *et al.* 2007:50). A list of possible variables will be developed from literature and initially included in the study in order to define its influence on the

share price. By processes of elimination these measures were narrowed down to only the most relevant ones determining the share price, using multiple linear regression analysis.

A study done by Ernst & Young in 2008 indicates that institutional investors base an average of 60% off their decisions on financial measures, while 40% is based on non-financial measures. The non-financial measures have a longer term impact on the sustainability of the investment and can also be seen in the financial results of the company. The non-financial measures with possible influence on the share price include, inter alia, the reliability of management, corporate strategy and the strength of the trademark.

In consideration of the above information the study aims to identify the key elements which influence share prices (and indirectly shareholders), resulting in a usable guide for similar companies which aim to list on the JSE. Due to the varying influences on different sectors the study will be done specifically on the food sector, particularly on farming and food producers. This particular study is aimed at current unlisted agri-businesses intending to list in the food producers sector of the JSE, due to its main operating income being derived from farming and food production.

Although the other companies in the food sector do not have similar business plans, similar business cycle patterns are indicated. The fact that most of these companies are low growth, relatively acceptable yielding companies with a low beta against the rest of the JSE, means that it will suffice as defensive shares for investors looking for low-risk opportunities. The agri-business will compete against these companies for an opportunity to be on an investor's portfolio and has to know when and why an investor will look at a particular share.

The study is split between a literature study on the various ways to measure company and share price performance and its ability to predict share price movement; and an empirical study analysing the share price history of companies listed on the JSE in particular, the food producer sub-sector of the main sector farming and fishing. The main source of information for listed companies will be information provided by McGregor BFA.

It is important to know what is to be expected in terms of company performance in order to be the share of preference as well as to anticipate what the share price reaction will be on certain actions taken by the company. The ability to model these expected changes will create a good idea of the expected share price.

For purposes of the research, the past 19 years' financial performance ratios of the JSE listed companies will be used to analyse the share movement in relation to financial performance.

## **1.2 BACKGROUND TO THE STUDY**

In its aspiration to remain the market leader in the agricultural sector, a company should continuously investigate opportunities or methods to set up the most effective delivery platform for the building of shareholder value. Historically agricultural co-operatives were set up for the purpose of delivering value for the members. By converting to companies, ownership of agri-businesses has changed from membership to shareholders. However, the purpose of creating value has not changed.

Managing shareholders value and growing it require effective balance sheet management - especially a balance between using debt finance and shareholders' investment (equity finance) as sources of capital for business generation. It also requires building the confidence of investors in order to grow the investment value within the company. When considering listing, an investigation as to whether optimal methods are being used for creating and building value of the company's shares at listing on the JSE, is necessary.

Due to the low trading volume of unlisted shares as well as limited knowledge of the existence of these types of companies, it is expected that listing shares on an open platform will create increased trading volumes and also unlock the perceived inherent value of the company. Doing this is perceived to be a bold move for companies not entirely sure of what to expect in a listed environment. In order to shed some light on what can be expected and how to anticipate the value and price movement shares can

experience in a listed environment, it will be attempted to find the value drivers and model the impact thereof on the shares of unlisted companies when they list.

Based on the above it is currently unsure which variables have to be managed to such an extent that a realistic share price will be achieved at initial public offering. It appears as though the most up-to-date topic in the management discussion on financial management is related to a value-based management (VBM) as part of residual income theories. Chapter 2 discusses these topics in more detail.

### **1.3 PROBLEM STATEMENT**

To determine what value drivers can be identified which will influence the movement of share prices for an agri-business company listed on the JSE and what can be done to ensure share performance.

### **1.4 OBJECTIVES OF THE STUDY**

The following objectives were set in order to confirm whether the study met the required criteria

#### **1.4.1 Primary objective**

The primary objective of the study is to develop a framework for the understanding of variables influencing share price changes and management of share value.

##### **1.4.1.1 Secondary objectives**

- Establishing the relevant variables which may have an impact on share price movement by way of a literature study.

- Analysing share price movement and the variables influencing it by developing multiple linear regression models.
- Determining which of the variables in the model has the most influence on the share price.
- Developing a framework for management as a tool in the daily operation of the company.

## **1.5 SCOPE OF THE STUDY**

With an emphasis on financial management, the study will be limited to the fields of financial strategic and operational management and packaged under value-based management.

## **1.6 RESEARCH METHODOLOGY**

The methodology used will be a combination of literature and empirical study.

### **1.6.1 Literature/Theoretical study**

The foundation of the study firstly consisted of a theoretical cornerstone of research into the specific area of financial ratio analysis and residual income theories of value management and the effect of these forces on the share price movement, especially in the first three years after listing.

### **1.6.2 Empirical study**

14 companies are currently listed on the JSE Food Sector, but due to the fact that there were a few which came and went, it will be necessary to include the full group available

for the past 19 years since 1990 and to also include the factors which allowed for introduction as well as de-listing.

The financial history of the food companies as mentioned above will be drawn from McGregor BFA in order to analyse certain key variables as identified through the literature study to be possible drivers of share price as well as the measurement of company performance. By doing multiple regression analysis on share price movement and comparing it with the key variables, the ability of these measures to determine and predict the share price will be calculated.

The aim is to identify key financial variables that may influence the share price movement.

## **1.7 PARAMETERS TO THE STUDY**

The study will be done with all available information from 1991 to 2009 based on standardised financial records and share trading reports of the companies listed on the JSE Food Sector as provided by McGregor BFA.

## **1.8 LAYOUT OF THE STUDY**

### **Chapter 1 Food Sector share prices: An overview**

Introduction, problem statement and objectives

### **Chapter 2 Financial variables, company value and value-based management**

Background on accounting ratio analysis and recent developments in the area of financial management and strategic management. Theories developed in relation to key elements of share price movements with closer reference to residual income theories.

### **Chapter 3    Research method and data analysis**

Statistical analysis of companies in the Food Sector on the JSE and interpretation of results.

### **Chapter 4    Empirical study: recommendations and conclusion.**

Results discussion, summary and recommendation

## **CHAPTER 2**

### **Company value and value-based management**

The objective of this chapter is put into perspective the factors which may influence company value with reference to share prices and what can be done to understand the effect of management influence in determining share value. Financial and accounting variables are defined and put into perspective. This lays the foundation for the empirical analysis of financial and accounting variables and its relation to share price, in order to be used as value based management tools. Value-based management is defined and discussed in the context of share price management.

#### **2.1 INTRODUCTION**

The purpose of a profit orientated company is to ensure sustainable shareholder investment growth or in other words: “Create shareholder value” (De Wet & Du Toit, 2007:59). From a shareholder's perspective this means that the company should be able to perform at such a level that it can sustain the underlying value of the share.

Even if most of the value is perceived and not necessarily capital supported, management needs to be able to understand the origin of value and how to positively manage it in all instances. This, in essence, means that management needs to know what drives the value of the share and to develop the tools to measure and manage these drivers. Bokpin & Abor (2009:1) supports this argument by suggesting that growing the assets entrusted to management through constant effort is of the essence. Knowing what the share value drivers are and being able to measure the drivers, enable management to manage those drivers that may have an impact on value creation. The focus must be on the underlying operational and managerial actions required to maintain or improve financial performance, whether it be the choice investment, financing of assets or working capital management.

From a general financial theory point of view and intuitively one would suspect that share prices are driven by the same fundamentals that drive the economy (Somoye *et al.*, 2009:186). Economic supply and demand theory has it that an increase in the

demand for a product, given the same level of supply, will increase the price of such a product. Similarly the price will rise by the same level of demand but reduced supply. The exact opposite will happen if either the demand decreases or the supply increases, should the other factors remain constant and should prices decrease. It can also happen that prices can stagnate due to a lack of supply or demand side forces (Carbaugh, 2007:43).

To establish a fair share price it is therefore necessary for the shares to firstly be available for sale and secondly that healthy supply and demand forces are active. In this regard it is necessary to realise that both the buying and selling decision are driven by information available on the performance and perceived quality of shares. Choices based on this information are the same as in the case of contemporary economics (Carbaugh, 2007:42).

It is necessary to note that the timing and quality of information impact on the true value created from this information. The latter creates interesting dynamics, because supply and demand are again driven by perceptions and preferences based on the interpretation of the available information. The question thus remains: Based on what information do shareholders/investors sell or buy shares?

### **2.1.1 Market efficiency**

One of the methods managers can use to ensure that investors get an accurate picture of the company and what management expects will be the outcome of their effort, is by following the signalling model. To understand signalling one needs to understand the underlying efficient market hypotheses. Megginson, Smart & Gitman, (2007:382) expand on three types of market efficiencies and deliver proof to the concept of overreaction. Market efficiency, according to financial theory, can be divided into weak, semi-strong and strong form.

The following table depicts the definitions and identification of each of the mentioned forms of market efficiency.

**Table 2.1: Market Efficiency**

| Form of Efficiency | Definition                                                                                                                                                                               | Example                                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weak               | Financial asset (stock) prices incorporate <i>all historical information</i> into current prices; future stock prices cannot be predicted based on an analysis of past stock prices.     | Nothing of value is to be gained by analysing past stock price changes, since this does not help to predict future price changes. This renders "technical analysis" useless. |
| Semi-strong        | Stock prices incorporate all publicly available information (historical and current). There will not be a delayed response to information disclosures.                                   | The relevant information will be incorporated into a stock price as soon as the information becomes publicly known.                                                          |
| Strong             | Stock prices incorporate <i>all information - private</i> as well as public; prices will react as soon as new information is generated, rather than as soon as it is publicly disclosed. | Stock prices will react to a dividend increase as soon as the firm's board of directors votes - and before the board announces its decision publicly.                        |

In essence an efficient market means that the share price responds almost immediately to changes in the business environment or company performance expectation, once the information becomes publicly available (Drake, 2007:4). In cases where the markets are perceived not to be fully efficient, methods of communicating with investors are developed.

One of the methods of share market communication is called signalling. The signalling model was developed by Ross and others in the 1970's (Megginson *et al.*, 2007:502) to make sense of the information gap between management and investors. One example used by Megginson is of a company expecting excellent returns in the near future, taking on debt financing, which causes repayment commitment, to prove their

ability to service this debt. The logical reaction will be for investors to trade the share price to higher levels in expectation of higher investment yields caused by increased capital. The reason investors will expect a higher yield on investment in the company's shares is that an increased capital requirement is most probably a result of investment in new projects or growth by the company. It can also mean that the company perceives its share price to be too low and as a result rather takes up debt finance than equity for the purpose of investment in growth.

It is argued that the weaker the efficiency in the share market in which companies operate, the higher debt financing it is prepared to take up to signal its future profitability. Research indicates that a positive correlation exists between an increased use of debt finance and market efficiency. The relationship is, however, not significant. (Megginson *et al.*, 2007:503).

Signalling can be used in various ways to inform less informed investors, like using dividend payouts as a way to communicate to the investment community satisfaction with the performance of the company or in a "negative" sense to communicate that viable investment projects in the field of business are not available. The latter may lead to a perception that a company is moving into a maturity phase, which in turn has specific implications for the market price of the share. One of the less conspicuous ways of signalling is using market timing. Market timing means that companies tend to issue shares at the time when share value is perceived to be at a high and buy in when the share value is perceived to be low (Megginson *et al.*, 2007:504).

Considering the fact that supply and demand for shares are probably derivatives of underlying information one has to consider what influence supply and demand have on share price determination. Another issue constantly referred to regarding investment decision-making in financial theory is the so-called risk return relationship (Megginson *et al.*, 2007: 45).

### **2.1.2 Risk and return**

Investors, according to financial theory, will logically be looking for the largest possible reward (return) on investment and minimal risk of losing any of the capital invested.

Risk and reward theoretically, and maybe specifically for risk averse investors, have a positive correlation, thus the higher the perceived risk, the higher the required return to entice the investor to invest. The final choice whether to invest in a specific asset or opportunity seems to be determined by the individual's risk aversion profile. By being able to determine the risk in investing, the choice will fall on an investment where the perceived positive gap between reward and risk is the greatest, in line with the risk profile of investors (Megginson *et al.*, 2007:180).

### **2.1.3 Evaluation and measurement**

The first step in considering an investment in a company is to understand its business model. The business model is derived from the identification of certain strategic drivers, mostly spelled out in the non-financial sections of the annual financial reports. The management of most companies try to explain the business model followed, using various methods of breaking down the business into segments and mostly through schematic illustrations and diagrams of how the units are integrated. The mentioned can be used to identify the key drivers of the business and eventually allows ways to analyse the company's ability to grow core competencies into competitive advantages. Measures to evaluate the effectiveness of strategy and execution usually can be derived from comparing efficiency and growth within and amongst companies (Thompson *et al.* 2010:107). Regarding future performance expectations it is specifically important to pay attention to the strategic direction and focus indicators as spelled out in the chairperson's and other reports contained in the annual financial report.

Investors' evaluation of companies as prospective candidates often starts by looking into a company's financial reports and if available, in the case of a company intending to list, its prospectus. From the financial reports the financial variables are analysed and put into perspective, mostly by considering trends within the company but also by comparison with similar companies. The prospectus explains the investment story of the company, giving more than just the financial background but also explaining the reason for listing and value proposition for investors. In the listing prospectus, the strategy and building blocks for generating future income is expanded on. In combination with the managing director's and often the financial director's reports, most

of the non-financial issues are discussed. The non-financial issues may include reference to the effectiveness of execution and relevance of company strategy for the past period and for the future. It may also include a change of direction and focus and a variety of other indicators. Other indicators and issues often referred to in the prospectus and financial reports, may include execution of strategy and the use of brand, marketing and advertising efforts as well as corporate governance and compliance issues. Fox (2003:3) suggests that the share price will overall reflect a more accurate picture of the company value, especially if the disclosure in financial statements complies with legal requirements.

