

# **AN ANALYSIS: ECONOMIC VALUE ADDED AND SHARE PRICE MOVEMENT**

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## Abstract

Value-based management was developed to determine whether companies, through management actions, can create value for their shareholders. Value is created when capital is invested at returns higher than the cost for that capital. The concept of creating value for shareholders has its origins in 1776, when Adam Smith wrote in his *An inquiry into the Nature and Causes of the Wealth of Nations*, that investors require a return on capital.

Since value-based management has appeared in the 1980s, various consulting firms have developed and popularised metrics that can assist management in measuring economic profit. One of the most popular metrics developed was Economic Value Added (EVA) by Stern and Stewart. While value-based management is used to increase shareholder value, one of its serious drawbacks is its short-term focus on immediate results to the detriment of long-term sustainable competitive advantage.

The main goal of this study is to investigate and determine whether investors can use economic profit as an indicator for share price movement of non-mining and non-financial South African companies listed on the Johannesburg Securities Exchange. This was done through multiple regression models, in order to determine whether investors can use value-based management measurement to predict share price movement. Value-based measurements selected were Economic Value Added (EVA), Return On Capital Employed, and Return On Equity. Income statement, balance sheet, cash flow statement items, as well as Earnings Per Share were also selected as independent variables in the multiple regression models. The results from this study indicate that the only real measure that can be used for predicting share price movement is Earnings Per Share (EPS). EVA is good for determining shareholder value, but not adequate for determining stock performance.

Even though it was found that investors should only use EPS for predicting share prices, companies should still focus on creating value for their shareholders. It is beneficial to investors to understand what value-based management is, and to understand management actions in terms of value creation. South Africa has seen over 30 consecutive quarters of economic growth, which was found in this study to have a good correlation with company performance – not only in terms of EPS, but also in terms of EVA.

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## Table of Abbreviations

<b>Acronym</b>	<b>Term</b>
PE	Price earnings
ABC	Activity-based costing
ABM	Activity-based management
AICPA	American Institute of Certified Public Accountants
APS	Average price per share
BPM	Business process management
CEO	Chief executive officer
CFO	Chief financial officer
CFROI	Cash flow return on investment
CLV	Customer lifetime value
CVA	Cash value added
DCF	Discounted cash flow
DERO	Discounted equity risk option
EBDIT	Earnings before depreciation, interest and tax
EBIT	Earnings before interest and tax
EE	Equity equivalents
EP	Economic profit
EPS	Earnings per share
EVA	Economic value added
FCF	Free cash flow
FIFO	First in first out
JSE	Johannesburg Securities Exchange
LIFO	Last in first out
MVA	Market value added
NOPAT	Net operating profit after tax
NOPLAT	Net operating profit less adjusted taxes
NPV	Net present value
OCF	Operational cash flow
OCFD	Operational cash flow demanded
PCD	Product-capital dependence
PE	Price earnings ratio
ROCE	Return on capital employed
ROE	Return on equity
ROI	Return on investment

ROIC	Return on invested capital
SVA	Shareholder value added
URL	Uniform Resource Locator
VBM	Value-Based Management
WACC	Weighted average cost of capital
YPS	Year-end price per share

# CHAPTER 1: INTRODUCTION

## 1.1 INTRODUCTION

In today's business world, the primary aim of most firms is to maximise shareholders' wealth (Brigham & Ehrhardt, 2005:109). If a company does not satisfy its shareholders, it does not have the flexibility to take the necessary steps to take care of its employees and its community. How does the management of an organisation determine whether it is creating the wealth required by its shareholders, and if a company is making a profit, does it mean it is creating wealth for the shareholders?

The first step before any investor decides to invest in a company is to investigate and analyse a prospective company. There are various ways of doing this, but Libby *et al.* (2004:704) suggest that the following three factors should be considered:

- Economic factors. These factors include the overall health of the economy, unemployment rates, inflation rates and interest rates.
- Industry factors. Is the particular industry in which the company operates in a growth or a decline phase? What are the current trends in the industry? Where does the company fit within the industry?
- Individual company factors. When analysing the individual company, the analysis should not only be limited to the financial statements, but also to its products, as well as its media coverage and reputation.

It is important that investors understand the business strategy of the company, because the financial statements are the result of the strategy followed by the company (Libby *et al.*, 2004:705). There are numerous ratios that can be used to test the profitability, liquidity, asset management, and solvency, as well as to test how the company is performing in the market. The analysis of the financial statements is a judgemental process as not all ratios calculated are helpful in a given situation (Libby *et al.*, 2004:709). To give relevance to these ratios, the company has to be compared to other companies within the same industry, as this comparison gives a good indication of how the company concerned is performing in relation to its competitors. From these results it might become apparent that the company is not on a par with its peers, and management might decide to improve the company's ratios to equal or outperform the ratios of the top companies within the industry. Such a decision might be disastrous, as not all companies are identical – especially in respect of capital structure. These

ratios, which are very important for any company, are fragmented in the sense that they do not give single measurements of how management is going about creating wealth for its shareholders.

One of the most common metrics used to measure corporate performance is Earnings Per Share (EPS), but it is not an adequate metric. EPS is often a misleading indicator that can result in costly decisions that frequently short-change the common shareholder (Stern & Ross, 2003:171). The EPS criterion confuses investment decisions with financing policies because substandard projects can appear desirable simply because of the way in which they are financed (Stern & Ross, 2003:171). There is also a large body of empirical evidence that indicates that the market is not primarily interested in earnings or in EPS per se (Stern & Ross, 2003:171). EPS should be abandoned as an analytical tool for acquisition pricing and financing, and for capital structure planning (Stern & Ross, 2003:171).

One can argue that by calculating the Return of Equity (ROE), it will give the return investors are getting and can expect, but this is only for the portion of shareholders equity. The firm might have a very good ROE, but this can be due to a small portion of equity supplied by shareholders, while most of the capital is financed through debt. ROE, according to Stewart (1998:84), suffers from accounting and financing distortions. Accounting distortions include stock valuations methods (FIFO and LIFO), the expense of Research and Development, the use of successful efforts instead of full cost to account for risky investments, and accrual bookkeeping entries that bury reserves purchasing. Other ratios might be used to evaluate the application of debt, but it is segmented without giving the total amount of wealth created by the management.

One measure of the amount of wealth created is the Market Value Added (MVA) of the company. MVA is defined as the market value of the firm, less the book value of the investor-supplied capital. It can also be calculated as the difference between the market value of the firm's stock and the amount of equity capital supplied by shareholders. The MVA calculation can cause problems, as the book value might be the value of a number of years back, but management and shareholders are interested in the MVA for the last year. MVA reflects the performance of the company over its entire life (Brigham & Ehrhardt, 2005:112). The MVA measurement can be flawed, because the market value might have been created in the initial years of the company,

but not in the later years. In such a scenario, it can give management a false sense of security, while in reality, management has destroyed value.

The only true measure of management actions to create wealth is when capital is invested at returns higher than the cost of that capital (Koller, 1994:87). This is known as Value-Based Management (VBM). Koller (1994:89) describes value-based management as a marriage between a value creation mindset and the management processes and systems that are necessary to translate that mindset into action. Managers are required to use value-based performance metrics for better decisions at all levels in an organisation. It entails managing the balance sheet as well as the income statement, and balancing long- and short-term perspectives (Koller, 1994:87).

In the modern era, value-based management systems have become a popular method to align management compensation with shareholders' wealth. One of the most popular variable compensation systems currently being used in the corporate world is the Economic Value Added (EVA)-based compensation system (Mohanty, 2006:265).

The concept of EVA was fully developed by Stern Stewart towards the end of the 1980s (Stern & Ross, 2003:68). The Economic Value Added is an estimate of a business's true economic profit for the year, and it differs sharply from accounting profit, because EVA represents the residual income that remains after the cost of all capital, including equity capital, has been deducted (Brigham & Ehrhardt, 2005:110). Accounting profit is determined without imposing a charge for equity capital. A positive EVA indicates that the company's activities have generated "shareholders value" over the period of measurement, and that the activities that generated negative EVA values are considered to have lost shareholders value (Lawrie, 2003:1). EVA is not the only measure to calculate the amount of value added, as companies might use different metrics such as economic profit (EP) or Cash Value Added (CVA), because the term EVA is the registered trademark of Stern and Stewart and may only be used by companies that have acquired the rights to use this term. As long as a company provides for a capital charge in the calculation of its economic profit, it will be able to determine whether value was created or destroyed in the period under review.

As mentioned earlier in the chapter, the financial statement of a company is the result of the company's business strategy. "Strategies fail in the decision, not the vision" (Pettit *et al.*, 2001:1). When a company develops a business strategy which is based on flawed measures, it can result in uneconomic decisions and ultimately lead to value

destruction. The board of directors or the management of a division would be able to make much better informed decisions with regards to the creation or destruction of wealth if these decisions are based on VBM principles.

It is important to keep in mind that a VBM metric is not something that is used once, but is a continuous measurement. Whatever metric is used to determine the value of a company, it should not be calculated at a specific time, but the goal should be to increase the value from month to month, or from fiscal year to fiscal year. "To create value for shareholders, a firm has to try and add value year after year to reward shareholders. Economic value added helps measure the contributions of the company's management every year" (Dasgupta, 2002:35).

## **1.2 PROBLEM STATEMENT**

South Africa has become popular amongst foreign investors over the last five years as a developing country with ample investment opportunities. With this in mind, South African companies should make themselves even more attractive by creating wealth for current and potential investors. The South African companies must be able to show they can compete with the rest of the world when it comes to adding value to their shareholders' investments.

According to the South African Reserve Bank's March 2007 *Quarterly Bulletin* (2007:1), the global economy recorded its third successive year of real growth in 2006 at a rate approximating 5 per cent, while the African continent's real growth hovered around 5.5 per cent for the third year in succession. In South Africa, the real gross domestic product increased at a rate of 5 per cent in 2006, which kept in line with the previous two years. The *Quarterly Bulletin* (2007:2) also reports that investments in shares by foreign investors dominated the financial account of the balance of payments throughout 2006, further stressing the point that South African companies must make themselves more attractive to foreign investors if this influx of foreign equity is to continue. This point is further strengthened by the fact that the Johannesburg Securities Exchange (JSE) which has also experienced record highs with the All Share Index climbing to over 30000 in 2007.

While the South African economy has been performing well in recent years and the listed companies have benefited through rising share prices, the question must be asked: how much wealth has these companies been able to create for their

shareholders? If these companies have been able to post positive results, was it possible to create wealth for shareholders while doing so? Did the management of these companies make use of value-based management principles to create wealth, and at the same time increase the share price of the company, or was it due to the positive economic conditions in South Africa and the positive sentiment towards South Africa by foreign investors? Can investors make use of value-based management metrics as indicators of share prices?

### **1.3 GOALS AND OBJECTIVES OF THE STUDY**

#### **1.3.1 Main goal**

The main goal of this study is to investigate and determine whether investors can use economic profit as an indicator for share price movement of non-mining and non-financial South African companies listed on the Johannesburg Securities Exchange. It was decided to only focus on non-mining and non-financial companies, as mining and financial companies' financial reporting is different than that of the selected companies.

#### **1.3.2 Subobjectives**

The subobjectives of this study are the following:

- To investigate and determine to what extent financial performance is responsible for share price movement.
- To investigate and determine how these companies performed against the All Share Index of the JSE.
- The development of a model for investors to determine share price movement.

### **1.4 RESEARCH METHODOLOGY**

The research methods that were used within this research are the following:

#### **1.4.1 Literature study**

A literature study will be done to provide a conceptualisation of Value-Based Management. The literature study focuses on the following:

- Value-based management principles
- The concept of EVA and its origins
- The link between economic profit and share price

- How to improve economic profit
- Benefits/advantages of using VBM
- Critique of VBM
- VBM and strategy

#### **1.4.2 Empirical study**

The empirical study will be done by means of a quantitative study. The quantitative research will be done by making use of historical financial data that will be obtained from McGregor BFA in order to determine whether a company's economic profit does have an effect on its share price. The final part of the empirical study will look at how the companies' economic profit and performance compare against the JSE All Share Index.

### **1.5 SCOPE OF THE STUDY**

The field of study for this research is financial management. The research focuses on how potential and current investors can use value-based management measurements to determine corporate performance, as well as share price movement. Only non-mining and non-financial companies listed on the Johannesburg Securities Exchange (JSE) were considered for this study.

### **1.6 LIMITATIONS OF THE STUDY**

There are certain limitations to this research. The findings of the research are based on companies across a large spectrum of industries. It might therefore not be possible to identify what the common factors are that influence share prices in a particular industry.

### **1.7 LAYOUT OF THE STUDY**

#### **Chapter 1: Introduction**

Chapter 1 sets the context of why the specific research topic was chosen. In this chapter the problem statement is formulated and the research goals, research methods, and limitations are given.

## **Chapter 2: Literature study**

Chapter 2 contains the literature study to establish the theoretical basis for this study. The first section of the chapter will focus on the origins of VBM, its principles, benefits and critique, as well as shareholder value, and value drivers. The section will also focus on the link between VBM and the market in terms of share prices. It will also look at how value-based management can be used to formulate strategies. The second section will focus on EVA, as it is one of the popular measurements used in VBM. The final section will look at how shareholder value can be improved by looking at various components in the income statement and balance sheet, in order to attract potential investors and to retain existing investors.

## **Chapter 3: Empirical study**

Chapter 3 will empirically investigate and apply the theory described in Chapter 2 in a South African context, and will thereby address the subobjectives of this study. The results from the investigation will be analysed to determine whether there is a correlation between a company's economic profit and its share prices.

## **Chapter 4: Conclusions and recommendations**

Chapter 4 assesses the results of Chapter 3, in order to determine whether investors can use value-based management measurements to gauge share price movement. Recommendations, suggestions and conclusions will be made based on these findings.

## CHAPTER 2: LITERATURE STUDY

### 2.1 INTRODUCTION

How does a company know whether it is performing well and at the same time creating value for its shareholders? Traditionally, a company or a division within a large organisation would measure its performance against the budget for a specific period. In addition to the budget, a stretch target would be set, and if this is achieved or surpassed, a bonus could be paid out. Does it mean that when the budget is met, or if the stretched targets are achieved, the company has created value for its shareholders? Was the budget drawn up correctly in order to create value? What do companies do in order to generate the value required by its shareholders? How do these companies rethink their internal performance measures to reflect the focus on shareholder value? In recent years, numerous value-based metrics were developed to provide management with the answers to these questions. While value-based management is discussed from a company perspective, it is based on the assumption that investors consider value-based management factors for investment purposes.

### 2.2 VALUE-BASED MANAGEMENT

#### 2.2.1 Origins and development of value-based management

Even though value-based management has become popular over the last couple of years, it has its origins as far back as 1776, when Adam Smith wrote his *An Inquiry into the Nature and Causes of the Wealth of Nations*. Smith said: "... every individual, therefore, endeavours as much as he can both to employ his capital in the support of domestic industry and so to direct that industry that its produce may be of the greatest value" (Wikipedia, 2007). Smith, therefore stated already in 1776 that investors require a return on capital (Jordaan, 2005:1).

There has in recent years been an overabundance of new management approaches for improving organisational performance. Koller (1994:87) lists total quality management, flat organisations, empowerment, continuous improvement, reengineering, kaizen, and team building as some of these approaches. Kaizen originated in Japan as a management concept for continuous incremental improvements (Value Based Management, 2007). Many of these approaches succeeded, but just as many failed, because performance targets were unclear, and not properly aligned with the ultimate goal of creating value. Koller (1994:87) is

of the opinion that value-based management is a solution to tackle this problem head on, because it provides a precise and unambiguous metric upon which an entire organisation can build.

According to Wang *et al.* (2006:36), the concept of value-based management appeared in the U.S.A. in the 1980s, and value-based management has been pursued in Western enterprises since the 1990s. Trahan and Gitman (in Ryan & Trahan, 1999:47) surveyed Fortune 500 and Forbes 200 Small Company CFOs in 1995 in order to determine their desire to know more about several corporate finance topics. The surveyed CFOs expressed a desire to know more about the impact of financial decisions on stock prices, the impact of institutional and managerial ownership on stock prices, and the impact of short-sighted management. Ryan and Trahan (1999:49) also conducted research in 1996 and 1997 to establish how firms perceive, use and implement value-based management systems. Of the 186 executives completing the questionnaire, 87 per cent were familiar with value-based management.

Corporate performance can be improved by boosting EPS, maximising PE ratios, maximising the market-to-book ratio, and increasing the return on assets, but Koller (1994:90) believes that value is the only correct criterion of performance.

Value-Based Management (VBM) has become a popular topic in financial management and is measured in various forms. Numerous consulting firms have developed and popularised metrics designed to help corporations implement value-based management systems. Some examples of metrics developed according to Ryan and Trahan (1999:47) are:

- Discounted Cash Flow (DCF). It is the market value of a company expressed as the present value of its expected future cash flows discounted back to the present at the company's cost of capital.
- Cash Flow Return on Investment (CFROI). It represents the cash flow that a company generates in a given period as a percentage of the cash invested in the company's assets. Both cash flow and assets are stated in current rands to adjust for inflation. The asset base is also adjusted to include the capitalisation of operating leases. The ratio of cash flow to cash invested is then converted to an internal rate of return measure over the normal economic life of the assets involved.

- Return on Invested Capital (ROIC). It is the ratio of a company's net operating profit less adjusted taxes (NOPLAT) to its invested capital. NOPLAT is the company's earnings before interest and taxes less cash taxes, and invested capital is the amount invested in the operations of the company.
- Economic Value Added (EVA). It is calculated as net operating profits after taxes (adjusted for a variety of factors) minus a capital charge, computed as the company's adjusted book value of capital multiplied by its market-determined cost of capital.

Table 2.1 gives a summary of six financial/consulting firms' preferred metrics. For the complete synopsis, refer to Annexure A.

**Table 2.1: Preferred metrics of six financial/consulting firms**

	Stern Stewart & Co	Marakon Associates	McKinsey & Co	PriceWaterH ouseCoopers	L.E.K. Consulting	HOLT Value Associates
Preferred Metrics	<ul style="list-style-type: none"> <li>• MVA (corporate)</li> <li>• EVA (corporate, business unit and product line)</li> </ul>	<ul style="list-style-type: none"> <li>• Equity Spread (corporate)</li> <li>• EP (corporate, business unit, customer and product line)</li> </ul>	<ul style="list-style-type: none"> <li>• Enterprise DCF (corporate, business unit)</li> <li>• EP (corporate, business unit, customer and product line)</li> </ul>	<ul style="list-style-type: none"> <li>• CFROI (corporate)</li> <li>• SVA (corporate, business unit)</li> <li>• FCF (corporate, business unit)</li> </ul>	<ul style="list-style-type: none"> <li>• SVA (corporate, operating level)</li> <li>• Change in residual income or change in EVA (operating level)</li> <li>• Leading indicators of value (operating level)</li> </ul>	<ul style="list-style-type: none"> <li>• CFROI (corporate)</li> <li>• Accounting-based measures (lower levels)</li> </ul>

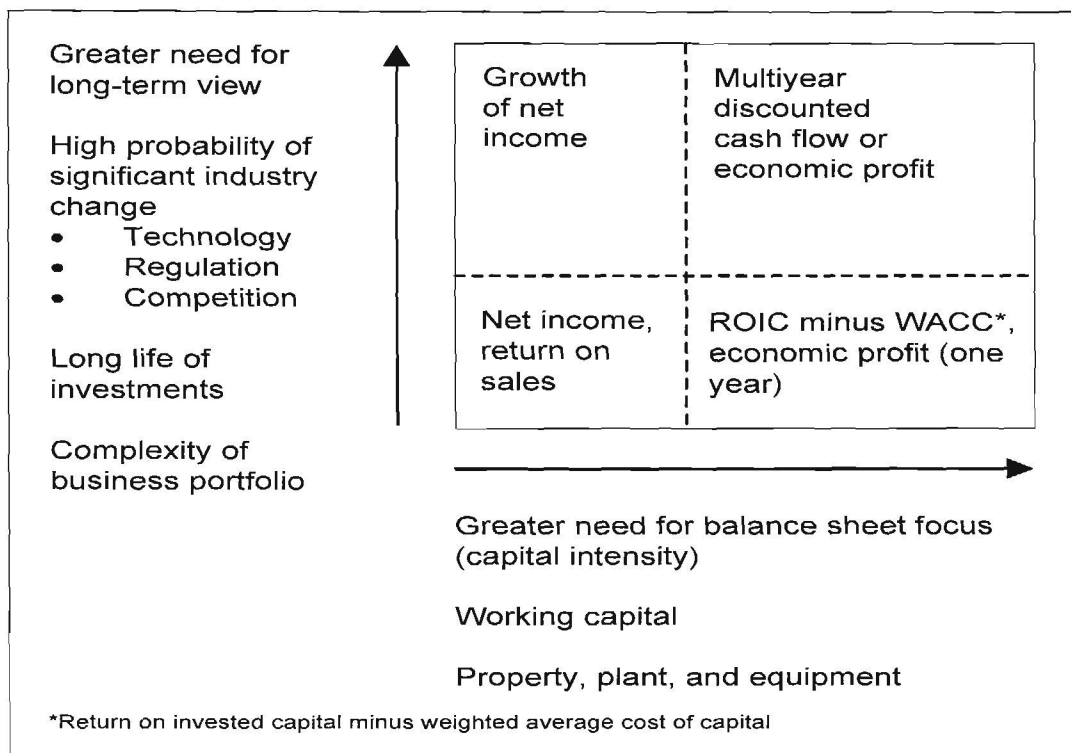
(Source: Adapted from Ameels *et al.*, 2002:27)

Another VBM metric developed was Cash Value Added (CVA). Value-Based Management (2007) defines CVA as the difference between Operational Cash Flow (OCF) and the Operational Cash Flow Demand (OCFD). OCF is the sum of Earnings Before Depreciation, Interest and Tax (EBDIT), adjusted for non-cash charges, working capital movement and non-strategic investments. OCFD represents the cash flow needed to meet the investor's financial requirements on the company's strategic investments, that is to say, the cost of capital.

Return On Capital Employed (ROCE) is another measure that can be used to calculate the efficiency and profitability of a company's capital investments (Value-Based Management, 2007). It is calculated by dividing Earnings Before Interest and Tax (EBIT) by the difference between total assets and current liabilities.

Diagram 2.1 compares various measures of corporate performance along two dimensions: the need to take a long-term view and the need to manage the company's balance sheet. It is clear from the diagram that multi-year discounted cash flow or economic profit is the most appropriate measure.

**Diagram 2.1: Measuring corporate performance**



(Source: Koller, 1994:91)

### 2.2.2 Value-based management principles

Koller (1994:87) describes VBM as focusing on better decision-making at all levels in an organisation, but it is not a staff driven exercise. VBM recognises that top-down command-and-control structures do not work well in large multi-business corporations, but instead calls on managers to use value-based performance metrics for better decisions. An indication of whether VBM is working or not, is when decision-makers at all levels are provided with the right information and incentives to make value-creating decisions. According to Koller (1994:87), VBM entails managing the balance sheet as well as the income statement, and

balancing long- and short-term perspectives. VBM's focus should not be on methodology, but on the why and how of changing the corporate culture of a company. "A value-based manager is as interested in the subtleties of organisational behaviour as in using valuation as a performance metric and decision-making tool" (Koller, 1994:88).

In its most basic form, value-based management involves transforming behaviour in a way that encourages employees to think and act like owners (Martin & Petty, 2001:2). Companies claim through statements by the CEO, or in the annual financial statements, that the company's goal is to create value for its shareholders, but translating the goal into practice is far from easy (Martin & Petty, 2001:2). Value is only created when managers are actively engaged in the process of identifying good investment opportunities and taking steps to capture the value potential of these opportunities. Value creation requires management to be effective in identifying, growing, and harvesting investment opportunities (Martin & Petty, 2001:2).

Ryan and Trahan (1999:47) define value-based management as the adoption of a corporate strategy of maximising shareholder value by the management of a company. The two authors (Ryan & Trahan, 1999:47) further state that value-based management is, in theory, all-encompassing and includes corporate strategy, management compensation issues, and detailed internal control and reward systems, all designed to link employee performance to shareholder value.

Ryan and Trahan (1999:46) ascribe the heightened pressure in corporations to focus on maximising shareholder value, to the increased competition in the managerial labour and capital markets. Other factors contributing to this increased pressure are hostile takeovers, institutional investors with large equity positions in corporations, more active boards of directors, and increasingly competitive global capital markets (Ryan & Trahan, 1999:46).

Wang *et al.* (2006:39) even go so far as to say that value-based management defines the key goal of management activity as the maximisation of enterprise value. "In order to realize the maximum of enterprise value, it's necessary to minimize the risk that enterprises face, maximize the cash flow and the ability of continuing operating" (Wang *et al.*, 2006:39).

Stewart (1999:1) also sees the maximisation of a firm's current market value as the most important job of senior management. According to Stewart (1999:1), many companies' all-important quest for value is being confounded by a hopelessly obsolete financial management system where the wrong financial goals, performance measures, and valuation procedures are emphasised, while managers are improperly, and in many cases inadequately, rewarded.

The problem with both Wang and Stewart's point of view of maximizing market value is that the market value approach ignores the capital employed to create it. If a firm invest more, market value will rise, without necessarily creating value for shareholders. The market value approach is also a short-term approach that can be detrimental in the long-term, as investment decisions are based on short-term results, and not on long-term investments or long-term sustainability.

### **2.2.3 Benefits of value-based management**

VBM brings tremendous benefits when it is well implemented. According to Koller (1994:87), VBM is similar to restructuring in order to achieve maximum value on a continuing basis, and it has high impact, often realised in improved economic performance.

A value-based metric combines the three essential financial characteristics of an organisation: cash flow generated by the organisation, the capital invested to generate those cash flows, and the cost of capital of the investment (Francis & Minchington, 2000:46).

Value-Based Management (2007) lists the following aspects for which VBM provides consistency:

- The corporate mission (business philosophy)
- The corporate strategy (course of action to achieve corporate mission and purpose)
- Corporate governance (who determines the corporate mission and regulates the activities of the corporation)
- The corporate culture
- Corporate communication
- Organisation of the corporation
- Decision process and systems

- Performance management processes and systems
- Reward processes and systems

Table 2.2 illustrates the impact of VBM on different businesses.

