

**DETERMINING ECONOMIC VALUE ADDED FOR AGRICULTURAL
CO-OPERATIVES IN SOUTH AFRICA**

by

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ABSTRACT

No research has been done to date on Economic Value Added (EVA) as a performance measure for South African agricultural co-operatives. The main objective of this study is to calculate Economic Value Added for South African agricultural co-operatives. Further objectives are to determine whether co-operatives add value to their members' interest, whether there exists a correlation between EVA performances over the years under review and between the individual groups of co-operatives. The study aims to determine EVA for the grain and oilseeds, wine, meat, timber, tobacco, fruit and vegetables co-operatives. The study further calculated EVA values for all the groups of co-operatives under changing beta-values to look at the sensitivity of EVA.

EVA can be described as a value-based performance measure, an investment decision tool and also a performance measure reflecting the absolute amount of shareholder value created.

Three basic inputs are needed in the calculation of EVA, namely return on capital earned on investments, the cost of capital for those investments and the capital

invested in them. These three inputs are determined before the calculation of EVA can be applied. The values for the determination of these inputs are obtained from the income statements and balance sheets of the respective agricultural co-operatives.

After the calculation of the EVA values for all the separate co-operatives, it could be concluded that no grain and oilseed co-operatives created value. There was only one wine co-operative which created value, five which improved from a negative to a positive EVA, three which had negative but improving EVA values. The rest of the wine co-operatives destroyed value. In the case of meat co-operatives three of the four co-operatives destroyed value, while the other one created value in the first (1998) and last year (2001) under review. The timber co-operatives created value, except for one of the three which destroyed value in 2000 and 2001. The tobacco co-operatives destroyed value over the four years under review. In the case of fruit and vegetable co-operatives, one co-operative created value, while the rest of the co-operatives destroyed value. All of the general co-operatives, as well as all the requisites co-operatives destroyed value.

Averages for all the groups of co-operatives were calculated as well. Grain and oilseeds, wine, tobacco, general and requisites co-operatives destroyed value. The average of the meat co-operatives showed that this group destroyed value over the first three years under review, but created value in the last year. Timber, fruit and vegetable co-operatives created value over all four of the years under review. The average for all of the co-operatives showed that co-operatives, in general, destroyed value.

From this study it becomes clear that no correlation exists between the EVA values calculated for the co-operatives over the four year period under review. There is no correlation between the individual groups of co-operatives either. This means that the EVA performance of co-operatives are not influenced by

external factors, but depends on the effective management and decision-making within the agricultural co-operatives.

By increasing and decreasing beta-values by 10% and 20% respectively and then recalculating EVA with these changed beta-values, the sensitivity of EVA could be determined. There were no significant changes in the EVA values after recalculating them. Most negative EVA values stayed negative and the positive EVA values stayed positive after recalculating EVA. It can be said that EVA is not very sensitive to the changing betas.

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IMPORTANT NOTE

In this study, decimal points are used and not decimal commas, as is the case in South Africa. The reason for this is that all my computer outputs are in this format and it is also the format applied by the Department in which the study is registered.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Through the centuries people have devised ways and means of coping with life's adversities. Often the problems confronting them were so large that one person alone could not effectively handle it and the help of other people was required. This is how the unique African institution of the *stokvel* was born, so that more than one person could voluntarily co-operate in achieving a common goal. In this sense one could say that a co-operative is simply a *stokvel* that is legalized and enjoys the protection of the government and the law.

Co-operatives were formed in South Africa, after the Anglo Boer War in the early 1900's. Farmers formed these co-operatives to aid in the selling of their produce. The general dealer was the only supplier and buyer of agricultural commodities and this restricted the farmers from obtaining better prices for their commodities. Co-operatives are regarded as a separate form of business organization, extending the conventional classification of single proprietorship, partnerships and stockholder-owned firms. Like other firms, co-operatives buy, sell and produce goods and services. However, unlike other firms, co-operatives are owned by their members to exist and to serve their members; they distribute profits and surpluses according to patronage and not according to investment. Co-operatives developed slowly, but had a total of R6.7 billion in assets in 2002 and a net income after tax of R193 million. Although this is a large industry in agriculture, little research was done to determine whether co-operatives create value for their members.

In the late 1980s, Joel Stern and G. Bennet Stewart III of the New York consulting firm Stern Stewart and Co. began to develop and promote economic

value added (EVA) in the business community as a method that can be connected with a firm's share price. EVA thus determines whether shareholder wealth was created or not. EVA is a value based financial performance measure, an investment decision tool and it is also a performance measure reflecting the absolute amount of shareholder value created. It is a single, simple measure that gives a real picture of shareholder wealth creation. In addition to motivate managers to create shareholder value and to be a basis for management compensation, there are further practical advantages that value based measurement systems can offer.

In one sense, agriculture is not significant as a producer of wealth; the contribution of this sector to GDP has decreased from 7% in 1980 to 3.5% in 2002. Nevertheless, as a net export industry – accounting for nearly 9% of total exports – agriculture is an important earner of foreign exchange, with the value of total agriculture exports during 1997 totaling around R13 billion. As a source of employment, some 55 000 commercial farmers employ more than one million workers and, in the emerging sector, an estimated one million small-scale farmers earn a living from agriculture. It is estimated that some six million people are sustained through agriculture. But the real contribution of the agricultural sector to the national economy becomes clearer when the full impact of income and employment linkages and the multiplier effect are included. Then the contribution of the agricultural sector to GDP rises to 12% and employment stands at 30%. Clearly, the well-being of the agricultural sector is crucial to the growth and development of the broader South African economy.