While non-financial factors are not necessarily clearly visible in the financial reports, the perception is that the effect of non-financial issues may be visible, derived from, and can be interpreted from using financial measures. Thompson *et al.* (2010:103) is specifically of the opinion that financial measures can clearly indicate strategic direction and execution. The financial reports are perceived to be the most accurate available reflection of the operating model and the performance of the company. Due to the diversity of businesses and operating models, it is recommended not to only look at one company in isolation. In order to judge a company's performance it needs to be benchmarked against companies with similar operating activities. Comparison between companies unfortunately poses its own challenges since the information and the way it is presented differ from company to company.

General methods of evaluating share investment returns and company performance are based on earnings multiples. Earnings multiples, as the term suggests, are ratios built on the relationship between share price and company earnings as expressed per issued share. Bringing the share price in perspective with the underlying company's results gives an average investor a basis from where to determine the market's impression of the company. Many earning multiple metrics currently exist - some of the most popular methods are discussed.

### **Price-earnings ratio (P/E)**

P/E is defined as a company's share price divided by its earnings per share (EPS) in a specific financial year. EPS is mostly used for the most recent year and it is calculated as the net profit after tax divided by the number of shares in issue at the end of the year or the average number of shares in a particular year. Price/earnings is often used in peer group context, in other words what is an acceptable P/E ratio for a specific industry or sector. This approach leads to an “assumed relative stable” P/E for a company. The reason for following this approach is that a fair P/E for a company cannot be established. The problem is that EPS is the only value in the equation which is known therefore a fair P/E for a specific company cannot be calculated using the above equation. Bosman (2007:38) argues that even EPS cannot be considered as a constant since a variety of factors including changes in capital structure and company operations can change earnings and should impact on the ratio. Notwithstanding the above, P/E is currently the most popular valuation measurement (Hillestad & Bank, 2007:127). The popularity of P/E may be due to the fact that it is easy to understand and calculate. Other calculus exists to calculate a fair P/E. However, due to its own complexities and underlying assumptions it will not be discussed.

### **Price-sales ratio (P/S)**

P/S is defined as a company's share price divided by the relevant 12 months' sales-per-share. An advantage of using price to sales is that the source of future income, namely sales is measured, irrespective of the efficiency of the company's internal operations. As a result of measuring pure sales growth, an opinion can be developed about the market share and growth prospects of the company. This should give an investor a snapshot of expected growth, especially if price to sales is compared between years and analysed as a trend. Long term investors will accept that companies may experience seasons of low sales, but in the long run sales turnover should smooth out, giving a clear indication of growth trend.

Variation in terms of sales and sales revenue, which might not be directly related to growth or the lack of growth, is cases where, for instance, sales margins were reduced to increase market share or compete against a rival firm. In the case of reduced sales margins, sales revenue may grow, but not necessarily gross profit, possibly creating a more positive perception of growth than what might actually transpire once the net

profit becomes known. Where sales margins are increased to increase profitability it could result in loss of sales revenue, but not necessarily profitability as a whole. The perception could be that the company experienced negative growth but the net profit may even have increased. Sales margin can be increased by decreasing cost-of-sales or increasing sales price. Similarly sales margins can reduce by reducing selling prices or increased cost-of-sales. More detail will be provided later in this chapter.

### **Price-book (P/B)**

A company's net asset value is the net value after all the liabilities are deducted from the company's total assets and is equal to its book value, thus its assets less its liabilities. To calculate the price to book (P/B) ratio one has to divide a company's share price by its book value per share. P/B ratio is considered a good measure for value investments. It also gives a clear indication of the market sentiment regarding the expected value of the share and its possible future profit. A high price to book ratio indicates that investors perceive the company to be able to be more profitable in future. The latter means that the current asset value or book value is considered to be too low.

A company's assets are used to generate income. Indications are that if a company's profitability is higher than expected, the additional financial benefit gets discounted by investors in the share price. In this regard (Hillestad & Bank, (2007:128) indicates that a high price to book ratio may mean that the investors believe the company will outperform its normal projected growth. Interestingly Bokpin & Abor (2009 :31) found a considerable correlation between capital structure and price book ratio, suggesting that investors discount the debt ratio in the share price. A high debt ratio consistently resulted in a lower price book ratio. It is derived that investors may be concerned about the ability of a company to meet financial commitments, amortise debt, compensate shareholders or to reinvest funds for future growth.

In South Africa the most popular methods of valuation are earnings multiples as discussed above and the discounted cash flow (DCF) methods, to be discussed later (Correia & Cramer, 2008:48).

The above variables are used to determine the value of shares but do not necessarily indicate how the value is created or where it originated from within a company's operations. Financial ratios were developed in order to standardise the approach in

which company performance is evaluated. Secondly, financial ratios are used as diagnostic tools to determine whether resources are used effectively and efficiently. Using standardised ratios allows for comparison across companies, which facilitates benchmarking. The benefit of benchmarking is the ability to identify inefficiencies or areas of excellence in a company. The use of financial ratios as indicators of where share value is generated in a company is perceived not to be a clear science. In this regard a substantial number of financial ratios and measures were developed in order to truly measure company performance.

These financial ratios are calculated by analysts and investors from information provided in financial reports. Financial reports, however, contain historic information and the investor needs to determine possible future performance of the company in order to ensure good investment returns. Of these financial ratios the most popular ones are discussed for possible inclusion in the empirical study. The discussion follows later on in the chapter. It is also important to remember, as per previous discussion, that some of the factors influencing a company's performance are of non-financial origin. These non-financial factors would be hard to measure in the same way that financial factors are measured.

In order to include consideration for the effect of non-financial factors on share prices, the aim is to be able to develop a set of measures which indirectly relate to the measurement of non-financial factors as well. In other words, one has to find financial measures from which the influence of non-financial performance results can be derived. It is suggested that non-financial factors tend to impact on financial measures at later stages. Impacting at later stages means that the ability to understand the non-financial drivers of the company can enhance the accuracy of determining the outcome of the performance in future. Thus, through diagnosis of the financial factors, non-financial issues can be laid bare. Non-financial issues are discussed and put into context of company performance later on.

#### **2.1.4 Financial assessment**

When reporting on financial results, companies tend to produce an own perspective of performance and this is done by means of comparing history. Accounting standards GAAP (Generally Accepted Accounting Principles) and IFRS (International Financial Reporting Standards) prescribe a certain set of financial reports which should always be part of the annual financial reporting process. Financial details are set out in annual financial reports to the extent where it most accurately reports the past year's performance and the financial position on the last day of the financial year. Investors use the mentioned reports to make comparisons between companies in order to determine the best investment from information provided.

Financial reports normally comprise of the following (Megginson *et al.* 2007:31):

1. Income statement.
2. Cash flow statement.
3. Changes in shareholders' equity; and
4. Balance sheet.

In order to make financial reports more understandable, each financial statement is accompanied by notes, allowing readers to see a breakdown of the values or policy and procedures followed in the compilation of the specific financial report.

The information at hand thus allows the investor to see the company in terms of income and profit generated, capital availability and deployment of funds.

Companies use resources, popularly known as: Men, Money, Machines and Materials. Men, referring to the people with certain skill sets to perform tasks in order to achieve a mutual goal. Money refers to the available capital and the systems used to plan and monitor its movement. Machines, in the case of production companies, but it can also refer to the equipment necessary for service companies to deliver service. Material includes all resources being transformed from an input to a product or service.

The financial results of the business activities are summarised in the income statement and the use and application of capital are reported on in the balance sheet. The

income statement is therefore a measure of effective operation of the company, while the balance sheet indicates the final movement of capital, mostly to indicate the extent to which the profit generated by the company contributes to the owner's equity, but also to give a breakdown of the distribution of capital to operational activities - the result of the structure of financing of activities.

### 2.1.5 Share performance

Shareholders can obtain value from investments by two means only: Share price growth and dividends received. Dividends are fully company controlled and are dependent on the market conditions, company strategy and the actual financial performance of the company – specifically related to earnings yield; cash generated and cash requirements for future use. Companies mostly issue dividends to achieve two goals, the first being to send a communication to its investors regarding its performance and financial condition and secondly to entice prospective investors to invest in the company (Megginson *et al.*, 2007:551).

Investors use these dividends to determine the share price through the “Gordon Growth model:

$$P_0 = D_1/(r - g)$$

Where:

$P_0$  = the current share value

$D_1$  = the dividend at the end of the first year

$r$  = the cost of capital or required return for the investor and

$g$  = the expected growth rate of the company

the expected growth rate is determined by establishing the retention rate of profit generated, in other words the balance of the profit of the company, reinvested into future growth after payment of dividends, as a fraction of the ROE (Megginson *et al.* 2007, 155):

$$g = rr \times ROE$$

where:

$g$  = the growth rate  
 $rr$  = the retention rate  
 $ROE$  = return on equity.

Calculating the share value using the Gordon Growth model will give an investor a good indication of the price to pay for a share. However, there are pitfalls in the sense that dividends can be paid from capital resources and not necessarily from profits generated. Dividends can also be paid in different forms as Ben Temkin (Temkin:2010) discovered when looking at the dividends of a specific company in detail. The dividends were paid by way of giving shareholders more shares. As a result the capital support for the share prices was diluted and the dividend value was stripped from the share value.

Share prices seldom follow the Gordon Growth valuation, mainly due to the unpredictability of ROE or growth and issues like the Tiger dividend as per the previous paragraph. “Share price movement can be influenced by the market’s view of the sector or the company, rather than the performance of the company.” This was quoted by Seal, (2010:105) as the words of John Mayo in articles published in the Financial Times, giving his account of his part in the debacle of a well-known American electronics company in 2002. In brief, the share price of the electronics company took a turn for the worst, despite perceptions of the company that it was still performing well, mainly due to poor performance of certain investment choices it made. This created a general concern about the competency and strategic direction of the leadership of the company and resulted in a discounting of the share price.

In most instances there are only two opportunities per annum at which a company can truly publicly confirm its financial performance, namely at financial year-end – in which case external auditors can verify performance and then at mid-year, where investors depend solely on the integrity of the company to provide an accurate reflection of financial performance, because interim statements are not audited. Some companies deliver quarterly statements as well, but there is a cost involved and the benefit must outstrip the cost to justify such an action.

In the meantime, the share prices fluctuate on a daily basis and produce significant changes, seemingly without any changes in information regarding their financial performance. This leads to the question: "What role does the financial results and performance measurements play in the value of the share, what is recognised as the major contributors to share price variation and how should these matters be handled by the management of the company?"

Van den Heever (2007:108) concluded in her dissertation regarding share price movement and capital structure that net operating profit after tax (NOPAT), net profit after tax (NPAT) and free cash flow (FCF), of which NOPAT is a building block, have a significant correlation with share price movement in the industrial sector of the JSE. This result agrees with the basis of Koller's (1994:1) argument that generated cash is the only accurate measure of a company's value.

#### **2.1.6 Analysis**

In order to test the above arguments regarding financial variables correlating with share price movement and to statistically prove or reject the ability of certain ratios to predict or at least correlate with share price movement, it is necessary to, within reasonable logical sequence, present these ratios, define them and argue the reason for their inclusion in the statistical analysis.

The logical analysis will actually start from a beginning balance sheet, containing all the capital information needed to understand the base of revenue creation and profit generation, back to an ending balance sheet, showing the outcome of the combination of capital and activities in generating further capital.

For the purpose of this presentation, the sequence of discussion will be in line with the order of appearance of information as contained in financial reports, which starts with an income statement. What needs to be borne in mind is the fact that it may not necessarily mean that the share price will move positively with delivery of positive results. Results which are in line with expectation will hardly ever produce a change in share price, because it has already been factored in by the time of publication (Hillestad & Bank, 2007:117).

## **2.2 INCOME STATEMENT**

An income statement is a report that reveals the efficiency and effectiveness of the operations of a company in financial terms. Therefore values in and ratios that can be calculated from income statement figures may be important, not only in the management of operations but also in the context of value creation. Some of the measures considered important in context of the above will be discussed below.

### **2.2.1 Profit margins**

Profit margins are normally expressed as percentages simply because it allows users to easily compare figures. It should be borne in mind that a variety of profit margin figures can be calculated using different formulae. For the purpose of this study attention will be afforded only to gross, operating and net profit margin. If expressed in percentage terms, the profit margins mentioned above indicate what percentage of sales is left after the deduction of costs. The purpose of using profit margins is to establish the quantum of surplus funds generated after subtraction of specified expenses.

It is important to note that profit margins do not measure cash generated - it only measures the difference between specified variables in line with generally accepted accounting practice (Kew *et al.*, 2006:518). When used, it must be considered in conjunction with the total cash cycle and realising that the cash cycle may have an influence on margin values. The argument regarding cash cycle emphasises, namely that care needs to be taken that every aspect which may influence profit margins is considered when distributable reserves are determined.

The following is a more detailed look at the various profit margins measured.

#### **Gross profit margin**

Gross profit is calculated as sales less directly attributable costs; in other words the amount of money that remains after direct production costs have been subtracted from

sales. Direct production costs include the following type of costs: overheads, labour, office, fuel, resources and other used to operate the company.