**Table 2.2: Examples of VBM's impact**

<b>Business</b>	<b>Change in behaviour</b>	<b>Impact</b>
Retail household goods	Shifted from broad national growth programme to focus on building regional scale first	30-40% increase in potential value
Insurance	Repositioned product portfolio to emphasise products most likely to create value	25% increase in potential value
Oil production	Used new planning and control process to help drive major change programme	Multimillion dollar reduction in planning function through streamlining  Prompted an acquisition  Exposed non-performing managers
Banking	Chose growth versus harvest strategy, even though five-year return on equity was very similar	124% potential value increase
Telecoms	Generated ideas for value creation <ul style="list-style-type: none"> <li>• New services</li> <li>• Premium pricing</li> </ul> <p>Around 40% of planned development projects in one business unit discontinued</p> <p>Sales force expansion plans completely revised after discovering how much value it would destroy</p>	240% potential value increase in one unit  246% potential value increase in one unit  N/A  N/A

(Source: Koller, 1994:88)

#### **2.2.4 Critique of value-based management**

Koller (1994:88) states that one of the pitfalls of VBM is that it can become a staff-captured exercise that has no effect on operating managers at the front-line or on the decisions that these front-line managers make. It is critical that these front-line

managers are incorporated in the VBM process, as the real decisions are made by these managers. The critique of EVA as VBM metric is that the EVA results rely on supporting calculations and assumptions, the value for some of which are difficult to determine reliably. Lawrie (2003:1) uses the calculation of the cost of capital that applies to a particular operation within a business as an example to illustrate that the values for such a calculation is notoriously difficult to estimate.

The drawbacks of value-based management, according to 12Manage (2007), are the opposite of its benefits, and are the following:

- VBM is an all-embracing, holistic management philosophy, which often requires culture change. VBM programmes are typically large-scale initiatives that take considerable time, resources and patience to be successful.
- Value creation may sound simpler than corporate strategy but is not, because it is actually more or less the same.
- Economic value added, performance management and the balanced scorecard are very powerful management support tools and processes, but each has its own costs.
- It is of the utmost importance to measure the right things, because if not, it could lead to value destruction.
- VBM requires strong and explicit CEO and Executive Board support.
- Comprehensive training and management consultancy are advisable or even necessary, but can be quite costly.
- The perfect VBM or valuation model has not been invented yet. Any method chosen will have certain drawbacks, which should be taken into account.

The problem with VBM, according to Lew and Barnard (2004:20), is that it is an accounting and economics driven initiative that needs to find its impetus in people-based interventions. Value creation relies not only on the strategy and an understanding of the business drivers, but also on the buy-in of all employees; unfortunately, many employees do not share the passion for value creation (Lew & Barnard, 2004:20). Another problem listed by Lew and Barnard (2004:21) is the fact that VBM cannot serve the needs of customers and shareholders to an equal extent when managers are focusing on increasing cash flow.

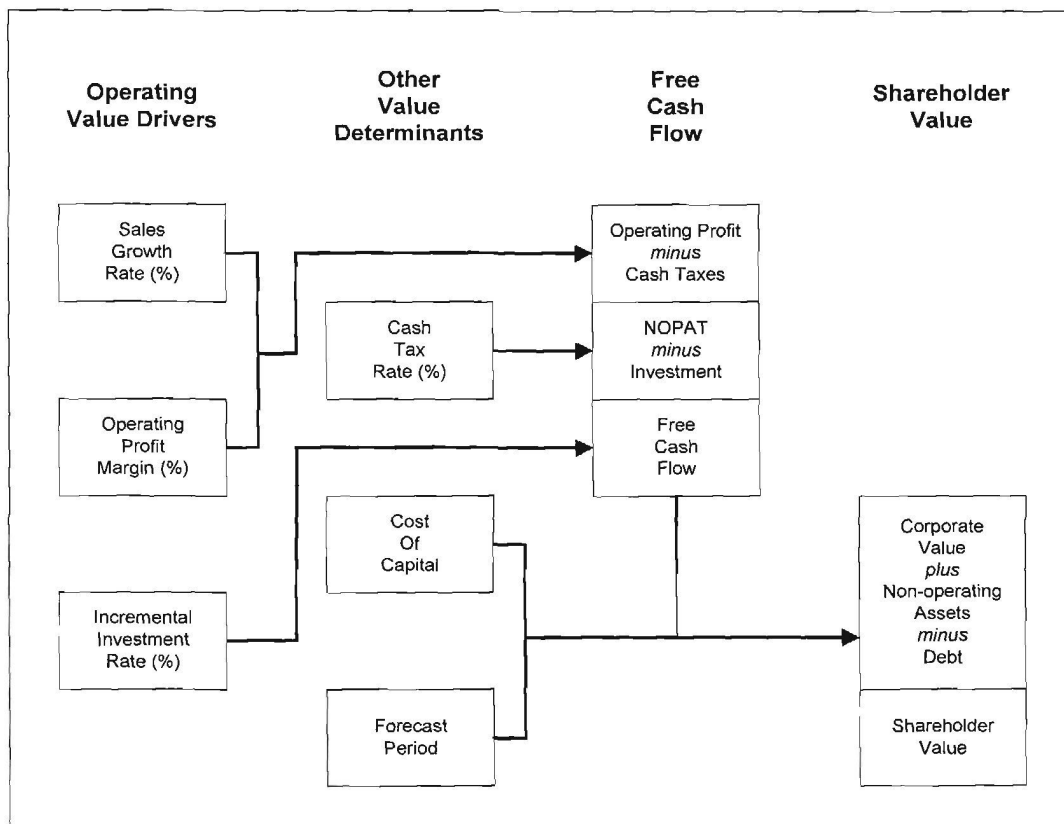
### 2.2.5 Shareholder value

Shareholder value is defined by Value Based Management (2007) as the Net Present Value (NPV) of all future cash flows plus the value of non-operating assets (value of the company) minus the future claims (debt). Non-operating assets include marketable securities, excess real estate and overfunded pension plans. Future claims include interest-bearing debt (long- and short-term), capital lease obligations and underfunded pension plans.

Rappaport and Mauboussin (2001:21) have developed a shareholder value road map (Diagram 2.2) that shows the following relationships:

- Sales growth and operating profit margin determine operating profit.
- Operating profit minus cash taxes yields net operating profit after taxes (NOPAT).
- NOPAT minus investment in working and fixed capital equals free cash flow.
- Free cash flows discounted at the cost of capital determine corporate value.
- Corporate value plus non-operating assets minus the market value of debt equals shareholder value.

**Diagram 2.2: Shareholder Value Road Map**



(Source: Rappaport & Mauboussin, 2001:21)

One of the negative aspects of pursuing shareholder value is that managers and investors are mainly focusing on the next quarter's results and neglecting long-term investments. The end result is that executives are destroying the value that is supposed to be created and executives almost always claim that pressure from the stock market was responsible for doing so (Rappaport, 2006:66). According to Stewart (1999:1), the myth that increasing earnings, earnings per share, or return on equity is the way to attract Wall Street has to be abolished. Several senior executives believe that the market wants earnings now, and to report good earnings, executives manipulate earnings through time-consuming and ethics-corroding accounting legerdemain.

Rappaport (2006:66) also contributes the introduction of stock options during the 1990s to this short-term focus. The idea behind these stock options was to align the interest of management with those of shareholders. Unfortunately, it had the opposite effect, because relatively short vesting periods combined with a belief that short-term earnings fuelled stock prices, encouraged executives to manage earnings accordingly: exercise stock options early, and cash out opportunistically. Executives blamed this adoption of a short-term orientation on the fact that the average holding period of stocks in professionally managed funds has dropped from about seven years in the 1960s to less than one year (Rappaport, 2006:68). This reasoning is deeply flawed, because what matters is the market's valuation horizon, which is the number of years of expected cash flows required to justify the stock price and not the investor holding period (Rappaport, 2006:68). "Studies suggest that it takes more than ten years of value-creating cash flows to justify the stock prices of most companies" (Rappaport, 2006:68).

Rappaport (2006:68) drew on his research and several decades of consulting experience to set out ten basic governance principles for value creation that collectively will help any company with a sound, well-executed business model to better realise its potential for creating shareholder value. These ten principles are the following:

**Principle 1: Do not manage earnings or provide earnings guidance.**

"Companies that fail to embrace this first principle of shareholder value will almost certainly be unable to follow the rest" (Rappaport, 2006:68). Research conducted revealed that 80 per cent of respondents would decrease value-creating spending on research and development, advertising, maintenance and hiring, in order to

meet earnings benchmarks, and more than half would delay a new project even if it entailed sacrificing value. There are three reasons why it is not good to be focusing on earnings:

1. The accountant's bottom line approximates neither a company's value nor its change in value over the reporting period.
2. To boost short-term earnings, a company can compromise value by investing at rates below the cost of capital or forgo investment in value-creating opportunities.
3. Value-destroying operating decisions of stretching permissible accounting to the limit in order to report glowing earnings eventually catches up with the company.

**Principle 2: Make strategic decisions that maximise expected value, even at the expense of lowering near-term earnings.**

Companies tend to evaluate strategic decisions against reported earnings instead of measuring against expected incremental value of future cash flows. In order to determine whether a strategic decision would produce the greatest value, the following three questions must be answered at operations level:

1. How do alternative strategies affect value?
2. Which strategy is most likely to create the greatest value?
3. How sensitive is the value of the most likely scenario to variables such as shifts in competitive dynamics, technology life cycles, regulatory issues, and other relevant variables?

At corporate level, executives must answer the following three questions:

1. Do any of the operating units have sufficient value-creation potential to warrant additional capital?
2. Are the operating units that do not have potential, candidates for restructuring?
3. What mix of investment in operating units is likely to produce the most overall value?

**Principle 3: Make acquisitions that maximise expected value, even at the expense of lowering near-term earnings.**

Even though most of a company's value is created in its day-to-day operations, a major acquisition can destroy value faster than any other corporate activity. The norm when considering an acquisition is to evaluate the impact on the earnings per

share of the company, but it does not tell anything about the deal's long-term potential to add value. Management must be able to identify when, where and how real performance gains can be achieved by estimating the present value of the resulting incremental cash flows and then subtracting the acquisition premium.

**Principle 4: Carry only assets that maximise value.**

This principle has two parts:

1. A company must regularly monitor whether there are buyers willing to pay a premium above the estimated cash flow value to the company for its business units, brands, real estate, and other detachable assets.
2. Companies can reduce the capital employed and increase value in two ways:
  1. Focus on high-value activities such as research, design, and marketing, where the company enjoys a comparative advantage, and
  2. Outsource low value-added activities that can be reliably performed by others at lower cost, such as manufacturing.

**Principle 5: Return cash to shareholders when there are no credible value-creating opportunities to invest in the business.**

On inspection of the financial statements of companies, it seems as if these companies tend to sit on too much cash. When a company has large amounts of excess cash with limited value-creating investment opportunities, it is better to distribute some of the cash to its shareholders, because executives might end up making investments that do not add value, and in particular ill-advised, overpriced acquisitions. By giving the investors a portion of the cash back, the shareholders will be able to invest the cash in other value-added investments. Companies also buy their own shares back in order to increase EPS, but such an increase does not indicate whether a share buyback makes economic sense. It is only when a company's stock is trading below its estimated value, as determined by its management, and no other internal investment opportunities exists, that a share buyback is a good option. Dividends are the best option when a company's shares are too expensive, and there is no good long-term value to be added through investing in the business.

**Principle 6: Reward CEOs and other senior executives for delivering superior long-term returns.**

There are three reasons why standard stock options are an imperfect vehicle for motivating long-term, value-maximising behaviour:

1. Standard stock options reward performance well below superior return levels. In a rising market, executives realise gains from any increase in share price.
2. The typical vesting period for stock options is between three and four years, and coupled with executives' inclination to cash out early, the long-term motivation that is intended with stock options is diminished.
3. When options are hopelessly below strike price, the ability of these stock options to motivate all, is lost.

Rappaport (2006:72) recommends an adoption of either a discounted indexed-option plan or a discounted equity risk option plan (DERO). By adopting an indexed-option plan, executives are only rewarded when the company's shares outperform the index of the company's peers, and not simply because the market is rising. Vesting periods can be extended and executives can be required to hang on to a meaningful fraction of the equity stakes obtained from exercising the options.

**Principle 7: Reward operating-unit executives for adding superior multi-year value.**

Most share option schemes are developed for the company's executives, but are inappropriate for rewarding operating-units executives because of the limited effect these operating-unit executives have on the overall company performance. Usually, these operating-unit executives are rewarded through annual and long-term incentive plans which are usually linked to the budget, but not to long-term cash flow that produces shareholder value. Shareholder Value Added (SVA) is a metric that can be developed as an incentive for an operating unit. SVA is calculated by applying standard discounting techniques to forecast operating cash flow, and then subtracting investments made during the period. SVA is totally focused on cash flow, and to ensure long-term performance, the evaluation period should be extended to a rolling multi-year cycle. A portion of the incentive payout can then be banked for future years when the operating-unit might be underperforming. SVA therefore eliminates budget-based thresholds, and standards are developed for superior year-to-year performance improvements, peer benchmarking, and performance expectations implied by the share price.

**Principle 8: Reward middle managers and front-line employees for delivering superior performance on the key value drivers that can be influenced by these employees.**

SVA is not an appropriate metric for middle managers and front-line employees because it does not provide day-to-day guidance on how to increase SVA. Rappaport (2006:74) suggests focusing on three to five leading indicators and at the same time capturing an important part of the indicators' long-term value-creation potential. Improving leading-indicator performance is the foundation for achieving greater SVA, which in turn provides increased long-term shareholder value.

**Principle 9: Require senior executives to bear the risk of ownership just as shareholders do.**

The biggest risk with rewarding executives with stock options is that it becomes a short-term focus on results, which neglects long-term investments. In order to better align executives' interest with shareholders' needs, a company must find a proper balance between the benefits of requiring executives to have meaningful and continuing ownership stakes and the resulting restrictions on the executives' liquidity and diversification. If executives have no equity-based incentives, they may become excessively risk averse to avoid failure or possible dismissal, while too much equity might also nudge executives away from risk to preserve the value of their largely undiversified portfolios. Two other possible ways of balancing executives' and shareholders' risks are to extend the period before executives can unload shares through the exercise of options, and not to count restricted grants as shares.

**Principle 10: Provide investors with value-relevant information.**

Companies must better inform their shareholders, and not only make use of the traditional financial reports to dispel short-term earnings obsessions and at the same time lessen investor uncertainty. This will contribute towards reducing the cost of capital and increasing the share price. Rappaport (2006:74) developed a "Corporate Performance Statement", and this statement does the following:

- It separates out cash flow and accruals, thus providing a historical baseline for estimating a company's cash flow prospects and enabling analysts to evaluate how reasonable accrual estimates are.
- It classifies accruals with long cash-conversion cycles into medium and high levels of uncertainty.

- The Corporate Performance Statement provides a range and the most likely estimate for each accrual, whereas the traditional single point estimates ignore the wide variability of possible outcomes.
- Depreciation and amortisation, which are arbitrary, value-irrelevant accruals, are excluded.
- Assumptions and risks for each line item are detailed, and at the same time, key performance indicators which drive the company's value are presented.

One might argue that disclosing such information might be too costly, but this is an ideal opportunity for the management of a company to show that management has a clear grasp of the business, and at the same time to create value by improving the form and content of corporate reports.

Rappaport (2006:76) is of the opinion that value-creating growth is *the* strategic challenge for most organisations, and to succeed, companies must be good at developing new potentially disruptive businesses. The bulk of companies' share price reflects the expectation for the growth of a company's current business and if these expectations are met, shareholders will earn a normal return. But what must a company do to deliver superior long-term returns? To achieve superior long-term returns, a company must be able to increase its share price faster than that of its competitors, and this is achieved by either constantly exceeding market expectations or through new business opportunities. A company that is focused on creating long-term shareholder value is a first mover in a market and creates formidable barriers to entry through scale or learning economics, positive network effects, or through reputational advantages (Rappaport, 2006:77).

Lawrie (2003:1) states that when EVA is used in conjunction with the Balanced Scorecard approach, the resulting hybrid tool can be a powerful basis for encouraging organisational change and performance improvement. According to Lawrie (2003:5), EVA and a Balanced Scorecard are both tools that have valuable application potential to help managers to focus more effectively on the creation of shareholder value. While EVA is efficient at tracking the relative value-generating performance of an organisation, the Balanced Scorecard is a powerful complementary tool which is useful to guide the management of strategic and operational plans intended to trigger the value-generating improvements sought (Lawrie:2003:5).

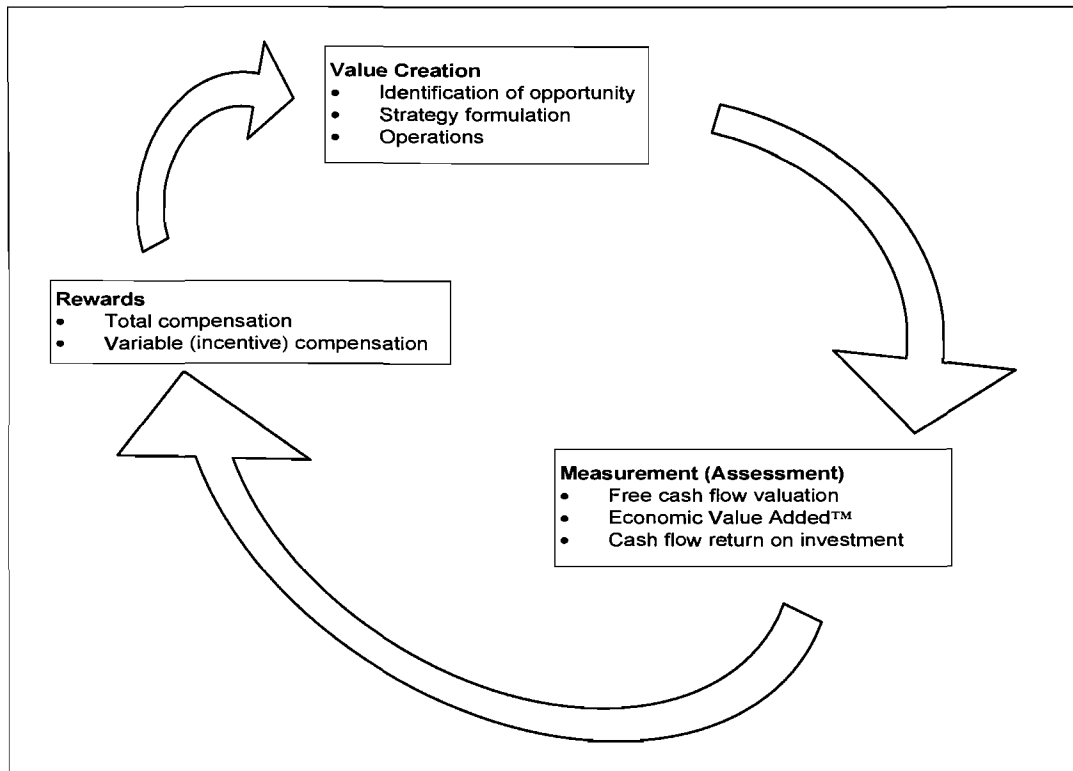
Stewart (1999:299) suggests the following actions that management must take to enhance value:

- Increase the sustainable level of fundamental profits derived from the company's Net Operating Profit After Tax (NOPAT).
- A sensible target capital structure must be adopted that employs greater proportions of debt than what is currently employed.
- Methods to step up capital spending in businesses where attractive returns can be earned must be identified.
- Capital must be withdrawn from businesses in which inadequate returns are being earned on the potential net exit proceeds.

Initially, a company's income statement (profitability) ratios are the key value drivers in determining shareholder value creation, but as a company becomes an established wealth creator and improves its performance, profitability ratios become less important (Hall, 2002:18). After that stage, efficient financing of the balance sheet, efficient fixed assets and working capital management become top priorities in driving shareholder value (Hall, 2002:18).

The creation of shareholder value must be sustainable. It is no good creating value in one year, and the following year all the hard work of the previous year is nullified because of a lack of focus. Value is created over time as a result of a continuing cycle of strategic and operating decisions (Martin & Petty, 2000:6). VBM systems are based on the fundamental premise that in order to sustain the wealth creation process, managerial performance must be measured and rewarded using metrics than can be linked directly to the creation of shareholder value (Martin & Petty, 2000:6). The key elements of a VBM system designed to build and support a sustainable cycle of creation can be seen in Diagram 2.3.

**Diagram 2.3: Constructing a sustainable cycle of value creation**



(Source: Adapted from Martin & Petty, 2000:6)

### 2.2.6 Value drivers

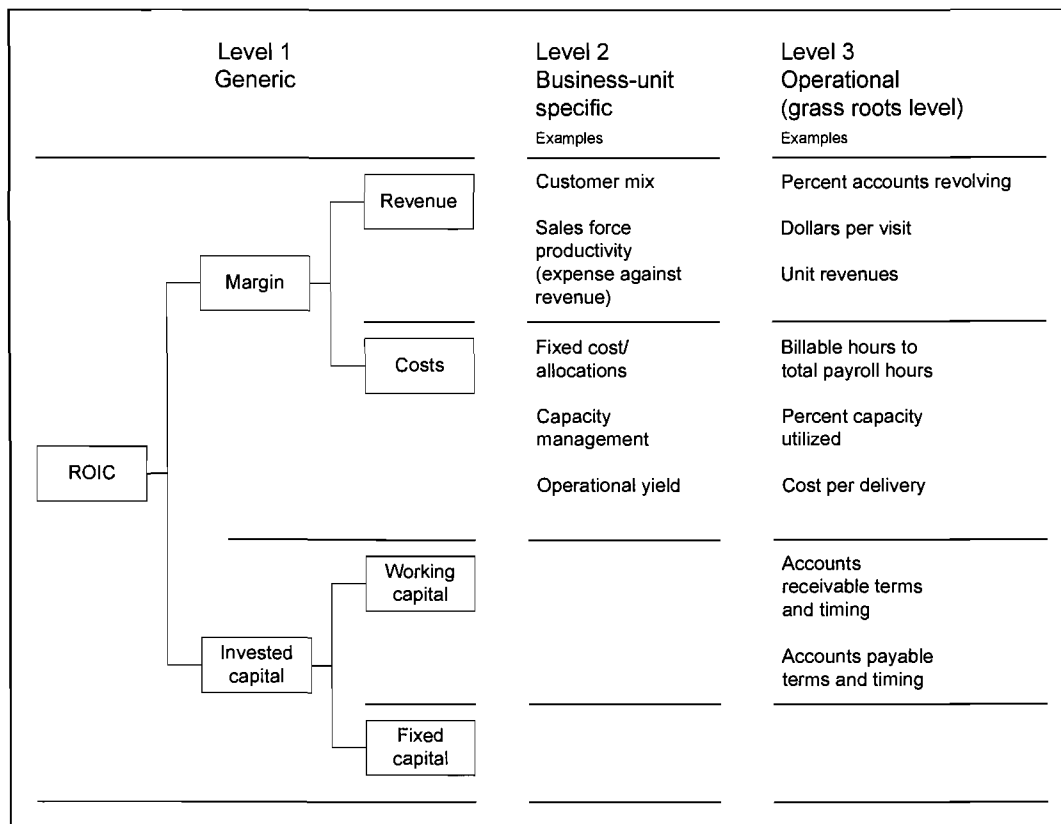
A deep understanding of what the performance variables are that actually create the value of the business is a very important aspect of VBM. Koller (1994:91) states that such an understanding is essential because an organisation cannot act directly on value, but has to act on the things that it can influence such as customer satisfaction, cost, capital expenditures and production factors. Through these drives senior management learns to understand the rest of the organisation.

These performance variables are known as value drivers, and these variables can be anything that affects the value of the company. Koller (1994:91) defines the following three levels of drivers:

- Generic, where operating margins and invested capital are combined to compute ROIC.
- Business unit, where variables such as customer mix are particularly relevant.
- Grass roots, where front-line managers' drivers are precisely defined and tied to specific decisions.

Diagram 2.4 shows the value drivers and the different levels at which these drivers are relevant.

**Diagram 2.4: Levels of value drivers**



(Source: Koller, 1994:91)

It is important to remember that these value drivers need to be frequently reviewed because of changes within the organisation as well as external influences, such as competitors' actions, economic changes, regulatory changes et cetera. The process of identifying key value drivers can be difficult, because it requires an organisation to think about its processes in a different way, and according to Koller (1994:95), existing reporting systems are often not equipped to supply the necessary information.

It also requires a different and creative way of thinking, and it is a cumbersome process of trial and error until the right value drivers are identified. Hall (2002:20) writes that value drivers depend on each company's unique situation and that value drivers need to be broken down to operating level. It is just as important to remember that value drivers should not be considered in isolation, because many

of these value drivers are somehow linked to each other, and by focusing on one only, might have a negative effect on another one.

Koller (1994:95) suggests scenario analysis as a valuable tool to understand the interrelationships among value drivers and to assess the impact of different sets of mutually consistent assumptions on the value of a company or its business units.

Stewart (1999:299) identified six essential factors that collectively account for the intrinsic value of a company of which the following four are under the control of management:

- NOPAT.
- The tax benefit of debt associated with management's target capital structure.
- The amount of new capital invested for growth in a normal year of the investment cycle.
- The after-tax rate of return expected from new capital investments.

The following two factors are beyond management's control:

- Weighted cost of capital (WACC); and
- The future period of time over which investors expect management will have attractive investment opportunities.

### **2.2.7 Share price**

Rappaport and Mauboussin (2001:9) list three pervasive misconceptions in the investment community that lead investors to chase the wrong expectations:

1. The market is short-term.
2. Earnings per share (EPS) dictate value.
3. Price-earnings multiples determine value.

The reality of the misconceptions is:

1. The market takes the long view.
2. Earnings tell very little about value.
3. Price-earnings are a function of value.

Share prices are influenced by all kinds of news or information such as new data on employment, manufacturing, directors' dealings, political events or even the

weather (The London Stock Exchange, 2007). The London Stock Exchange (2007) has grouped factors that influence stock prices into six groups:

- The economy: The health of the global economy has a primary influence on share prices and the stock market will anticipate moves in the economy by around six to nine months.
- Company news: News put out by companies can influence share prices.
- Analysts' reports: Independent analysts' reports can influence share prices.
- Press recommendations: Sentiments from journalists can either have a positive or a negative effect on share prices.
- Sentiment: Investor sentiment is almost impossible to predict and can be influenced by a wide variety of factors.
- Technical influences: Share prices can be influenced by a variety of technical reasons that has nothing to do with the actual outlook for an individual company or the market itself. A common technical influence is profit taking after a strong rally.

The economic factor listed by the London Stock Exchange (2007) is the major factor that influences stock prices. Farsio *et al.* (2000:117) list five economic factors in the USA that have created unprecedented amounts of wealth accumulation and changed the manner in which investors make investment decisions:

- Economic expansion
- Consistently rising disposable personal income
- Low unemployment
- Inflation
- Interest rates

The advent of the Internet and the ability to trade securities via the Internet made investment information and services available and affordable for the general public (Farsio *et al.*, 2000:117). According to Farsio *et al.* (2000:118), investors have increasingly adopted the practice of investing in companies specifically for the capital appreciation possibilities, focusing on projected growth rates while ignoring poor performance indicators such as negative earnings.