No research has yet been done on EVA as a performance measure for South African agricultural co-operatives. Applying the EVA system will motivate management of co-operatives to create shareholder value; it will help managers to make better investment decisions; identify opportunities for improvement and consider long-term and short-term benefits. Because EVA is a measure of the quality of managerial decisions, these decisions can be improved. Constant

positive EVA values over time will increase the co-operatives' value, while negative EVA values will decrease company values.

EVA is not a new discovery. EVA is a variation of residual income with adjustments to how one calculates income and capital. Residual income, an accounting performance measure, is defined as operating profit less capital charge. Residual income is based on the premise that, in order for a co-operative to create wealth for its owners, it must earn more on its total invested capital than the cost of capital. It measures 'profits', net of the full cost of both debt and equity capital (Biddle, Bowen & Wallace, 1999). Before 1970 residual income was not get wide publicized and was not recognized as a prime performance measure in companies.

Stern Stewart & Co., a consulting firm based in New York, introduced the concept on EVA as a measurement tool in 1989, and trademarked it. The EVA concept is often called Economic Profit (EP) to avoid trademark disputes. EVA is so popular and well known that all residual income concepts are often called EVA even though they do not include the main elements defined by Stern Stewart & Co. (Pinto, 2001).

EVA has received wide publicity and is starting to be the prime performance measure in companies (Mäkeläinen, 1998). By the 1990's, creating shareholder value had become the ultimate economic purpose of a company (Stewart, 1991). Companies focus on building, operating and harvesting new businesses and/or products that will provide a greater return than the firm's cost of capital, thus maximizing of shareholder value. EVA is a strategy formulation and a financial performance management tool that helps companies make a return greater than the companies' cost of capital. Companies have adopted EVA to track their financial position and to guide management decisions regarding resource allocation, capital budgeting and acquisition analysis.

1.2 General Issue

This research focuses on the adaptation of EVA to agricultural co-operatives. This is the first time that such a study is undertaken in South Africa. The study aims to determine EVA for the following groups of agricultural co-operatives:

- Grains & oilseed;
- Wine;
- Meat;
- Timber;
- Tobacco; and
- Fruit and Vegetables.

1.3 Specific Issue

Conducting this research will help to determine whether South African agricultural co-operatives add value to their member's interest. A positive EVA indicates that value was added; a negative value indicates that value was destroyed.

The study will furthermore establish whether there is any correlation of EVA performance within groups or as a whole.

1.4 Objectives

1.4.1 General objective

The main objective of this research is to calculate EVA for South African agricultural co-operatives.

1.4.2 Specific objectives

Further objectives are to:

- determine whether co-operatives add value to their member's interest;
- determine whether there is any correlation between EVA performance in the individual groups of co-operatives; and
- determine whether there is correlation between EVA performance over certain years.

1.5 Review of Related Research

Several research studies focused on EVA in South Africa (Jeffereys, 1996, Carstens, 1997, Pretorius, 1997, Pearson, 1998, Suleman, 1999, Van Wyk, 2000, Soni, 2001 & Gelderblom, 2003) but no research was done to develop EVA as a measurement tool for agricultural co-operatives. Several studies examined the relationship between EVA and maximizing shareholder value.

Bottger (1999) found that the basic corporate finance and microeconomic theory indicate that the primary financial directive of any firm ought to be to maximize the wealth of the shareholders. The EVA concept is considered from a financial management perspective. The EVA approach, as a financial management system, is the key to creating wealth, based on the results of practical and theoretical investigation. It was found that one of the major challenges facing EVA implementation is changing traditional methods of financial reporting. You Lee (1995) did a study on the usage of EVA as a corporate performance measurement tool. The main research finding was that within the context of the JSE, EVA is at best marginally better than ROA and ROE. Turvey, Lake, Van Duren and Sparling (2000) examined the relationship between economic value added (EVA) and the stock market performance of 17 publicly-traded companies in the Canadian food-processing sector. They attempted to correlate EVA with a

variety of measures including accounting return on assets (ROA), return on equity (ROE), share prices, the Capital Asset Pricing Model (CAPM) returns to risk and others. Results provided little support for the conjecture that high-EVA firms lead to higher shareholder value. However, because the management logic that has popularized EVA is so logical and fundamental to common practices in corporate finance it dismissed EVA as a valued paradigm. It is suggested, rather, that market volatility and other factors mask the short-term increments to shareholder wealth from EVA-implemented strategies.

Jaxa (1999) did a case study on the implications of productivity accounting and 'economic value added' for the traditional annual financial statements of organization ABC; (the organization's real name is confidential). By applying EVA methods, Jaxa found that the organization had actually destroyed value. By using this method, he was able to recommend that management utilize the organization's resources more efficiently, resulting in productivity improvements. Management was also advised of methods that would create value for the shareholders.