The gross profit margin expressed as a percentage measures the percentage difference between sales and cost of sales. From a management point of view gross profit margin is an important measure because a positive profit margin indicates that the company is able to cover direct attributable costs. Naturally the bigger the gross profit margin the better. Gross profit margin is calculated as:

$$\text{Gross Profit Margin} = (\text{Sales} - \text{Cost of sales}) / \text{Sales} \times 100$$

Given that a high gross profit margin is preferable in terms of the goal to create wealth for shareholders and stakeholders, it is important to understand how management interventions may influence gross profit. It is for example necessary to understand that an increase in sales without an increase in costs at a slower rate than the increase in sales, would not lead to an increase in the gross profit margin. On the contrary, a decrease in the cost of sales will lead to an increase in the gross profit margin if sales are kept constant. In this context the important aspects to manage are the factors that contribute to the cost of sales. Similarly one has to understand that the lowering of the mark-up percentage to increase sales may lead to an increase in gross profit, but it will not lead to an increase in gross profit margins if the cost of sales is not reduced proportionally. One also has to understand that an increase in gross profit will lead to an increase in operating profit or operating profit margins, provided that the operating cost is kept constant or increases at a slower rate than the rate at which gross profit increases.

Correct interpretation and understanding the relationships between the variables that influence gross profit margin, some of which have been discussed above, afford management the opportunity to adjust management activities in order to achieve the goal of wealth creation.

The bigger picture of the gross profit ratio is an indication of the ability of management to accurately utilise the gap between cost of sales and sales, without negatively affecting sustainability. Sometimes high margins can be maintained despite a large competitive market and that could indicate advantageous marketing effort.

The formula sales/cost of sales has a complex base because cost of sales is defined through effective stock control, purchasing and manufacturing efficiency. It can, for diagnostic purposes, be broken down into its elements but the information may not be available in the financial reports.

### **Operating profit margin**

After subtracting overhead costs, the operating profit of a firm is calculated, indicating how much surplus capital is available for repaying external finance charges (interest) and tax and eventually how much funds are available for distribution to shareholders or for reinvestment. The purpose of this measure is to isolate operating activities from financing activities and tax in order to measure operating efficiency (Megginson *et al.*, 2007:51).

Calculated as

$$\text{Operating profit/Sales X100}$$

its purpose is to isolate interest and tax from the net profit formula in order to see the profitability of the company before financing repayments and tax deductions. Sometimes companies tend to do capital restructuring in order to reduce tax. This has nothing to do with whether the company operates successfully, and successful operation is the backbone of sustainability.

### **Net profit margin**

Calculated as:

$$\text{Net profit after tax/Sales X100}$$

This ratio is expressed as a percentage of sales.

After the gross profit measure, operating expenses are subtracted to establish net profit generated. It is important to note the fact that this ratio does not measure cash generated (Kew *et al.*, 2006:518). As percentage of total sales, net profit will provide a way to compare the effectiveness of operations of companies. It can also indicate

whether the company generates sufficient gross profit to service the operations effectively.

## **2.3 FROM THE INCOME STATEMENT TO THE BALANCE SHEET**

While the income statement gives a view of business conducted, the results of operations are summarised in the balance sheet and movement can be seen in terms of a beginning and end balance sheet.

### **2.3.1 Profitability in terms of capital utilisation**

Although profitability is a good indication of operational efficiency, it has to be put to perspective in terms of its relation to capital utilisation. In order to achieve this, net profit after tax is put into relation to various combinations of capital utilisation and information is derived as to how effectively assets were utilised.

#### **2.3.1.1 Return on Assets (ROA)**

As derivative of invested capital and due to the fact that investors' funds are usually invested in assets in the company, it is necessary to determine whether the return on assets have an impact on share price movement. ROA compares income to the total assets used to earn the income. Managing assets from a value based management point of view will intuitively result in more effective asset utilisation, followed by improved return on assets.

The ROA ratio combines the income statement with the balance sheet. It specifically points to the efficiency of use of assets. ROA is influenced by the profitability of the company in terms of net profit, with the use of capital in terms of assets. Keeping the assets at the same level and improving profitability will improve the ROA and vice versa, while keeping profitability at the same level by utilising less assets will also improve the ROA.

The main problem arising from the use of the ROA ratio is the fact that it reflects the use of all capital and does not give an indication of which assets are being used less or more efficiently. Distinguishing between current and non-current assets and calculating ratios in respect of the effective utilisation of the last two mentioned balance sheet items are expected to be necessary to truly predict the effectiveness of managing these ratios in terms of share value.

The research of Alexakis *et al.*, (2010:132) suggested that ROA along with other ratios did not have a significant impact on share value for companies on the Athens stock exchange. The mentioned results, however, are contradicted to a certain extent by Prakash *et al.*, 2003:2), concluding that the adoption of the EVA® consideration in financial management processes was expected to impact positively on, amongst others, profitability and debt management, both of these being building blocks of ROA. The conclusion of the last writer supports the expectation of this report.

Defined as

$$\text{Net profit after tax} / \text{Total assets} \times 100$$

Meggison (2007:52) defines ROA as:

$$\text{Earnings available for common stockholders} / \text{total assets}$$

Assets are used to produce income, which is why it is important to see whether it is being used effectively. Companies use employees and funds to generate revenue from assets. The effective use of the combination of funds and employees is expected to be a key factor in maintaining sustainable long term profitability.

### **2.3.1.2 Return on equity (ROE)**

ROE relates income to the starting equity of that specific financial year. Equity over time is built up of the original investment of the owners of the company when created and adding or subtracting the net retained income year on year. Growth in equity over time indicates the actual value growth of the investment of the owners of the company.

However, there is a change in emphasis regarding the use of equity as measure of growth in investors' value. In the case of a sole proprietorship, the equity directly relates to the owners' value, but in the case of companies, there is a disconnection between equity and owners' value. While shares in a company trade at a specific value after it changed ownership from the company to the shareholder, the value is not directly connected to changes in equity.

Thus, although ROE as management ratio can say a lot about the profitability of the company in terms of owners' equity, it might not reflect acceptably in terms of the capital invested by shareholders. When trading shares, the secondary owner of the share, in other words, the investor purchasing the share from the first buyer of the share after issue, does in fact not invest in the company but rather purchases a right to the future yield of the share. The price at which it is purchased might or might not be supported by underlying equity, but rather by the ability of the company to return a profitable benefit to the owner.

The difference between owners' equity and the total trading value of the shares creates a problem regarding the true contribution of ROE towards share value creation. A large positive gap between equity and the market value of all shares, called the market gap can have two meanings.

- Either the company outperforms the value the equity should normally produces or,
- The equity of the company reflects below value assets or excessively valued liabilities, depressing the equity to below realistic value.

The latter gap can create management pressure in terms of performance because, while a 20% ROE could be acceptable for a sole owner, a shareholder who owns shares at 120% of equity value will only earn 16.7% on his investment.

Managers, analysts and creditors use ROE to assess the effectiveness of the company's overall business performance. While nothing can be taken away from the value of ROE as effectivity measure, as motivated by the argument of De Wet and Du Toit below, there is a chance that ROE as measure of share value growth may fail.

Defined as

$$\text{Net profit after tax}/(\text{Total assets} - \text{total liabilities}) \times 100$$

In the literature study of De Wet & Du Toit (2007:60) it is argued why this is probably the most popular measure used by analysts, managers, creditors and investors alike. It was also concluded that its popularity might stem from the use of the Du Pont analysis to compare certain efficiencies between companies.

ROE can be used as basis to start financial analysis and break it down in terms of the Du Pont analysis to find the main drivers, and then further down into profitability, asset utilisation and balance sheet structure or it can be the end result of detailed financial analysis (De Wet & Du Toit, 2007:60). Coming from a book value base, the difficulty in finding a link with share price is explained:

This measure ignores the value of the investment in terms of share price. Due to a high market value add (high market to book), the return on share value may be significantly lower than that of equity. This as such poses a considerable problem for management of, particularly, long running companies with “old” assets. In terms of accounting principles these assets should have low or even zero book value and have a negative impact on equity. Thus, although the assets are recognised at depreciated value, it still generates strong surpluses allowing for a high ROE. What needs to be considered are the replacement cost of these assets and the impact of replacement on ROE. Due to good results, the company performs well above market mean and therefore generates a good picture for investors, creating a positive gap between net asset value and share price. When assets reach replacement value, it may result in below average ROE as soon as the replacement assets’ value is reflected in the balance sheet. New assets have a double negative effect on ROE, impacting on increased asset value and increased depreciation, both these items having reducing effect on the ratio.

The relevance of the measure is again rather to determine the effectiveness as to how capital, and more specifically the shareholders' interest, is utilised. Although it is a necessary measure, one doubts its ability to predict share price movement. A study done by De Wet & Du Toit in 2006 indicated what the research also expects, namely

that ROE fails to deliver a significant correlation with share price movement in the industrial sector of the JSE (De Wet & Du Toit, 2007:64).

### **2.3.1.3 Return on investment**

From a shareholder's point of view, return on investment will be the total cash yield in terms of dividend as well as the growth in share price. Shareholders' investment in the company relates to the shareholders' equity at original share issue value. The concept of total shareholders' return (TSR) is used to define this result. For the company, the ROI will also be the ROA (Megginson, 2007:52).

Measuring the return on net assets will indicate the effectiveness at which capital is employed. Again, being a profitability ratio, it is an indication of performance, which relates to the ability of the company to generate profit in order to build up retained earnings.

Ratios which will probably give a better representation of the rate of operating capital movement in a company will be activity ratios:

### **2.3.2 Activity ratios**

It is accepted that the correlation between activity ratios and eventual operating profit will exclude these ratios from the initial model via the correlation matrix. This however does not mean that the ratios do not contribute to value based management. Being part of the finer detail of analysing the effective management of operating assets, means that they will most certainly be part of the value based management process. Activity ratios measure the rate at which companies are able to turn operating assets into cash (Kew *et al.* 2006:47). Turning operating assets into cash at a fast rate relieves pressure on financing requirements and allows the same invested capital to go through more cycles of profit generation. As a result of increased cycles of profit generation, return on invested capital increases.

The four most frequently used measures of effective utilisation of effective use of capital are as follow:

#### **2.3.2.1 Average collection period**

Defined by (Thompson *et al.* 2010:105) as:

$$\text{Accounts Receivable}/(\text{Total sales} \div 365)$$

This ratio measures the effectiveness of credit extension and collection activities. A company which can collect cash from its customers has good liquidity and does not tie up funds in unproductive assets. A low ratio suggests effective collection activities. However, a very low ratio may indicate an over-stringent credit policy that could cause lost sales and profits. A high ratio suggests credit extension to poor credit risks and/or ineffective collection efforts (Megginson *et al.* 2007:49).

Although debtors in arrears or not collected on time, in most cases earn an interest, this interest earning is accepted never to compensate for the loss of profit on the capital not utilized for operating activities. On the one side, it causes pressure on cash resources and financing activities, worsening the gearing of the business and possibly drawing financing cost and on the other side it is an opportunity cost for loss of profit. Poor management of debtors, thus have a substantial effect on the net profit margin, return on assets, return on equity and return on invested capital.

All the last mentioned variables are in one or more ways expected to have a significant effect on share price, because it influences shareholders return. Again, the value based management principles may suggest using activity ratios in order to have early indications of meeting share value goals.

### **2.3.2.2 Total Asset Turnover Ratio**

The asset turnover ratio is an indication of management's effectiveness and its ability to manage the assets efficiently. All assets in a company are financed either through equity (owners' capital) or liabilities (borrowed funds). Generating sales or revenue from using all the company's assets is accepted to be the key activity of a company. As mentioned previously the more sales generated from use of assets, the less the carriage cost of those assets are in relation to the total business activity, the higher the return on shareholders capital is expected to be as long as the sales can be turned into cash fast. Measuring sales to total assets is the first step in the du Pont analysis. The du Pont analysis breaks down the sales activity to asset utilisation, brings it into context of net profit margin and eventually breaks down sales, use of assets and profit, to the area of importance and that is the owners' portion of the profit. The balance of the variables of the du Pont analysis is discussed in more detail after the balance sheet measures.

Total asset turnover is defined as:

$$\text{Sales/Total assets}$$

Its significance is in its inclusion in the Du Pont analysis as being the measure of efficient management of assets; a low asset turnover ratio signifies inefficient management, seeing that the end result of turnover (sales) after expenses is the determinant of the surplus available to service the carry cost of assets.

Assets are financed either through equity or debt and carry an opportunity cost as explained later in this chapter.

### **2.3.2.3 Fixed Asset Turnover Ratio**

The fixed asset turnover ratio is an indication of management's effectiveness and its ability to effectively utilise available resources. It is a more comprehensive measure than asset turn over and explains the effective use of assets which are difficult to liquidate to generate cash if not used effectively. Although, again the possibility exist that it will not be added to the final regression models as such, it still remains

necessary to be included as a break down measure in the value based management process.

#### **2.3.2.4 Cash Coverage**

The cash coverage ratio compares the cash generated by a company to its cash obligation for the period (Megginson *et al.* 2007:50). Normally it is not the solvency of a company which first indicates possible financial distress, but the availability of cash to finance its operating activities. Cash coverage should be a very important determinant for an investor in choosing the relevant investment, because it not only influences cash available for operating activities, but also eventually the payment of external financiers and dividends.

### **2.4 BALANCE SHEET CONDITION**

The balance sheet is the core piece of information for the investor. The information provided relates to the assets supporting the share value and the way in which it is utilised and it changes from year to year (Megginson *et al.* 2007:49).

An indication of the types of financing used to acquire assets and the commitment that can be incurred in terms of repayment is also provided in the balance sheet. External debt has a repayment commitment and equity holders have to be satisfied that the company, at all times, have the ability to service its external debt, thus the importance of the mentioned information.

The balance sheet breaks down the sources of capital and the areas capital in deployed and provides for the necessary information to assess the effective use of assets and liabilities to generate shareholders profit.

## **2.4.1 Solvability and equity measures**

Solvency refers to a company's ability to meet its long-term obligations on a continuous basis. Tests of solvency measure a company's ability to meet these obligations. Three ratios are used to measure solvency and equity position.