Shareholder value and stock prices are driven by changes in expectations about future cash flows. Even when earnings growth is reported, and with an increase in

shareholder value, it can trigger reduced investor expectations and a fall in the stock price, because stock prices are remotely related to earnings growth (Rappaport & Mauboussin, 2001:16). Rappaport and Mauboussin (2001:71) offer the following aspects to look at when reading expectations:

- Cash flows: Determine market consensus forecast for the operating value drivers (shown in Diagram 2.4).
- Cost of capital: Estimate the WACC by making use of various sources. In South Africa, McGregor BFA can be used to obtain such types of financial information.
- Non-operating assets and debt: The only liability that is not listed in the balance sheet is employee stock options. It has become more relevant over the last couple of years and if already granted, it must be treated as debt. Estimated future grants must be treated as expenses.
- Market-implied forecast period: This is the number of years of free cash flows required to justify the stock price. It is the market's expectation of how long a company will be able to generate economic profits.

A counter-argument could be made against the third point of Rappaport and Mauboussin, because the moment that a share option cost is treated as a cost, a balance sheet item is mixed with an income statement item. A share option is simply an issue of shares that dilutes the interest of the existing shareholders and has nothing to do with expenses.

According to Stewart (1999:2), there is an overwhelming body of established academic research that proves that accounting measures of performance is only coincidentally related to share price and are not the primary determinants. The academic evidence proves that cash, adjusted for time and risk, which investors can expect to get back over the life of the business, truly determines the share price (Stewart, 1999:2). To use EPS, which is the accounting model of valuation, as a measure of value is very unreliable. This can be explained by a simple example. Traditionally, a company's share price would be set by capitalising a company's EPS at an appropriate price/earnings (PE) multiple. If, for example, a company's EPS is R5, and its PE is 10 times, its share price would be R50, based on the accounting model. Should the EPS drop to R2, its share price would drop to R20. This is hardly realistic, because the accounting model assumes that PE remains constant, but there are so many variables that can influence the PE ratio. Factors that can influence PE are mergers and acquisitions, divestitures, changes in

financial structure and accounting policies, and new investment opportunities (Stewart, 1999:22).

Ferguson, Rentzler and Yu (2005:111) conducted a study by using event study methodology to investigate whether firms adopt EVA due to poor stock performance and whether adopting EVA leads to better stock performance. Ferguson *et al.* (2005:111) found that there was insufficient evidence to conclude that poor stock performance leads a firm to adopt EVA or that adopting EVA improves stock performance. What Ferguson *et al.* (2005:111) did find was that firms that adopted EVA appeared to have above-average profitability relative to peers both before and after adopting EVA. There was some evidence that EVA adopters experienced increased profitability relative to peers following adoption. Farsio *et al.* (2000:118) found that EVA might be one of the poorest measures available to indicate stock performance and explains only a fraction of the variability in stock return fluctuations.

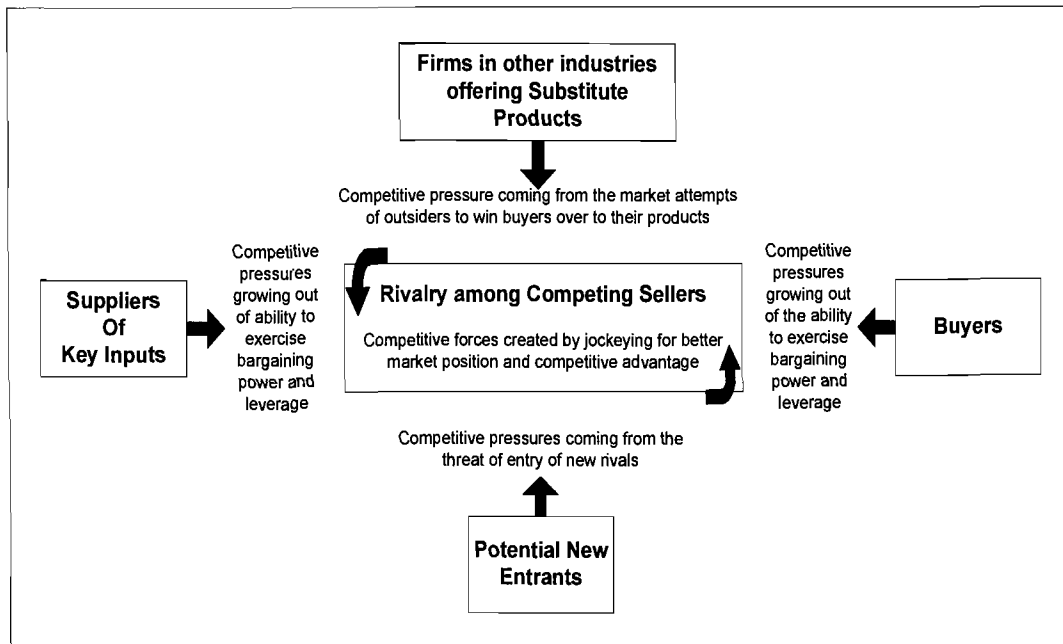
### **2.2.8 Value-based management and strategy**

Developing strategies that will create shareholder value is not a new concept. In 1986, Rappaport (1986:58) wrote: "Management has been coming under increasing pressure to select and implement strategies that will create value for shareholders."

Formulating a strategy is about deciding where the organisation is today and where the organisation should be in the future. In formulating a strategy, the attractiveness of the industry and the position of the business vis-à-vis its competitors must be analysed. This analysis then seeks to understand how alternative strategies might affect the industry attractiveness and the company's position relative to its competitors. In order to estimate what the economic value of alternative strategies is, a strategy valuation analysis must be done (Rappaport, 1986:60).

There are numerous methods and models available to assist in formulating a strategy, but the most powerful and widely used tool is Porter's five forces model of competition (Thompson *et al.*, 2007:54). Porter's five forces model provides an economically sound, systematic framework for analysing industry attractiveness (Rappaport, 1986:61). The five forces model (Diagram 2.5) holds that the state of competition in an industry is a composite of competitive pressures operating in five areas of the overall market (Thompson *et al.*, 2007:54).

**Diagram 2.5: Porter's Five Forces model**



(Source: Adapted from Kotzé, 2007:40)

The five areas that the model looks at are the following:

- Rivalry among competing sellers. These are the competitive pressures associated with the jockeying among rival sellers for better market position, increased sales and market share, and competitive advantage.
- Threat of firms in other industries offering substitute products. Firms selling substitute products are a threat because these firms are trying to win buyers over to the substitute products.
- Threat of suppliers of raw material, parts, components, or other resources or inputs. The strength of this force depends on whether the major suppliers can exercise sufficient bargaining power, and the nature plus extent of supplier-seller collaboration in the industry.
- Threat from buyers. The strength of this force depends on whether some buyers have sufficient bargaining leverage to obtain price concessions and other favourable conditions, and the extent plus competitive importance of seller-buyer strategic partnerships.
- Threat from potential new entrants. The strength of this force depends on the barriers to entry and the expected reaction of existing firms to new entry.

These five forces of competition govern shareholder returns because they influence prices, quantities sold, costs, investment, and the level of risk that firms carry in an industry. These variables are the building blocks for the value-driver determinants of shareholder value (Rappaport, 1986:61).

The role of the driving forces analysis in strategy-making is threefold (Kotzé, 2007:38):

- It indicates which factors will have the greatest impact on the company's business in the next 1 to 5 years.
- In order to be able to match strategy to emerging conditions, the contribution that the different driving forces will make have to be assessed.
- A strategy must be crafted that is responsive to and deals with the driving forces.

A strategy can be developed on two levels, namely corporate level and business unit level, but both these strategies must have one thing in common – maximising value. At corporate level, the strategy is explicitly developed to maximise the overall value of the company. The corporate strategy primarily focuses on what business to be in, how to exploit potential synergies across business units, and allocating resources across businesses (Koller, 1994:86). A business-unit strategy is developed after alternative strategies have been valuated and the one that would create the most value has been identified. The chosen strategy should explain how the business unit will achieve a competitive advantage that will permit the unit to create value (Koller, 1994:96).

### **2.2.9 Corporate governance and shareholder value**

Recent accounting scandals such as Enron, HealthSouth, Tyco and WorldCom have shaken the confidence of investors. A crucial criterion for a company's valuation is better corporate governance, which is considered a guarantee of the credibility of its financial and accounting reports (El Mir & Seboui, 2006:242). A survey conducted in 2002 by McKinsey (in El Mir & Seboui, 2006:243) showed that 15 per cent of investors consider corporate governance as more important than a firm's financial issues, such as profit performance or growth potential.

El Mir and Seboui (2006:243) list sources such as Brown and Caylor (2005), Durnev and Kim (2005) and Drobetz *et al.* (2004) which suggest that good corporate governance leads to higher stock returns and, consequently, to higher

firm valuations. Accounting values are largely affected by managerial practices such as disclosure timing, window shadowing and earnings management, aimed at improving the looks and the image of the firm to its stakeholders and particularly to current and potential shareholders (El Mir & Seboui, 2006:243).

EVA seems to foster opportunistic behaviour in managers, and incite these managers to manipulate accounting numbers (El Mir & Seboui, 2006:244). This opportunistic behaviour has led the American Institute of Certified Public Accountants' (AICPA) Special Committee on Financial Reporting (2004) to require firms adopting EVA to further improve and detail their financial reporting (EL Mir & Seboui, 2006:244).

Gompers *et al.* in (EL Mir & Seboui, 2006:245) analysed the relationship between corporate governance and long-term equity returns, firm value and accounting measures of performances for the US market. The results from the research supports the hypothesis that well-governed companies outperform poorly-governed companies. Well-governed companies have higher equity returns, are valued more highly and the companies' accounting statements show a better operating performance. EL Mir and Seboui (2006:243) are of the opinion that the findings of Gompers *et al.* should encourage investors to consider corporate governance in investment decisions.

## **2.3 ECONOMIC VALUE ADDED**

### **2.3.1 Introduction**

EVA was launched by Stern Stewart & Co. in 1989. EVA is defined by Stewart (1998:192) as the internal measure of operating performance that best reflects the success of companies in adding value to the shareholders' investment. EVA is not a new concept; it is what economists has long called economic profit. The most important reason why companies should adopt EVA as the main corporate financial goal is that it is the only performance measure to tie directly to intrinsic market value (Stewart, 1999:3). Hall and Grant (in Hall, 2002:2) found that the market value of a company correlates best with the internal performance measurement of Economic Value Added (EVA), and therefore EVA is one of the best methods to express and quantify shareholder value creation.

It is thus clear that there are inconsistencies in the arguments, views and research of how good EVA is as a method to determine shareholder value. It seems from the literature, that EVA is good for determining shareholder value, but not very good in determining stock performance.

Ehrbar (1998:5) recommends that EVA should be employed to the fullest because it becomes far more than just another way of adding and computing profits. According to Ehrbar (1998:6), EVA is the following:

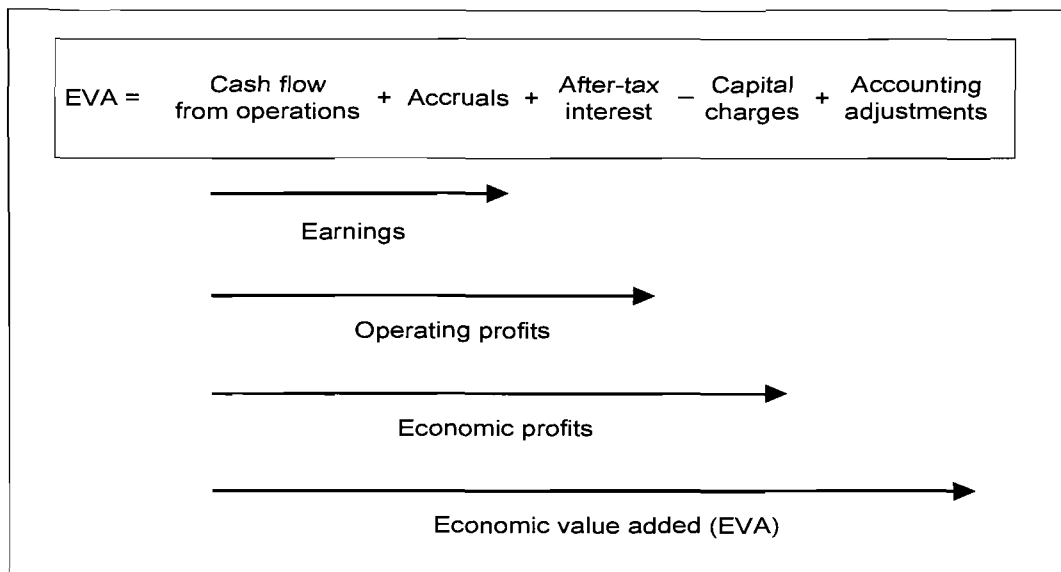
- The corporate performance measure that is tied most directly to the creation of shareholder wealth.
- The only genuine continuous improvement metric, and more, EVA is always unambiguously better for shareholders.
- The framework underlying a comprehensive new system of corporate financial management that guides annual operating budgets, capital budgeting, strategic planning, and decisions regarding acquisitions and divestitures.
- A simple but effective method for teaching business literacy to even the least sophisticated of workers.
- A method to truly align the interest of managers with those of shareholders and as a result, it makes managers think and act like shareholders.
- A method for companies to communicate their goals and achievements to investors, and a method for investors to identify companies with superior performance prospects.
- An internal system of corporate governance that motivates all managers and employees to work cooperatively and enthusiastically to achieve the very best performance possible.

Godrej in Dasgupta (2002:39) lists the following benefits of EVA as a VBM metric:

- Management:
  - Improvement in capital efficiency
  - Greater focus on tax optimisation
  - Greater focus on optimal capital structure
  - Improved strategic and scenario planning
  - More robust acquisition analysis tools
- Motivation:
  - Long-term focus
  - Greater alignment between shareholder and employee interests

The relationship between EVA and financial measure can be portrayed as follows:

**Diagram 2.7: Relations between EVA and other financial measures**



(Source: Martin & Petty, 2000:87)

Another benefit of EVA is that it has helped to make the key concepts of value and corporate finance accessible to general managers, and therefore has been an indispensable tool in advancing the wealth creating potential of business (Young, 2000:193).

Brewer *et al.* (1999:7) identified four limitations of EVA:

1. Size difference. A larger plant or division will tend to have a higher EVA relative to its smaller counterparts.
2. Financial orientation. Managers can manipulate EVA in various ways, three of which are the following:
  - o Revenue recognition can be manipulated by choosing which customer orders to fill and which to delay.
  - o Discretionary expenditure can be terminated to boost EVA.
  - o Completely depreciated assets may not be replaced because it lowers the asset base and ensures that no depreciation is charged, thereby increasing the EVA.
3. Short-term orientation. The generation of immediate results is overemphasised and therefore creates a disincentive for managers to invest in innovative

product or process technologies, because the benefits will only be realised in the medium or longer term.

4. Results orientation. EVA does not help in offering solutions to the non-accounting business managers who are responsible for continuously improving the value delivered to customers.

### 2.3.2 Calculating Economic Value Added

There are various methods or formulas for calculating EVA, and this section will focus on five of these methods. The first three formulas are examples of conventional methods of calculating EVA, while the last two formulas are alternative methods for calculating EVA.

The Eva formula according to Ehrbar (1998:3) is:

$$EVA = NOPAT - C\%(TC)$$

*Where*

*NOPAT = Net operating profits after taxes*

*C% = Percentage cost of capital*

*TC = Total capital*

The EVA formula according to Brigham and Ehrhardt (2005:110) is:

$$EVA = EBIT(1 - \text{Tax rate}) - (\text{Total net operating capital})(WACC)$$

*Where*

*EBIT = Earnings before interest and tax*

*WACC = Weighted average cost of capital*

According to Martin and Petty (2000:88), Eva is calculated as follows:

$$EVA = NOPAT - (k \times CAPITAL)$$

*Where*

*NOPAT = Firm operating profit after taxes but before financing costs and non-cash bookkeeping entries except depreciation*

*k = Firm's weighted average cost of capital*

*CAPITAL = Total cash invested in the firm over its life, net of depreciation*

It is clear that the above formulas are more or less the same, and thus a generic formula can be formulated for calculating EVA:

$$EVA = NOPAT - (Capital Employed \times Cost of Capital)$$

An alternative method of calculating EVA is to calculate EVA in terms of ROIC. Brigham and Ehrhardt's (2005:110) formula is:

$$EVA = (Operating\ capital)(ROIC - WACC)$$

*Where*

*Operating capital = The sum of net operating working capital and operating long-term assets. It is the total amount of capital needed to run the business.*

*ROIC = Is the ratio of NOPAT to total operating capital*

*WACC = Weighted average cost of capital*

Martin and Petty (2000:88) calculate EVA in terms ROIC as follows:

$$EVA = (r-k) \times CAPITAL$$

*Where*

*r = Firm's return on capital (NOPAT/CAPITAL)*

*k = Firm's weighted average cost of capital*

*CAPITAL = Total cash invested in the firm over its life, net of depreciation*

### **2.3.3 Net Operating Profit After Taxes**

As explained earlier, NOPAT is a company's net operating profit after tax. NOPAT is a proxy for the cash generated from recurring business activities, and the only non-cash item included is depreciation (Wolin & Klopukh, 2000:142). The reason for this, according to Wolin and Klopukh (2000:142), is because depreciation represents the best available estimate of the economic deterioration in invested assets.

### 2.3.4 Weighted Average Cost Of Capital

The Weighted Average Cost of Capital (WACC) is based on the percentages of debt and equity (common and preferred) and the cost of debt, the cost of stock for both common and preferred, and the corporate tax rate. The formula is as follows (Brigham & Ehrhardt, 2005:321):

$$WACC = w_d r_d (1 - T) + w_{ps} r_{ps} + w_{ce} r_s$$

Where

$w_d$	= weight of debt
$r_d(1 - T)$	= after-tax cost of debt
$w_{ps}$	= weight of preferred equity
$r_{ps}$	= cost of preferred equity
$w_{ce}$	= weight of common equity
$r_s$	= cost of common equity

When estimating the WACC of a company, the weights used should be based on market values, not book values (Brigham & Ehrhardt, 2005:322).

### 2.3.5 Capital

Capital is defined by Peterson (2000:79) as the sum of net working capital, net property and equipment, goodwill, and other assets. Total net operating capital as used by Brigham and Ehrhardt, is defined as net operating working capital (NOWC) plus operating long-term assets (Brigham & Ehrhardt, 2005:104). NOWC is defined as operating current assets (cash, accounts receivable and inventories) less operating current liabilities (accounts payable and accruals) (Brigham & Ehrhardt, 2005:104). Total net operating capital can also be calculated by adding up the funds provided by investors, such as notes payable, long-term bonds, preferred stock, and common stock (Brigham & Ehrhardt, 2005:104).

### 2.2.6 Equity Equivalents

In order to convert NOPAT and Capital from an accounting book value to an economic book value, certain adjustments need to be made. These adjustments are called equity equivalents (EE) by Stern Stewart & Co. (Martin & Petty, 2000:90), and there can be some 160 or so possible equity equivalents for a particular firm. Martin and Petty (2000:92) have compiled a list of the most important equity equivalents for calculating NOPAT, and these can be seen in Table 2.3. Both a financing and an operating perspective yield the same results for NOPAT.

**Table 2.3: Measuring a firm's NOPAT**

<b>Computing NOPAT</b>	
<b>Financing perspective</b>	<b>Operating perspective</b>
Income available for common stockholders	Net operating profits before taxes (NOPBT) excluding unusual losses or gains
+ Interest expense after taxes	+ Implied interest on non-capitalised leases
+ Implied interest expense on non-capitalised leases after taxes	- Cash taxes
- Interest and other passive investment income after taxes	[Provision for income taxes
+ Preferred dividend	- Increase in deferred tax reserve
+ Minority interest provision	+ Marginal taxes saved (paid) on unusual losses (gains)
	+ Marginal taxes saved on interest expense on debt and implied interest on non-capitalised leases
	+ Marginal taxes paid on interest and other passive investment income]
+ Changes in equity equivalents	+ Changes in equity equivalents
Increase in deferred tax reserve	Increase in LIFO reserve
Increase in LIFO reserve	Increase in bad debt reserve
Goodwill amortisation	Goodwill amortisation
Increase in bad debt reserve	Increase in (net) cumulative expensed intangibles, e.g. R&D and product development
Increase in (net) cumulative expensed intangibles, e.g. R&D and product development	Increase in other reserves, such as inventory obsolescence, warranties, deferred income
Unusual loss (gain) after taxes	
Increase in other reserves, such as for inventory obsolescence, warranties, deferred income	
= NOPAT	= NOPAT

(Source: Martin & Petty, 2000:92)

Martin and Petty (2000:92) have also compiled a list of the most important equity equivalents for calculating Capital, and this can be seen in Table 2.4. Once again, both a financing and an operating perspective yield the same results for capital.

Martin and Petty (2000:90) recommend that only 10 to 15 adjustments be made. Wolin and Klopukh (2000:143) note that every EE adjustment applied to NOPAT has a corresponding adjustment to capital. According to Martin and Petty (2000:90), there are only three reasons for making adjustments:

1. In order to convert from accrual to cash accounting.
2. Market-building expenditures that have been expensed in the past must be capitalised.
3. Removal of cumulative unusual losses or gains after taxes.

**Table 2.4: Measuring a firm's CAPITAL**

<b>Computing CAPITAL</b>	
<b>Financing perspective</b>	<b>Operating perspective</b>
Common equity + Interest-bearing debt + Present value of non-capitalised leases + Capitalised leases – Marketable securities and construction in progress + Preferred stock + Minority interest + Equity equivalents Deferred tax reserve LIFO reserve Bad debt reserve Cumulative goodwill amortisation Unrecorded goodwill (Net) cumulative expensed intangibles, for example R&D and product development Cumulative unusual loss (gain) after taxes Other reserves, such as for inventory obsolescence warranties, deferred income = CAPITAL	Total assets – Marketable securities and construction in progress – Non-interest-bearing current liabilities + Present value of non-capitalised leases  + Equity equivalents LIFO reserve Bad debt reserve Cumulative goodwill amortisation Unrecorded goodwill (Net) cumulative expensed intangibles, for example R&D and product development Cumulative unusual loss (gain) after taxes Other asset-contra reserves, such as for inventory obsolescence, warranties  = CAPITAL

(Source: Martin & Petty, 2000:92)

Wolin and Klopukh (2000:143) state that the exercise of applying equity equivalents can reveal whether a company is conservative or aggressive in managing its earnings.

### **2.3.7 Return on Invested Capital**

As mentioned in Chapter 1, Return On Equity is not a good measure for return on shareholder investments, because ROE suffers from accounting and financing distortions. Stewart (1998:85) recommends using the rate of return on total capital in order to assess corporate performance. The formula for rate of return on capital (ROIC) is:

$$ROIC = \frac{NOPAT}{CAPITAL}$$

NOPAT and Capital can be calculated from either a financing or an operating perspective. When calculating the rate of return on capital from a financing perspective, Steward (1998:87) suggests the following:

- Add all interest-bearing debt (plus the present value of non-capitalised leases) to common equity, and the interest expense on the debt to the bottom-line accounting profit. This is done to remove the effect of gearing up the capital structure with debt and the result is the earnings that would have been reported if the company was 100 per cent equity funded. The tax benefit from debt is therefore properly taken into account.
- Other financing distortions must be eliminated by adding the equity provided by preferred stockholders and minority investors to capital and by adding the cost of these sources back into NOPAT. NOPAT is therefore now totally unaffected by the capital structure.
- Accounting distortions are eliminated by adding equity equivalent reserves to capital, and the periodic charge in such reserves to NOPAT. Equity equivalents are added back to capital in order to convert from accrual accounting to cash accounting.

From an operating perspective, capital can be defined as net working capital plus net fixed assets, where net working capital is the current assets net of non-interest-bearing current liabilities (Stewart, 1994:92). Non-interest-bearing current liabilities are accounts payable and accrued expenses that arise as spontaneous sources of financing and do not require additional permanent capital. Net fixed assets include net property, plant and equipment, goodwill and other long-term capital required to run the business. Certain equity-equivalent reserves, such as LIFO reserve, bad-debt reserves, cumulative amortisation of goodwill and capitalised intangibles, must be added back into capital, in order to convert from accrual accounting to cash accounting. Under the operating perspective, NOPAT is the operating profit, after taxes payable in cash.

## **2.4 INCREASING VALUE**

This section looks at various methods of increasing shareholder value. The methods listed might be from a company's perspective, but potential investors can also evaluate companies in terms of these methods. Investors can, by evaluating historical data, media reports, visiting the companies' websites and by contacting the prospective company, determine whether the company does apply these methods to increase

shareholder value. The first part will look at some general methods, and then, the rest of the section will look at three specific methods – adding value through customers, activity-based costing, shared services – and the capital structure of the company.

#### **2.4.1 In general**

Hall (2002:19) suggests the following actions to improve profitability margins in a company:

- Increase gross profit margin by lowering the cost of sales through more efficient production.
- Optimise inputs and substitute inputs without affecting product quality.
- Reduce operating expenses by calculating and monitoring (reducing) the ratios of various operating costs to output (sales).
- Achieve relevant economies of scale for each activity.
- Introduce mechanisms to improve the rate of learning.
- Eliminate overheads that do not add value to products.

Company tax rate is another variable that influences a company's shareholder value. Although the company tax rate is set by fiscal authorities, Hall (2002:19) recommends that a company should see to it that all available tax incentives and deductions are used to the fullest extent. Weissenrieder (2004:5) lists three major tax effects to consider in all types of investment calculations, either in the cash flow statement or in the WACC:

1. Tax shield on Operating Surplus. This is the tax on sales minus cash-related costs.
2. Tax shield from Debt. There is a positive effect from debt because interest payments are tax deductible, and therefore debt is cheaper than equity.
3. Tax shield from Depreciation. Depreciation is treated as a cost when calculating tax, resulting in lowering the taxable income.

Actions recommended by Hall (2002:20) for working capital investment:

- Minimise cash balances.
- Manage accounts receivable to reduce the average number of days for debt outstanding.
- Increase inventory turnover.
- Maximise use of non-interest-bearing current liabilities such as creditors and taxes.

According to Hall (2002:20), the following actions are recommended for fixed capital investment:

- Promote policies to increase utilisation of fixed assets.
- Obtain productivity-increasing assets by means of prudent project or investment evaluation techniques, such as net present value (NPV).
- Sell unused or under-utilised fixed assets if possible.
- Set levels of utilisation or returns on assets employed.

Ray (2001:66) suggests that the missing link between EVA and improved financials is productivity, incrementally aided by a well-documented measurement effect. Ray (2001:69) states that an increase in value added can be attained by either decreasing the firm's cost of capital or by increasing its productivity. Ray (2001:69) lists the following factors than can increase productivity:

- Innovation
- Technology
- Human capital investment
- A myriad of other factors

By using value-based management principles, a company can also create value in the way that it manages its own buildings. With VBM, the focus must not only be on the obvious cost, but value-added management must also find ways to reduce hidden costs, even costs that most property managers do not traditionally think of as operating costs (Palzer, 1996:46). Palzer (1996:44) suggest that water and electrical retrofits, in-house labour, trash compacting and property taxes are methods to reduce cost and therefore add value.