A study was done by Lloyd (1996) that examined the use of four traditional share valuation techniques based on different versions of economic value added. Pearson (1998) did a study that compares the explanatory power of EVA to that of Refined Economic Value Added (REVA) for share returns on the mining sector of the JSE. It was found that EVA partially explains share returns, while REVA does not appear to explain share returns at all. Manipulating the EVA information to obtain the annual change in EVA leads to the finding that the annual change in EVA explains a significant portion of share returns in the mining sector. It suggests that positive changes in EVA, from one year to the next, could be a reliable measure of management performance. Pretorius (1997) researched Economic Value Added as an alternative evaluation method.

Jansen (1998) did research on EVA as an evaluation for capital projects. This research was done on the South African Marine Corporation Limited, which is a shipping and air transportation company trading internationally. The business is very capital-intensive, new investment decision-making as well as the adequate assessment of past investments is critical to the business. Jansen's research is limited to the use of EVA as a mechanism for new project investment decision-making.

Hall (1998) did a study on variables that determined the shareholder value of industrial companies listed on the Johannesburg Securities Exchange (JSE). He found that meaningful mathematical relationships existed between the variables that affect shareholder wealth and shareholder value.

1.6 Statement of Hypothesis

As can be seen from the above, no study has yet been done in South Africa to determine EVA for agricultural co-operatives or even for agribusinesses. This thesis is focused on filling that gap by proposing the following hypothesis:

- a) EVA can be applied to agricultural co-operatives.
- b) Co-operatives add value to their member's interest.
- c) There is no correlation between EVA performances over certain years or between the groups of co-operations.

1.7 Methods and Procedures

The methods and procedures for calculating EVA will be done in six steps. These will be discussed in more detail in Chapters two and three.

Step one: The necessary data has to be obtained from the Registrar of Co-operatives. This data contains the financial statements – balance sheets and

income statements – of the various co-operatives. A database was generated to put all the data in the right format.

Step two: The *Net Operating Profit after Tax* (NOPAT) earned by a co-operative has to be estimated. The accounting measure of operating income has to be adjusted with equity equivalents.

Step three: Determine *Capital* used by the Co-operative. Capital has to be adjusted with equity equivalents as in the case of NOPAT.

Step four: The *Cost of Capital* has to be calculated next. This calculation has a few of its own steps and uses the capital asset pricing model (CAPM). This model is used assuming there are no transaction costs or private information. It concludes that the marginal investor holds a portfolio that includes every traded asset in the market and that the risk of any investment is the risk added to this “market portfolio”. Before calculating the cost of capital a few steps need to be followed.

Step 4.1: The risk-free rate has to be determined. Most risk and return models in finance start off with an asset that is defined as risk-free, the expected return on that asset is used as the risk-free rate. Expected returns on risky investments are then measured relative to the risk-free rate, with the risk creating an expected risk premium that is added to the risk-free rate. Risk in finance is viewed in terms of the variance in actual returns around the expected return.

The average return on the R150, a government security, will be used as the risk-free rate in the capital asset pricing model (CAPM). This rate was obtained from McGregor BFA.

It is general practice to use a risk premium of 6%.

Step 4.2: Next Beta has to be calculated. Betas are a measure of risk in models of risk in finance. They measure risk added to a diversified portfolio, rather than total risk. Betas measure the relative risk of an asset; therefore they are standardized around one. The average betas, over a five-year period, of certain companies in the food and beverage sector, with direct linkages to agriculture, were used to determine expected return. Six companies were selected based on their main activities. The companies were:

- Afgri;
- Distell;
- Omnia;
- Rainbow;
- SAPPI; and
- Tigerbrands.

Step 4.3: The *cost of equity capital* can be calculated by using the capital asset model (CAPM), as all information needed to do the calculation has been determined.

Step 4.4: The weighted average cost of capital (WACC) will be used to determine the cost of capital. It is a weighted average of the costs of debt and equity capital, where the weights are the market values of debt and equity. To determine the cost of debt, the return on the R150 was used and a risk premium of two percent was added. The cost of debt must be after tax to take the tax benefit into consideration.

Step five: EVA for the different co-operatives can now be calculated.

Step six: Interpret the results of the formula. A positive EVA implies that the rate of return on capital exceed the required rate of return. If the company's EVA is greater than zero, the firm is creating (adding) value for its shareholders. If the company's EVA is less than zero, value is destroyed.

1.8 Limitations of Research

There are a few limitations to this research. These are:

- Some of the financial statements are incomplete. As a result EVA could not be calculated for each of the years and in some cases EVA could not be calculated for certain co-operatives at all.
- Inflation is ignored in the calculations.
- An average beta is used in the study. The beta was determined using six companies listed on the Johannesburg Securities Exchange in the Food & Beverage sector.
- Market risk was estimated at 6% for all the cooperatives.
- Book values, instead of market values, were used for the calculation of EVA.

1.9 Outline of Chapters

The outline of the study is as follows: Chapter two defines economic value added; Chapter three compares EVA to other evaluation techniques; and Chapter four gives a general review of co-operatives in South Africa and the method of calculating EVA is described. The results are given and interpreted in Chapter 5. In Chapter 6 the study is summarized and concluded.

CHAPTER TWO

DEFINING “ECONOMIC VALUE ADDED”

2.1 Introduction

Every asset, financial or real, has a value. The key to successfully invest in assets and managing assets lies in understanding not only their value, but also the source of their value. Any asset can be valued, but some assets are easier to value than others and the details of valuation will vary from case to case. Thus, the valuation of a share in a real estate will require different information and follow a different format to the valuation of a publicly traded share and the valuation of an agricultural co-operative. What is surprising, however, is not the differences in valuation techniques across assets, but the degree of similarity in basic principles.