### **2.4.1.1 Debt-to-equity ratio**

Above ratio expresses a company's debt as a proportion of its owners' equity and illustrates the relationship between the amount of capital provided by the shareholders and the amount provided by creditors. Debt to equity ratio is one of the ways to measure the investors' capital exposure to external finance. From an investor point of view debt has a very positive outcome to the profitability of the company, due to the fact that the total amount of assets used to generate revenue can be increased, without investing more funds. The problem is however that the repayment of borrowed funds has priority to the payment of shareholders return. As a result of the beneficial treatment of debt, the investment risk increases for the investor. It is thus expected that increased debt to equity, especially when it puts the investors' funds at risk, may have a negative effect on share price.

Debt to equity is the defining factor when it comes to effective balance sheet management. With this ratio effectively controlling the cost of capital, expressed as WACC or weighted average cost of capital, the effective use of owners' equity versus external debt will result in a low WACC - based on the assumption that the cost of debt is cheaper than the cost of equity. (Megginson *et al.* 2007:158).

This is one of the areas where there is a conflict between the agency cost of debt and the tax benefit. According to Megginson *et al.*, (2007:460) high leverage increases the probability of the firm encountering financial distress and its associated costs, but the tax benefit of financing costs causes WACC to reduce, with an increase in debt finance. The latter is only relevant up to the level where the external financiers will increase their rate due to increased risk. There is thus an optimal point for a company, where the WACC is at its lowest, given low interest on foreign debt and low agency cost (Correia & Cramer, 2008:46). The Modigliani-Miller model allows for calculation of this point.

Debt interest pricing was found not to be consistent among financiers. There is no consensus among banks and other financial institutions regarding the evaluation of the company risk or the pricing relevant to finance that specific risk (own experience). Therefore, although such an optimal debt ratio does exist, it is not easy to determine it in practice. Common mistakes made by South African companies, as per the research of Correia & Cramer (2008:85), is that it does not unlever and relever their beta calculations for the calculation of WACC when doing capital structure adjustments. This adds to lower correlation of a company's performance, share price and expected share price performance.

The benefit of using debt to increase assets is defined as the Equity Multiplier in the du Pont analysis discussed later. The equity multiplier is the inverse of debt to equity, and indicated the leverage obtained from finance.

## **2.4.2 Liquidity measures**

Liquidity refers to a company's ability to meet its current maturing debts (Megginson *et al.* 2007, 46). Tests of liquidity focus on the relationship between current assets and current liabilities. A company's ability to pay its current liabilities is an important factor in evaluating its short-term financial strength. Four ratios can be used to measure liquidity.

### **2.4.2.1 Current ratio**

This ratio measures the relationship between current assets and total current liabilities on a specific date. It measures the cushion of working capital that companies maintain to allow for the inevitable unevenness in the flow of funds through the working capital accounts (Megginson *et al.* 2007:46).

Calculated as:

$$\text{Current assets/current liabilities}$$

#### 2.4.2.2 Quick ratio

The quick ratio is a more stringent test of short-term liquidity than the current ratio. Quick assets are per definition readily convertible into cash at approximately their book value. The quick ratio is a measure of the safety margin that is available to meet a company's current liabilities.

Calculated as

$$\text{(Current assets – inventory)/Current liabilities}$$

None of the above measures as an exact benchmark, although companies would prefer ratios of above 1:1 for the most sensitive of the ratios, it is industry dependent and will be necessary to benchmark against concurrent companies (Megginson *et al.*, 2007:46). There is a fine balance between using creditors to finance stock purchases and allowing debtors to repay at a later stage. The largest benefit can be obtained by utilising as much as possible creditors days and try to reduce the debtors days to as short as possible. The process of using the trade-off between debtors and creditor, may allow for cash to be freed-up to invest in other projects. The risk of freeing up cash may be allowing for funds not being utilized fully and cause an increase in the total cost of funds.

Alexakis *et al.*, (2010:5) concluded in their research that liquidity ratios like asset turnover and current ratio as well as profitability ratios like operating profit margin and return on equity had a positive relationship with changes in share prices. In the context of value based management, these measures is expected to be included as benchmarks for effectively managing the cost of capital and eventually net profit after interest cost.

### 2.4.2.3 Du Pont Analysis

The building blocks of du Pont were discussed in previous sections. Although the du Pont analysis is just another break down of the actual ROE, it is a fast way to measure the efficiencies in a company. Being able to generating an acceptable-risk profit means that the elements of the du Pont model should rather be in equilibrium and none of the individual elements should be excessive.

Calculated as follow:

$$\text{ROE} = \text{Profit margin [PM]} \times \text{Total Asset Turnover [TATO]} \times \text{Equity multiplier [EM]}$$

$$\text{Profit margin (PM)} = \text{Net income (NI)/Sales}$$

$$\text{Total Asset turnover (TATO)} = \text{Sales/Total assets}$$

$$\text{Equity Multiplier (EM)} = \text{Total assets/Equity}$$

To generate a large profit margin, means that net income should be high and sales low, but to generate an acceptable total asset turn over, it is assumed that sales should be high and total assets low. Sales should not be high in the first equation except if net income is even much higher. Net income can only be higher with the same amount of sales if the operating cost is kept low, but this can cause sustainability problems due to a chance of under spending on a certain key long term expense like research and development or marketing.

The final element in reaching a high ROE is a large equity multiplier, but as discussed earlier, this comes with a risk of not being able to deliver shareholders return, should the company come under some sort of liquidity problem. Eventually the outcome will be to evaluate the profitability of the owners' originally invested capital, but it allows for a bird's eye view on how the profit is reached.

## 2.5 INVESTMENT PERFORMANCE

The allocation of profit generated in the company is done per share in order to allow investors to clearly understand their portion of the generated profit. This way, comparing the profit with the initial investment in the share, will allow for an exact indication of the shareholder's investment performance.

### 2.5.1 Earnings per share

Earnings per share is viewed as the most common measure of share value, and as discussed under the PE ratio EPS is mostly used for the most recent year and it is calculated as the net profit after tax divided by the number of shares in issue at the end of the year or the average number of shares in a particular year. This measure of return on investment is based on the number of shares outstanding instead of the amounts reported on the balance sheet and is the single most widely watched ratio.

Earnings per share, defined as

$$\text{Net profit attributable to ordinary shareholders} / \text{No. of shares in issue}$$

The number of shares in issue is calculated as the weighted average number of shares on hand throughout the year, with the effect of any changes, equally distributed throughout the year and across the shares (Kew, *et al.*, 2006:523)

From a managerial point of view, it is expected that there is not a lot of direct influence which can be effected on EPS, but it should be valuable to measure like-for-like investment performance if the EPS values of different companies can be put to perspective.

Although EPS says nothing about the underlying asset use, it can still be related to the initial capital layout of the investor and enable the ability to calculate company return on investment done by the investor. Whatever capital base the company used to produce

the profit, could be made irrelevant in terms of investor's capital layout. It is expected that earnings per share should exhibit a positive relationship to share price movement.

### **2.5.2 Cash and investments on hand**

A term described for this by Megginson (2007:461) is financial slack, which indicates large cash and marketable investments or shares, giving companies the ability to start projects which it normally would not have done if it was necessary to issue further shares or obtain external finance for such a project.

In a study done by Muller *et al.* (2009:27) to develop a model for predicting financial distress in companies, one of the most important indicators of financial distress is a lack of positive cash flow. Importantly Muller *et al.* (2009) refers to previous work it reported on, pointing out that a company may survive a year or two with negative cash flow, but will suffer financial distress in further years. Important to note is the reality that all analyses on companies have one golden thread and that is that no single year should be analysed in isolation.

Cash flow patterns can also be used successfully to determine the life cycle of a company and as a result be used to interpret the state of the company's financial position (Steyn-bruwer & Hamman, 2005:16). This will unfortunately not work for agricultural companies. Being mature companies, their cash flow patterns may vary along the line of the crop expectation and finance requirement of farmers. As a result, the financial position of most former co-operatives may be misread by investors.

## **2.6 TRENDS**

Ratios are acceptable analysis tools but it does not provide for a view of the dynamics of a company. Strategy is a long term process and needs to be assessed, looking at the past and future. The only way to put a company's performance into perspective is to see where it came from.

### 2.6.1 Sales/revenue growth

This measures the revenue of the current year in relation to the previous.

Calculated as

$$\text{(Sales or total revenue year 2) / (Sales or total revenue year 1) - 1}$$

This ratio is expressed as percentage growth.

A positive sales growth is not necessarily good if it was done at the cost of sales margins. Similarly, improved sales efficiency and lowering cost of sales may increase the sales margin despite a decrease in revenue. Profit can be increased by changing the sales mix to emphasise products delivering a high gross margin, without necessarily increasing sales revenue.

The truth is also that, especially in the case of start-up companies and companies of which strategy is built on sales growth, the rate at which its sales grow in relation to its opposition is indicative of the change in market share. It is also true that the company with the largest growth rate is probably increasing its share.

This has to be seen in context with gross and net margin growth. An effective market share growth will mean that both gross profit margin and net profit margin are at least maintained.

### 2.6.2 Profitability growth

Net profit, as percentage of revenue, gives a good indication of the total profitability of the company.

The equation will look as follows:

$$\text{Profitability} = \text{NPAT (Net profit after tax)/Revenue (sales) * 100}$$

expressed as a percentage.

Profitability growth means the change in profitability over two or more sequential years.

$$\Delta \text{ Profitability} = (\text{Profitability year 1} / \text{Profitability year 2}) - 1$$

expressed as a percentage.

In this case it is extremely important to note the industry in which the company is involved. A high profitability growth may be as damaging as a low one if the growth is not sustainable.

Here the relevance of further diagnostic ratios is noted. Growth in profitability, being a ratio, does not necessarily mean increased earnings. Profitability can increase with a decrease in revenue as a result of increasing sales margins, but losing market share. Putting profitability into perspective with equity will address the above shortfall and allow it to be benchmarked.

Again, this is rather a measure of the efficiency and effectiveness with which the company operates and does not say a lot about shareholders' return. It can, however, influence the shareholders' return, given the fact that it evaluates the performance of the company and thus the confidence shareholders have in the operating model and management team.

### **2.6.3 EBITDA growth**

This ratio is defined as:

Earnings before interest and tax excluding depreciation and amortisation, compared between years. The only difference between this and the earnings per share measure is the fact that it measures only cash related earnings and thus excludes the effect of the asset value on the earnings. This is mostly done to enable analysts to measure the true operating performance of the company.

## 2.6.4 Earnings per share growth

EPS growth will thus be calculated as

$$\Delta \text{ EPS} = (\text{EPS year 2} / \text{EPS year 1}) * 100\%$$

Criticism against earnings per share is that it ignores changes in the share price and share numbers between comparative years. This means that if a share price changed in the relevant period (i.e. an investor bought the share at a different price than the starting price of the measuring period), or further shares were issued, shareholders revenue would be impacted. It also ignores the relevant capital used in generating the earnings.

Growth in EPS is relevant in the sense that it gives an indication of the effective execution of the business plan. Comparing it to a budgeted figure, it will relay the operational efficiency of the business. De Wet (2004:26), however, found no real significance between market value add (measure of share performance) and EPS. However, this does not mean that there cannot be a correlation between change in share price and EPS, thus its inclusion in the study. What needs to be noted though, is that accounting data can be manipulated, for instance the way sales are recorded or stock calculated (Kleiman, 2011:2).

## 2.7 GENERAL COMMENTS ON FINANCIAL VARIABLES

Koller (1994:90) is of the opinion that traditional financial performance measures, such as earnings or earnings growth, not always manage to indicate value creation. In his opinion discounted cash flow value should be used by companies in order to focus on value creation. This should be used to set performance goals and has to be included in short-term financial targets, which only measure performance. This agrees with other researchers indicating that there is a lack of support for shareholder value creation when using pure financial measures. De Wet & Du Toit (2007:59) also suggest that traditional accounting measures of performance like earnings per share, return on assets and dividends per share were perceived to be the correct determinants of share

value but other researchers found less than a significant correlation between these measures and value. Bosman (2007:48)'s research added criticism to the use of accounting based analysis, noting that it does not make provision for capital charge. It is therefore impossible to determine the expected return for the shareholder.

However true Bosman's argument may be, it is necessary to determine which of the financial performance ratios or measures a company can use to best determine the result of share price movement. At least it is possible for the company to promote its performance as part of an investor drive if it can clearly state its comparative performance and it is assumed that this can drive share price behaviour.

## **2.8 NON-FINANCIAL VARIABLES**

In order to achieve the financial goals, a company is expected to have non-financial objectives. These objectives can include, amongst others, customer satisfaction, product innovation and employee satisfaction. The objective of the latter is to drive and motivate the total staff complement and serve as guide, driving behaviour in other ways and from a different angle than what is provided by the financial reports. Although with a different impact, non-financial factors should still drive the company in line with value adding financial goals (Koller, 1994:91). According to Koller (1994:91) the most successful companies are the ones performing well in the non-financial areas. It goes without saying that the specific set of non-financial goals is something requiring considerable discourse and debate and has to take into account the company's financial circumstances. An example Koller uses is of a contractor for the US Defence Force, which should not include a "no layoffs"-policy in its objectives to increase the staff morale, because it can cause inefficient staff utilisation when contracts are completed or terminated and staff numbers cannot be reduced in line with necessity. According to De Wet & Du Toit (2007:59) it is a more difficult task for managers to determine if value adding goals are met than to set the goals. One of the reasons for this difficulty can be expected to be an inability to see the impact of the implementation of goals on the end result, namely share value.

### **2.8.1 Management credibility**

The most important issue listed by Ernst & Young (2008) is that a company should deliver on its promises. It must stay true to its projections and accurate on its budgets. There is not a lot of empirical study regarding the change in investor behaviour in terms of reaction to possible break-down in management credibility, but the media is full of accounts of share price reaction on the verge of exposing management scandals.