#### **2.4.2 Adding value through customers**

The only value that a company will ever create is the value that comes from the current and future customer (Peppers & Rogers in Cokins, 2006:2). Rappaport (1998:8) states that without customer value, there can be no shareholder value. Customer perceived value is defined as the difference between total customer value and total customer cost (Kotler & Armstrong, 2006:13). Customers do not buy products or services; customers buy value, the total package of product performance, access, experience and cost (Kothari & Lackner, 2006:243). Companies that understand how customers define value across the aforementioned dimension consistently achieve superior long-term profitable

growth. Such an understanding leads companies to create value propositions that are focused on how products perform rather than on the elements of an offering that create value for the customer (Kothari & Lackner, 2006:243).

More advanced analytical organisations, according to Cokins (2006:3), have become competent in measuring customer profitability, through activity-based costing methodology and its supporting software technologies, to trace the unique costs of customers, channels, services and products. Business is no longer just about increasing sales; it is about increasing the profitability of sales, and companies must start to identify the difference in cost to serve between different types of customers (Cokins, 2006:1). Improving shareholder wealth through a customer-oriented strategy should focus on three factors: costs, potential customer value and customer needs. Understanding long-term potential value requires that customers are viewed as investments, and as with equity stocks, some customers might be big time winners and some might end up being losers (Cokins, 2006:4).

According to Cokins (2006:8), a company must determine, through sensitivity analysis, how much to spend on valuable customers, because in some cases, excess spending can lead to the destruction of shareholder wealth, while insufficient spending on a customer can also harm shareholder wealth. Rappaport (1998:8) is also of the opinion that providing customer satisfaction does not automatically translate into shareholder value, if the total long-term cost, including the cost of capital, is greater than the cash generated by the sale. Rappaport (1998:8) warns that if customers are subsidised by shareholders (for example, when customers do not accept higher prices for better quality and service delivery), the shareholders become the ultimate losers. Rappaport (1998:8) recommends that, when there is a conflict between customer value and shareholder value, management should resolve the conflict in favour of shareholders and the long-term viability of the business.

Cokins (2006:9) suggest that a business strategy to manage a company's customer portfolio in order to reward shareholders must facilitate revenue growth, and will generally pursue the following objectives:

- Identify, understand and address the best (and worst) customers.
- Target and sell existing products and services to existing customers.
- Target prospective customers that are similar to most valuable existing customers.

- Develop compelling new product and service offerings, price schemes and marketing programmes for the entire customer portfolio, but focus first on high-value customers.
- Retain the most valuable customers.
- Increase wallet share for customers with high potential customer lifetime value.
- Develop an organisational brand and image aimed at attracting high-value customers.

Customer lifetime value (CLV) is defined by Kotler and Armstrong (2006:19) as the value of the entire stream of purchases that the customer would make over a lifetime of patronage.

### **2.4.3 Activity-Based Costing**

Under the traditional approach to costing a product, overheads are generally allocated to production activities on the basis of direct labour hours or machine hours. The total estimated overhead costs are divided by the budgeted direct labour hours and an overhead rate is established. The problem with this approach is that direct labour hours as a percentage of total cost has fallen dramatically over the past decade. Through, for example, the introduction of advanced manufacturing technology and other productivity improvements – to where direct labour as a percentage of total cost is as low as 7 to 10 per cent of total manufacturing costs in many industries (Chase *et al.*, 2004:714). Chase *et al.* (2004:714) warn against this traditional approach, because it can lead to questionable investment decisions. According to Chase *et al.* (2004:714), activity-based costing techniques have been developed to alleviate these problems by refining the overhead allocation process to more directly reflect actual proportions of overheads consumed by the production activity.

Activity-based costing (ABC) is defined by Garrison *et al.* (2006:314) as a costing method that is designed to provide managers with cost information for strategic and other decisions that potentially affect capacity and therefore “fixed” as well as variable costs. Activity-based costing is not a replacement of a company’s usual financial accounting system, but supplements it.

A recent survey done by BetterManagement.com (in Datamonitor, 2006:3) found that Activity-based costing/Activity-based management (ABM) is flourishing as a methodology for improving business process management (BPM) results. Eighty

seven per cent of the 520 companies surveyed are doing or are seriously considering ABC/ABM to provide a more complete picture than traditional cost accounting. Datamonitor (2006:3) lists three reasons why ABC/ABM has become popular:

1. Economic downturn. Companies operating in a depressed economy tend to focus resources on existing customers, rather than seeking new customers. ABC helps to sort the profitable customers from the loss-making customers and helps to figure out ways to raise profits without drastically increasing prices.
2. Driver-based budgeting. Traditional budgeting is largely based on gut feel, and ABC is now seen as a subset of driver-based budgeting.
3. Customer intelligence and valuation. ABC helps companies to better understand the value that customers bring to the bottom-line.

According to Garrison *et al.* (2006:315), the following takes place in activity-based costing:

- Non-manufacturing as well as manufacturing costs may be assigned to products.
- Some manufacturing costs may be excluded from product costs.
- A number of overhead cost pools are used, each of which is allocated to products and other cost objects and uses its own unique measure of activity.
- The allocation base often differs from those used in traditional costing systems.
- The overhead rates, or activity rates, may be based on the level of activity at capacity rather than on the budgeted level of activity.

One of the major benefits of activity-based costing is that it can be used to identify areas that would benefit from process improvements. ABC software, from a business standpoint, allows managers to see which products or services are profitable or losing money (Datamonitor, 2006:2). Activity-based management is used in conjunction with activity-based costing to improve processes and reduce cost and is used in organisations as diverse as manufacturing companies, hospitals, and the U.S. Marine Corps (Garrison *et al.*, 2006:335).

Activity-based costing has certain limitations. Implementation requires substantial resources, and once implemented, it is more costly to maintain than a traditional costing system, because data about numerous activity measures must be periodically collected, checked, and entered into the system (Garrison *et al.*, 2006:338). ABC reports do not conform to generally accepted accounting

principles, and therefore a company requires two costing systems: one for internal reporting and one for external reporting (Garrison *et al.*, 2006:338). This has additional cost implications and the benefits of increased accuracy must not outweigh these costs.

The greatest leverage for improving Return On Investment (ROI) or EVA may come from making decisions not at the business unit, or corporate level, but at the levels of activities, products, and customers (Kaplan & Atkinson, 1998:520). EVA and ABC were developed to solve a distortion in the financial reporting of company economics. EVA corrected the failure of financial accounting statements to recognise the cost of capital as an economic expense before arriving at a profitability figure. ABC was developed to correct arbitrary allocations of factory overheads to products and the failure to assign other indirect expenses to product and customers (Kaplan & Atkinson, 1998:523).

Managers obtain a clearer map of economic profitability and losses when ABC and EVA are used together. Managers can direct attention and specific actions through operational and strategic activity-based management to operations where economic losses are incurred, and managers can retain, protect, and expand economically profitable operations (Kaplan & Atkinson, 1998:523).

#### **2.4.4 Shared Services**

A company can save costs by either outsourcing certain activities or by creating a shared services centre. Outsourcing has become a popular method by companies to reduce costs. The two big drivers for outsourcing, according to Thompson *et al.* (2007:175), are that outsiders can often perform certain activities better or cheaper, and outsourcing allows a firm to focus its entire energies on those activities at the centre of its expertise. These activities are the most critical to the company's competitive and financial success. The biggest risk with outsourcing is that a company will farm out too many or the wrong types of activities and thereby hollow out its won capabilities (Chase *et al.*, 2007:175).

Shared services are defined by Goh *et al.* (2007:252) as a collaborative strategy whereby the staff functions of a firm are concentrated in a semi-autonomous organisation and managed like a business unit competing in the open market to promote greater efficiency, value creation and improved services for internal customers. Advances in technology and telecommunications have enabled

companies to consolidate administrative and financial activities across multiple geographical boundaries (PriceWaterHouseCoopers, 2007). A shared services environment allows companies to standardise on best-in-class operating models by employing specialist staff with key skills and driving through process automation that generates significant cost savings (PriceWaterHouseCoopers, 2007).

SunGard (2007:3) argues that the new focus on shared services, which can result in much larger dividends, is on driving sustained strategic benefits such as improved business performance, ensured regulatory compliance and enduring competitive advantage. A shared services centre is in effect a stand-alone business dedicated to serving internal customers across the enterprise. Such a centre creates the opportunity for focus and for building and sustaining an enterprise centre of excellence (SunGard, 2007:7).

Through shared services, a company can make the most of increasingly scarce resources. Some of the benefits by centralising across a company in an in-house shared service with value-creation as the end-goal in mind are:

- cost savings
- efficiency
- consistent application of governance and controls
- quality improvements
- management of data
- shared resources
- skills development
- capitalising on expertise

#### **2.4.5 Capital structure**

A shareholder of a company faces two types of risk: business risk and financial risk. Business risk is the risk a firm's common stockholders would face if the company had no debt (Brigham & Ehrhardt, 2005:550). According to Brigham and Ehrhardt (2005:550), business risk arises from uncertainty in projections of the company's cash flow, which in turn means uncertainty about its operating profit and its capital requirements. ROIC combines the uncertainty about operating profit and capital requirements, and the standard deviation of ROIC can be used to measure business risk. Brigham and Erhardt (2005:550) list the following factors that have an impact on business risk:

- Demand variability. The business risk is lower if, other things held constant, the demand for the company's products is more stable.
- Sales price variability. If the company's products are sold into highly volatile markets the business risk is higher.
- Input cost variability. The business risk is higher if the costs are highly uncertain.
- Ability to adjust output prices for changes in input costs. The greater the ability to adjust output prices to reflect cost conditions, the lower the business risk.
- Ability to develop new products in a timely, cost-effective manner. The business risk is higher if a company's products become obsolete in a short period of time.
- Foreign risk exposure. If the company's majority of products are exported to foreign countries, the company faces exchange rate fluctuation, which can reduce earnings. Political instability in the countries to which the company exports will increase the company's political risk.
- The extent to which costs are fixed to operating leverage. A high degree of operating leverage is defined by Brigham and Ehrhardt (2005:552) as a relatively small change in sales that results in a large change in EBIT, if other factors are held constant. Thus a high percentage of costs are fixed and do not decline as revenue drops, the company is exposed to a relatively high degree of business risk.

Financial risk, on the other hand, is the additional risk placed on the common stockholders as a result of the decision to finance with debt (Brigham & Ehrhardt, 2005:554). The use of debt is also known as financial leverage, and by using debt, a company concentrates its business risk on its common stockholders, and the cost of equity becomes higher. The leveraged firm's stockholders will demand more compensation for bearing the additional financial risk, so the required rate of return in common equity (ROE) will increase with the use of debt (Brigham & Ehrhardt, 2005:550).

All companies require operating capital to support their sales and this is usually done with a combination of equity and debt. This combination of equity and debt is known as a company's capital structure. A company will strive to keep its actual financing mix as close as possible to its target capital structure. A company's capital structure decisions includes its choice of its target capital structure, the

average maturity of its debt, and the specific sources of financing forms part of the company's capital structure decision (Brigham & Ehrhardt, 2005:547). Brigham and Ehrhardt (2005:547) also highlight the fact that, as with operating decisions, managers should make capital structure decisions designed to maximise their company's value. Hall (2002:19) suggests that in order to increase shareholder wealth, WACC must be lowered by targeting an optimal capital structure, selecting least-cost debt and equity instruments and reducing business risk factors in a manner consistent with overall company strategy.

A company's value is calculated as the present value of its expected future free cash flows (FCFs), discounted at its weighted average cost of capital (WACC). The formula used for calculating the value of a company is as follows:

$$V = \sum_{t=1}^{\infty} \frac{FCF_t}{(1+WACC)^t}$$

Brigham and Ehrhardt (2005:547) identified the following points as ways in which a higher proportion of debt can affect WACC and/or FCF:

- Debt increases the cost of stock,  $r_s$ . Shareholders have only claim to the company's residual free cash flow after the debt holders have been paid. The cost of stock ( $r_s$ ) is increased because the fixed claims of the debt holders cause the shareholders' residual claim to become less certain.
- Debt reduces the taxes that a company pays. Tax is only payable after the interest payable on debt has been deducted from the taxable income.
- The risk of bankruptcy increases the cost of debt,  $r_d$ . With higher debt, a company's risk of financial distress, or worst case, bankruptcy increases. The higher risk of bankruptcy will make debt holders insist on higher promised return, which then increases the pre-tax cost of debt ( $r_d$ ).
- The net effect on WACC. If the proportion of debt is increased, the weight of high-cost equity decreases, and if all else remained the same, WACC would fall and the value of the firm would increase. Even if it is clear that changing the capital structure affects all variables in the WACC equation, it is not easy to say whether those changes increase, or decrease the WACC, or balance out, leaving the WACC unchanged. Brigham and Ehrhardt (2005:563) state that no one knows how to precisely define what a company's optimal capital structure

should be, and suggests that capital structure decisions must be made through a combination of judgement and numerical analysis.

- Bankruptcy risk reduces Free Cash Flow. When a company is faced with bankruptcy or financial distress, some customers might choose to buy from the company's competitors, thereby reducing sales, and negatively impacting on Net Operating Profit After Taxes (NOPAT), and as a result, reducing FCF.
- Bankruptcy risk affects agency costs. In good times, higher levels of debt can tempt managers to waste cash flow on perquisites and non-necessary expenditures, which is known as agency cost. Such spending will be reduced when there is a threat of bankruptcy. The risk of bankruptcy may force managers to reject positive NPV projects if the projects are too risky. This is known as underinvestment. The net effect of agency cost on value is not clear, because debt can reduce one aspect of agency cost (wasteful spending), but can also increase another agency cost (underinvestment).
- Issuing equity conveys a signal to the marketplace. Issuing of equity is perceived by investors as a negative signal, and this usually causes the stock price to fall.

Managers can, according to Merton (2005:86), in principle, engineer a company's capital structure so that nearly the only risks its shareholders, debt holders, trade creditors, pensioners, and other liability holders must bear is value-adding risks, while the other risks can be hedged or insured against, through the financial markets. Merton (2005:86) defines value-adding risks as the risk associated with positive net present value activities in which the company has a comparative advantage. A company's shares will be worth far more if a company can strip out the non-value-adding or passive risk, thus enabling a company to use its existing equity capital to finance a lot more value-adding assets and activities than its competitors, and so the company's shares will be worth far more (Merton, 2005:86). By engineering a company's capital structure, it will be able to finance more value-adding growth for the same amount of equity, while there is no increase in the level of risk the company bears. However a change in the nature of the risk will occur (Merton, 2005:86).

Merton (2005:88) suggests that by eliminating the existing passive risk, the risk capacity is created to expand value-adding investments. Should there be no such investments available, management can still create value by using the risk

reduction to change the capital structure to have less equity without negatively affecting the company's debt rating.

Merton (2005:88) further suggests that after a company has identified its risks and determined which are value adding, it should draw up a risk balance sheet and calculate how much equity capital can be eliminated by hedging, selling or insuring the passive risk. Such a risk balance sheet reports assets in terms of both value and risk, and identifies what proportion of total value and risk each type of liability is cushioning. The risk balance sheet includes all assets and risks faced by the firm, whether off or on the balance sheet, and also all significant liabilities.

Equity capital is by far the most versatile form of risk protection, because there are no strings attached and it can be used to cover any business risk. Managers have absolute control over the money raised and have no contractual obligation to pay it back. The only rights shareholders have is to elect the board of directors and receive distributions. Equity, however, has the highest premium rate of any kind of corporate-risk insurance policy because shareholders demand compensation beyond what is expected for bearing the risks of the investments to be made with investors' money (Merton, 2005:87).

According to Merton (2005:88), the amount of equity capital a company needs is independent of the cost of capital. Merton argues that companies with relatively high weighted average cost of capital (WACC) do not necessarily need more equity than companies with relatively low capital costs. WACC is determined by the company's systematic risk, measured by the sensitivity of the company's asset value to changes in overall equity-market prices (the asset's beta, in the context of the Capital Asset Pricing Model), and not by the business's total risk (Merton, 2005:88).

## **2.5 SUMMARY**

One of the main, if not the main requirement of an investor, is a return on an investment. This is not something new, because even in 1776, investors required a return on investments. In recent years, a number of metrics have been developed to help companies implement value-based management systems, such as DCF, CFROI, ROIC and CVA. One of the more popular metrics is EVA, developed by Stern and Stewart. In essence, Value-Based Management is a method of maximising

shareholder value through management actions, and also to encourage employees to think and act like owners. It is important for investors to understand the principles, advantages and disadvantages of VBM, and as a result of this knowledge, to better understand management actions.

## CHAPTER 3: EMPIRICAL STUDY

### 3.1 INTRODUCTION

In recent times, VBM has become a popular topic in financial management. It is measured in various forms and numerous consulting firms have developed and popularised metrics designed to help corporations implement value-based management systems. VBM involves managing the balance sheet as well as the incomes statement, and balancing long- and short-term perspectives (Koller, 1994:87). VBM is seen by Koller (1994:87) as the only true measure of management actions to create wealth.

There are various ratios and methods to determine whether a company is creating value for its shareholders. One of the most common measures used is EPS, but it has its limitations, and Stern and Ross (2003:171) are of the opinion that it is a misleading indicator and they have developed EVA as a measurement tool to calculate a company's true economic profit.

The main goal of this study is to investigate and determine whether investors can use economic profit as an indicator for share price movement of non-mining and non-financial South African companies listed on the Johannesburg Securities Exchange.

### 3.2 RESEARCH METHODOLOGY

#### 3.2.1 Background to the research

In order to determine whether investors can use economic profit as an indicator of share price movement, a quantitative approach was followed. The quantitative research was done by making use of historical financial data obtained from McGregor BFA in order to determine whether a company's economic profit does have an affect on the company's share price.

#### 3.2.2 Data collection

McGregor BFA was used to gather information about companies listed on the JSE. McGregor BFA supplies real-time and historical fundamental information on South African listed companies, top unlisted South African companies, local and international economic data as well as international financial indicators and

currency exchange data. McGregor BFA also provides standardised financial information, which was used for this research.

Only companies, for which McGregor BFA has calculated an EVA value, were selected. McGregor BFA calculates EVA as follows:

$$EVA = (\text{Operating capital})(ROIC - WACC)$$

As a result, companies from the mining and financial sectors were excluded from the research as a whole. Various income statement, balance sheet, and cash flow statement items of the identified companies were selected as independent variables. In addition to financial data, EVA, ROE and ROCE were selected as independent variables, to determine whether these value creation measurements also have an influence on the share price of the selected companies. The dependent variables selected were the average price per share (APS) and the year-end price per share (YPS) of the companies. Data for APS was collected for the period 1995 to 2005 and for YPS from 1995 to 2006.

### 3.2.3 Multiple Linear Regression

Multiple linear regression is used to explain some Y variable with several explanatory variables (Wisniewski, 2002:347). The multiple regression model with k independent variables is:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki} + \epsilon_i$$

Where

$\beta_0$  = Y intercept

$\beta_1$  = slope of Y with variable  $X_1$  holding variables  $X_2, X_3, \dots, X_k$  constant

$\beta_2$  = slope of Y with variable  $X_2$  holding variables  $X_1, X_3, \dots, X_k$  constant

$\beta_3$  = slope of Y with variable  $X_3$  holding variables  $X_1, X_2, \dots, X_k$  constant

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$B_k$  = slope of Y with variable  $X_k$  holding variables  $X_1, X_2, X_3, \dots, X_{k-1}$  constant

$\epsilon_i$  = random error in Y for observation i

Multiple regression models, according to Wisniewski (2002:347), are particularly complex in both their structure and the underpinning statistical assumptions. Wisniewski (2002:348) recommends that a specialist computer package must be used, because the calculations involved in multiple regression are both complex and tedious. SPSS 15.0 (for Windows), which is a statistical and data management package for analysts and researchers, was used in this study to develop the multiple regression models.

There are four key assumptions behind the multiple regression model that needs to be checked, according to Wisniewski (2002:356):

1. A linear relationship exists between the dependent and independent variables. At an early stage of the process, scatter plots are produced to determine whether there is a linear relationship between dependent and independent variables.
2. Regression errors must have a constant variance. The errors are the difference between each actual dependent value and the dependent value predicted by the regression model. This can also be done by using scatter plots.
3. The regression errors are independent of each other. This assumption implies that each error is independent of the errors before it and the errors after it. If the errors are interdependent, then autocorrelation exists, where the errors are strongly correlated with each other. The Durbin-Watson test can be used to determine whether autocorrelation exists.
4. The independent variables are independent of each other. When independent variables are not independent of each other, multicollinearity exists. To test for multicollinearity, a correlation matrix can be calculated between all the independent variables being used in the model. The correlation matrix contains all the correlation coefficients of the independent variables.

One important additional assumption made in the study was that the financial data of one year is not influenced by the financial data of any of the other years. For this reason, a multiple regression model was determined per year.

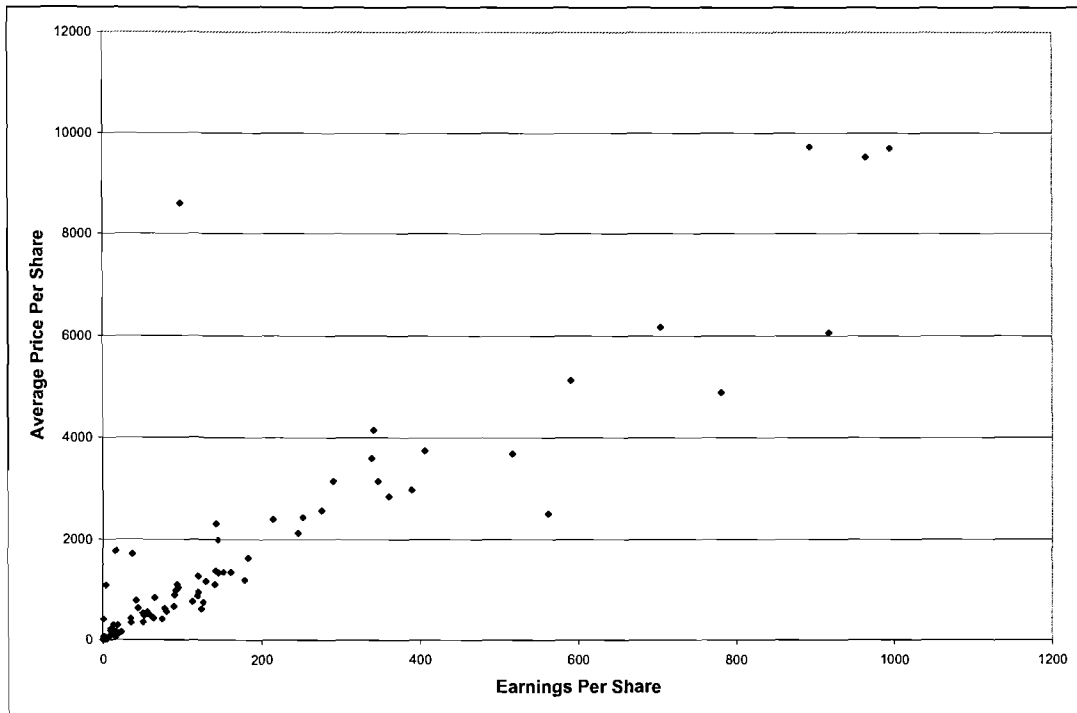
### **3.2.4 Data preparation**

The data was prepared in accordance with the four assumptions listed in paragraph 3.2.3 above. In order to make a better comparison between the data used in the model, a z-score was calculated for the various years' data. The z-score (or standard score) is defined by Wikipedia (2007) as an indication of how many

standard deviations an observation is above or below the mean. It also allows for a comparison of observations from different normal distributions. It is calculated by subtracting the population mean from an individual raw score and then dividing the difference by the population standard deviation. For this study, only data with a z-score between three and minus three was used.

Diagram 3.1 shows a scatter plot between Earnings Per Share (independent) and Average Price Per Share (dependent), that was produced to determine whether a linear relationship exists between the dependent variable and one of the independent variables. The existence of a linear relationship was done through the inspection of the scatter plot, and not through the calculation of  $R^2$ .

**Diagram 3.1: Scatter plot – EPS and APS**



Turnover was used as anchor in the correlation matrix to test for multicollinearity. Turnover was selected because all the other independent variables in the income statement and balance sheet are a function of turnover, or are used to generate turnover. All the independent variables that had a correlation coefficient between 0.6 and 1 were considered to be dependent on each other, and were subsequently excluded from the data used to calculate the models. See Diagram 3.2 for a correlation matrix calculated to test for multicollinearity. The areas marked in red

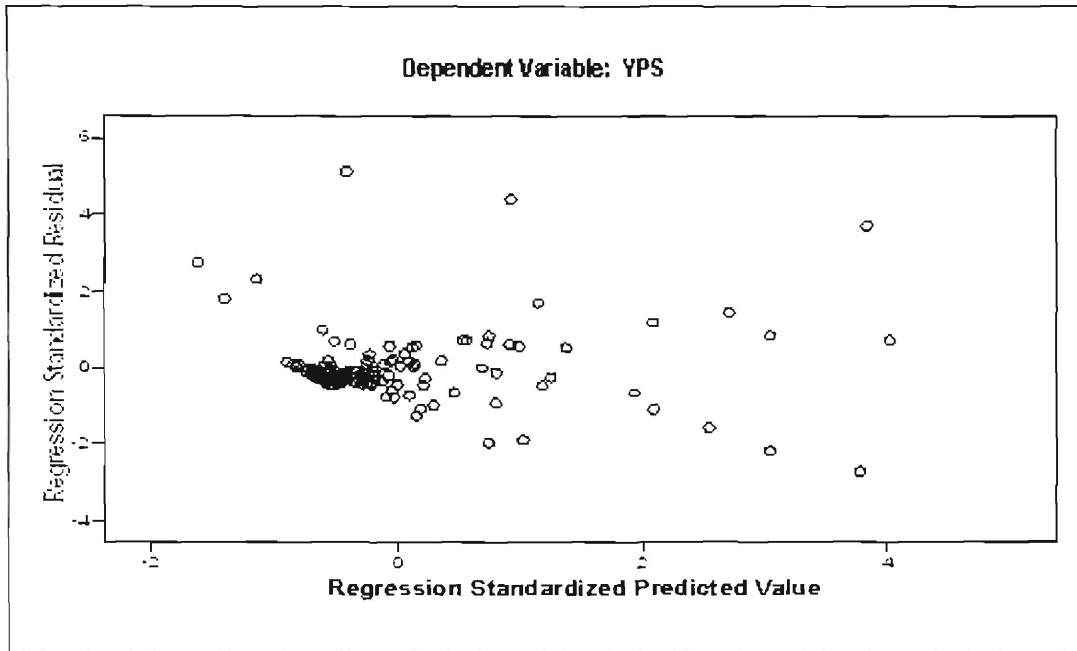
indicate a correlation coefficient of 0.6 and higher (closer to 1). See Annexure C for the rest of the correlation matrices calculated for the various years.