In the last decade, while firms have become more focused on value creation, new mechanisms for measuring value were created. One mechanism that seems to have made the most impact is Economic Value Added (EVA), which measures the surplus value (in rands) created by a firm in its existing environment.

This chapter will define EVA, discuss the calculation of EVA for agricultural co-operatives. There will also be an explanation of equity equivalents: the adjustments made to Net Operating Profits After Tax (NOPAT) and capital to reflect the true economic value of the co-operative. Importance of EVA will be discussed after this. The advantages and limitations of EVA will also be discussed. Finally, this chapter will look at how the EVA results obtained can be improved.

2.2 Defining EVA

EVA is a value based performance measure, an investment decision tool and also a performance measure indicating the absolute amount of shareholder value created. It is the product of the “excess return” made on an investment and the capital invested in that investment. EVA is the net operating profit after tax minus an appropriate charge for the opportunity cost of all capital invested in an enterprise or project. It is an estimate of true economic profit, or an amount by which earnings, in any given period, exceed or fall short of the cost of capital used to produce profits (Stewart, 1990).

EVA is different from most other performance measures because it includes a charge against profit for the cost of all the capital: debt and equity capital. EVA is much more than just a performance measure, it is a framework for complete financial management and an incentive compensation system, which guides the firm’s decision-makers (Ehrbar, 1998).

The capital charge in EVA is basically opportunity cost. Opportunity cost is the return investors could expect to get by putting their money in a portfolio of other stocks and bonds of comparable risk. They have foregone this return by owning securities of the firm in question. The capital charge embodies the fundamental precept that the company has to produce a minimum, competitive return on all capital invested in it, equity as well as debt. Until a firm returns a profit larger than its cost of capital it operates at a loss and instead of creating wealth, destroys it. The enterprise thus returns less to the economy than it devours in resources (Ehrbar, 1998).

EVA has begun to receive wide publicity and is starting to be the prime performance measure in companies (Mäkeläinen, 1998). By the 1990’s, the creation of shareholder value had become the ultimate economic purpose of a company. Firms began to focus on building, operating and harvesting new

businesses and/or products that would provide a greater return than the firm's cost of capital, thus ensuring maximization of shareholder value (Sparling & Turvey, 2003). EVA is a strategy formulation and a financial performance management tool that helps companies make a return greater than the firm's cost of capital. Firms use EVA to track their financial position and to guide management decisions regarding resource allocation, capital budgeting and acquisition analysis.

2.3 Calculation of EVA

The three basic inputs needed for the calculation of EVA, as outlined in its definition, is the return on capital earned on investments, the cost of capital for those investments and the capital invested in them.

The formula for calculating EVA is (Stewart, 1990):

$$EVA = \left(\frac{NOPAT}{Capital\ invested} - Cost\ of\ Capital \right) \times Capital\ invested$$

It is not wise to use the market value of the firm because the market value of the firm includes capital invested in assets in place as well as capital invested in expected future growth. Since the quality of assets needs to be evaluated, the market value of only those assets needs to be estimated. The book value of assets, as a proxy for the market value of capital invested in assets, can be used when determining the value of capital (Kramer & Pushner, 1997). The book value, however, is a number that reflects not just the accounting choices made in the current period, but also accounting decisions made over time on how to depreciate assets, value inventory and deal with acquisitions.

2.4 Equity Equivalentents

Stern, Shiely and Ross (2001) best describe equity equivalentents in their book “The EVA Challenge: Implementing Value-Added Change in an Organization”. To eliminate various accounting distortions some adjustments need to be made for the determination of real economic value added. The five most common adjustments are:

- Research and Development (R&D) costs,
- Advertising and Promotion,
- Staff training and development,
- Taxes and Reserves,
- Depreciation.

Accountants usually treat R&D costs as expenses, presumably because these outlays would be worth nothing if the firm becomes bankrupt. That consideration is undoubtedly of interest to lenders concerned with liquidation value, but it is totally unrealistic in calculating the true profitability of a company. R&D is properly considered as an investment that will bring future returns to the firm. In EVA practice, R&D is included in the firm’s balance sheet and amortized over the period of years during which these research outlays are expected to have an impact. Only the yearly amortization charge is included as a cost item. This EVA treatment is the same for staff training and development.

For advertising and promotion expenses in consumer goods companies, the EVA treatment is the same as with R&D above. Although they have a shorter life span than R&D, these outlays are also an investment that builds long-term proprietary value in the form of new products and trademarks.

Taxes, in EVA calculations, show up only in the year in which they are paid. The accounting custom is to deduct them in the year in which they were deferred. Of

course such taxes are a debt that has to be paid in the future, thus accountants' deduction of this future obligations may well be commendably conservative, but the practice distorts the company's operating results for any one year. Limiting the tax deduction to the amount that was actually paid gives a far more realistic view of the year's costs. The same considerations apply to the reserves that accountants set up, such as a reserve to pay the costs of fulfilling warranty obligations. If the reserve is too large, it will artificially depress earnings; if it is too modest, it will inflate earnings. One can get an accurate picture only by listing the actual disbursements for warranties during the year.