Shareholders' reaction should not be limited to scandalous behaviour, but can be subtle at the discovery of certain commitments not being met or a change of direction, deviating from the stated strategy. Thompson *et al.* (2010:102) notes that a company's performance and strategy goes hand-in-hand. When a company tends to perform poorly, its strategy can be questioned. A weak strategy consistently leads to poor financial performance.

### **2.8.2 Corporate strategy execution**

Companies have to prove a strong strategy. The belief in the strategy will be reflected in the market value add, after listing. Strategy is the road map of a company, indicating the process of unlocking the value in the resources. As resources can be described as assets, defined as the current value of future benefits, the strategy has a dire impact on the value of the assets, thus the operational value of the company. The measuring of a company's key financial performance ratios, according to Thompson *et. al* (2010:102), will provide sufficient insight into the effectiveness of the strategy and its execution. It can thus be derived that, when a company has a large market value add, the investors have confidence in its strategy.

### **2.8.3 Quality of corporate strategy**

Not only must the strategy be executed successfully, but it has to have all the characteristics of sustainable growth.

The problem with being listed is the conundrum of revealing to the public what the corporate strategy entails, without giving away the company's competitive advantage. Auret & Britten (2008) agrees with Pagano et. al. (1998) that one of the reasons companies tend perform poorly after IPO is, for one, due to disclosure requirements forcing it to reveal secrets regarding their competitive edge. Disclosure allows other companies to use the knowledge to their advantage causing strategy to partially or totally fail with listed companies and inevitably to poor performance. The question here will remain: "How should the strategy of the company be advocated as being of high quality, without revealing trade secrets."

It rather seems as if this should be a cost benefit calculation, to determine what the company might lose giving up the information versus what it stands to lose in shareholder value if it cannot convince the investors of a quality strategy.

#### **2.8.4 Brand strength**

Elrick (2009:19) states that setting marketing goals is a means to promote business performance and supports it with the table below.

**Table 2.2: Marketing goals versus potential outcomes**

| <u><b>Goal</b></u>             | <u><b>Outcome</b></u>                |
|--------------------------------|--------------------------------------|
| Acquire new customers          | Increase short-term cash flow        |
| Retain existing customers      | Increase profitability               |
| Reduce cost per lead           | Reduce acquisition expenses          |
| Increase customer satisfaction | Reduce customer service costs        |
| Build brand loyalty            | Increase long-term shareholder value |

Source: (Elrick, 2009:19)

By the above table Elrick suggests that thought should be given to the way in which the measuring of marketing results can give rise to an effect on the bigger company profitability. Companies tend to cut on marketing expenses when faced with tough

economic conditions, but do not realise that marketing is the front runner of revenue. Reducing marketing expenses can be detrimental to future growth. Investors should use this as indicator of company performance.

It is also acknowledged that the ability to measure the building of brand value via return on investment is ineffective, but in order to maintain customer association a company has to have a visible brand that is recognised as steady and well accepted. It is suggested that although one needs to be careful about spending, it is necessary for the market to see the name and to learn to recognise it. It is not interpreted well by prospective investors and customers to stop doing brand visibility advertising in tough times. Elrick (2009:19) suggests that there are cost-effective ways to investigate in order to at least maintain the brand.

Elrick (2009:20) suggested certain drivers of brand value which can be visible in any company. Using these measures and setting benchmarks with specific measures and targets, like percentage increase in market share versus a specified expectation, will allow for significant evaluation of brand value. When communicating with the market, follow-up of the communication will ensure sensible measure (Elrick, 2009:20).

In summary it can be derived that the benefit of brand strength and marketing efforts will be impacting in two major areas in the income statement, namely:

Revenue growth

Gross profit margin,

but similarly can impact negatively on the net profit margin. By comparing the net profit ratio and gross profit ratio year-on-year and between companies, the impact and cost of these efforts can be compared.

### **2.8.5 Corporate governance practices**

Given the past experience of companies like Enron and a few locals, the focus is ever increasing on the presentation of credible evidence to the company's performance and the controlling functions being done by independent "watch dogs" removed from the opportunities to interfere with stated information.

The board of directors, in its capacity as representative of the shareholders, has a clear function and mandate to watch over the making and implementation of strategy by the appointed management.

In this, the board has four obligations (Thompson *et al.*, 2010:49):

1. The board has to be inquisitive and be objectively critical when overseeing the company's direction, strategy, and business approaches.
2. The ability of executives of the company to create strategy and execute it must be evaluated and their skills need to be tested and compared to the market.
3. Put together a sensible financial incentive and remuneration system for executive management to ensure the correct behaviour and actions, aligned with stakeholders, but importantly in the shareholders' interest.
4. Controlling the company's accounting and financial reporting and the compliance and integrity thereof.

According to Thompson *et al.* (2010) every company should have a strong, independent board of directors (also prescribed by the JSE) that:

- (1) stays informed about the total performance of the company,*
- (2) provides guidance to the CEO and other top executives and judges their input*
- (3) has to be able to stand up to management if their actions appear not to be appropriate and create or take unnecessary risk,*
- (4) provides certification to its appointees that the CEO and executives deliver on the expectation of the board,*
- (5) be mentors to management and deliver advice when necessary, and*
- (6) is in frequent high level debate about the advantage or disadvantage of the actions of key directors and executives.*

Again, the above is prescribed by the King Commission (Engelbrecht, 2009), but in cases where the board does not comply with these functions, the core value of corporate governance is lost and allows for debacles as mentioned previously (Thompson *et al.*, 2010). In terms of King III (Engelbrecht, 2009) corporate governance failures can be subject to civil and criminal action against failing board members.

### **2.8.6 Ability to recruit / retain talent**

One of the most difficult aspects of a company's value and performance to measure is the quality of staff. Again, the only way to at least get an indication of staff value is to analyse the income statement ratios and determine whether operational efficiencies are reached and maintained. The effective execution of strategy lies firmly in the hands of the management team and staff. The ability of the management to mobilise staff skills and the level of skills at which staff operate in relation to their cost is probably not clearly measurable, but a combination of staff turnover, cost per individual and spread between management and operating staff, might shed some light on this valuable resource.

Intuitively, strategy can only be executed effectively if the right skilled and job fit talent is available and fully functional. Recruiting top talent will be dependent on the view potential recruits have of the company. The company is valued by different people for different reasons and when high quality people indicate their willingness to be part of it, it indicates a vote of confidence. Similarly, it will reflect poorly on the company if it loses what appears to be a top individual, especially on executive level.

### **2.8.7 Quality of internal relations guidance**

The ability to operate in a conflict free (ideal world) environment will increase productivity and stimulate intrapreneurship (entrepreneurs within corporates). Last mentioned is something a company cannot expect to excel without. Focus is placed on the development of team work and a positive working environment conducive to smooth performance.

### **2.8.8 Market share**

Closely coupled with brand strength, market share is an element of the larger marketing strategy and should only be one of the measurements for evaluation of

effective strategy execution. Elrick (2009:20) suggests the following metrics to consider when evaluating market share:

1. Growth in active customer numbers. Both the numbers and the rate of growth should be measured.
2. More related to marketing is: What is the advertising and marketing expense per active customer and how does it compare with reasonable competition? Elrick (2009:20) suggests that marketing communication expense related to the number of customers gained should be evaluated.
3. The ratio between active and non-active customers. This is to determine what proportion of the total customer base is actually buying. Changes in this ratio can also be indicative of the effectiveness of the advertising campaign.
4. "Customer churn rate": What is the rate of customers leaving versus customers joining? (Elrick, 2009:20)

The above metrics do not necessarily mean maximising market share as such, but optimising it and creating a suitable structure to service the market may optimise profit and sustainability. In line with the law of diminishing returns, there should be an optimal point regarding marketing spend. As such, large corporates in the South African environment are frequently challenged by the competition authorities when they try to improve their already large share of an established market. Refer to the cases recently concluded against well-known companies.

Interestingly, a study done by (Becker *et al.* 2009:8) on the impact of data quality of banks, indicate that most businesses suffer from bad data quality. The result of this is that even market share data tends to be incorrect, causing key drivers of performance measures to follow suit. This may result in overstated growth prospects – one of the facets identified as a key driver of share value.

In essence, the above means having reliable data is of the essence in all measurements. Companies tend to focus purely on the accuracy of financial reporting, mostly due to the highly regulated environment it is presented in, but failure to purify the trading base and using incorrect data to build the strategy from can prove fatal to strategy execution.

### **2.8.9 Customer satisfaction**

Unless the product the company trades in, or the service it delivers is an absolute necessity and there are no competitors, the ability to satisfy customer needs and expectations is one of the key focus areas of any business. Customers are the business platform of any firm generating sales, irrespective of what is being sold or the service being delivered. Being the main driver of advertising and marketing, a large portion of new business generated is not necessarily from expensive marketing drives of ad campaigns, but is supported by a strong customer base. Changing sales revenue is expected to be directly related to customer satisfaction.

### **2.8.10 CEO leadership style**

The function of the CEO is to drive the strategy of the company. Using the team of selected individuals to develop a sound strategy and to facilitate direction and urgency, the ultimate responsibility vests with him/her to lead the process of making and implementing strategy (Thompson *et al.*, 2010:37)

## **2.9 VALUE-BASED MANAGEMENT**

When evaluating firm performance, conventional measures tend to evaluate mostly accounting performance. Share value differs from accounting performance in the sense that investors evaluate the company's performance based on what they could earn on their investment should they have invested in an alternative company or prospect (Magni, 2009:1). This is done by determining the future prospects and possible growth of the value of the investment in that company accordingly. When an investor sees a possible value investment, the price paid to purchase the shares will be determined by the calculated prospective income of this investment and not necessarily by the company equity or current book value. Harry Domash clearly says it is how profitable investors think the company will be in future (Domash, 2010:12). The latter

creates a gap between the actual equity in the company and the market value of the share equity.

Value based management is the process by which sense is made of the above-mentioned gap in areas such as culture, performance measurement, financial information systems and incentive design (Koller, 1994). The sum total of the use of financial ratios as performance measures and non-financial measures is accepted to be the value creating activities in a company.

While total shareholder return (TSR) is a key measure to focus on in order to maximise shareholder value, this measure can be difficult to use internally. Factors like interest rates, general economic conditions and terminal values in particular have a major impact on share value and are not within a manager's control. There are timing issues where share price is an indication of expected future and not historical performance. There may be accountability issues, specifically if the inability exists to assess the contribution of individual business units to TSR. Finally, there are decision-making issues in trying to determine how individual managers can contribute directly to TSR.

Koller (1994:87) stated that a company should have performance measures which have the ability to overcome the shortfalls of financial ratios, which focus on shareholder return and which are in correlation with it. He lists some of the measures in use at the time of writing as: *economic spread, economic value added and cash flow return on investment (CFROI)*. He recognises that most measures calculate only a component of the bigger picture and none of it singularly has the ability to predict or explain total shareholder return. The measured functionality also vary from company to company and each company's management team should thoroughly investigate the relevance of certain measures to determine its ability to predict total shareholder return and that it does not cause undue pressure on administration.

It was touched on lightly in previous sections of this chapter, but due to the fact that investors tend to choose investments by way of expected future benefits they generate, most recent developments in financial management suggest the use of residual value theories to determine share value. All of these theories have a few things in common:

1. It uses future income expectations, discounted to a current capital value.
2. It is evaluated against possible other opportunities and uses the expected return of these other opportunities as cost base for evaluating the benefit of this choice.
3. It is less interested in past performance than future expectations.
4. Most of it tends to have a terminal value at the end of the expected investment period, where the initial investment is recovered and this value carries the largest weight of the value.
5. It is almost NEVER correct, because the calculations are based on assumptions which cannot be accurately predicted, mostly relying on a fictitious terminal value which sometimes contributes more than 50% of the value.

Here is a list of the most commonly used formulas:

|                                |       |
|--------------------------------|-------|
| Economic value add             | EVA®  |
| Discounted cash flow           | DCF   |
| Residual Income                | RI    |
| Economic profit                | EP    |
| Internal rate of return        | IRR   |
| Cash flow return on investment | CFROI |

### 2.9.1 Economic value added (EVA®)

$$\text{EVA}^{\circledR} = (\text{ROIC} - \text{WACC}) \times \text{IC}$$

where ROIC = Return on invested capital

WACC = Weighted average cost of capital

IC = Invested capital (at the beginning of the year)

EVA(R) can also be determined by subtracting the cost of equity from the earnings:

$$\text{EVA}^{\circledR} = \text{Earnings} - (k_e \times \text{equity})$$

where  $k_e$  = Cost of equity

EVA® can be defined as the total value generated over a single reporting period, measured by net operating profit after tax (NOPAT) and the cost of capital.

$$\text{EVA}^{\text{®}} = \text{NOPAT} - (\text{capital employed} \times \text{weighted average cost of capital (WACC)})$$

According to the research of Seal (2010:107) discussions regarding VBM as part of residual income already started as academic discussions as early as the 1960's, but only became part of board and management decision-making more than 30 years later after having been introduced by management consultants. This was the origin of EVA<sup>®</sup> as part of value-based management.

It was argued that using only financial ratios like ROI moved the management focus away from the shareholders to internal focus. The impact of this was visible in the dismal performance of GEC towards 2002 (Seal, 2010:108). Although these measures were positive, it was impossible for shareholders to grasp the future potential of the business. The result was a subsequent change in focus towards value based management and shareholder oriented decisions. Research done by Maditinos (2005:6) indicates that there are still quite a few discussions going on about the use of EVA<sup>®</sup> as a measure of share performance as opposed to other financial and accounting ratios. The only variation these researchers had in common was the data used. It can be derived that the measures applicable to analysis are dependent on the type of company or the industry they belong to.