**Diagram 3.2: Correlation matrix – APS: 1995**

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.883	1.000																			
Interest Paid	0.809	0.835	1.000																		
Net Profit After Taxes	0.832	0.974	0.763	1.000																	
Total L-T Assets	0.797	0.914	0.898	0.891	1.000																
Total Current Assets	0.940	0.938	0.868	0.912	0.822	1.000															
Total Assets	0.921	0.971	0.882	0.945	0.939	0.968	1.000														
Total Current Liabilities	0.953	0.937	0.874	0.890	0.862	0.967	0.966	1.000													
Total L-T Owners Interest	0.871	0.966	0.841	0.960	0.953	0.933	0.985	0.914	1.000												
Total L-T Loans	0.767	0.810	0.831	0.775	0.842	0.841	0.881	0.802	0.853	1.000											
Net Invest L-T Assets	0.751	0.884	0.742	0.867	0.983	0.757	0.891	0.821	0.919	0.728	1.000										
Earnings Per Share	0.540	0.539	0.549	0.536	0.582	0.530	0.578	0.546	0.573	0.529	0.559	1.000									
Ret On Equity	-0.022	-0.047	-0.037	-0.016	-0.127	-0.015	-0.065	-0.043	-0.067	-0.109	-0.124	-0.067	1.000								
ROCE	0.018	0.008	-0.107	0.035	-0.107	-0.007	-0.052	-0.007	-0.058	-0.151	-0.084	-0.004	0.561	1.000							
EVA Rm	-0.707	-0.729	-0.767	-0.688	-0.837	-0.746	-0.821	-0.736	-0.826	-0.825	-0.782	-0.429	0.140	0.245	1.000						
Cash Invested	0.734	0.825	0.676	0.761	0.882	0.733	0.833	0.788	0.816	0.802	0.846	0.499	-0.228	-0.134	-0.772	1.000					
Cash Available	0.852	0.903	0.771	0.924	0.897	0.869	0.822	0.876	0.927	0.773	0.878	0.596	-0.028	0.013	-0.671	0.757	1.000				
Cash Generated	0.036	-0.105	0.024	-0.007	-0.213	0.063	-0.055	-0.031	-0.050	-0.141	-0.222	-0.000	0.295	0.158	0.221	-0.509	0.131	1.000			
WACC	0.255	0.278	0.116	0.291	0.216	0.256	0.250	0.244	0.273	0.092	0.243	0.281	0.021	0.263	-0.220	0.196	0.234	-0.034	1.000		
APS	0.647	0.745	0.594	0.750	0.681	0.689	0.718	0.681	0.714	0.639	0.647	0.683	-0.002	0.056	-0.527	0.647	0.706	-0.063	0.376	1.000	

The test to determine whether the regression errors have a constant variance is done by means of a scatter plot. An example of such a scatter plot, based on the year-end share price, can be seen in Diagram 3.3. The scatter plot in Diagram 3.3 is an example of the method used to determine if there is a constant variance through visual inspection and not the result of residuals of regression errors for the respective dependent variables.

**Diagram 3.3: Residual plot of regression errors**



### 3.2.5 Results

The results of the multiple regressions are reported by making use of tables. The results reported are standardised beta (Std  $\beta$ ), significance value (Sig.) and adjusted  $R^2$ .

When working with multiple explanatory variables, it is easier to interpret the standardised version of the  $b$ -value, because it is not dependent on the units of measurement of the variables (Field, 2005:193). For the standardised betas reported in the tables, there is no zero before the decimal, because these values cannot exceed 1. The level of significance being used is  $p < 0.05$ , and any variable with significance less than 0.05 confirms a high correlation. According to Levine *et al.* (2005:580), some statisticians suggest that the adjusted  $R^2$  should be computed. This is especially necessary when one is comparing two or more regression models that predict the same dependent variable but have a different number of explanatory variables.

The results for the average price per share (APS) multiple regressions can be seen in Table 3.1. The most striking observation from Table 3.1 is the standardised beta and level of significance of Earnings Per Share. This is constant with the inspection of the trend in Diagram 3.1. It is in fact, the only independent variable

that is of any importance in all models. The second major observation is how insignificant Economic Value Added, Return On Equity and Return On Capital Employed are. What is also evident in Table 3.1 is that some of the independent variables have positive standardised betas in certain years, but negative standardised betas in other years. Turnover appears in all the years, but is of little use in explaining APS. It is clear from Table 3.1, that the elements used in calculating EVA are not prominent in any of the results.

**Table 3.1: Results: APS multiple regression**

APS		Year										
Independent Variable	Data	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Cash Generated	Std $\beta$	<b>-0.073</b>	<b>-0.134</b>	.060	<b>-0.325</b>	.164	.163	<b>-0.091</b>	<b>-0.181</b>	<b>-0.172</b>	.073	.075
	Sig.	0.427	0.064	0.491	0.001*	0.196	0.080	0.171	0.032*	0.004*	0.153	0.123
Cash Invested	Std $\beta$			.202		.077	.095		.203			
	Sig.			0.052		0.634	0.411		0.049*			
Constant	Std $\beta$											
	Sig.	0.156	0.954	0.563	0.083	0.257	0.722	0.274	0.646	0.408	0.931	0.908
Earnings Per Share	Std $\beta$	.439	.758	.759	.706	.597	.790	.639	.712	.668	.884	.807
	Sig.	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
EVA Rm	Std $\beta$	<b>-0.069</b>	.016	.222	.064	.165	<b>-0.166</b>	<b>-0.185</b>	<b>-0.252</b>	<b>-0.460</b>	<b>-0.299</b>	
	Sig.	0.611	0.906	0.004*	0.475	0.029*	0.010*	0.018*	0.000*	0.000*	0.000*	
Interest Paid	Std $\beta$						.081	.045	.040		.255	
	Sig.						0.246	0.613	0.550		0.000*	
NetInvest LTassets	Std $\beta$							.051				
	Sig.							0.523				
Net Profit After Taxes	Std $\beta$				.122					.260		
	Sig.				0.267					0.002*		
Ret On Equity	Std $\beta$	.057	<b>-0.050</b>	.017	<b>-0.005</b>	<b>-0.132</b>	<b>-0.011</b>	.007	.017	.002	<b>-0.019</b>	.004
	Sig.	0.586	0.485	0.769	0.952	0.045*	0.835	0.918	0.767	0.971	0.652	0.939
ROCE	Std $\beta$	.010			<b>-0.130</b>	<b>-0.067</b>	<b>-0.032</b>	<b>-0.031</b>	.004			<b>-0.049</b>
	Sig.	0.933			0.153	0.351	0.563	0.680	0.942			0.373
Total LT Owners Interest	Std $\beta$										<b>-0.132</b>	
	Sig.										0.020*	
Total LT Assets	Std $\beta$									.205		
	Sig.									0.011*		
Total LT Loans	Std $\beta$		.078	.351	<b>-0.054</b>	.454						
	Sig.		0.564	0.000*	0.654	0.000*						
Turnover	Std $\beta$	.327	.150	<b>-0.058</b>	.041	.030	<b>-0.066</b>	.132	<b>-0.056</b>	.070	.176	.187
	Sig.	0.018*	0.113	0.432	0.647	0.749	0.408	0.101	0.548	0.334	0.003*	0.001*
WACC	Std $\beta$	.147	.049	.029	.170	.113	<b>-0.015</b>	<b>-0.081</b>	<b>-0.029</b>	<b>-0.053</b>	.025	.033
	Sig.	0.115	0.491	0.608	0.021*	0.140	0.795	0.256	0.633	0.366	0.552	0.496
Adj R <sup>2</sup>		0.562	0.656	0.798	0.672	0.672	0.715	0.565	0.706	0.624	0.802	0.812

\* $p < 0.05$

The results for the YPS multiple regressions can be seen in Table 3.2. The most striking observation, as in Table 3.1, is the standardised beta and level of significance of Earnings Per Share. It is in fact, the only independent variable that is of any importance in all models. Secondly, Economic Value Added, Return On Equity and Return On Capital Employed are also insignificant as predictors of year-end share prices. Some of the independent variables, as is the case in Table 3.1, have positive standardised betas in certain years, but negative standardised betas in other years. Turnover, which was an anchor in the correlation matrices, is of little

use in explaining year-end share prices. Once again, the elements used for calculating EVA is lacking in prominence and significance.

The blank cells in Table 3.1 and Table 3.2 is due to the fact that the independent variables were eliminated because of the existence of multicollinearity.

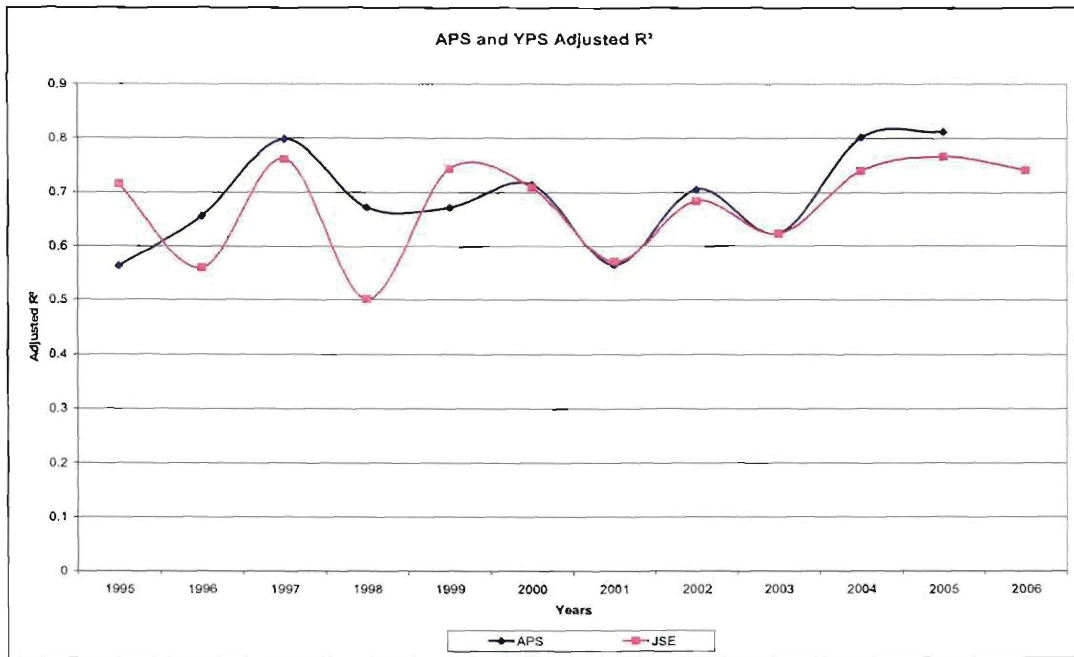
**Table 3.2: Results: YPS multiple regression**

YPS		Year											
Independent Variable	Data	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Cash Generated	Std $\beta$	-0.27	-.084	.063	-.387	.030	.092	-.019	-.059	-.119	.127	.073	.039
	Sig.	0.719	0.291	0.504	0.002*	0.625	0.323	0.770	0.495	0.050	0.030*	0.135	0.442
Cash Invested	Std $\beta$			.280			-.011		.364				
	Sig.			0.014*			0.923		0.001*				
Constant	Std $\beta$												
	Sig.	0.995	0.989	0.483	0.022*	0.461	0.831	0.552	0.550	0.522	0.824	0.370	0.978
Earnings Per Share	Std $\beta$	.778	.706	.734	.523	.759	.787	.692	.696	.719	.847	.782	.832
	Sig.	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
EVA Rm	Std $\beta$	.163	.032	.272	.069	.074	-.177	.033	-.091	-.498	-.412	-.097	
	Sig.	0.137	0.840	0.001*	0.526	0.272	0.007*	0.664	0.190	0.000*	0.000*	0.193	
Interest Paid	Std $\beta$						.093	.018	.047		.317	.267	.249
	Sig.						0.189	0.835	0.498		0.000*	0.000*	0.000*
Net Invest LT Assets	Std $\beta$							.264				-.050	
	Sig.							0.001*				0.434	
Net Profit After Taxes	Std $\beta$				.170					.299			
	Sig.				0.209					0.000*			
Ret On Equity	Std $\beta$	.065	-.028	.019	-.026	-.106	-.008	-.011	.003	.010	-.007	-.022	-.018
	Sig.	0.442	0.735	0.765	0.789	0.069	0.887	0.872	0.958	0.863	0.880	0.669	0.727
ROCE	Std $\beta$	-.015			-.150	-.063	-.028	-.044	-.024			.026	
	Sig.	0.868			0.180	0.319	0.615	0.552	0.708			0.654	
Total LT Owners Interest	Std $\beta$									-.195	-.144		-.149
	Sig.									0.018*	0.030*		0.017*
Total LT Loans	Std $\beta$		.032	.324	-.043	.299							
	Sig.		0.841	0.000*	0.769	0.000*							
Turnover	Std $\beta$	.272	.154	-.091	-.033	.050	-.007	-.058	-.162	.283	.159	.070	.022
	Sig.	0.012*	0.144	0.261	0.766	0.414	0.930	0.467	0.098	0.000*	0.017*	0.278	0.703
WACC	Std $\beta$	-.008	.049	.040	.269	.067	-.016	-.031	-.037	-.021	.000	-.032	.064
	Sig.	0.917	0.543	0.518	0.003*	0.323	0.779	0.663	0.552	0.722	0.994	0.487	0.166
Adj R <sup>2</sup>		0.715	0.559	0.762	0.501	0.743	0.709	0.571	0.684	0.623	0.740	0.767	0.742

\*p<0.05

The adjusted R<sup>2</sup> is an indication of the variation in a dependent variable accounted for by the variation in independent variables. In order to determine whether the adjusted R<sup>2</sup> improved or varied over time, the adjusted R<sup>2</sup> values for both sets of data were plotted on a graph (Diagram 3.1). In both sets of results, the adjusted R<sup>2</sup>s are on average, over the periods, below 0.7. This implies that, on average, less than 70 per cent of the variation in share price (average or year-end) is accounted for in the variation of the independent variables. The highest adjusted R<sup>2</sup> calculated was 81.2 per cent for APS in 2005, and the lowest was 50.1 per cent for YPS in 1998. It seems that there was a gradual improvement in the adjusted R<sup>2</sup>s in both sets of data from 2001 onwards. As from 2001 and onwards, it seems also to be a lot more constant, and less volatile, than in the preceding years.

Diagram 3.4: Adjusted R<sup>2</sup>



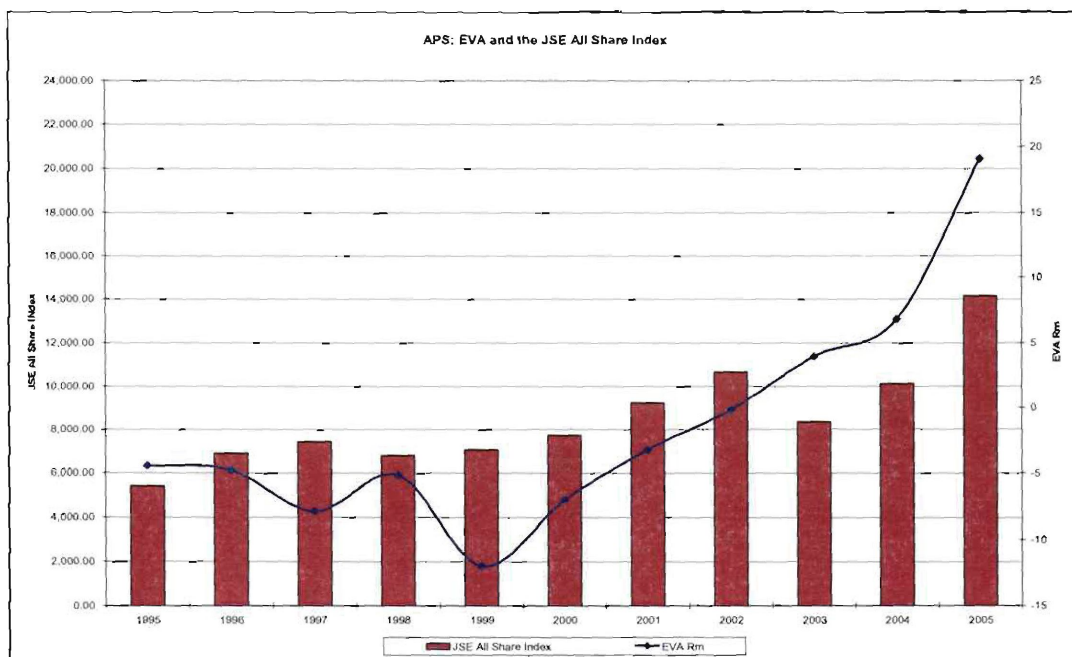
### 3.2.6 EVA, ESP and JSE All Share Index

The JSE All Share Index is a capitalisation-weighted price index of all the shares traded on the Johannesburg Securities Exchange. In order to better understand how the selected companies performed against the JSE All Share Index, it was decided to compare EVA and EPS figures against the JSE All Share Index by means of graphs. While the JSE All Share Index contains the entire range of share traded, the EVA and EPS figures only represent non-mining and non-financial companies.

The same data that was used for calculating the multiple regression models was used for this comparison. It was decided to calculate the median for EVA and EPS. This was done for each year in the sets of data. The reason for calculating the median was because the median is not affected by any extreme observations in the data, whereas the arithmetic mean is greatly affected by any extreme value or values. When the arithmetic mean is reported, it may present a distorted representation of what the data is conveying (Levine *et al.*, 2005:107). The median of EPS and EVA was plotted against the JSE All Share Index as at 30 June of the respective years under review.

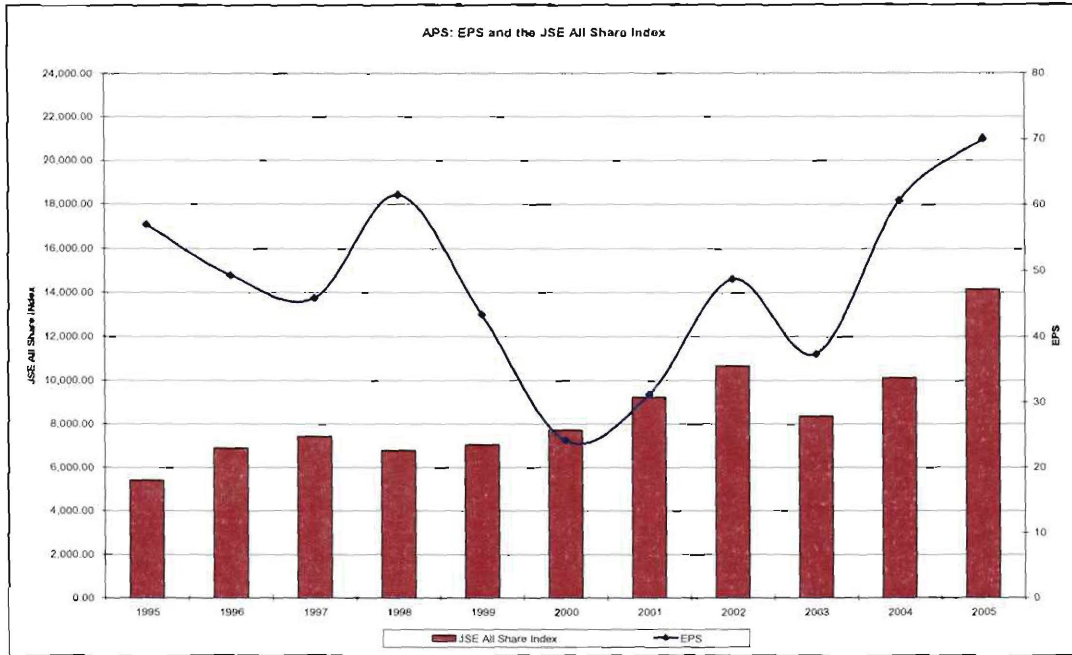
The graph of EVA and the JSE All Share Index for the APS set of data can be seen in Diagram 3.5. From 1995 up to 2001 the median EVA was negative and had a downward trend. In terms of the literature in Chapter 2, this implies that the companies in the study were not able to add value to their shareholders' investments. From 2002, and onwards up to 2005, the companies were able to generate EVA at an increasing rate. The JSE All Share Index was fairly flat from 1995 to 2000, with a net growth of  $\pm 2000$  points in the same period. The JSE All Share Index, notwithstanding the decline in 2003, more than doubled from 2000 to 2005.

**Diagram 3.5: APS – EVA and JSE All Share Index**



The graph of the median EPS and the JSE All Share Index for the APS set of data can be seen in Diagram 3.6. From 1995 to 1999 the median EPS did not follow the JSE All Share Index, but from 2000 up to 2005, the median EPS was in sync with the JSE All Share Index.

**Diagram 3.6: APS – EPS and JSE All Share Index**



The results of the median EVA and the JSE All Share Index plotted for the YPS can be seen in Diagram 3.7. The results are very similar to the APS graph in Diagram 3.5, except for the period between 2005 and 2006, where there is a reduction in EVA generated.

**Diagram 3.7: YPS – EVA and JSE All Share Index**

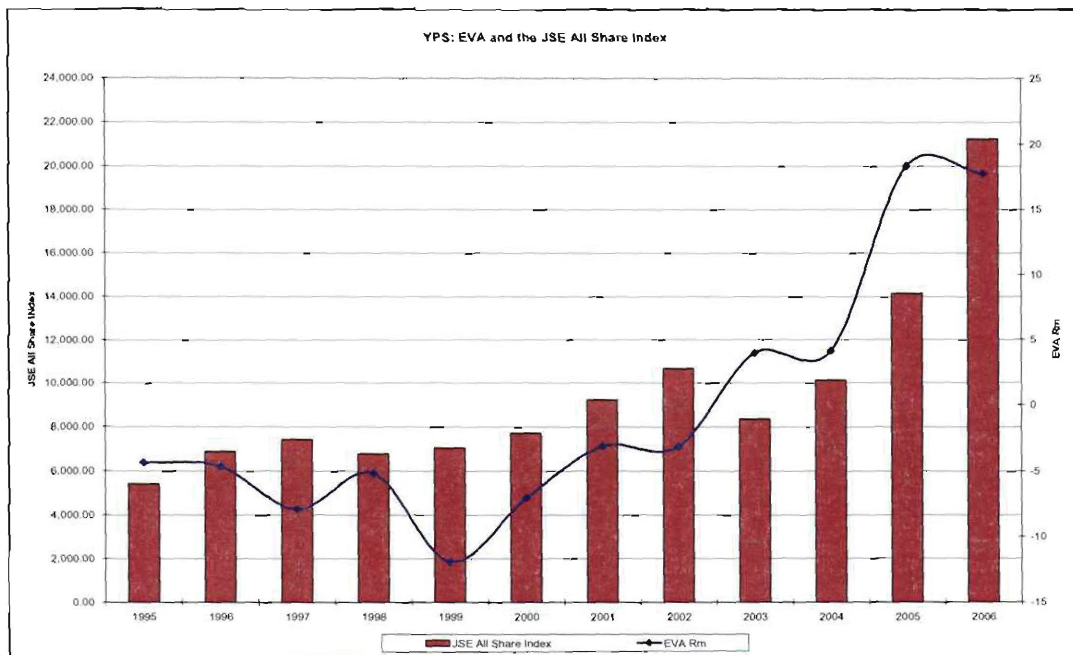
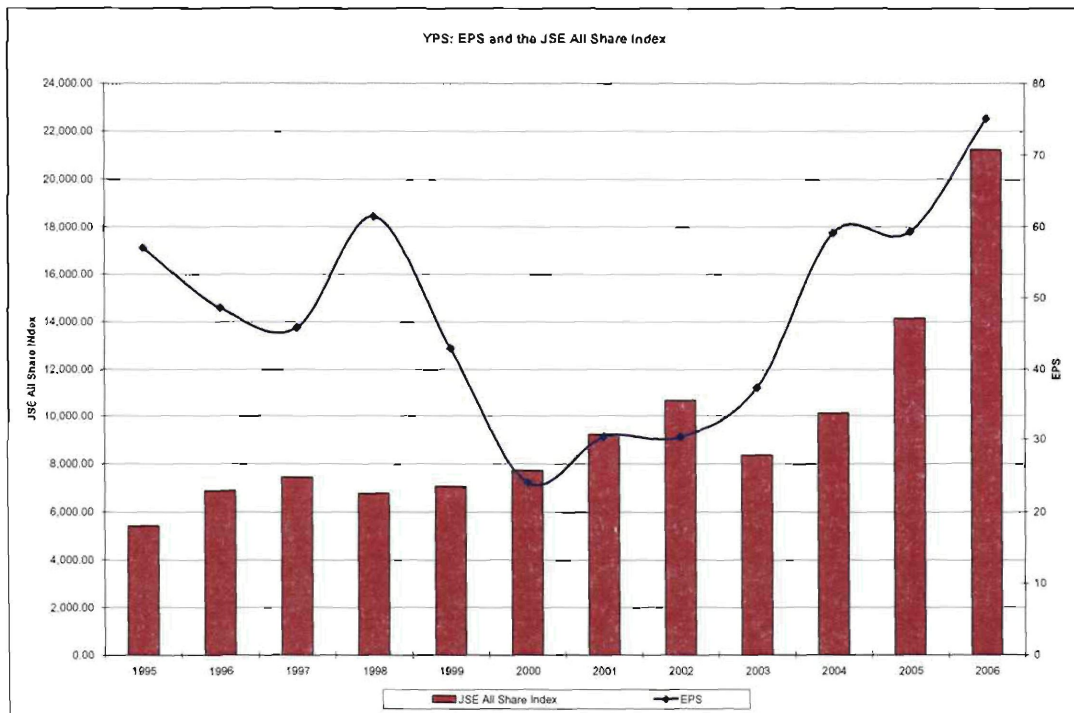


Diagram 3.8 represents the graph of the median EPS and the JSE All Share for the YPS set of data. The graph is very similar to the APS graph in Diagram 3.6. The only difference is the period 2004 to 2005, where the median EPS flattens out, and then increases from 2005 to 2006.

**Diagram 3.8: YPS – EPS and JSE All Share Index**



### 3.3 SUMMARY

The multiple regression models had two very significant results, specifically when correlation coefficients are considered. The first was that EPS was shown to be the only independent variable of any importance in all of the models. The second was how statistically insignificant EVA, ROE and ROCE are as predictors of either average price per share or year-end share price.