Depreciation creates another accounting distortion. From a tax point of view, a firm likes accelerated depreciation as it reduces taxes by squeezing more costs into fewer years. Straight-line depreciation is adequate for many firms as it reflects actual obsolescence reasonably well, but it creates distortions for firms with a lot of heavy, long-lasting equipment by making durable old equipment seem cheaper than new equipment that may be more efficient. EVA uses sinking fund depreciation to solve this problem. When using sinking fund depreciation the annual charge does not vary from year to year, but the return of principle is small in the early years and dominates in later years, as is the case with a mortgage, reflecting the actual decline in the economic value of the plant and equipment toward the end of its lifetime. This adjustment is reflected by steeply declining asset values on the balance sheet in later years.

2.5 Importance of EVA

EVA is important because when accompanied by cash accounting, it properly measures all three ways in which a company can create wealth: by raising the efficiency of the current operations, by achieving profitable growth and by paring uneconomic activities in which the immediate exit proceeds more than make up for the subsequent cash flow forgone (Stewart, 1990).

Traditional performance measures are unable to describe the company's true business results and sometimes lead to wrong business decisions. The EVA concept is easy to understand and easy to use. The managers can make it transparent to all employees in a short time. On the other hand, an EVA calculation is simple, since only main data contained in income statements and balance sheets are needed.

The EVA concept integrated in a company's decision-making process improves its business performance because managers that have deeper knowledge about capital and capital cost are able to make better decisions. On the other hand it eliminates the distortions that plague conventional accounting. Standard accounting, for example, penalizes managers for increased spending on innovations and brand building. It makes it hard for them to jettison poorly performing assets and restructure. It causes aggressive financing to make poor investments look like winners and distorts true performance in many other ways as well. EVA removes the most destruction of these distortions so that managers can make better assessments of the impact that their actions have on true economic profits (Ehrbar, 1998).

2.6 Advantages and disadvantages of EVA

EVA is frequently regarded as a single, simple measure that gives a real picture of shareholder wealth creation. It motivates managers to create shareholder value and maximize economic profit because it is a basis for management compensation. Managers will think like owners when they are paid like owners (Lovata & Costigan, 2002). They also have to identify with successes and failures of the firm. Several articles have described EVA and its advantages and disadvantages in a variety of environments (Cleverley, 1993; Burkette and Hedley, 1997; De Villiers, 1997; Dillon and Owers, 1997; Otley, 1999).

There are practical advantages that value-based measurement systems can offer. An EVA system helps managers to (Roztoci & Needy, 1998):

- Make better investment decisions;
- Identify improvement opportunities; and to
- Consider long-term and short-term benefits for the company.

Like other financial performance measures, such as return on investment (ROI), EVA, on its own, is inadequate when assessing a firm's progress in achieving its strategic goals and in measuring divisional performance. Other more forward-looking measures, often non-financial in nature should be included in regular performance reports to provide early warning signs of problem areas (Wood, 2000).

In certain industries EVA alone is inappropriate to evaluate financial performance. For new high growth companies, such as those in technology, year-on-year changes in EVA, which may be negative at times, are unlikely to explain changes in a firm's value, given that the value is dependent on future expected cash flows (Wood, 2000).

A criticism of EVA is that it does not account for real options embedded in investment decisions. EVA neglects the growth opportunities of a firm by concentrating on assets in place and is therefore a short-term performance measure (Johnson & Soenen, 2003). Size difference has been a problem when using EVA (Brewer, Chandra & Hock, 1999). The larger co-operatives could create more wealth than smaller co-operatives despite not using their assets as efficiently. Ibendahl & Fleming (2003) finds that by grouping co-operatives into type and size categories, this limitation is minimized.

Another limitation of EVA is that it is based on accounting profits. Accounting profits is a poor proxy for economic profit. This discrepancy between accounting earnings and economic earnings is exacerbated by inflation (De Villiers, 1997).

According to Stern Stewart; two very important ways to decrease accounting distortions are introducing a modified depreciation schedule (for example sinking fund depreciation) or imposing a level of capital charge throughout the life of the asset. Either of these prevents EVA from increasing simply because an asset is growing older (Kroll, 1997).

Acheampong & Wetzstein (2001) find that is often very difficult to calculate a value-based measure because of various adjustments that must be made to the accounting figures. EVA is a short-term concept. Ideas that have long-term payoff may be rejected because their future contribution may not be fully reflected in the numbers used to calculate EVA (Ibendahl & Fleming, 2003).

2.7 How to improve EVA

There are countless individual actions in a firm that employees can perform to create value, but eventually all of them fall in one of three categories captured by EVA: return on capital (r), cost of capital (c) or capital invested. EVA is improved when operating efficiency is enhanced, when value-enhancing investments are undertaken and when capital is withdrawn from unrewarding activities.

More specifically, EVA will improve if (Shadbolt, 2001):

- The rate of return (r) earned on the existing capital base improves, in other words current capital is used to earn more profit;
- New capital is invested in any project that earns a rate of return greater than its cost of capital (c); or

- Capital is diverted or liquidated from business activities, which do not cover the cost of capital (where $r < c$).

These are the only ways in which shareholder value can be created (Keefe & Roush, 2003), and EVA captures them all. The three ways in which EVA can be improved may appear quite simple. They certainly are not new ways to improve the position of the shareholders.