The shareholder value driver analysis correlates financial measures, such as net income growth, return on invested capital, cash flow, and economic value added, with market valuation measures, such as TSR and market-to-book ratios, to determine the key drivers of shareholder value for a particular company within the context of its industry. By assessing the complete spectrum of performance measures currently in use, a company can identify the measure that are most relevant to shareholder value and least complex to administer (Bannister & Jesuthasan, 1997:5).

According to Koller (1994:87) the reasoning for the implementation of VBM is self-explanatory. Companies are valued using the available free cash flow it generates from its operations in order to finance new projects and discounting it against the required return it has to generate for sustainable investment growth. Free cash flow already takes into account dividend pay-outs and reinvested capital.

Companies can only create value when the profit generated outstrips the cost of the capital invested, thus the EVA® or EP reasoning. According to Kleiman (2011: 3) accountants do not measure economic profit. They are only interested in the book profit, without taking into consideration the capital charge. Value based management extends the concept of residual income to a drive created in the company, both in terms of strategy as well as operations in line with the required outcomes and vision. The result of effective use of these measures by management is an alignment between company vision, drives and strategic direction with total shareholders return.

For VBM to function successfully, the drivers of value in the organisation should be found. This can be any variable which can affect the value of the company. Below is a table extracted from the McKinsey report (1994) that depicts the levels of value drivers as can be found in the average organisation.

**Diagram 2.1: Levels of value drivers**

| LEVEL 1<br><b>Generic</b>                                                                                                                                                                                                                                          | LEVEL 2<br><b>Business unit-specific</b><br>Examples                  | LEVEL 3<br><b>Operational</b><br>(Grass roots level)<br>Examples                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <pre> graph TD     ROIC --&gt; Margin     ROIC --&gt; InvestedCapital[Invested capital]     Margin --&gt; Revenue     Margin --&gt; Costs     InvestedCapital --&gt; WorkingCapital[Working capital]     InvestedCapital --&gt; FixedCapital[Fixed capital] </pre> | Customer mix<br>Sales force productivity<br>(expense against revenue) | Percentage of accounts revolving<br>Dollars per visit<br>Unit revenues                        |
|                                                                                                                                                                                                                                                                    | Fixed cost/allocations<br>Capacity management<br>Operational yield    | Billable hours to total payroll hours<br>Percentage of capacity utilised<br>Cost per delivery |
|                                                                                                                                                                                                                                                                    |                                                                       | Accounts receivable terms and timing<br>Accounts payable terms and timing                     |
|                                                                                                                                                                                                                                                                    |                                                                       |                                                                                               |

(Source: The McKinsey Quarterly 1994 no: 3, p. 91)

The drawback of valuation based measures is that it is stock market driven and as a result it follows market movements directly in line with economic performance (Bloom *et al.*, 2002:16). Bloom questions the ability of the value ratios to function as forecast mechanisms due to the above. However, Ryan & Trahan (2007:30), concludes that the firms it analysed managed to increase their economic profit for longer periods. While economic profit relates to value add to shares, it may mean that despite these external factors, these firms would have been sought after and as a result would have incurred increased prices.

De Wet & Du Toit (2007:64) found that the result of calculating the economic value add as a spread between ROIC and WACC and multiplying it with the invested capital, was a rand value which correlated better with share prices than ROE.

As most arguments about value based management and residual income pertain to all measures, the balance of these value measures are only defined and it is expected that different variations of the same base will feature through different time periods, depending on the emphasis placed on it at that specific stage.

The following definitions are included for the sake of completeness.

### **2.9.2 Discounted cash flow (DCF)**

Similar to the Gordon Growth model, using dividends to calculate the price of a share, the DCF has its origins in the accrual of available cash for future investment.

### **2.9.3 Residual income (RI)**

Net profit after tax less capital charge (Magni, 2009:1) The capital charge is usually calculated as the required return on investment by investors or as defined via the CAPM model. Basically it is similar to the calculation of economic profit (Inman:2011).

#### **2.9.4 Economic profit (EP)**

$$\text{Economic profit} = \text{Accounting profit} - \text{Cost of equity.}$$

(De Wet & Du Toit, 2007:61). The cost of equity can also be defined as the opportunity cost of the invested funds (Drake, 2007).

#### **2.9.5 Internal rate of return (IRR)**

Future income stream, discounted to present value at a rate equal to capital charge (refer to RI), with the initial outflow of the invested capital (Baker, 2006:1).

#### **2.9.6 Cash flow return on investment (CFROI)**

Internal rate of return of the inflation adjusted income stream (Magni, 2009:15). It can be calculated as net operating cash flow as percentage of invested capital.

### **2.10 SUMMARY**

*Even within the realm of financial goals, managers are often confronted with many choices: boosting earnings per share, maximising the price/earnings ratio or the market-to-book ratio and increasing the return on assets, to name a few. Koller [We] strongly believe that value is the only correct criterion.*

In saying this, Koller actually means that using value as a bottom line derivative of all above measures, will result in positive (or at least predictable) share price reaction and the ability to manage financial as well as non-financial measures in terms of the effect it will have on the value of the shares of a company. It should be noted that no company can indefinitely outstrip its competitors on financial performance on an annual basis, but much can be said about a company's ability to maintain positive long-term earnings yield. The return on invested capital (ROIC) combines these two sources of uncertainty

and its variability can be used to measure business risk on a stand-alone basis (Brigham & Ehrhardt, 2005:550); (van den Heever, 2007).

Although care has been taken to include all the above ratios and analysis instruments in the empirical studies, it needs to be noted that, especially the income statement ratios, would highly correlate with one another. The most accurate and relevant variables were deployed to ensure that all options were covered.

## **CHAPTER 3**

### **Research method and data analysis**

#### **3.1 INTRODUCTION**

A successful outcome of this study would mean that a food and agricultural company, intending to list its shares on the JSE, will be able to understand which financial measurements can be used to determine the factors which may influence the movement of its share price and to what extent it can expect it to move. The fact that all the companies in the study are listed on the JSE and have to adhere to IFRS and GAAP accounting standards, makes it easier to compare and derive statistically relevant information from the comparison.

There is, however, different ways of interpreting the standards, and for that matter the data used, sourced from McGregor BFA, is standardised by McGregor BFA to reflect similar asset reporting systems between companies. This allows for statistical analysis to build a case for drawing up management decision guidelines for a JSE Limited Food and Agricultural sector listed company.

As concluded in Chapter 2, there is still a lot of research to be done regarding variances in the share price within years. Given that companies are obliged to submit financial reports only once a year means that a company can only truly be evaluated by investors upon presentation of its annual results. This is the only time at which it can be established whether the share price is matched with company performance.

It is assumed that financials are usually only presented in the order of two and a half months after year end. Usually the company issues at least a trading statement to indicate whether its performance is in line with its projections, but it is only on presentation of the financial figures that the real performance is reported.

In the months before and after the presentation, investors determine what to make of the information and movement in the share price is expected. The reality is that the only way to smooth out movement not related to financial performance is to use the average share price for the last month before financial year-end. For this reason, year-end share prices have been excluded from the analysis.

## **3.2 THE FOOD SECTOR**

Due to the various operating models that exist for businesses and the various main revenue generating sources, companies listed on securities exchanges worldwide get grouped by exchanges into similar revenue sources and operating models. These criteria usually give way a homogenised view on companies grouped together. These views should be able to give the potential investors a picture of what trends can be expected for a specific company. The external environment, consisting of the macro-economy, politics, social interaction, legislature and technology, is constantly changing and affecting an impact on business. (Mbuthia & Ward 2003) Grouping together companies on the securities exchanges should result in largely similar drivers impacting performance. These groupings are called sectors, referring to the industry sector (JSE, 2011:1). At the respective financial year-end for companies listed on the JSE Food Sector, there were 14 active companies. Due to the small population, all companies listed in this sector since 1991 were included in the sample. The sample thus consists of the full population from 1991 to 2009, a total of 19 years.

## **3.3 METHOD OF ANALYSIS**

Multiple linear regression was done amongst all the companies listed in the food sector of the JSE for each of the 19 years ending 2009. The reason for 2009 was to ensure that the financial year-end figures of all companies were available. The variables discussed in Chapter 2 were put to test against the average share price for each of the 19 years in succession. A multiple regression model was developed, which most significantly described the dependent variable, in this case being the average share price. Variables, most commonly occurring as playing a significant role in determining

the average share price, were identified as the most useful for establishing management measures resulting in effectively predicting the share price in future. The process was done in 4 phases:

### **Phase i**

Defining the independent variables and motivating its inclusion in the research. This was done by literature study in Chapter 2. Detail was provided to the building blocks of the ratios, its practical use and arguments for and against it.

### **Phase ii**

Calculation of the ratios from data received from McGregor BFA. Ratios were tested and confirmed as correct.

### **Phase iii**

A correlation matrix was drawn up for each of the years. The independent variables with the highest correlation with the dependent variable were selected and all independent variables correlating to these variables were removed. This was done at a 70% correlation or higher. The exercise was repeated for each of the 19 years. It is noted that most of the variables removed were building blocks of variables entered. The reason for including the building block variables was to test that it as such did not provide for better prediction than the results of the calculation it was entered in.

### **Phase iv**

The variables with the highest correlation to the dependant variables were modelled through multiple regression analysis, by first determining the coefficients and then removing the variables with the highest variance inflation factor (VIF). Only models with variables having a VIF lower than 5 were accepted.

The statistical model for a multiple linear regression is:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + \epsilon_i \text{ for } i = 1, 2, \dots, n.$$

“The proportion of variation of the dependent variable Y that is explained by the independent variables  $x_1, x_2, \dots, x_k$  in a multiple linear regression is given by the squared multiple correlation,  $R^2$  (Levine *et al.*, 2008:573).

The value of the coefficient of correlation for the sample can vary from -1 (perfect negative correlation) to 1 (perfect positive correlation). A value of zero indicates that there is no relationship between the variables. Values for the coefficient of determination will always be positive and will be between zero and one. The coefficient of determination can be expressed in percentage to indicate the measured proportion of variation in the dependent variable that is explained by the changes in the independent variable.

### **3.3.1 Key assumptions**

The four key assumptions behind this regression model that need to be checked according to Levine *et al.* (2008:529) are:

#### **1. Linearity**

There is a linear relationship between  $y$  and the  $x$  variables. This can be checked by producing scatter plots before the regression process is started. These scatter plots need to indicate that there is a linear relationship between  $y$  and the  $x$  variables by confirming that the variables are evenly spread above and below zero deviation. No other pattern is visible.

#### **2. Independence**

The requirement is that the errors ( $\epsilon_i$ ) are not dependent on one another, in other words no autocorrelation exists. When data points collected in sequence and the data point following the previous one is dependent on that previous point, independence does not exist. This can be done by using residual plots or the Durbin-Watson test.

#### **3. Normality**

The regression errors ( $\epsilon_i$ ) are normally distributed from the mean for each value of  $X$ . A frequency distribution of residual values will indicate whether normality exists.

#### **4. Equal variance**

The variance of the error ( $\epsilon_i$ ) must be similar in scale for lower as well as higher  $x$  values, in other words the  $y$  values must not increase in variation from low  $x$  values to

high  $x$  value. When this is not the case hetero-scedasticity exists and a regression line cannot be fitted with confidence. A scatter plot will indicate if a pattern exists.

As mentioned, the full set of data available for this sector was included in the research. Unfortunately some years had less than 8 companies, while others had up to 14. The result was an extremely high coefficient of multiple determination and difficulty in confirming the above key assumptions.

### 3.3.2 Model significance

According to Levine *et al.* (2008:578) three methods can be used to evaluate the overall usefulness of a multiple regression model:

- The coefficient of multiple determination  $R^2$ .
- The adjusted  $R^2$ ; and
- The overall  $F$  test.

*The **coefficient of determination**,  $R^2$ , measures the movement in  $Y$ , the dependent variable that is explained by movement in  $X$ , the independent variable in the case of linear regression. In a multiple regression model **adjusted coefficient of multiple determination** is used as a measure of the proportion of variation in the dependent variable that is explained by the set of independent variables.*

*The **adjusted  $R^2$**  reflects both the number of independent variables in the model as well as the sample size used.*

*The **F-test** as defined by Levin *et al.*, (2008:584) is used over all to test the significance of the relationship between the dependent variable and the entire set of independent variables.*

$$F = MSR / MSE$$

Where:

MSR is the mean square of regression for the group; and  
MSE is the mean square error.

*The **p-value** or observed level of significance is the probability of getting a test statistic equal to, or more extreme than the sample result.*

Only variables with a variance inflationary factor (VIF) lower than 5 were left in the model. The VIF is a measure for collinearity, meaning that two or more independent variables may be correlated to one another. A VIF in excess of 5 will cause the necessity to use other methods of model building than the least squares regression model of regression. The formula for calculation of VIF is:

$$VIF_j = 1 / (1 - R_j^2)$$

$R_j^2$  being the coefficient of multiple - determination for independent variable  $X_j$  with any of the other variables.

For each of the 19 years the data was evaluated for statistic relevance. All the available data was included in the study and although certain anomalies were found, it was accepted to be reasonable to the operating environment for these companies and was not excluded.

### 3.4 RESULTS OF THE ANALYSIS

The full procedure of development of the regression model is only illustrated for year one. The same procedure was followed for all of the 19 years.

### 3.4.1 Analysis year 1 (N=8)

For the first year 5 independent variables were left after the initial sifting process. Considering table 3.1 it is clear that earnings per share with a VIF value of 18.015 stood out as a variable with a too large variance to be left in the model and it was removed.