When EPS and EVA are compared with the JSE All Share Index, there are also two distinct observations. Before the turn of the century, EPS and EVA correlated negatively with the JSE All Share Index. After 1999/2000 there was a significant change in terms of EVA and EPS performance against the All Share Index.

## CHAPTER 4: CONCLUSIONS AND RECOMMENDATIONS

### 4.1 INTRODUCTION

In this chapter, the research findings are explored and interpreted in relation to the proposition of the research. The evaluation of the findings is correlated with the literature study. Through the evaluation, the research attempts to develop an understanding of whether investors can use value-based management measurements to determine corporate performance, as well as share price movement.

The primary research goal of this study was to investigate and determine whether investors can use economic profit as an indicator for share price movement of non-mining and non-financial South African companies listed on the Johannesburg Securities Exchange.

The secondary research goals were:

- To investigate and determine to what extent financial performance is responsible for share price movement.
- To investigate and determine how these companies performed against the All Share Index of the JSE.
- The development of a model for investors to determine share price movement.

### 4.2 RESULTS AND CONCLUSIONS OF MAIN GOAL

#### 4.2.1 Results

The results from the multiple regression models were presented in tabular form, and contained the standardised beta (Std  $\beta$ ), significance value (Sig.) and adjusted  $R^2$  for each year.

The most striking result is how closely EPS is correlated with the average share price. In fact, EPS is the only dependent variable that could be meaningfully used to predict a company's share price. EPS is the only dependent variable that has a significance value of  $p < 0.05$  across all the models. The correlation between the other variables and share price, including EVA, is relatively low ( $p < 0.05$ ). EVA is only significant in one or two models, and does not even feature in other models. The other two value creation measurements, ROCE and ROE, are also very

insignificant, and very limited in contributing towards the multiple regression equation at the 5 per cent significance level.

EVA's contribution (standardised beta) to the multiple regression equation for predicting share prices was relatively low. For APS, the highest was 22 per cent in 1997, and for YPS, 27 per cent in 1997. In most instances, its contribution was less than 10 per cent, and in both sets of results, it was sometimes negative.

It was found that certain of the dependent variables' standardised beta values were positive in one year and negative in the next year. This does not make business sense in certain cases, for example, when the results of some models determine that turnover should decrease in order to increase share price. This is the same for EVA, ROE and ROCE, which then implies that a company should reduce the amount of shareholder wealth created, in order to increase share prices.

On average, the models can only explain close to 70 per cent of the variation in share price. Even though 70 per cent is a good result, it still means that there are other factors that influence 30 per cent of the variation in share price of a company – and not only its financial performance.

#### **4.2.2 Conclusions**

Earnings Per Share, according to Stern & Ross (2003:171), is not an adequate metric, and is often a misleading indicator. Stewart (1999:2) writes that Earnings Per Share, which is the accounting model of valuation, is very unreliable as a measure of value. Rappaport and Mauboussin (2001:9) are of the opinion that one of the misconceptions in the investment community is that value is dictated by Earnings Per Share, but that earnings actually tell very little about value. According to Stewart (1999:1), the myth that increasing earnings, earnings per share, or return on equity is the way to attract investors, must be abolished. Value-Based Management was thus developed as a measure of management actions to create value.

With this in mind, one could ask: can investors make use of VBM measurements to determine share prices? Based on the results from this study, Earnings Per Share is the only metric that can be used to predict share price movement in non-mining and non-financial companies in South Africa. While VBM was developed as value creation measurement, it can only explain a very small variation in share price

movement. Farsio *et al.* (2000:118) found that EVA might be one of the poorest measures available to indicate stock performance and explains only a fraction of the variability in stock return fluctuations.

The fact that EPS is so highly correlated with share price can also be attributed to the lack of any other measurement to gauge share price movement. It might also be contributed towards investor culture, literacy, as well as a lack of knowledge on who's doing VBM in South Africa. Investors can use a company's PE ratio, but the PE ratio poses a problem in itself. The PE ratio is calculated by dividing the share price of a company by its EPS. Should one want to calculate the share price, one would multiply PE with EPS. This is a problem, because it is assumed that PE is constant, but it is not, because there are many factors influencing the PE ratio, as for example, the change of the share price throughout the day as trading takes place on the stock market.

### **4.3 RESULTS AND CONCLUSIONS OF SUBOBJECTIVE ONE**

#### **4.3.1 Results**

The adjusted  $R^2$  of a multiple regression model is an indication of the variation in a dependent variable accounted for by the variation in independent variables. The average adjusted  $R^2$ 's of the models is less than 70 per cent. This implies that on average, less than 70 per cent of the variation in a non-mining and a non-financial company's share price is proxied by APS and YPS.

#### **4.3.2 Conclusions**

A 70 per cent explanation of variation is fairly high, but it still means that there is another 30 per cent of the share price that is influenced by other factors. Other factors that influence share prices could, but not limited to the economy, company news, analysts' reports and technical influences and is subject to further study. El Mir and Seboui (2006:243) refer to a McKinsey survey that found that 15 per cent of investors consider corporate governance as more important than a firm's financial issues, such as profit performance or growth potential.

A country's risk profile is used by investors to identify the amount of risk they might face when investing in that specific country. A country risk analysis includes economic, social and political factors. After the first democratic elections in 1994, South Africa entered a period of great uncertainty. Both local and foreign investors

were uncertain about what was going to happen to the country. This can be seen in the JSE All Share's performance from 1995 to around 1999, when the index was fairly flat. From 2000 onwards, the JSE All Share Index reflects the economic growth that South Africa experienced. Investors' sentiment towards South Africa became very positive, and huge amounts of money were invested in local equity. South Africa's status as an emerging market aided in attracting foreign investors, who were willing to incur a certain amount of risk for good returns.

#### **4.4 RESULTS AND CONCLUSIONS OF SUBOBJECTIVE TWO**

##### **4.4.1 Results**

The results for comparing the companies' EPS and EVA against the JSE All Share Index, revealed that prior to the period of economic growth (2000, and onwards), there was great uncertainty in the market. The EPS and EVA did not follow the All Share Index, and prior to 2000, were mainly on a downward trend compared to the All Share Index's relatively flat performance. After 2000, both EVA and EPS followed the All Share Index in terms of overall growth.

##### **4.4.2 Conclusions**

South Africa's biggest export and foreign currency earner has always been resources, of which gold was and is the biggest. Mining companies are the most important role players on the JSE All Share Index through its market capitalisation. South Africa is also well known for its First-World financial institutions. This study only focused on non-mining and non-financial companies. Prior to the economic growth period, the JSE All Share Index was mainly supported by the performance of mining companies, because investors were uncertain and used especially gold as a safe haven. It is also clear that, since South Africa entered the positive economic growth cycle, it has had a positive effect on company performance in terms of EPS and EVA. Investors also started investing more and more in other sectors, and were handsomely rewarded by excellent returns on investments made in South African companies.

## 4.5 RESULTS AND CONCLUSIONS OF SUBOBJECTIVE THREE

### 4.5.1 Results

Please refer to Table 3.1 and Table 3.2. The model with the highest adjusted R<sup>2</sup> to predict an average share price for a non-mining and non-financial company listed on the JSE is as follows:

$$\text{APS} = -43.113 + \text{Turnover}(0.187) + \text{EPS}(0.807) + \text{ROE}(0.004) + \text{ROCE}(-0.049) + \text{Cash Generated}(0.075) + \text{WACC}(0.033)$$

In order to predict the year-end share price of a company, the model with the highest adjusted R<sup>2</sup> is:

$$\text{YPS} = 385.825 + \text{Turnover}(0.07) + \text{EPS}(0.782) + \text{REO}(-0.22) + \text{ROCE}(0.026) + \text{EVA}(-0.097) + \text{Cash Generated}(0.073) + \text{WACC}(-0.032) + \text{Interest Paid}(0.267) + \text{Net Investment in Long-term Assets}(-0.05)$$

Both these models are only valid for 2005. The reason for the good correlation in 2005 might be the period of good economic growth, and relative political stability in South Africa since 2000. Companies in general benefitted from the favourable economic climate which resulted in good financial results, and the JSE All Share Index grew by more than 50 per cent from 2004 to 2005. In order for the model to remain relevant beyond 2005, it must be recalculated on an annual basis.

### 4.5.2 Conclusions

In both the proposed models, to calculate the respective average share price and year-end share price, EPS is the most dominant element. In both models some of the dependent variables are negative, which does not make business sense, especially in terms of ROCE, ROE and EVA. This suggests that these value creation measurements should decrease, should an increase in share price be predicted. It might therefore be more prudent to use only the EPS as a predictor of share price movement. This finding correlates with the evidence presented in Chapter 3.

## **4.6 RECOMMENDATIONS**

### **4.6.1 Investment criteria**

Value-based management is seen as a moderator together with other tools, such as the Balanced Scorecard for creating wealth for a company's shareholders. Can investors use value-based management measurements for investment purposes, especially for share price movement in non-mining and non-financial South African companies? The evidence in this study indicates that Earnings Per Share is still the only real measurement that can be used for predicting share price movement in the South African context for non-mining and non-financial companies.

If investors only want to make short-term investments for high returns, then EPS should be an adequate measure to use for predicting share price movement. If investors are, however, contemplating long-term investments, then more than only EPS should be considered. It is beneficial to investors to understand what value-based management is, and to understand management actions in terms of value creation. There are various other factors that investors should consider when deciding on which company to invest in. One of the major factors to consider for investment purposes is the economic situation in a country. The fact that South Africa has experienced over 30 consecutive quarters of economic growth has had a positive effect on companies' performance, especially in terms of EPS and EVA. The political situation in a country, especially in an emerging market economy, will also be a major factor to evaluate and consider, as these markets are usually in a process of transformation to an open market economy.

Investors should also consider the long-term sustainability of a company's performance and competitive advantage. In this regard, it would be prudent to evaluate the company's ability to generate economic profit, as it is an indication that the company can invest capital at returns higher than the cost of capital.

### **4.6.2 Company perspective**

The evidence in this study indicates that EPS is still the major indicator of share price movement; but management should still make investment decisions based on getting returns higher than the cost of the capital invested, and not only on improving earnings. One of the major draw-backs of value-based management is its short-term focus. Management should guard against making decisions on short-

term returns to the detriment of long-term sustainable competitive advantages. The old adage holds true: penny wise, pound foolish.

#### **4.7 SUGGESTIONS FOR FURTHER STUDIES**

In the course of the current study, a number of areas were identified where further research could be beneficial:

##### **VBM from a company perspective:**

This study has focused on VBM from an investor's perspective. Future studies could investigate how VBM is implemented and managed in South African companies. The findings should then be compared against actual company performance to determine whether management actions do translate into economic profits.

##### **Country risk and share prices:**

The effect of country risk on stock market returns and how it influences investment decisions.

##### **Additional consideration for further studies:**

Repeat the exercise for those companies in the JSE that uses VBM. Recalculate the model to see if EPS is still such a significant explanatory variable if others emerge.

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## ANNEXURE A: SYNOPSIS OF SIX FINANCIAL/CONSULTING FIRMS

		Stern Stewart & Co	Marakon Associates	McKinsey & Co	PriceWaterHouseCoopers	L.E.K. Consulting	HOLT Value Associates
Management focus		Successful companies maximise creation of wealth for the shareholders					
Why shareholder value maximisation?		Recognition of ownership	Best objective in going concern	Prosper in business	Prosper in business	Prosper in business	Prosper in business
Philosophy of the consulting company with regards to stakeholder groups		Stakeholder Theory, by means of putting the shareholder first					
Fundamentals for value creation		Strategy Structure & metrics	Strategy	Metrics Belief systems	Structure	Strategy & Metrics	Strategy & Metrics
Main elements in the consultants' approach		Systems with focus on measuring, training and rewarding	Culture, structure and systems with focus on decentralised strategy development	Culture, structure and systems with focus on corporate strategy and valuation	Culture, structure and systems with focus on training and communication	Culture and systems with focus on strategy and education	Systems with focus on valuation
Scope / Purpose of external communication concerning VBM		Better quality information Marketing advantage	Focus on wealth creation	Univocal information to all stakeholder groups	Better quality information. Temporary marketing influences	Better quality information & commitment	Better quality information
Perception and specific (internal) contribution of the VBM-approach in general		Clarifies the perception of underlying economics	Better alignment of internal organisation & processes with strategy	Improving dialogue between different internal entities	Changing time-horizon and encouraging strategy development	Improving management productivity	More efficient analysis of firms' performance
Strategy development	General ideas	Overarching strategy & corresponding organisational structure	Bottom-up process Common framework Valuing strategies on profitable growth instead of growth	Decision making at all levels Focus on valuing strategies	Common framework corporate parent and business units 'Strategic thinking reconciled with financial thinking = Valuing strategies'	Strategic analysis at all levels based on combination of strategy formulation and strategy valuation	Strategy is induced by feedback from the stock market
	Mentioned references	Refer to <ul style="list-style-type: none"> <li>Porter and Treacy and Wiersema for strategy development</li> <li>Duncan and Brickley, Smith and Zimmerman for organisational design</li> </ul>	Proprietary strategy approach, based on Market economics & Competitive position, resembles ideas of Porter	Refer to <ul style="list-style-type: none"> <li>Porter</li> <li>Coyne &amp; Subramaniam</li> <li>Proprietary Customer segmentation analysis</li> <li>Competitive business system analysis</li> </ul>	Briefly refer to Porter and Hamel & Prahalad for strategic thinking	Refer to <ul style="list-style-type: none"> <li>Porter for strategy formulation</li> <li>Williams for the sustainability question</li> </ul> Doubts about ideas of <ul style="list-style-type: none"> <li>Hammer &amp; Champy</li> <li>Hamel &amp; Prahalad</li> <li>Treacy &amp; Wiersema</li> </ul>	
Strategy deployment	General	Top down, decentralised	Bottom up, decentralised	Preference for bottom up	Top down and centralised	Bottom-up with central guidance	Top
	Focus in strategy deployment	Increasing EVA as general objective	Profitable growth instead of growth per se	Profitable growth instead of growth per se	Maximisation of shareholder value	Maximisation of expected shareholder value added	
	Supporting tools	EVA value drivers, EVA is common language for all management decisions	Strategic value drivers of different business units, benchmarked with corporate management processes, EP is common language	Key value drivers and Key performance indicators defined separate for different organisational levels	Strategic value drivers are decomposed in financial value drivers and operational value drivers	Decomposition of the shareholder value network till de level of Key Value Drivers	
Preferred Metrics		<ul style="list-style-type: none"> <li>MVA (corporate)</li> <li>EVA (corporate, business unit and product line)</li> </ul>	<ul style="list-style-type: none"> <li>Equity Spread (corporate)</li> <li>EP (corporate, business unit, customer and product line)</li> </ul>	<ul style="list-style-type: none"> <li>Enterprise DCF (corporate, business unit)</li> <li>EP (corporate, business unit, customer and product line)</li> </ul>	<ul style="list-style-type: none"> <li>CFROI (corporate)</li> <li>SVA (corporate, business unit)</li> <li>FCF (corporate, business unit)</li> </ul>	<ul style="list-style-type: none"> <li>SVA (corporate, operating level)</li> <li>Change in residual income or change in EVA (operating level)</li> <li>Leading indicators of value (operating level)</li> </ul>	<ul style="list-style-type: none"> <li>CFROI (corporate)</li> <li>Accounting-based measures (lower levels)</li> </ul>

		Stern Stewart & Co	Marakon Associates	McKinsey & Co	PriceWaterHouseCoopers	L.E.K. Consulting	HOLT Value Associates
Investment decisions & resource allocation		Valuation of strategies based on EVA valuation	Focus on fulfilment of strategy requirements of the business unit Four principles for resource allocation	Focus on valuation-techniques <ul style="list-style-type: none"> <li>DCF</li> <li>Real option theory</li> </ul>	Focus on maximisation of SHV and alignment with strategy	Focus on Market signals analysis combined with DCF and real options as valuation tools	DCF in two parts, existing assets versus future investments
Mergers and acquisitions		EVA analysis combined with strategic considerations	Develop an acquisition strategy	Discipline acquisition programme	Structured approach combined with common sense	Discipline acquisition process	CFROI analysis
Influence on collaboration		Dynamic discussions at steering committee Commonality across processes and measures	Creation of "managing for value" mindset	Aligning BU managers and employees around a common understanding of top priorities	Bridging corporate and front-line managers strategy and its implementation	Aligning managers with a common framework of analysis, a common goal & common language	Create common language, Continuous improvement through feedback system
Performance Management	Performance Management	Paramount objective is increasing EVA  EVA is internalised through cross-functional teams  Preference for EVA valuation model and free cash flow model  Resemblance with the Shareholder Value Network of Rappaport	Suggested process consists of 3 activities: <ul style="list-style-type: none"> <li>Target setting</li> <li>Monitoring performance</li> <li>Examine difference</li> </ul> 2 Principles: <ul style="list-style-type: none"> <li>Plan driven targets</li> <li>Performance contracts</li> </ul>	Prescribed system contains 3 elements: <ul style="list-style-type: none"> <li>Value creation strategy for Bus</li> <li>Alignment between targets and value drivers at every level</li> <li>Structured performance review</li> </ul> 4 Principles: <ul style="list-style-type: none"> <li>Tailor-made</li> <li>Long- &amp; short-term targets</li> <li>Financial &amp; operational targets</li> <li>Leading indicators</li> </ul>	Proposed system is based on 4 elements: <ul style="list-style-type: none"> <li>Target setting</li> <li>Linking goals to value drivers on lower level</li> <li>Define micro-divers</li> <li>Value chain analysis</li> </ul>	Focus on development of an organisation wide "owner-oriented culture" Installation of more ownership-oriented perspective consists of 3 steps: <ul style="list-style-type: none"> <li>Overcome earnings myopia</li> <li>Measure and reward long-term performance</li> <li>Convey risks and rewards of ownership</li> </ul> Performance measurement hierarchy	Focus on learning process (not elaborated) At lower levels switch to simpler accounting based tools.
	Target setting	EVA goals as basis for stretched targets	Proposed strategy is validated (projections of revenue growth, EP and Equity CF) and once approved it becomes the target	Iterative process (negotiation between different organisational levels)	Translate global targets to localised targets at operational level	Translate shareholder returns at corporate level to specific key value drivers on the lowest organisational level	CFROI goals (at higher levels) translated in more local targets
Reward System	Basis for rewarding	Link rewards with value creation	Link rewards to performance consistent with value creation	Link individuals behaviour to overall value creating activities	Link rewards with value creation	Compensation based on superior performance (SSVA)	Compensation based on an empirical link to value
	General ideas	Putting executives at the same risk as stockholders  Start with top management and gradually extend through the ranks of middle management	Alignment between top management and governing objective  Focus on top management	Making managers think like owners  All employees throughout the organisation	Appropriate level of risk and reward  All employees throughout the organisation	Acquire experience and understanding with the shareholder value approach first, before linking to remuneration  All employees throughout the organisation	Acquire experience with the CFROI-model first, before linking to remuneration

		Stern Stewart & Co	Marakon Associates	McKinsey & Co	PriceWaterHouseCoopers	L.E.K. Consulting	HOLT Value Associates
	Key elements	<p>Results and not performance is rewarded</p> <p>Features of rewarding system(=Bonus bank):</p> <ul style="list-style-type: none"> <li>• Based on EVA-measure</li> <li>• Unambiguous Target</li> <li>• Uncapped bonuses</li> <li>• Based on improvement on corresponding level</li> <li>• Stretching horizon from short-term to longer-term</li> </ul> <p>Cash rewarding combined with internal rewarding Encourage employee stock ownership</p>	<p>Economic performance as basis</p> <p>Features of rewarding system:</p> <ul style="list-style-type: none"> <li>• First focus on the right strategies and organisational capabilities then on financial rewards</li> <li>• One corporate performance target, tailored targets for the BU based on its strategy</li> <li>• Targets are defined in contract</li> <li>• Compensation on one year results</li> <li>• Performance on corresponding level as basis for rewarding</li> <li>• Relative pay for relative performance</li> <li>• Linked short-and long-term targets</li> </ul> <p>Individual payment choice (cash or cash equivalents, options)</p>	<p>Individual behaviour and performance as basis for rewarding</p> <p>Features of rewarding system:</p> <ul style="list-style-type: none"> <li>• Challenging fin &amp; non-fin targets</li> <li>• Linked long-and short-term targets</li> <li>• Aversion against bonus caps</li> <li>• Corresponding performance</li> <li>• Targets tailored for different levels and linked to controllable KPIs</li> <li>• Visualise realised performance</li> <li>• Differentiate rewarding</li> </ul> <p>Financial incentives fulfilled with opportunities, values and beliefs form the reward package</p>	<p>Basis is economic performance</p> <p>Features of rewarding system:</p> <ul style="list-style-type: none"> <li>• Linked with strategy</li> <li>• Separate long &amp; short-term targets</li> <li>• Depending on hierarchy-level</li> <li>• Related to responsibilities</li> <li>• Subscribe the idea of long term incentive plans</li> </ul>	<p>Exceeding the threshold standard for superior performance as basis</p> <p>Features of rewarding system:</p> <ul style="list-style-type: none"> <li>• Based on SVA-measure</li> <li>• Based on improvement on corresponding level</li> <li>• Linked short-and long-term targets</li> <li>• One corporate performance target, tailored targets for lower organisational levels</li> <li>• Aversion against bonus caps</li> <li>• Related to responsibilities</li> <li>• Compensation on rolling three-to-five year SVA plans</li> <li>• Subscribe bonus-bank approach</li> <li>• Relative pay for relative performance</li> </ul> <p>Indexed stock options Encouragement of stock ownership or stock options</p>	
Training & education	General ideas	<p>Change the mindset</p> <p>Continuous communication with entire workforce</p> <p>Top-down</p>	<p>"learn by doing"</p> <p>Continuous reinforcement through top management communication</p> <p>Top-down to all levels</p>	<p>First, survey managers anonymously about beliefs and values, before changing beliefs and values</p> <p>Entire organisation</p>	<p>Value transformation team educates managers &amp; BU's</p> <p>Endorsement from top to all employees</p>	<p>Continuous education</p> <p>"Train the trainers" approach</p> <p>Shareholder Value Education Agenda</p> <p>Endorsement from top to all employees</p>	
	Content	<p>Focus on EVA</p>	<p>Focus on (developing &amp; implementing strategies that) maximise governing objective</p>	<p>Emphasis on value creation</p>	<p>Focus on share price goal shareholder value theme</p>	<p>Focus on superior total shareholder return (SSVA™)</p>	
Facilitators for the implementation of the VBM approach		<p>Installation of steering committee Commitment of CEO and CFO</p> <p>Formal implementation team</p> <p>Regular meeting with consulting firm to continue knowledge transfer</p>	<p>Chief executive as visible leader</p> <p>Top management champions to drive implementation</p>	<p>Visible top management commitment</p> <p>Extensive participation of BU managers in value driver analysis</p>	<p>CEO sponsorship, with support of senior management and board of directors</p> <p>Value transformation team, consisting of representatives off all levels</p>	<p>CEO commitment, with full support of the Board and management</p> <p>Various facilitating constructs</p>	
Benchmarking	Corporate level	<p>Compare sum of EVAs of Business Plans with market value of company</p>	<p>Company key management processes</p>	<p>DCF</p>	<p>Cash flow performance compared with competing companies</p> <p>Broad definition of benchmarking</p>	<p>Relative total shareholder return or comparing company's total return with a group of comparable peers</p> <p>DCF when absence of true current market benchmark</p>	<p>Compare forecast patterns with historical information</p>

		Stern Stewart & Co	Marakon Associates	McKinsey & Co	PriceWaterHouseCoopers	L.E.K. Consulting	HOLT Value Associates
	Business unit level	EVA drivers to compare internal	Identification of strategic value drivers	DCF combined with EP to benchmark	Business unit specific value driver	Business units operating plan Historical performance of the business unit Competitive performance of value drivers Market expectations for the whole company DCF when absence of true current market benchmark	NCR drivers

(Source: Ameels *et al.*, 2002:27)

## ANNEXURE B: CORRELATION MATRICES

Correlation matrix – Average price per share: 1996

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.881	1.000																			
Interest Paid	0.780	0.841	1.000																		
Net Profit After Taxes	0.894	0.961	0.854	1.000																	
Total L-T Assets	0.771	0.998	0.793	0.887	1.000																
Total Current Assets	0.833	0.933	0.877	0.917	0.818	1.000															
Total Assets	0.921	0.981	0.879	0.947	0.945	0.992	1.000														
Total Current Liabilities	0.986	0.918	0.863	0.891	0.928	0.989	0.948	1.000													
Total L-T Owners Interest	0.613	0.845	0.831	0.945	0.989	0.903	0.917	0.870	1.000												
Total L-T Loans	0.595	0.645	0.873	0.809	0.892	0.895	0.727	0.813	0.673	1.000											
Net Invest L-T Assets	0.741	0.875	0.745	0.872	0.982	0.770	0.908	0.803	0.581	0.541	1.000										
Earnings Per Share	0.395	0.427	0.324	0.430	0.365	0.366	0.383	0.378	0.395	0.122	0.393	1.000									
Ret On Equity	0.080	0.095	0.067	0.135	0.029	0.078	0.058	0.079	0.040	0.043	0.022	0.161	1.000								
ROCE	0.068	0.049	-0.036	0.058	-0.069	0.019	-0.022	0.031	-0.036	-0.118	-0.050	0.152	0.694	1.000							
EVA Rm	-0.614	-0.685	-0.733	-0.668	-0.831	-0.729	-0.813	-0.682	-0.808	-0.840	-0.746	-0.163	0.084	0.210	1.000						
Cash Invested	0.783	0.803	0.852	0.745	0.784	0.773	0.808	0.788	0.781	0.528	0.753	0.302	0.905	-0.022	-0.582	1.000					
Cash Available	0.830	0.874	0.738	0.886	0.848	0.818	0.871	0.855	0.868	0.450	0.883	0.451	0.122	0.068	-0.547	0.702	1.000				
Cash Generated	0.085	0.118	0.329	0.218	0.134	0.125	0.136	0.158	0.145	-0.074	0.176	0.243	0.117	0.035	-0.070	-0.311	0.346	1.000			
WACC	0.254	0.286	0.179	0.268	0.232	0.286	0.274	0.288	0.277	0.123	0.238	0.163	0.155	0.268	-0.216	0.188	0.288	0.082	1.000		
APS	0.482	0.550	0.392	0.530	0.516	0.469	0.514	0.481	0.528	0.280	0.532	0.792	0.081	0.072	-0.270	0.487	0.525	0.056	0.198	1.000	