2.8 Conclusion

The book by Bennett Stewart, *The Quest for Value* (1991), introduces EVA and market value added (MVA) measures and their anticipated benefits. EVA is promoted as being preferable to other relatively inexpensive measures such as earnings per share and return on investment by aligning shareholders' and managers' goals. Stewart (1991) states:

“Every company’s most important goal must be to increase its EVA. Let that be your quest. Forget about earnings, earnings per share, earnings growth, rate of return, dividends, and even cash flow. All of them are fundamentally flawed measures of performance and value. EVA is all that really matters.”

EVA is starting to become a very popular performance measure because the creation of shareholder value is the ultimate economic purpose of most companies. EVA, as a strategy formulation and financial performance management tool, helps companies to make returns greater than their cost of capital.

This chapter looked at the development of EVA and how EVA can be calculated. The different components in the calculation of EVA, importance of EVA and the

advantages and limitations in the usage of EVA were discussed. The next chapter will compare EVA with traditional performance measures.

CHAPTER THREE

COMPARING EVA TO OTHER EVALUATION TECHNIQUES

3.1 Introduction

Knowing the business you are in requires management expertise in three fundamental areas: finance, production and marketing. Finance is mentioned first, because it is a function of production and marketing. Farming co-operatives are capital-intensive businesses and arranging sufficient funding for an entire year is absolutely essential in order to be certain of completing an operating cycle.

Financial managers of co-operatives use financial performance measures to assess the profitability, liquidity, solvency and financial efficiency of their businesses. These performance measures help managers to make effective planning, implementation and control decisions. Measuring performance is particularly important for the control function (Boehlje & Eidman, 1984). Performance measures can be used as warning signs or indicators that corrective actions are needed to improve the firm's financial positions and profitability. The information provided from performance measures also allows managers to make strategic plans and track their progress relative to the firm's goals.

The question may arise: Why should EVA be used instead of other evaluation techniques? To answer this, the Internal Rate of Return, Net Present Value, Return on Total Assets and Return on Equity will be discussed in this chapter. Then EVA will be compared to traditional performance measures.

3.2 Traditional discounted cash flow model

The traditional discounted cash flow model provides a thorough analysis of all the ways in which a firm can increase value, but it can become complex as the number of inputs increases. It is also very difficult to link management compensation systems to a discounted cash flow model, since many of the inputs need to be estimated and can be manipulated to yield the results management wants (Damodaran, 2001).

If market efficiency is assumed, the unobservable value in the discounted cash flow model is replaced with the observed market price and valuation of the business and/or the reward of the managers is based upon the performance of the share. Thus, a firm whose share price has gone up is viewed as having created value, whereas one, whose share price has fallen, has destroyed value. While market prices have the advantage of being up to date and observable, they are also 'noisy'. Even if markets are efficient, share prices tend to fluctuate around the true value. Thus, a firm may see its share price go up and its top management rewarded, even as it destroys value. Conversely, the managers of a firm may be penalized as its share price drops, even though they may have taken actions to increase firm value. The other problem with share prices as the basis for compensation is that they are available only for the entire firm, not for individual divisions. Share prices cannot be used to analyze the managers of individual divisions of a firm or for their relative performance. Furthermore, the discounted cash flow model is only usable for firms with traded share prices.

3.3 Internal Rate of Return (IRR)

The IRR can be defined as the discount rate that equates the present value of net cash inflows with the initial investment associated with a project resulting in $NPV=0$ (Gitman, 2003). The IRR is calculated as follows:

$$\sum_{t=1}^n \frac{CF_t}{(1 + IRR)^t} = C_0$$

Where

CF = expected net cash flows in successive periods

n = project life

C₀ = initial investment

IRR = internal rate of return

t = number of periods (t = 1,2 ... n)

The decision criterion to make accept-reject decisions when using IRR is as follows: If the calculated IRR value is greater than the cost of capital, the project or investment should be accepted. If the calculated IRR value is smaller than the cost of capital, the project or investment should be rejected.

This measure is used primarily to determine if an investment should be undertaken. It is an investment decision and does not measure the value created.

3.4 Net Present Value (NPV)

The NPV of a project is the difference between the present value of all expected net cash inflows and the present value of all expected net cash outflows, usually the initial investment, calculated over the expected life of the project (Du Toit, Neuland & Oost, 1997). The NPV is calculated as follows:

$$NPV = \sum_{t=1}^n \frac{CF_t}{(1+k)^t} + \frac{TCF_n}{(1+k)^n} - C_0$$

Where

CF = expected annual net cash flow

k = discount rate (cost of capital)

TCF_n = expected terminal cash flow in year n, where applicable

n = expected project life

C₀ = initial investment

t = number of periods (t=1,2 ... n)

The decision criterion, when using NPV to make accept-reject decisions, is as follows: If NPV is larger than 0, the project or investment should be accepted. If NPV is equal to or smaller than 0, the project or investment should be rejected.

EVA and NPV are very similar concepts. If the EVA measure for earnings accounts for the tax shield provided by depreciation, then there is a direct connection between EVA and NPV. Otherwise, EVA will understate the company value relative to NPV (Turvey, Lake, Van Duren & Sparling, 2000). EVA values for each future year must be discounted back to the present to give a NPV number. In effect, EVA represents the flow component of a stock measurement, which is the NPV of a firm (Young, 2000).

Discounting future cash flows to NPV is a static measure; it compresses the foreseeable future to today's value rather than providing a year-to-year measure. It is possible to compare the NPV of a firm in year one with its NPV in year two and see whether there has been a gain or loss. The problem with this approach is that assumed future cash flows are discounted, and such assumptions of the future may be wrong (Stern, Shiely & Ross, 2001).