**Table 3.1: Variables identified through initial regression modelling**

| Model 1                    | Unstandardised Coefficients |            | Standardised coefficients | t      | p-value | Collinearity Statistics |        |
|----------------------------|-----------------------------|------------|---------------------------|--------|---------|-------------------------|--------|
|                            | B                           | Std. Error | Beta                      |        |         | Tolerance               | VIF    |
| (Constant)                 | -941.003                    | 453.274    |                           | -2.076 | 0.286   |                         |        |
| Earnings per Share         | 2.352                       | 2.090      | 0.275                     | 1.125  | 0.462   | 0.056                   | 18.015 |
| Return on Assets           | 199.186                     | 73.179     | 0.286                     | 2.722  | 0.224   | 0.301                   | 3.328  |
| Return on Equity           | 37.271                      | 33.721     | 0.094                     | 1.105  | 0.468   | 0.463                   | 2.158  |
| Return on Invested Capital | -1475.308                   | 1940.334   | -0.071                    | -.760  | 0.586   | 0.383                   | 2.608  |
| Profit per share           | 160.851                     | 69.716     | 0.530                     | 2.307  | 0.260   | 0.063                   | 15.892 |

Earnings per share was expected to be highly correlated with profit per share, and with profit per share having the lowest p – value, it was left in the model.

The following model was derived from removing EPS from the equation:

**Table 3.2: Eliminating Earnings per share**

|                            | Unstandardised Coefficients |            | Standardised Coefficients | t      | p-value | Collinearity Statistics |       |
|----------------------------|-----------------------------|------------|---------------------------|--------|---------|-------------------------|-------|
|                            | B                           | Std. Error | Beta                      |        |         | Tolerance               | VIF   |
| (Constant)                 | -1048.008                   | 471.805    |                           | -2.221 | 0.156   |                         |       |
| Return on Assets           | 248.601                     | 62.323     | 0.357                     | 3.989  | 0.057   | 0.470                   | 2.130 |
| Return on Equity           | 34.678                      | 35.814     | 0.087                     | 0.968  | 0.435   | 0.466                   | 2.148 |
| Return on Invested Capital | -1819.900                   | 2039.732   | -0.087                    | -0.892 | 0.466   | 0.393                   | 2.543 |
| Profit/share               | 233.698                     | 27.567     | 0.770                     | 8.477  | .014    | 0.456                   | 2.193 |

Forward stepwise regression was used to determine which variables with significance were included in the final models in cases where the answer was not as obvious as for year one.

The beta value is used to determine the level of influence of the independent variables and in combination with significance the p-values, it is determined which variables stay in the model. From table 2 it is clear that return on assets with p-value 0.057 and profit per share with p-value 0.014 will be included in the regression equation. When tested for validity the model comprising of the return on assets and profit per share yielded the results in table 3.3

**Table 3.3: Validity of model 1**

| Model | F - value | p - value |
|-------|-----------|-----------|
| 1     | 65.980    | 0.015     |

The F-value represents the significance of the relationship between the dependent and the full set of independent variables, the higher the value, the better. The p-value represents the level of significance, in this case the closer to zero the better. A p-value of 0.015, thus smaller than 0.05, means the model is significant at a 95% confidence interval.

The final model derived for year 1 is displayed in table 3.4.

**Table 3.4: Final Model for year 1**

| Final Model, year 1<br><br>Adjusted R Square<br>0.977 | Unstandardized<br>Coefficients |               | Standardised<br>Coefficients | t      | p-value | Collinearity<br>Statistics |
|-------------------------------------------------------|--------------------------------|---------------|------------------------------|--------|---------|----------------------------|
|                                                       | B                              | Std.<br>Error | Beta                         |        |         | VIF                        |
| (Constant)                                            | -                              | 423.092       |                              | -2.383 | 0.076   |                            |
| Return on Assets                                      | 1008.247                       | 46.376        | 0.382                        | 5.737  | 0.005   | 1.379                      |
| Profit per share                                      | 266.042                        | 20.217        | 0.739                        | 11.091 | 0.000   | 1.379                      |

With beta being the coefficient indicating magnitude of change in the dependent variable for a unit change in the independent variable, it is clear that ROA has a larger influence on the dependent than profit per share.

### **Multiple regression model for year one**

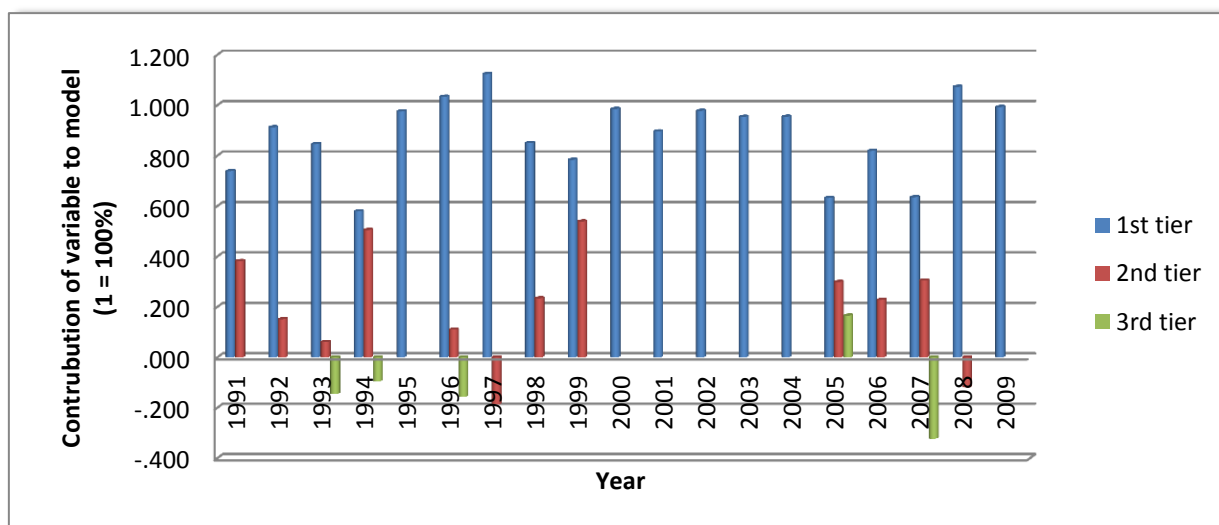
Average share price (Y) = -1008.247 + 266.042 (ROA) + 224.216 (Profit per share)

The unstandardized coefficients are used in the final formula for the purpose of validation, while standardising the coefficients express the variables as a sum total of one in order to indicate which variable has the greater effect on the dependent variable, when their unit of measurement varies (Schroeder *et al.*, 2011). The interpretation of the standardised beta is the change that will occur with the dependent variable as a result of a 1 unit change in variation of the independent variable.

The importance of the variable is thus not based on its coefficient, but rather on its standardised coefficient  $\beta$ , indicating its contribution to the prediction of the dependent variable (Dallal, 2011).

To illustrate this, a graph was drawn, depicting the strength of the effect of changes in certain variables to change the dependent variable.

**Graph 3.1: Contribution of the variables to the model**



Interpretation of the above graph is as follows:

- 1<sup>st</sup> tier - The independent variable appearing first in the regression equation. First bar to the left of each year.
- 2<sup>nd</sup> tier - The independent variable appearing second in the regression equation. Second bar to the left of each year.
- 3<sup>rd</sup> tier - The independent variable appearing third in the regression equation. Third bar to the left of each year.

A frequency distribution of the independent variables occurring in the models is discussed in the final chapter, but what is relevant to the above table is that with the exception of 1994, the independent variables with the highest contribution to the model had a larger than 0.6 to 1 effect on the dependent variable.

Due to the small number of companies listed in this sector, the number of observations was too low in most cases to confirm linearity of the model.

It could, however, be confirmed that most of the data appeared linear, normally distributed, was not dependent on one another and adhered to the equal variance principle.

### 3.3.2 Test for effective use of regression

Following the procedure discussed above, the multiple regression models for each of the years were derived. In most of the years following year one forward stepwise regression was used to narrow the amount of variables down to the most significant. Table 3.5 provides detail of the models derived, the significance of the models (F-value), the coefficient of multiple-determination  $R^2$  and the p-value.

**Table 3.5: Multiple regression formulas for the period 1991 to 2009**

| YEAR | FORMULA DERIVED                                                                                                                       | F - value | R Square | Adjusted R Square | p-value           |
|------|---------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|-------------------|-------------------|
| 1991 | Average Share price = -1008.247 + 266.042(ROA) + 224.216(Economic Profit per share)                                                   | 153.460   | .987     | .981              | .000 <sup>a</sup> |
| 1992 | Average Share price = -469.478 + 575.864(Price to book) + 699.195(NOPAT per share)                                                    | 190.632   | .987     | .982              | .000 <sup>b</sup> |
| 1993 | Average Share price = 1219.894 – 260.942(Dividend yield) – 2508.804 (ROIC) + 719.853 (NOPAT PER SHARE) + 0.003 (Economic value added) | 12595.45  | 1.000    | 1.000             | .000 <sup>b</sup> |
| 1994 | Average Share price = 3015.085 + 0.009(EVA) – 12320.662(Current ratio) + 636.640(ROE) -0.046(CEVA)                                    | 2.960     | .689     | .457              | .161 <sup>a</sup> |
| 1995 | Average Share price = -134.921 + 101.986(NOPAT per share)                                                                             | 117.308   | .951     | .943              | .000 <sup>a</sup> |
| 1996 | Average Share price = -1401.208 + 99.013(Price/Earnings) + 1085.182(NOPAT per share) – 97.722 (Economic Profit/share)                 | 320.275   | .997     | .994              | .000 <sup>b</sup> |
| 1997 | Average Share price = -47.398 + 1214.033(NOPAT per share)                                                                             | 227.197   | .987     | .983              | .000 <sup>b</sup> |
| 1998 | Average Share price = -303.207 + 9.855(EPS) + 125.465( Economic Profit per share)                                                     | 355.548   | .994     | .992              | .000 <sup>c</sup> |
| 1999 | Average Share price = -108.867 + 1.017(NAV per share) + 115.884(Economic Profit per share)                                            | 104.899   | .959     | .950              | .000 <sup>a</sup> |

| YEAR | FORMULA DERIVED                                                                                   | F - value | R Square | Adjusted R Square | p-value           |
|------|---------------------------------------------------------------------------------------------------|-----------|----------|-------------------|-------------------|
| 2000 | Average Share price = -26.920 + 598.732(NOPAT per share)                                          | 298.302   | .971     | .967              | .000 <sup>b</sup> |
| 2001 | Average Share price = -104.254 + 001(EVA)                                                         | 24.556    | .804     | .771              | .003 <sup>c</sup> |
| 2002 | Average Share price = -246.699 + 581.423(NOPAT per share)                                         | 196.648   | .956     | .951              | .000 <sup>e</sup> |
| 2003 | Average Share price= -335.682 + 549.991(NOPAT per share)                                          | 71.355    | .911     | .898              | .000 <sup>c</sup> |
| 2004 | Average Share price= -185.807 + 624.409(NOPAT per share)                                          | 71.830    | .911     | .899              | .000 <sup>c</sup> |
| 2005 | Average Share price = -1572.029 + 27.896(Price to sales) + 484.955(NOPAT per share)               | 283.417   | .993     | .989              | .000 <sup>d</sup> |
| 2006 | Average Share price = -1251.206 + 22.493(Price to sales) + 8.434(EPS)                             | 46.721    | .895     | .876              | .000 <sup>d</sup> |
| 2007 | Average Share price = 3990.240 - 1322.329(Dividend Yield) + 682.188(NOPAT per share) + 77591(ROE) | 112.630   | .985     | .977              | .000 <sup>c</sup> |
| 2008 | Average Share price = - 153.071+953.020(NOPAT per share) - 0.001(EVA)                             | 514.209   | .992     | .990              | .000 <sup>c</sup> |
| 2009 | Average Share price = 52.431 + 10.019(EPS)                                                        | 851.429   | .986     | .985              | .000 <sup>d</sup> |

The reason for the high values of the adjusted r-squares is again the fact that the sample size was substantial. This appears to be a shortfall of the study, but although it may not allow for modelling of the share price if a company intends to list, at least it resulted in clear indications of which variables were meaningful to use as base for management and decision-making.

Only in 1994 a decent model could not be derived because the p-value suggests that the derived model did not have a significant fit and a very low  $R^2$  was calculated. Based on above evidence one may conclude that the multiple regression model for 1994 is a model with a lower predictability.

In order to get clarity on which ratios most commonly appeared in the regression equations, a frequency table was created where each occurrence of the variables was marked with an X for every company for every year. The total in respect of each variable was then tallied and tabled as per table 3 below:

**Table 3.6: Frequency of ratios appearing in the models**

| <u>List of ratios</u>     | TOTAL  | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---------------------------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| EVA                       | 4      |      |      |      |      |      |      |      |      |      |      | x    |      | x    | x    | x    |      |      |      |      |
| Cash flow dividend cover  | 6      |      |      |      |      |      | x    | x    | x    | x    |      |      | x    |      |      |      |      |      | x    |      |
| Price to sales            | 5      |      |      |      |      |      |      |      |      |      |      | x    | x    |      |      | x    | x    | x    |      |      |
| Dividend Yield            | 2      |      |      | x    |      |      |      |      |      |      |      |      |      |      |      |      |      | x    |      |      |
| EPS                       | 4      | x    |      |      |      |      |      |      | x    |      |      |      |      |      |      |      | x    |      |      | x    |
| Net asset value per share | 5      |      |      |      |      |      |      |      |      |      |      | x    |      | x    | x    | x    | x    |      |      |      |
| Operating profit margin   | 2      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | x    | x    |      |      |      |
| Price to book             | 4      |      | x    | x    |      |      |      |      |      |      |      |      | x    |      |      |      |      |      |      | x    |
| Price Earnings            | 1      |      |      |      |      |      | x    |      |      |      |      |      |      |      |      |      |      |      |      |      |
| ROA                       | 3      | x    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | x    |      | x    |
| ROE                       | 3      | x    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | x    | x    |      |
| Dividend yield            | 1      |      |      |      |      |      |      |      |      |      |      |      | x    |      |      |      |      |      |      |      |
| CROIC                     | 2      | x    |      |      |      |      |      |      |      |      |      |      |      |      |      |      | x    |      |      |      |
| Hamada required WACC      | 1      |      | x    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| NOPAT per share           | 1<br>3 |      | x    | x    | x    | x    | x    | x    |      |      | x    |      | x    | x    | x    | x    |      | x    | x    |      |
| Comp EVA                  | 4      |      |      | x    |      |      |      |      | x    |      |      |      |      |      |      |      |      |      | x    | x    |
| CFROI                     | 1      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | x    |      |      |      |      |
| EP per share              | 5      | x    |      |      |      |      | x    | x    | x    | x    |      |      |      |      |      |      |      |      |      |      |

It is evident from the table that the most frequently appearing variable is NOPAT per share (13 times), followed by cash flow dividend cover (6 times) in second and, in third place, price to sales (5 times). After that, net asset value per share and economic profit per share and all the others follow.