Correlation matrix – Average price per share: 1997

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.885	1.000																			
Interest Paid	0.735	0.795	1.000																		
Net Profit After Taxes	0.788	0.857	0.734	1.000																	
Total L-T Assets	0.752	0.872	0.748	0.821	1.000																
Total Current Assets	0.819	0.921	0.844	0.876	0.787	1.000															
Total Assets	0.886	0.958	0.851	0.907	0.930	0.944	1.000														
Total Current Liabilities	0.947	0.908	0.814	0.860	0.802	0.951	0.940	1.000													
Total L-T Owners Interest	0.817	0.924	0.809	0.862	0.951	0.895	0.977	0.898	1.000												
Total L-T Loans	0.484	0.696	0.720	0.738	0.831	0.851	0.694	0.584	0.628	1.000											
Net Invest L-T Assets	0.715	0.825	0.677	0.758	0.883	0.708	0.893	0.774	0.833	0.501	1.000										
Earnings Per Share	0.439	0.529	0.387	0.516	0.549	0.469	0.540	0.475	0.571	0.245	0.568	1.000									
Ret On Equity	0.058	0.032	-0.047	0.074	-0.030	0.025	-0.001	0.033	-0.016	-0.039	-0.025	0.092	1.000								
ROCE	0.200	0.139	0.004	0.147	0.014	0.111	0.070	0.141	0.037	-0.039	0.025	0.202	0.811	1.000							
EVA Rm	-0.497	-0.617	-0.751	-0.648	-0.749	-0.649	-0.743	-0.576	-0.776	-0.683	-0.695	-0.275	0.105	0.196	1.000						
Cash Invested	0.437	0.607	0.409	0.575	0.708	0.449	0.828	0.552	0.596	0.477	0.688	0.403	-0.241	-0.040	-0.435	1.000					
Cash Available	0.720	0.878	0.883	0.845	0.853	0.752	0.858	0.781	0.847	0.616	0.831	0.537	0.029	0.130	-0.558	0.631	1.000				
Cash Generated	0.134	0.033	0.045	-0.068	-0.082	0.128	0.031	0.019	0.049	-0.046	-0.082	-0.015	0.339	0.150	-0.028	-0.608	0.120	1.000			
WACC	0.226	0.236	0.151	0.205	0.149	0.289	0.227	0.251	0.218	0.050	0.158	0.218	0.156	0.308	0.173	0.050	0.259	0.208	1.000		
APS	0.441	0.605	0.382	0.655	0.535	0.516	0.580	0.504	0.549	0.457	0.500	0.846	0.069	0.120	-0.280	0.514	0.594	-0.090	0.196	1.000	

Correlation matrix – Average price per share: 1998

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.832	1.000																			
Interest Paid	0.607	0.733	1.000																		
Net Profit After Taxes	0.599	0.808	0.401	1.000																	
Total L-T Assets	0.646	0.804	0.781	0.758	1.000																
Total Current Assets	0.926	0.910	0.687	0.689	0.871	1.000															
Total Assets	0.864	0.930	0.791	0.791	0.999	0.919	1.000														
Total Current Liabilities	0.949	0.883	0.715	0.828	0.886	0.933	0.889	1.000													
Total L-T Owners Interest	0.741	0.856	0.680	0.804	0.905	0.812	0.938	0.718	1.000												
Total L-T Loans	0.333	0.537	0.662	0.453	0.669	0.456	0.612	0.444	0.456	1.000											
Net Invest L-T Assets	0.657	0.769	0.667	0.746	0.956	0.697	0.667	0.661	0.925	0.421	1.000										
Earnings Per Share	0.377	0.511	0.315	0.587	0.587	0.453	0.551	0.395	0.599	0.288	0.566	1.000									
Ret On Equity	0.103	0.142	0.030	0.249	0.156	0.095	0.137	0.094	0.156	0.058	0.168	0.227	1.000								
ROCE	0.273	0.203	-0.011	0.207	-0.023	0.197	0.099	0.232	0.053	-0.147	0.031	0.195	0.469	1.000							
EVA Rm	-0.313	-0.368	-0.559	-0.185	-0.563	-0.411	-0.530	-0.270	-0.583	-0.515	-0.483	-0.147	0.081	0.345	1.000						
Cash Invested	0.561	0.716	0.699	0.525	0.782	0.683	0.747	0.645	0.603	0.826	0.604	0.392	0.025	-0.053	-0.484	1.000					
Cash Available	0.797	0.805	0.586	0.784	0.757	0.722	0.636	0.746	0.602	0.447	0.747	0.549	0.182	0.172	-0.285	0.573	1.000				
Cash Generated	-0.068	-0.160	-0.308	0.083	-0.140	-0.062	-0.131	-0.167	0.070	-0.595	0.054	0.057	0.194	0.164	0.247	-0.611	0.151	1.000			
WACC	0.230	0.221	0.043	0.166	0.078	0.275	0.196	0.191	0.221	-0.041	0.111	0.262	0.011	0.256	0.138	0.081	0.220	0.071	1.000		
APS	0.368	0.527	0.293	0.498	0.452	0.471	0.505	0.413	0.475	0.391	0.398	0.768	0.070	0.062	-0.198	0.536	0.460	-0.240	0.322	1.000	

Correlation matrix – Average price per share: 1999

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.798	1.000																			
Interest Paid	0.632	0.783	1.000																		
Net Profit After Taxes	0.623	0.899	0.603	1.000																	
Total L-T Assets	0.629	0.745	0.848	0.558	1.000																
Total Current Assets	0.920	0.882	0.721	0.738	0.706	1.000															
Total Assets	0.835	0.882	0.845	0.702	0.922	0.923	1.000														
Total Current Liabilities	0.936	0.846	0.755	0.710	0.722	0.922	0.881	1.000													
Total L-T Owners Interest	0.708	0.752	0.697	0.618	0.874	0.824	0.919	0.667	1.000												
Total L-T Loans	0.323	0.513	0.754	0.370	0.749	0.485	0.667	0.488	0.474	1.000											
Net Invest L-T Assets	0.635	0.721	0.721	0.548	0.937	0.684	0.877	0.705	0.914	0.471	1.000										
Earnings Per Share	0.355	0.473	0.367	0.511	0.379	0.450	0.450	0.336	0.518	0.170	0.416	1.000									
Ret On Equity	0.101	0.099	0.035	0.080	0.052	0.120	0.093	0.066	0.129	-0.009	0.075	0.152	1.000								
ROCE	0.150	0.220	0.003	0.320	-0.010	0.120	0.060	0.125	0.055	-0.163	0.040	0.224	0.001	1.000							
EVA Rm	-0.243	-0.102	-0.253	0.198	-0.503	-0.344	-0.458	-0.217	0.528	-0.424	-0.447	0.008	0.065	0.329	1.000						
Cash Invested	0.541	0.595	0.671	0.506	0.695	0.591	0.696	0.660	0.562	0.577	0.623	0.289	0.102	0.052	-0.236	1.000					
Cash Available	0.788	0.869	0.601	0.907	0.644	0.787	0.777	0.798	0.736	0.317	0.698	0.497	0.061	0.278	-0.080	0.512	1.000				
Cash Generated	-0.050	-0.037	-0.223	-0.031	-0.244	-0.100	-0.188	-0.198	-0.063	-0.238	-0.152	0.131	0.180	0.106	0.151	-0.734	0.116	1.000			
WACC	0.255	0.256	0.032	0.210	0.116	0.293	0.222	0.179	0.309	0.079	0.193	0.313	0.364	0.331	0.131	0.061	0.247	0.246	1.000		
APS	0.388	0.597	0.510	0.591	0.470	0.511	0.531	0.442	0.462	0.484	0.372	0.725	0.011	0.139	-0.062	0.354	0.560	0.052	0.218	1.000	

Correlation matrix – Average price per share: 2000

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.901	1.000																			
Interest Paid	0.565	0.729	1.000																		
Net Profit After Taxes	0.600	0.675	0.617	1.000																	
Total L-T Assets	0.581	0.787	0.704	0.721	1.000																
Total Current Assets	0.862	0.829	0.685	0.771	0.922	1.000															
Total Assets	0.856	0.695	0.771	0.830	0.894	0.907	1.000														
Total Current Liabilities	0.906	0.799	0.686	0.694	0.684	0.904	0.885	1.000													
Total L-T Owners Interest	0.673	0.830	0.682	0.819	0.888	0.827	0.951	0.720	1.000												
Total L-T Loans	0.417	0.734	0.746	0.636	0.831	0.534	0.754	0.515	0.711	1.000											
Net Invest L-T Assets	0.594	0.743	0.631	0.696	0.979	0.804	0.873	0.999	0.880	0.709	1.000										
Earnings Per Share	0.260	0.453	0.302	0.535	0.410	0.392	0.445	0.232	0.530	0.397	0.381	1.000									
Ret On Equity	0.114	0.148	0.099	0.254	0.110	0.125	0.131	0.101	0.141	0.080	0.112	0.150	1.000								
ROCE	0.107	0.159	0.075	0.213	0.055	0.107	0.091	0.098	0.080	0.047	0.054	0.189	0.100	1.000							
EVA Rm	-0.432	-0.370	-0.486	-0.213	-0.619	-0.508	-0.624	-0.438	-0.661	-0.538	-0.598	-0.235	-0.023	0.153	1.000						
Cash Invested	0.556	0.667	0.484	0.675	0.790	0.587	0.761	0.617	0.750	0.635	0.782	0.334	0.023	0.059	-0.418	1.000					
Cash Available	0.721	0.828	0.537	0.719	0.704	0.837	0.748	0.725	0.842	0.868	0.881	0.361	0.103	0.174	0.253	0.531	1.000				
Cash Generated	-0.099	-0.151	-0.131	-0.291	-0.367	-0.199	-0.312	-0.153	-0.382	-0.265	-0.371	-0.190	0.021	0.034	0.211	-0.734	0.099	1.000			
WACC	0.303	0.297	0.114	0.367	0.197	0.360	0.312	0.282	0.337	0.075	0.225	0.327	0.185	0.167	0.183	0.181	0.269	0.047	1.000		
APS	0.284	0.477	0.383	0.438	0.442	0.394	0.463	0.237	0.525	0.519	0.377	0.630	0.111	0.098	0.370	0.306	0.373	0.073	0.264	1.000	

Correlation matrix – Average price per share: 2001

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.899	1.000																			
Interest Paid	0.581	0.710	1.000																		
Net Profit After Taxes	0.643	0.729	0.530	1.000																	
Total L-T Assets	0.516	0.750	0.696	0.450	1.000																
Total Current Assets	0.893	0.807	0.672	0.703	0.484	1.000															
Total Assets	0.844	0.905	0.796	0.684	0.821	0.897	1.000														
Total Current Liabilities	0.951	0.821	0.690	0.681	0.562	0.935	0.894	1.000													
Total L-T Owners Interest	0.638	0.828	0.696	0.816	0.868	0.738	0.920	0.670	1.000												
Total L-T Loans	0.451	0.670	0.728	0.308	0.615	0.540	0.763	0.515	0.717	1.000											
Net Invest L-T Assets	0.484	0.697	0.599	0.460	0.968	0.402	0.749	0.517	0.629	0.534	1.000										
Earnings Per Share	0.328	0.455	0.350	0.473	0.364	0.441	0.471	0.345	0.521	0.344	0.330	1.000									
Ret On Equity	0.137	0.167	0.082	0.191	0.106	0.133	0.141	0.122	0.143	0.078	0.106	0.188	1.000								
ROCE	0.147	0.201	-0.005	0.240	0.008	0.080	0.057	0.102	0.035	-0.056	0.037	0.207	0.352	1.000							
EVA Rm	-0.182	-0.137	-0.380	-0.028	-0.365	-0.360	-0.419	-0.271	-0.440	-0.474	-0.273	-0.131	0.070	0.330	1.000						
Cash Invested	0.433	0.475	0.480	0.289	0.677	0.376	0.587	0.468	0.539	0.613	0.625	0.209	0.045	-0.015	-0.408	1.000					
Cash Available	0.643	0.803	0.542	0.577	0.599	0.828	0.808	0.696	0.786	0.583	0.789	0.418	0.161	0.205	-0.103	0.527	1.000				
Cash Generated	0.044	0.073	-0.126	0.125	-0.167	0.078	-0.033	0.024	-0.007	-0.243	-0.112	0.071	0.056	0.152	0.322	-0.727	0.175	1.000			
WACC	0.269	0.306	0.157	0.288	0.167	0.338	0.306	0.269	0.336	0.097	0.178	0.344	0.278	0.258	0.155	0.128	0.312	0.099	1.000		
APS	0.396	0.465	0.445	0.347	0.466	0.453	0.531	0.390	0.545	0.493	0.398	0.699	0.101	0.022	0.361	0.382	0.436	0.123	0.203	1.000	

Correlation matrix – Average price per share: 2002

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.631	1.000																			
Interest Paid	0.507	0.719	1.000																		
Net Profit After Taxes	0.710	0.784	0.563	1.000																	
Total L-T Assets	0.496	0.775	0.773	0.625	1.000																
Total Current Assets	0.873	0.764	0.808	0.802	0.508	1.000															
Total Assets	0.816	0.884	0.780	0.835	0.928	0.905	1.000														
Total Current Liabilities	0.935	0.816	0.634	0.787	0.581	0.936	0.899	1.000													
Total L-T Owners Interest	0.589	0.798	0.718	0.746	0.852	0.753	0.914	0.871	1.000												
Total L-T Loans	0.408	0.681	0.749	0.534	0.811	0.481	0.716	0.484	0.652	1.000											
Net Invest L-T Assets	0.476	0.728	0.691	0.595	0.964	0.459	0.777	0.555	0.840	0.628	1.000										
Earnings Per Share	0.238	0.343	0.246	0.440	0.188	0.311	0.296	0.282	0.199	0.367	0.084	1.000									
Ret On Equity	0.106	0.158	0.088	0.273	0.097	0.095	0.110	0.103	0.103	0.058	0.103	0.183	1.000								
ROCE	0.075	0.073	0.046	0.139	0.078	0.011	0.046	0.019	0.081	0.107	0.056	0.121	0.383	1.000							
EVA Rm	-0.210	-0.238	-0.348	-0.228	-0.380	-0.435	-0.472	-0.350	-0.505	-0.362	-0.343	-0.054	0.199	0.389	1.000						
Cash Invested	0.599	0.758	0.541	0.714	0.731	0.583	0.742	0.679	0.614	0.674	0.688	0.271	0.053	-0.036	-0.326	1.000					
Cash Available	0.786	0.741	0.522	0.811	0.596	0.773	0.800	0.791	0.681	0.494	0.570	0.380	0.144	0.051	-0.271	0.650	1.000				
Cash Generated	0.388	0.097	0.132	0.236	0.018	0.403	0.255	0.347	0.205	-0.096	0.019	0.178	0.112	0.024	-0.086	-0.263	0.471	1.000			
WACC	0.301	0.287	0.158	0.346	0.184	0.395	0.349	0.312	0.371	0.111	0.195	0.282	0.095	0.138	-0.307	0.187	0.384	0.259	1.000		
APS	0.231	0.460	0.356	0.475	0.418	0.303	0.405	0.303	0.330	0.585	0.293	0.741	0.084	-0.018	-0.329	0.509	0.425	-0.108	0.218	1.000	

Correlation matrix – Average price per share: 2003

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.819	1.000																			
Interest Paid	0.813	0.780	1.000																		
Net Profit After Taxes	0.409	0.629	0.459	1.000																	
Total L-T Assets	0.597	0.834	0.752	0.518	1.000																
Total Current Assets	0.880	0.843	0.798	0.481	0.630	1.000															
Total Assets	0.825	0.925	0.802	0.549	0.872	0.929	1.000														
Total Current Liabilities	0.930	0.867	0.731	0.479	0.721	0.917	0.920	1.000													
Total L-T Owners Interest	0.563	0.786	0.626	0.483	0.816	0.785	0.883	0.654	1.000												
Total L-T Loans	0.578	0.771	0.861	0.511	0.799	0.637	0.781	0.685	0.576	1.000											
Net Invest L-T Assets	0.519	0.744	0.588	0.447	0.964	0.535	0.790	0.633	0.818	0.583	1.000										
Earnings Per Share	0.265	0.360	0.351	0.424	0.206	0.332	0.307	0.278	0.283	0.224	0.167	1.000									
Ret On Equity	0.126	0.189	0.085	0.275	0.113	0.119	0.128	0.118	0.123	0.075	0.116	0.273	1.000								
ROCE	0.130	0.151	0.038	0.218	0.033	0.101	0.079	0.096	0.066	0.008	0.040	0.239	0.628	1.000							
EVA Rm	0.234	0.347	0.269	0.539	0.069	0.130	0.115	0.152	0.036	0.122	0.032	0.385	0.267	0.318	1.000						
Cash Invested	0.750	0.834	0.756	0.553	0.770	0.754	0.941	0.823	0.639	0.784	0.682	0.279	0.108	0.064	0.224	1.000					
Cash Available	0.821	0.915	0.687	0.575	0.867	0.819	0.900	0.859	0.756	0.684	0.751	0.325	0.183	0.155	0.201	0.626	1.000				
Cash Generated	0.202	0.270	0.040	0.048	0.228	0.250	0.266	0.172	0.397	-0.003	0.309	0.042	0.077	0.067	-0.138	-0.021	0.430	1.000			
WACC	0.162	0.171	0.050	0.118	0.138	0.254	0.226	0.183	0.280	0.038	0.188	0.184	0.111	0.050	-0.117	0.119	0.224	0.196	1.000		
APS	0.325	0.414	0.463	0.417	0.441	0.344	0.426	0.414	0.257	0.578	0.308	0.645	0.137	0.069	-0.001	0.453	0.443	-0.019	0.160	1.000	

Correlation matrix – Average price per share: 2004

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.814	1.000																			
Interest Paid	0.573	0.788	1.000																		
Net Profit After Taxes	0.706	0.895	0.617	1.000																	
Total L-T Assets	0.562	0.777	0.799	0.855	1.000																
Total Current Assets	0.828	0.835	0.699	0.740	0.594	1.000															
Total Assets	0.790	0.905	0.806	0.745	0.867	0.916	1.000														
Total Current Liabilities	0.927	0.870	0.763	0.703	0.686	0.903	0.902	1.000													
Total L-T Owners Interest	0.530	0.713	0.542	0.691	0.743	0.787	0.846	0.609	1.000												
Total L-T Loans	0.412	0.652	0.791	0.546	0.807	0.547	0.742	0.565	0.469	1.000											
Net Invest L-T Assets	0.527	0.683	0.556	0.562	0.679	0.468	0.726	0.595	0.780	0.425	1.000										
Earnings Per Share	0.331	0.477	0.351	0.533	0.294	0.375	0.379	0.363	0.348	0.198	0.291	1.000									
Ret On Equity	0.163	0.195	0.095	0.208	0.108	0.138	0.139	0.148	0.125	0.050	0.125	0.239	1.000								
ROCE	0.248	0.274	0.085	0.297	0.074	0.192	0.156	0.213	0.116	0.004	0.110	0.394	0.656	1.000							
EVA Rm	0.511	0.607	0.502	0.589	0.197	0.459	0.382	0.533	0.168	0.176	0.159	0.507	0.181	0.434	1.000						
Cash Invested	0.610	0.756	0.657	0.669	0.816	0.664	0.818	0.696	0.633	0.798	0.604	0.347	0.132	0.158	0.277	1.000					
Cash Available	0.826	0.945	0.742	0.903	0.779	0.842	0.910	0.881	0.709	0.659	0.661	0.489	0.186	0.280	0.582	0.772	1.000				
Cash Generated	0.501	0.511	0.358	0.474	0.214	0.496	0.414	0.523	0.305	0.095	0.251	0.324	0.069	0.281	0.547	0.002	0.567	1.000			
WACC	0.142	0.158	0.041	0.182	0.120	0.185	0.175	0.143	0.234	0.019	0.169	0.174	0.050	0.105	0.008	0.110	0.163	0.074	1.000		
APS	0.429	0.547	0.469	0.626	0.441	0.442	0.494	0.459	0.383	0.396	0.356	0.858	0.181	0.271	0.381	0.442	0.589	0.336	0.185	1.000	

Correlation matrix – Average price per share: 2005

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	APS	
Turnover	1.000																				
Gross Profit	0.886	1.000																			
Interest Paid	0.689	0.624	1.000																		
Net Profit After Taxes	0.701	0.914	0.786	1.000																	
Total L-T Assets	0.516	0.905	0.773	0.789	1.000																
Total Current Assets	0.855	0.882	0.789	0.802	0.810	1.000															
Total Assets	0.680	0.937	0.821	0.836	0.935	0.995	1.000														
Total Current Liabilities	0.945	0.905	0.815	0.787	0.858	0.933	0.947	1.000													
Total L-T Owners Interest	0.706	0.841	0.668	0.757	0.668	0.879	0.917	0.773	1.000												
Total L-T Loans	0.764	0.851	0.782	0.789	0.887	0.856	0.913	0.851	0.763	1.000											
Net Invest L-T Assets	0.676	0.747	0.579	0.605	0.679	0.570	0.736	0.682	0.787	0.560	1.000										
Earnings Per Share	0.457	0.597	0.509	0.572	0.431	0.487	0.487	0.490	0.476	0.349	0.414	1.000									
Ret On Equity	0.157	0.213	0.174	0.277	0.092	0.135	0.123	0.167	0.069	0.090	0.073	0.302	1.000								
ROCE	0.108	0.161	0.071	0.196	-0.004	0.063	0.036	0.069	0.011	-0.028	0.021	0.435	0.364	1.000							
EVA Rm	0.455	0.612	0.619	0.645	0.347	0.391	0.391	0.448	0.295	0.321	0.292	0.661	0.309	0.404	1.000						
Cash Invested	0.757	0.791	0.817	0.838	0.837	0.742	0.846	0.784	0.745	0.838	0.637	0.406	-0.031	0.021	0.258	1.000					
Cash Available	0.790	0.937	0.784	0.892	0.884	0.788	0.858	0.810	0.779	0.800	0.780	0.600	0.155	0.176	0.617	0.761	1.000				
Cash Generated	-0.165	-0.013	0.116	0.102	0.042	-0.184	-0.130	-0.136	-0.046	-0.293	0.135	0.152	0.085	0.101	0.376	-0.418	0.161	1.000			
WACC	0.092	0.148	0.053	0.184	0.111	0.179	0.158	0.117	0.214	0.006	0.193	0.227	-0.003	0.274	0.056	0.079	0.168	0.052	1.000		
APS	0.542	0.692	0.574	0.657	0.575	0.512	0.566	0.559	0.525	0.489	0.548	0.891	0.265	0.340	0.635	0.489	0.725	0.164	0.224	1.000	

Correlation matrix – Year-end price per share: 1995

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS	
Turnover	1.000																				
Gross Profit	0.891	1.000																			
Interest Paid	0.809	0.831	1.000																		
Net Profit After Taxes	0.930	0.974	0.758	1.000																	
Total L-T Assets	0.756	0.914	0.804	0.891	1.000																
Total Current Assets	0.940	0.936	0.867	0.910	0.821	1.000															
Total Assets	0.920	0.970	0.880	0.944	0.938	0.988	1.000														
Total Current Liabilities	0.963	0.935	0.873	0.888	0.891	0.967	0.986	1.000													
Total L-T Owners Interest	0.870	0.958	0.837	0.890	0.983	0.932	0.985	0.919	1.000												
Total L-T Loans	0.786	0.805	0.831	0.769	0.638	0.840	0.879	0.800	0.848	1.000											
Net Invest L-T Assets	0.748	0.884	0.737	0.868	0.982	0.763	0.890	0.819	0.919	0.721	1.000										
Earnings Per Share	0.462	0.492	0.453	0.492	0.524	0.455	0.507	0.471	0.516	0.429	0.518	1.000									
Ret On Equity	-0.023	-0.043	-0.039	-0.012	-0.124	-0.015	-0.064	-0.043	-0.084	-0.112	-0.120	-0.028	1.000								
ROCE	0.017	0.012	-0.110	0.040	-0.102	-0.008	-0.050	-0.007	-0.084	-0.155	-0.071	0.042	0.563	1.000							
EVA Rm	-0.705	-0.723	-0.767	-0.661	-0.831	-0.744	-0.817	-0.734	-0.820	-0.826	-0.772	-0.333	0.143	0.250	1.000						
Cash Invested	0.734	0.823	0.675	0.759	0.881	0.733	0.832	0.788	0.815	0.802	0.849	0.426	-0.228	-0.134	-0.770	1.000					
Cash Available	0.848	0.903	0.784	0.924	0.898	0.866	0.920	0.873	0.926	0.764	0.876	0.556	-0.021	0.021	-0.661	0.758	1.000				
Cash Generated	0.035	-0.097	0.018	0.001	-0.205	0.062	-0.053	-0.031	-0.044	-0.146	-0.211	0.063	0.300	0.168	0.228	-0.506	0.140	1.000			
WACC	0.255	0.278	0.118	0.290	0.215	0.256	0.250	0.244	0.273	0.092	0.242	0.242	0.021	0.262	-0.219	0.196	0.233	-0.034	1.000		
YPS	0.511	0.587	0.458	0.605	0.535	0.544	0.566	0.549	0.560	0.472	0.517	0.843	0.044	0.093	-0.287	0.497	0.638	0.086	0.213	1.000	

Correlation matrix – Year-end price per share: 1996

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS	
Turnover	1.000																				
Gross Profit	0.878	1.000																			
Interest Paid	0.796	0.862	1.000																		
Net Profit After Taxes	0.627	0.958	0.868	1.000																	
Total L-T Assets	0.789	0.888	0.793	0.873	1.000																
Total Current Assets	0.931	0.927	0.910	0.909	0.802	1.000															
Total Assets	0.898	0.958	0.902	0.941	0.939	0.958	1.000														
Total Current Liabilities	0.969	0.910	0.878	0.873	0.810	0.966	0.943	1.000													
Total L-T Owners Interest	0.804	0.938	0.841	0.940	0.988	0.891	0.974	0.898	1.000												
Total L-T Loans	0.589	0.645	0.751	0.609	0.696	0.897	0.734	0.814	0.878	1.000											
Net Invest L-T Assets	0.727	0.863	0.722	0.868	0.680	0.747	0.898	0.780	0.945	0.538	1.000										
Earnings Per Share	0.375	0.405	0.292	0.407	0.339	0.341	0.358	0.351	0.370	0.108	0.367	1.000									
Ret On Equity	0.080	0.097	0.077	0.140	0.028	0.079	0.059	0.081	0.040	0.042	0.021	0.182	1.000								
ROCE	0.074	0.057	-0.031	0.068	-0.067	0.025	-0.018	0.039	-0.035	-0.117	-0.046	0.156	0.694	1.000							
EVA Rm	-0.589	-0.656	-0.699	-0.628	-0.813	-0.701	-0.792	-0.644	-0.786	-0.859	-0.715	-0.119	0.091	0.216	1.000						
Cash Invested	0.778	0.798	0.686	0.798	0.758	0.787	0.823	0.785	0.777	0.520	0.745	0.283	0.004	0.002	-0.505	1.000					
Cash Available	-0.222	0.861	0.718	0.873	0.832	0.799	0.857	0.858	0.853	0.441	0.853	0.429	0.127	0.078	-0.491	0.694	1.000				
Cash Generated	-0.045	-0.072	-0.025	0.038	-0.063	-0.060	-0.085	-0.042	-0.051	-0.174	-0.026	0.191	0.141	0.057	0.178	-0.526	0.204	1.000			
WACC	0.240	0.272	0.153	0.252	0.215	0.271	0.259	0.252	0.261	0.115	0.220	0.151	0.155	0.271	-0.196	0.175	0.252	0.031	1.000		
YPS	0.432	0.507	0.370	0.492	0.450	0.411	0.451	0.425	0.469	0.189	0.475	0.751	0.099	0.083	-0.196	0.440	0.490	0.042	0.193	1.000	