3.5 Return on Total Assets (ROA)

ROA, which is often called Return on Investment (ROI), measures the overall effectiveness of management in generating profits with its available assets. The higher the net income for a given amount of assets, the better the return on assets (Jones, 1999). ROA can be calculated as follows:

$$ROA = \frac{\text{net profits after taxes}}{\text{total assets}} = \frac{\text{Operating profit}}{\text{Capital employed}} = ROI$$

This is a good indicator of corporate performance because it includes the balance sheet, but it can be manipulated. ROA measure only assesses the returns-to-assets, not specific claimants on these assets. Interests expense are added back because it represents the return to the suppliers of debt capital. Thus, ROA provides a measure of the profitability of production and marketing activities of the business that is separated from the financing function. However, this is also a weakness of the measure, since the method and the costs of financing the business assets often have a strong influence on profits.

3.6 Return on Equity (ROE)

Return on equity (ROE) measures the return earned on the owners' (both preferred and common stockholders') investments. The higher this return, the better off is the owners. ROE is calculated as follows:

$$ROE = \frac{\text{net profits after taxes}}{\text{stockholders' equity}}$$

This is also a good indicator of corporate performance because it includes the balance sheet, as ROA does, but it can also be manipulated. If ROE is the target

there are two ways to improve it. One is through better corporate performance. If that is not possible, reduce the equity in the firm by buying-in shares, either with cash or with debt to finance the repurchase. With fewer shares outstanding at the same level of profit, the ROE will obviously rise. The executive suite is well served, but not necessarily the shareholders.

Higgins (1983) find ROE to be a useful and important indicator, but it must be interpreted in light of its limitation and should never be used mechanically to suggest that a higher ROE is always better than the lower one.

The disadvantages of ROE are (Stewart, 1991):

- ROE uses successful efforts instead of full cost to account for risky investment.
- Accrual bookkeeping entries that bury the recurring cash flow (that a company generates from its operations) in reserves.
- The expensing of R&D.
- ROE reacts to changes in the mix of debt and equity that the co-operative employs and in the rate of interests it pays on its debts.

With ROE as its goal, management may be tempted to accept truly substandard projects that happen to be financed with debt and pass by very good ones if they must be financed with equity.

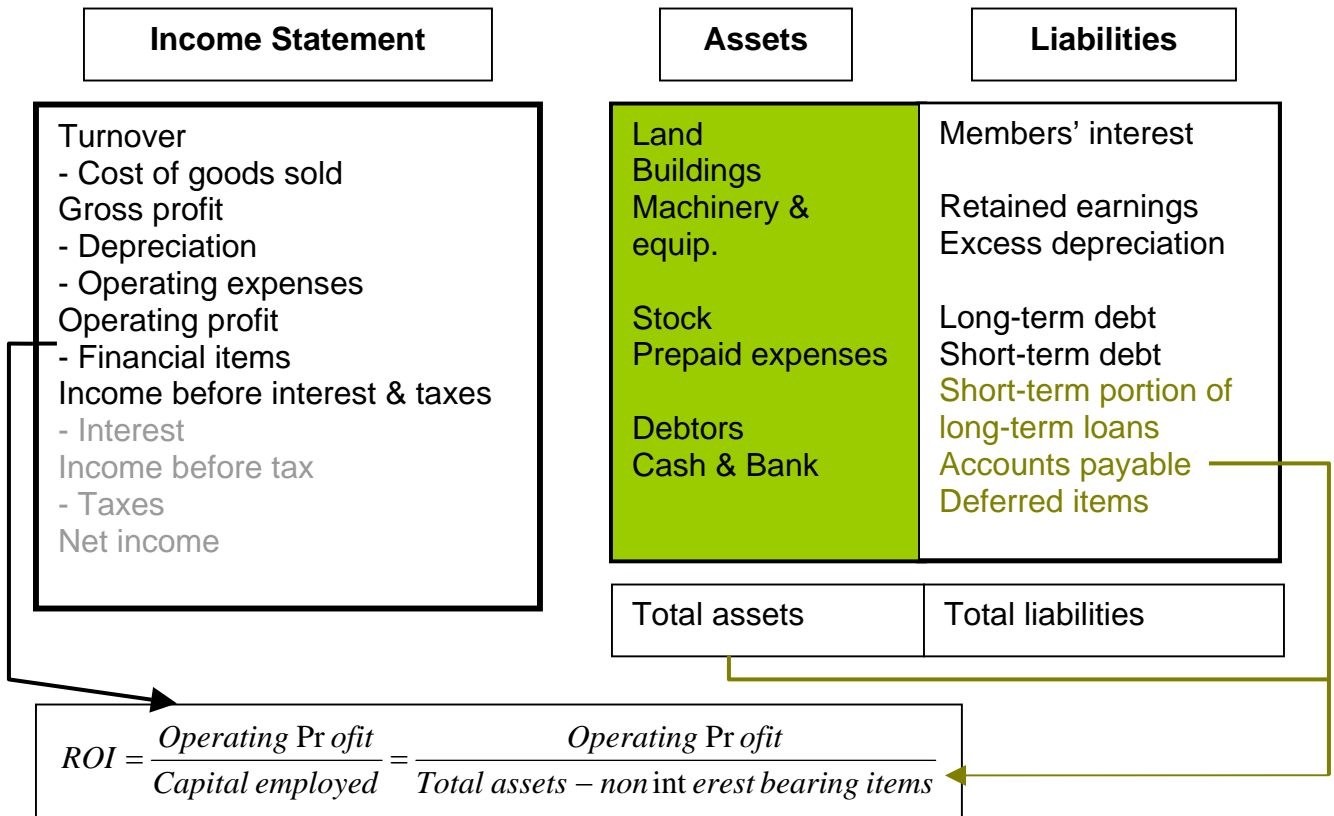
3.7 EVA vs. traditional performance measures