It is also clear that the emphasis shifted from Economic profit per share to Economic value added in around 2000, which coincides with the introduction of the concept of EVA® as financial management term by Stern and Steward to the market. Investors are not really interested in return on assets and return on equity. They rather prefer to link the performance, valuation and choice of share to invest in, in the ability of the investment to outperform the opportunity cost of that invested capital. Cash flow return on investment did not really make the cut but it is interesting to note that the cash available to pay dividends is placed second.

### **3.5 SUMMARY**

In this Chapter the process of modelling a multiple linear regression model was explained and the data was modelled according to these procedures. A multiple linear regression model was drawn up for each of the 19 years of the study similar to the method elaborated on for year 1. The results were tabled, with the R squared, adjusted R squared F test result and p-value and it was shown that it was possible to model all years with the exception of one.

A further table was drawn up to indicate which independent variables occurred most throughout the 19 years, with NOPAT per share being reflected as the most frequent independent variable. The order of appearance of the 5 variables occurring most in the regression equations derived for the 19 year period to explain change in share prices are:

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. Net operating profit after tax | 13 appearances. |
| 2. Cash flow dividend cover       | 6 appearances   |
| 3. Economic profit per share      | 5 appearances   |
| 4. Net asset value per share      | 5 appearances   |
| 5. Price to sales                 | 5 appearances   |

It has to be added though that variances of economic profit models, such as Economic Value add, Economic profit and Company Economic value add, in total occurred thirteen times as well, also placing further emphasis on residual income variables. There is no apparent trend at which these variables entered into the equations. Some of the appearances are earlier in the data and others fragmented throughout. It thus carries value to take note of the capital charge of delivering profit and not only pure profit.

The fact that the companies with the largest influence on the models are older, more mature companies, may contribute to the fact that capital charge may play second fiddle to NOPAT, but it also has to be borne in mind that these companies are running at an extremely low debt ratio and as a result, low external debt repayment risk to the investors.

## **CHAPTER 4**

### **Results of Empirical study, attempt to model a share price trend for a JSE Food Sector listed company and conclusion.**

#### **Objective of this chapter**

The method and results of the multiple linear regression analysis were presented in chapter 3. In this chapter a conclusion will be drawn of the results, the management value will be discussed and it will be attempted to model the share price of a company intending to list for at least five years, based on the performance information as per financial results.

#### **4.1 INTRODUCTION**

After long deliberation and extensive advice from management advisory companies, one particular agricultural business finally announced that it is preparing to offer its shares to the public via the JSE Securities Exchange. To determine whether it will be accepted by investors on the JSE as a company that will meet or exceed the expectations of the shareholders, it is important to compare the performance of the company and its shares, with companies it will be joining in the same sector.

When a company lists its shares, it will be compared to the companies in its peer group. An analysis of the share price performance of the companies expected to be in the company intending to list's peer group, may give an indication of what to expect of the share price in a listed environment.

The essential purpose of this dissertation was to find key performance measures from which a share price could be derived in order to understand the effect of changes in these measures on share prices in the JSE Food Sector. A successful outcome of this study would at least entail a strong enough regression model to determine which independent variables may have a strong influence on the dependent.

The independent variables being financial ratios and valuation metrics all expressed per share, and the dependent being the average share price for the last month before year- end of the same year as the ratios were derived.

Variables identified to be significant in respect of decision-making could then be used as a management tool for the company in order to balance performance with the expected share price, thus optimising management efficiency and value unlocking of the company's shares. The intention was to also identify the possible shortcomings and advantages a company might have had in a non-listed environment.

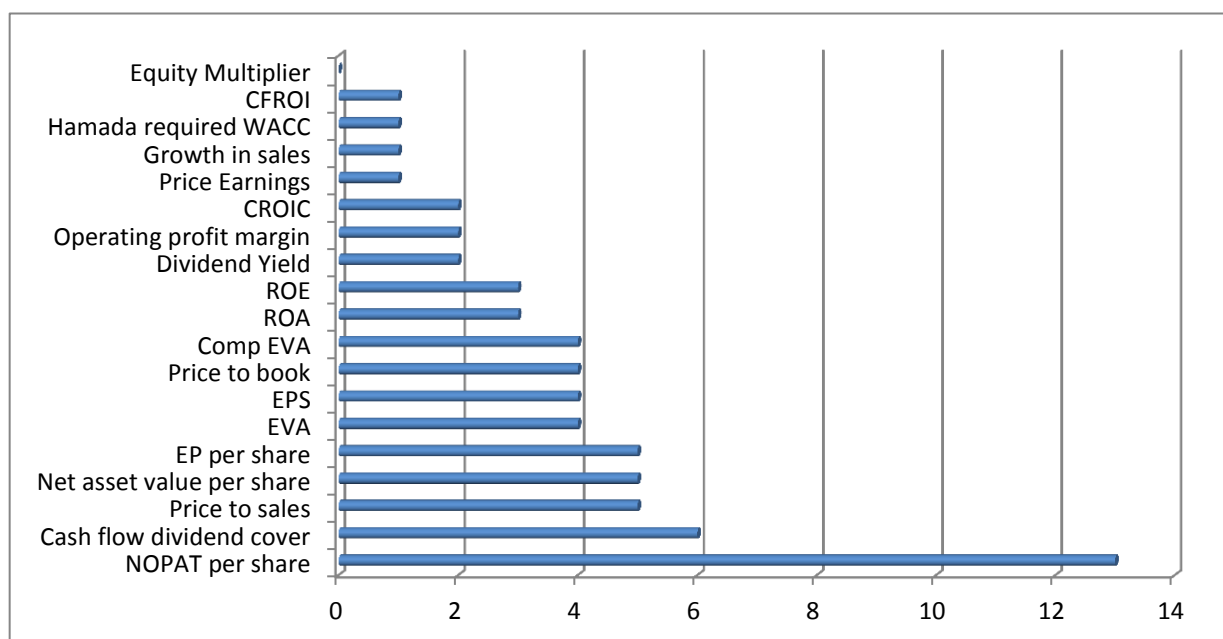
Following from this research, will be to establish whether multiple linear regression could be used for the same company over years.

## **4.2 RESULTS**

By getting a correlation between performance measures and share price movement, it was possible to establish whether key drivers can be identified on which shareholders or potential investors will base their buying or selling decisions regarding the trading of shares. For all but one year, strong relationships, well above the 95% significance, were obtained.

To illustrate the importance of the different variables in terms of model prediction, a graph was drawn up. Graph 4.1 indicates the number of times variables appeared over the 19 year period:

**Graph 4.1: Frequency of variable occurrence in the test sample**



Graph 4.1 contains a graphic illustration of the frequency of occurrence of independent variables as derived from the multiple regression modelling over the 19 year period. Net operating profit after tax clearly stands out as being the most frequent occurrence, followed by cash flow dividend cover and a mix of three

This means that the variables with the strongest influence on the average share price are:

1. NOPAT per share, being the major contributor - 13 out of the 19 years
2. Earnings per share, as major contributor - 3 times in 19 years
3. Profit per share, EVA® (VAD) and Current ratio, being the final 3.

### 4.3 MODELLING OF A JSE FOOD SECTOR COMPANY SHARE PRICE

Efforts to model a company's share price with the derived formulas resulted in a poor return. This is mostly ascribed to the fact that there is no consistency regarding the calculated weighted average cost of capital, which was a building block of economic profit and EVA® (Auret & Britten, 2008).

The formula for WACC contains a recordable interest cost on the finance portion, but the cost of equity tends to be a biased amount. Using the CAPM model was not possible due to the variance between the volatility of the over the counter market versus the listed environment. The value of cost of equity from calculation of the peer group had one coefficient namely the  $\beta$  or *beta value* which could not be derived.

Former agricultural co-operatives have a unique business model and method of reporting of turnover as well, causing the price to sales ratio not to reflect a similar result than the companies on the JSE. The grain sold as part of the commodity finance process has to be included in turnover, according to international reporting rules, which blows this figure out of proportion.

These two unique aspects were the main reasons for the failure of the modelling effort. However, it presents a logical question as to whether other listed food companies do not also contain such uniqueness, resulting in analysts not being able to accurately determine its true performance.

#### **4.4 MANAGEMENT VALUE**

The actual goal was achieved in that key financial ratios could be derived to be used as management tool in the value-based management process in order to ensure a positive outcome on the share price and eventually shareholders value.

#### **4.5 DISCUSSION AND FUTURE PROSPECTS**

It is assessed that the most effective value measurement for companies in the food sector is NOPAT per share, followed by cash flow dividend cover. It is accepted that this is the basis that a JSE Food Sector listed company should use to evaluate its performance going forward.

In order to effectively implement value-based management for the company, the formula for NOPAT should be broken down to its key elements and the relevant areas

in the company these elements are clearly defined should be identified. Goals should be set and a set of benchmarks should be created. If the company intending to list has a specific share price target in mind, or a certain percentage growth, the measurements can be quantified.

A separate document should be drafted to ensure a detail road map indicating what is expected to be achieved, with target dates and reward/penalty clauses to drive the correct behaviour. The use of a balanced score card for this purpose is advised.

## **4.6 CONCLUSION**

Although the literature appears to be inconclusive about what measures correctly predicted shareholders value and the change in share price of companies over time, this study managed to achieve a positive result, which can be used by companies listed in the Food Sector of the Johannesburg Securities Exchange. It is also expected that these measures have relevance for most companies in a similar business environment and with similar business drivers.

The results per company and for each year show significant similarities with the findings of Moolman and Du Toit (2005:88) and in other studies NOPAT came out as the preferred measure. It is also consistent with the findings of a study done on the Oslo Stock Exchange (Hillestad & Bank, 2007:121), with the logical explanation that with high (low) operating profits there will be more (less) wealth to distribute amongst the investors. Further support is found in the research of Pablo Fernandez (Fernández, 2001:1) on 582 companies in the United States of America. It is suggested that EVA® and cash value do not contribute to market value add results at similar levels than NOPAT. The case for cash flow dividend cover is accepted in that most investors with these companies in their investment portfolios are looking for sound dividend streams. The result is that companies in this sector are seen as “Cash cows”, in other words, mostly matured companies, with a steady revenue stream and profit base.

Maintaining an economical and profitable business, with good dividend streams and acceptable growth, will thus ensure sustainable value creation.

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## ANNEXURE A: LIST OF ALL VARIABLES USED

|    |                                    |
|----|------------------------------------|
| 9  | Operating Economic Value Added     |
| 11 | Cash Flow Dividend Cover           |
| 12 | Price Value Differential           |
| 13 | Average Share Price                |
| 14 | Price to Sale                      |
| 15 | Year End Share Price               |
| 16 | Change Year End Share Price        |
| 17 | Dividend Yield                     |
| 18 | EPS                                |
| 19 | Dividend per Share                 |
| 20 | Dividend Cover                     |
| 21 | Net Asset Value per Share          |
| 22 | Earnings per Share                 |
| 23 | Operating Profit                   |
| 24 | Price to Book Value per Share      |
| 25 | Inflation Adjust Return on Assets  |
| 26 | Inflation Adjust Return on Equity  |
| 27 | Interest Cover                     |
| 28 | ROA                                |
| 29 | ROE                                |
| 30 | Operating Profit Margin            |
| 31 | Price to Inflation Adjusted Profit |
| 32 | Price to Book Value                |
| 33 | Price to Cash Flow                 |
| 34 | Price to Earnings                  |
| 35 | Price to Net Asset Value           |
| 36 | Price per Share                    |
| 40 | Quick Ratio                        |
| 41 | Retention Rate                     |
| 42 | Return on Assets                   |
| 43 | Return on Equity                   |
| 44 | Total Asset Turnover               |
| 45 | NOPAT per Share                    |
| 46 | CEVA(R)                            |
| 47 | CFROI                              |
|    | Absolute Betas :                   |
| 48 | Average Real Market Beta           |
| 49 | Real Market Beta                   |

## ANNEXURE B: CORRELATION MATRICES

[illegible]







Year = 14

Correlation is significant at the 0.05 level (2-tailed).

Year = 15

Correlation is significant at the 0.05 level (2-tailed).

Year = 16

Correlation is significant at the 0.05 level (2-tailed).

Year = 17

Correlation is significant at the 0.05 level (2-tailed).

Year = 14

Correlation is significant at the 0.05 level (2-tailed).

Year = 15

Correlation is significant at the 0.05 level (2-tailed).

Year = 16

Correlation is significant at the 0.05 level (2-tailed).

Year = 17

Correlation is significant at the 0.05 level (2-tailed).