Correlation matrix – Year-end price per share: 1997

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS	
Turnover	1.000																				
Gross Profit	0.890	1.000																			
Interest Paid	0.735	0.799	1.000																		
Net Profit After Taxes	0.788	0.957	0.739	1.000																	
Total L-T Assets	0.732	0.872	0.748	0.821	1.000																
Total Current Assets	0.919	0.921	0.844	0.878	0.767	1.000															
Total Assets	0.898	0.958	0.851	0.907	0.930	0.944	1.000														
Total Current Liabilities	0.947	0.908	0.914	0.890	0.902	0.951	0.940	1.000													
Total L-T Owners Interest	0.817	0.924	0.880	0.862	0.951	0.885	0.977	0.858	1.000												
Total L-T Loans	0.494	0.699	0.720	0.738	0.651	0.651	0.694	0.584	0.628	1.000											
Net Invest L-T Assets	0.715	0.825	0.677	0.758	0.983	0.708	0.893	0.774	0.933	0.501	1.000										
Earnings Per Share	0.439	0.529	0.387	0.516	0.549	0.469	0.540	0.475	0.571	0.245	0.566	1.000									
Ret On Equity	0.058	0.032	-0.041	0.074	-0.030	0.025	-0.001	0.033	-0.016	-0.039	-0.025	0.092	1.000								
ROCE	0.200	0.139	0.004	0.147	0.014	0.111	0.070	0.141	0.037	-0.039	0.025	0.202	0.611	1.000							
EVA Rm	-0.497	-0.617	-0.751	-0.548	-0.749	-0.649	-0.743	-0.576	-0.776	-0.653	-0.696	-0.275	0.105	0.196	1.000						
Cash Invested	0.437	0.607	0.409	0.575	0.705	0.449	0.698	0.552	0.596	0.477	0.688	0.403	-0.241	-0.040	-0.435	1.000					
Cash Available	0.720	0.878	0.980	0.945	0.859	0.752	0.855	0.781	0.947	0.816	0.831	0.537	0.029	0.130	-0.558	0.651	1.000				
Cash Generated	0.134	0.033	0.045	-0.008	-0.082	0.128	0.031	0.049	-0.045	-0.082	-0.015	0.339	0.150	-0.029	-0.608	0.120	1.000	1.000			
WACC	0.226	0.236	0.151	0.205	0.149	0.269	0.227	0.251	0.218	0.050	0.158	0.218	0.156	0.308	-0.173	0.050	0.259	0.208	1.000		
YPS	0.397	0.554	0.317	0.597	0.484	0.462	0.504	0.447	0.497	0.413	0.453	0.821	0.057	0.119	0.225	0.531	0.547	-0.139	0.179	1.000	

Correlation matrix – Year-end price per share: 1998

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS	
Turnover	1.000																				
Gross Profit	0.832	1.000																			
Interest Paid	0.697	0.733	1.000																		
Net Profit After Taxes	0.599	0.808	0.401	1.000																	
Total L-T Assets	0.648	0.804	0.781	0.758	1.000																
Total Current Assets	0.926	0.910	0.881	0.895	0.611	1.000															
Total Assets	0.864	0.939	0.791	0.791	0.909	0.919	1.000														
Total Current Liabilities	0.949	0.883	0.715	0.828	0.886	0.933	0.889	1.000													
Total L-T Owners Interest	0.734	0.858	0.680	0.804	0.905	0.812	0.938	0.715	1.000												
Total L-T Loans	0.333	0.537	0.662	0.453	0.669	0.456	0.612	0.444	0.456	1.000											
Net Invest L-T Assets	0.657	0.769	0.667	0.746	0.959	0.639	0.887	0.661	0.925	0.421	1.000										
Earnings Per Share	0.377	0.511	0.315	0.587	0.557	0.453	0.551	0.395	0.599	0.288	0.566	1.000									
Ret On Equity	0.103	0.142	0.030	0.249	0.156	0.095	0.137	0.094	0.156	0.058	0.168	0.227	1.000								
ROCE	0.273	0.203	-0.051	0.207	-0.023	0.197	0.099	0.232	0.053	-0.147	0.031	0.195	0.469	1.000							
EVA Rm	-0.313	-0.368	-0.559	-0.185	-0.583	-0.411	-0.530	-0.583	-0.515	-0.463	-0.147	0.081	0.346	1.000							
Cash Invested	0.561	0.716	0.656	0.625	0.782	0.609	0.747	0.645	0.663	0.826	0.604	0.392	-0.025	-0.051	-0.484	1.000					
Cash Available	0.797	0.865	0.988	0.784	0.757	0.772	0.836	0.746	0.862	0.447	0.747	0.549	0.182	0.172	-0.285	0.573	1.000				
Cash Generated	-0.068	-0.182	-0.308	0.083	-0.149	-0.092	-0.131	-0.167	0.070	-0.595	0.054	0.057	0.194	0.164	0.247	-0.674	0.151	1.000			
WACC	0.230	0.221	0.043	0.166	0.078	0.275	0.196	0.191	0.221	-0.041	0.111	0.262	0.011	0.256	-0.130	0.061	0.220	0.071	1.000		
YPS	0.274	0.416	0.203	0.400	0.343	0.377	0.394	0.317	0.352	0.377	0.269	0.601	-0.007	0.002	-0.181	0.516	0.336	-0.368	0.353	1.000	

Correlation matrix – Year-end price per share: 1999

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS		
Turnover	1.000																					
Gross Profit	0.815	1.000																				
Interest Paid	0.890	0.779	1.000																			
Net Profit After Taxes	0.837	0.886	0.606	1.000																		
Total L-T Assets	0.618	0.764	0.840	0.573	1.000																	
Total Current Assets	0.925	0.882	0.718	0.730	0.709	1.000																
Total Assets	0.835	0.850	0.843	0.705	0.924	0.924	1.000															
Total Current Liabilities	0.937	0.852	0.752	0.711	0.723	0.922	0.890	1.000														
Total L-T Owners Interest	0.710	0.833	0.702	0.659	0.876	0.841	0.928	0.705	1.000													
Total L-T Loans	0.321	0.456	0.775	0.284	0.787	0.457	0.673	0.477	0.516	1.000												
Net Invest L-T Assets	0.871	0.900	0.744	0.609	0.952	0.729	0.907	0.734	0.920	0.562	1.000											
Earnings Per Share	0.356	0.493	0.388	0.539	0.380	0.457	0.453	0.339	0.519	0.180	0.420	1.000										
Ret On Equity	0.099	0.093	0.032	0.073	0.051	0.116	0.090	0.062	0.129	-0.023	0.079	0.152	1.000									
ROCE	0.148	0.222	0.000	0.329	-0.012	0.117	0.057	0.123	0.055	-0.126	0.044	0.224	0.000	1.000								
EVA Rm	-0.241	-0.094	-0.293	0.224	-0.302	-0.343	-0.457	-0.213	-0.529	-0.441	-0.455	-0.008	-0.054	0.330	1.000							
Cash Invested	0.542	0.623	0.675	0.537	0.896	0.692	0.702	0.885	0.562	0.628	0.259	-0.102	0.062	-0.236	1.000							
Cash Available	0.808	0.878	0.602	0.786	0.685	0.781	0.782	0.771	0.230	0.778	0.520	0.053	0.283	-0.071	0.539	1.000						
Cash Generated	0.062	-0.086	-0.242	-0.086	-0.269	-0.131	-0.211	-0.221	-0.061	-0.428	-0.136	0.132	0.177	0.103	0.159	-0.742	0.074	1.000				
WACC	0.255	0.263	0.031	0.218	0.116	0.286	0.222	0.179	0.310	-0.084	0.197	0.313	0.364	0.331	-0.131	-0.061	0.256	0.247	1.000			
YPS	0.394	0.548	0.535	0.520	0.514	0.498	0.547	0.420	0.546	0.411	0.487	0.825	0.033	0.128	-0.095	0.399	0.508	0.002	0.230	1.000		

Correlation matrix – Year-end price per share: 2000

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS		
Turnover	1.000																					
Gross Profit	0.803	1.000																				
Interest Paid	0.565	0.729	1.000																			
Net Profit After Taxes	0.600	0.875	0.617	1.000																		
Total L-T Assets	0.581	0.787	0.704	0.723	1.000																	
Total Current Assets	0.692	0.805	0.685	0.771	0.622	1.000																
Total Assets	0.609	0.895	0.771	0.830	0.694	0.907	1.000															
Total Current Liabilities	0.906	0.799	0.688	0.694	0.684	0.904	0.885	1.000														
Total L-T Owners Interest	0.473	0.830	0.682	0.819	0.888	0.827	0.951	0.720	1.000													
Total L-T Loans	0.417	0.734	0.746	0.626	0.833	0.534	0.754	0.515	0.713	1.000												
Net Invest L-T Assets	0.594	0.743	0.631	0.696	0.979	0.604	0.973	0.690	0.980	0.705	1.000											
Earnings Per Share	0.260	0.453	0.302	0.535	0.410	0.392	0.445	0.232	0.530	0.397	0.381	1.000										
Ret On Equity	0.114	0.146	0.099	0.254	0.110	0.125	0.131	0.101	0.141	0.080	0.112	0.150	1.000									
ROCE	0.107	0.159	0.075	0.213	0.055	0.107	0.091	0.098	0.080	0.047	0.054	0.189	0.100	1.000								
EVA Rm	-0.432	-0.370	-0.486	-0.213	-0.619	-0.308	-0.624	-0.438	-0.861	-0.538	-0.598	-0.236	-0.023	0.153	1.000							
Cash Invested	0.556	0.667	0.484	0.675	0.796	0.587	0.761	0.750	0.835	0.782	0.334	0.023	0.059	-0.418	1.000							
Cash Available	0.721	0.808	0.537	0.719	0.704	0.637	0.743	0.725	0.642	0.608	0.681	0.361	0.103	0.174	-0.253	0.531	1.000					
Cash Generated	-0.099	-0.151	-0.131	-0.291	-0.397	-0.199	-0.312	-0.153	-0.392	-0.369	-0.373	-0.160	0.021	0.034	0.211	-0.734	0.099	1.000				
WACC	0.303	0.297	0.114	0.367	0.197	0.360	0.312	0.282	0.337	0.075	0.225	0.327	0.185	0.187	-0.183	0.181	0.269	-0.047	1.000			
YPS	0.302	0.481	0.390	0.439	0.439	0.405	0.468	0.236	0.536	0.513	0.378	0.825	0.119	0.099	-0.381	0.294	0.364	-0.074	0.268	1.000		

Correlation matrix – Year-end price per share: 2001

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS		
Turnover	1.000																					
Gross Profit	0.838	1.000																				
Interest Paid	0.569	0.724	1.000																			
Net Profit After Taxes	0.661	0.739	0.538	1.000																		
Total L-T Assets	0.507	0.755	0.696	0.453	1.000																	
Total Current Assets	0.891	0.814	0.664	0.709	0.475	1.000																
Total Assets	0.640	0.915	0.784	0.694	0.817	0.695	1.000															
Total Current Liabilities	0.951	0.805	0.685	0.685	0.556	0.934	0.893	1.000														
Total L-T Owners Interest	0.628	0.838	0.687	0.646	0.866	0.792	0.918	0.685	1.000													
Total L-T Loans	0.439	0.676	0.722	0.310	0.812	0.531	0.768	0.508	0.721	1.000												
Net Invest L-T Assets	0.476	0.700	0.582	0.463	0.685	0.393	0.746	0.511	0.328	0.623	1.000											
Earnings Per Share	0.320	0.456	0.343	0.474	0.358	0.435	0.466	0.340	0.516	0.338	0.324	1.000										
Ret On Equity	0.137	0.167	0.081	0.191	0.105	0.133	0.140	0.122	0.143	0.077	0.105	0.188	1.000									
ROCE	0.167	0.203	0.014	0.241	0.021	0.096	0.073	0.114	0.052	-0.045	0.048	0.216	0.356	1.000								
EVA Rm	-0.141	-0.142	-0.346	-0.028	-0.346	-0.337	-0.336	-0.251	-0.415	-0.458	-0.254	-0.112	0.078	0.338	1.000							
Cash Invested	0.411	0.469	0.457	0.298	0.672	0.356	0.574	0.459	0.521	0.604	0.622	0.196	0.047	0.011	-0.358	1.000						
Cash Available	0.679	0.604	0.535	0.580	0.787	0.623	0.807	0.692	0.783	0.578	0.787	0.414	0.160	0.217	-0.877	0.522	1.000					
Cash Generated	0.081	0.077	-0.081	0.129	-0.144	0.111	-0.000	0.048	0.029	-0.220	-0.092	0.090	0.060	0.133	0.275	0.712	0.202	1.000				
WACC	0.280	0.307	0.168	0.289	0.174	0.349	0.317	0.276	0.349	0.104	0.184	0.349	0.279	0.295	-0.179	0.144	0.319	0.092	1.000			
YPS	0.276	0.497	0.363	0.296	0.522	0.328	0.479	0.293	0.523	0.527	0.456	0.737	0.117	0.105	-0.125	0.303	0.492	0.012	0.222	1.000		

Correlation matrix – Year-end price per share: 2002

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS			
Turnover	1.000																						
Gross Profit	0.801	1.000																					
Interest Paid	0.507	0.719	1.000																				
Net Profit After Taxes	0.710	0.764	0.563	1.000																			
Total L-T Assets	0.496	0.778	0.773	0.628	1.000																		
Total Current Assets	0.873	0.764	0.606	0.802	0.508	1.000																	
Total Assets	0.816	0.894	0.790	0.835	0.868	0.905	1.000																
Total Current Liabilities	0.935	0.816	0.634	0.767	0.581	0.938	0.899	1.000															
Total L-T Owners Interest	0.589	0.768	0.716	0.748	0.852	0.753	0.914	0.671	1.000														
Total L-T Loans	0.408	0.681	0.746	0.534	0.811	0.481	0.718	0.484	0.662	1.000													
Net Invest L-T Assets	0.476	0.728	0.661	0.595	0.764	0.459	0.777	0.555	0.440	0.628	1.000												
Earnings Per Share	0.238	0.343	0.246	0.440	0.188	0.311	0.296	0.282	0.189	0.367	0.084	1.000											
Ret On Equity	0.106	0.158	0.088	0.273	0.097	0.095	0.110	0.103	0.103	0.058	0.103	0.183	1.000										
ROCE	0.075	0.073	-0.046	0.139	-0.078	-0.011	-0.046	0.019	-0.081	-0.106	-0.056	0.121	0.383	1.000									
EVA Rm	-0.210	-0.236	-0.346	-0.228	-0.380	-0.435	-0.472	-0.350	-0.505	-0.382	-0.343	-0.054	0.199	0.389	1.000								
Cash Invested	0.599	0.738	0.541	0.714	0.731	0.583	0.742	0.619	0.814	0.614	0.668	0.271	0.053	-0.016	-0.326	1.000							
Cash Available	0.786	0.741	0.522	0.811	0.596	0.773	0.800	0.791	0.681	0.494	0.570	0.380	0.144	0.051	-0.271	0.650	1.000						
Cash Generated	0.388	0.097	0.132	0.236	-0.016	0.403	0.255	0.347	0.205	-0.096	0.019	0.178	0.112	0.024	-0.086	-0.263	0.471	1.000					
WACC	0.301	0.287	0.158	0.345	0.184	0.395	0.349	0.312	0.371	0.111	0.195	0.262	0.095	0.138	-0.307	0.187	0.384	0.259	1.000				
YPS	0.229	0.445	0.352	0.451	0.429	0.270	0.389	0.288	0.310	0.590	0.305	0.750	0.099	-0.003	-0.222	0.520	0.444	0.089	0.182	1.000			

Correlation matrix – Year-end price per share: 2003

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS	
Turnover	1.000																				
Gross Profit	0.851	1.000																			
Interest Paid	0.633	0.781	1.000																		
Net Profit After Taxes	0.599	0.695	0.514	1.000																	
Total L-T Assets	0.632	0.836	0.753	0.556	1.000																
Total Current Assets	0.846	0.877	0.737	0.682	0.888	1.000															
Total Assets	0.822	0.905	0.810	0.685	0.891	0.933	1.000														
Total Current Liabilities	0.826	0.888	0.747	0.686	0.759	0.912	0.919	1.000													
Total L-T Owners Interest	0.555	0.790	0.629	0.585	0.826	0.790	0.881	0.647	1.000												
Total L-T Loans	0.614	0.772	0.683	0.546	0.799	0.677	0.799	0.715	0.585	1.000											
Net Invest L-T Assets	0.550	0.746	0.590	0.481	0.954	0.566	0.807	0.655	0.806	0.583	1.000										
Earnings Per Share	0.312	0.366	0.358	0.423	0.383	0.383	0.334	0.316	0.302	0.225	0.189	1.000									
Ret On Equity	0.146	0.188	0.086	0.275	0.111	0.139	0.138	0.134	0.129	0.073	0.113	0.267	1.000								
ROCE	0.153	0.151	0.039	0.211	0.031	0.123	0.090	0.112	0.072	0.006	0.038	0.234	0.627	1.000							
EVA Rm	0.468	0.418	0.333	0.433	0.071	0.344	0.244	0.334	0.121	0.129	0.032	0.244	0.301	0.335	1.000						
Cash Invested	0.768	0.935	0.719	0.633	0.774	0.772	0.645	0.835	0.838	0.738	0.685	0.290	0.109	0.086	0.301	1.000					
Cash Available	0.819	0.925	0.698	0.744	0.835	0.808	0.897	0.850	0.794	0.716	0.776	0.361	0.205	0.172	0.380	0.938	1.000				
Cash Generated	0.115	0.276	-0.054	0.198	0.247	0.168	0.222	0.098	0.378	0.005	0.331	0.078	0.099	0.090	0.033	-0.045	0.384	1.000			
WACC	0.117	0.170	0.046	0.207	0.145	0.215	0.201	0.147	0.264	0.044	0.174	0.208	0.121	0.060	-0.031	0.111	0.192	0.148	1.000		
YPS	0.331	0.403	0.473	0.418	0.292	0.367	0.414	0.402	0.245	0.577	0.244	0.689	0.136	0.078	0.022	0.465	0.422	-0.063	0.171	1.000	

Correlation matrix – Year-end price per share: 2004

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS	
Turnover	1.000																				
Gross Profit	0.815	1.000																			
Interest Paid	0.577	0.797	1.000																		
Net Profit After Taxes	0.708	0.894	0.620	1.000																	
Total L-T Assets	0.553	0.764	0.758	0.637	1.000																
Total Current Assets	0.829	0.836	0.693	0.741	0.584	1.000															
Total Assets	0.790	0.901	0.809	0.774	0.667	0.911	1.000														
Total Current Liabilities	0.927	0.871	0.763	0.705	0.679	0.803	0.899	1.000													
Total L-T Owners Interest	0.531	0.712	0.552	0.686	0.748	0.784	0.849	0.608	1.000												
Total L-T Loans	0.412	0.648	0.748	0.538	0.819	0.543	0.750	0.566	0.488	1.000											
Net Invest L-T Assets	0.523	0.658	0.564	0.551	0.985	0.465	0.735	0.593	0.764	0.458	1.000										
Earnings Per Share	0.334	0.479	0.357	0.535	0.281	0.377	0.374	0.364	0.341	0.194	0.278	1.000									
Ret On Equity	0.171	0.204	0.099	0.217	0.109	0.147	0.146	0.156	0.133	0.049	0.129	0.251	1.000								
ROCE	0.248	0.275	0.093	0.296	0.060	0.193	0.149	0.213	0.104	0.001	0.091	0.384	0.688	1.000							
EVA Rm	0.495	0.586	0.478	0.577	0.139	0.444	0.343	0.511	0.137	0.126	0.113	0.505	0.184	0.438	1.000						
Cash Invested	0.912	0.757	0.681	0.669	0.803	0.685	0.817	0.688	0.834	0.732	0.682	0.246	0.140	0.158	0.262	1.000					
Cash Available	0.826	0.950	0.745	0.903	0.784	0.842	0.905	0.881	0.707	0.659	0.654	0.490	0.196	0.279	0.564	0.779	1.000				
Cash Generated	0.501	0.510	0.357	0.203	0.495	0.407	0.521	0.300	0.090	0.242	0.327	0.072	0.283	0.540	0.003	0.566	0.566	1.000			
WACC	0.180	0.206	0.038	0.253	0.132	0.258	0.225	0.176	0.329	0.002	0.203	0.257	0.230	0.208	-0.015	0.117	0.211	0.117	1.000		
YPS	0.407	0.545	0.481	0.596	0.497	0.420	0.510	0.456	0.385	0.463	0.394	0.796	0.178	0.248	0.294	0.441	0.578	0.331	0.230	1.000	

Correlation matrix – Year-end price per share: 2005

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS		
Turnover	1.000																					
Gross Profit	0.831	1.000																				
Interest Paid	0.568	0.734	1.000																			
Net Profit After Taxes	0.626	0.873	0.688	1.000																		
Total L-T Assets	0.659	0.846	0.789	0.724	1.000																	
Total Current Assets	0.857	0.881	0.712	0.748	0.696	1.000																
Total Assets	0.826	0.938	0.803	0.793	0.916	0.927	1.000															
Total Current Liabilities	0.945	0.893	0.736	0.723	0.748	0.927	0.912	1.000														
Total L-T Owners Interest	0.582	0.708	0.626	0.741	0.835	0.800	0.887	0.882	1.000													
Total L-T Loans	0.581	0.764	0.787	0.616	0.868	0.862	0.825	0.867	0.811	1.000												
Net Invest L-T Assets	0.588	0.748	0.594	0.860	0.906	0.581	0.801	0.823	0.848	0.573	1.000											
Earnings Per Share	0.388	0.539	0.425	0.582	0.400	0.509	0.496	0.465	0.495	0.304	0.399	1.000										
Ret On Equity	0.202	0.214	0.118	0.299	0.059	0.149	0.115	0.190	0.041	0.043	0.060	0.255	1.000									
ROCE	0.221	0.166	0.015	0.180	-0.017	0.113	0.054	0.156	-0.025	-0.051	0.015	0.339	0.508	1.000								
EVA Rm	0.534	0.637	0.585	0.886	0.327	0.511	0.458	0.548	0.303	0.321	0.264	0.569	0.330	0.408	1.000							
Cash Invested	0.657	0.775	0.575	0.557	0.778	0.888	0.783	0.707	0.672	0.728	0.855	0.408	-0.036	0.050	0.328	1.000						
Cash Available	0.725	0.947	0.768	0.835	0.842	0.815	0.902	0.833	0.794	0.745	0.760	0.549	0.166	0.175	0.640	0.773	1.000					
Cash Generated	-0.015	0.076	0.210	0.278	0.043	0.080	0.067	0.062	0.122	-0.041	0.104	0.131	0.130	0.078	0.327	-0.346	0.205	1.000				
WACC	0.110	0.157	0.026	0.231	0.104	0.214	0.175	0.135	0.299	-0.036	0.201	0.239	0.037	0.219	0.053	0.062	0.175	0.096	1.000			
YPS	0.441	0.603	0.565	0.584	0.506	0.527	0.561	0.532	0.475	0.465	0.436	0.852	0.210	0.257	0.554	0.444	0.625	0.189	0.166	1.000		

Correlation matrix – Year-end price per share: 2006

	Turnover	Gross Profit	Interest Paid	Net Profit After Taxes	Total L-T Assets	Total Current Assets	Total Assets	Total Current Liabilities	Total L-T Owners Interest	Total L-T Loans	Net Invest L-T Assets	Earnings Per Share	Ret On Equity	ROCE	EVA Rm	Cash Invested	Cash Available	Cash Generated	WACC	YPS		
Turnover	1.000																					
Gross Profit	0.808	1.000																				
Interest Paid	0.554	0.808	1.000																			
Net Profit After Taxes	0.648	0.938	0.744	1.000																		
Total L-T Assets	0.564	0.797	0.839	0.728	1.000																	
Total Current Assets	0.803	0.860	0.738	0.829	0.867	1.000																
Total Assets	0.783	0.926	0.869	0.866	0.891	0.893	1.000															
Total Current Liabilities	0.911	0.899	0.734	0.799	0.706	0.925	0.906	1.000														
Total L-T Owners Interest	0.394	0.685	0.580	0.709	0.699	0.725	0.781	0.556	1.000													
Total L-T Loans	0.513	0.714	0.877	0.603	0.849	0.832	0.797	0.831	0.408	1.000												
Net Invest L-T Assets	0.373	0.533	0.413	0.563	0.741	0.411	0.809	0.484	0.753	0.274	1.000											
Earnings Per Share	0.280	0.451	0.237	0.530	0.247	0.386	0.342	0.324	0.395	0.111	0.308	1.000										
Ret On Equity	0.400	0.337	0.091	0.370	0.123	0.246	0.209	0.329	0.096	0.040	0.172	0.321	1.000									
ROCE	0.341	0.266	-0.008	0.228	-0.001	0.175	0.106	0.244	0.018	-0.055	0.070	0.443	0.829	1.000								
EVA Rm	0.456	0.593	0.287	0.704	0.165	0.528	0.402	0.518	0.361	0.047	0.241	0.806	0.416	0.480	1.000							
Cash Invested	0.596	0.733	0.781	0.805	0.743	0.839	0.749	0.681	0.375	0.853	0.268	0.208	0.077	0.056	0.130	1.000						
Cash Available	0.773	0.962	0.783	0.924	0.795	0.860	0.912	0.890	0.641	0.714	0.550	0.432	0.299	0.235	0.583	0.705	1.000					
Cash Generated	-0.162	-0.287	-0.365	-0.067	-0.321	-0.128	-0.234	-0.128	0.028	-0.540	0.104	0.071	0.056	0.103	0.287	-0.719	-0.097	1.000				
WACC	0.054	0.135	0.030	0.151	0.082	0.161	0.138	0.101	0.247	0.010	0.162	0.172	-0.009	0.085	0.072	0.016	0.122	0.059	1.000			
YPS	0.308	0.523	0.389	0.583	0.383	0.385	0.425	0.406	0.349	0.289	0.347	0.846	0.268	0.311	0.495	0.297	0.528	0.001	0.162	1.000		