When looking at measures from the income statement such as operating profit, profit before extras, net income and earnings per share, investors are mainly interested in how much resources are employed in order to generate these profits. These measures are in absolute terms (rands, dollars, euros), which make them good measures from an operative perspective.

Measures such as ROI, ROA and ROE have fixed the main deficiencies of the income statement measures as capital is brought into the picture. ROE suffers from the same shortcomings as ROA. A risk component is not included and hence there is no comparison. The level of ROE does not tell the owners if the company is creating shareholder wealth or destroying it. With ROE this shortcoming is however much more severe than with ROA, because simply increasing leverage can increase ROE. As we all know that decreasing solvency does not always make the shareholders' position better because of the increased financial risk. ROE should also be taken as an informative measure but it should not guide the operations (Mäkeläinen, 1998).

The next figure shows how a traditional performance measure, ROI, is calculated.

Figure 3.1: Calculation of ROI



An example will be used to illustrate why EVA is better than ROI. In this example ROI is 30%. The example will show how ROI and EVA change after an investment producing a return of 20% has been made.

Initial situation:

Operating profit	30,000		
Capital employed	100,000	ROI	30%
Cost of Capital	10%	0.1*100,000 =	10,000
EVA		= 30,000 – 10,000 =	20,000

Investment opportunity

Operating profit	4,000
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Required capital employed 20,000 (offers a return of 20%)

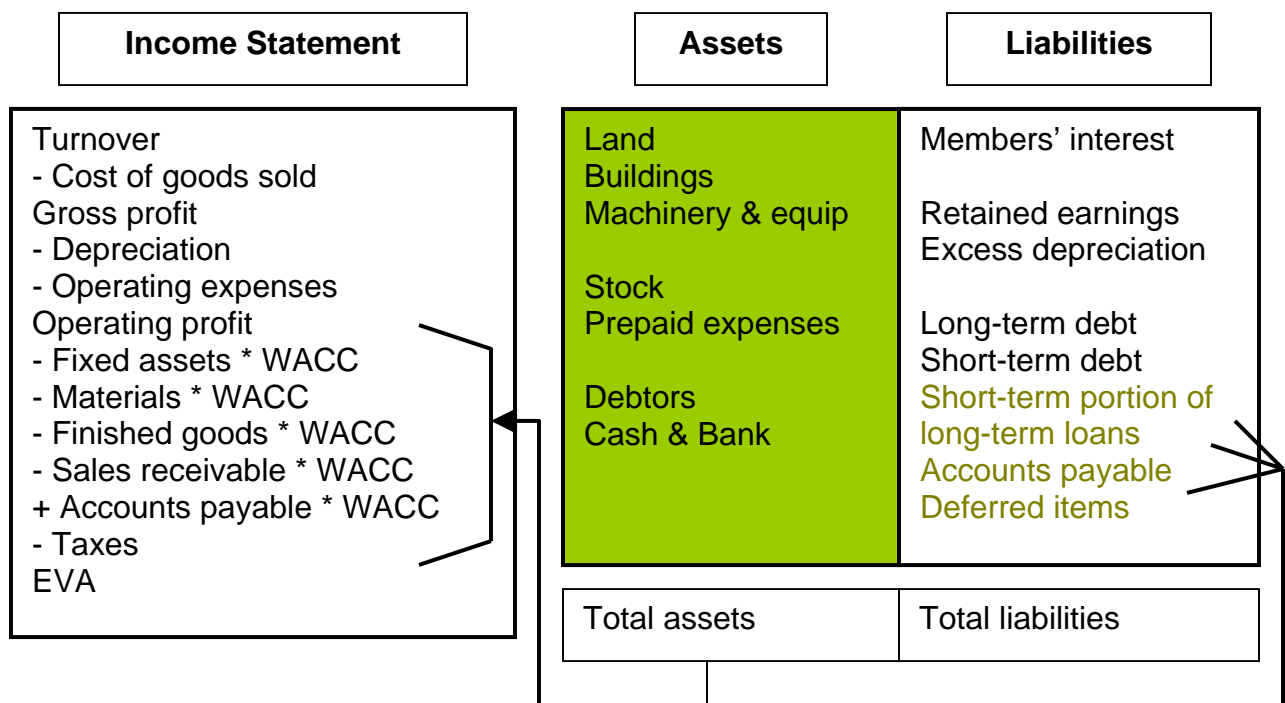
Situation if the investment is made

Operating profit	30,000 + 4,000 = 34,000	
Capital employed	100,000 + 20,000 = 120,000	ROI = 28%
Cost of Capital	10%	0.1*120,000 = 12,000
EVA		= 34,000 – 12,000 = 22,000

ROI does not take into account the increase or decrease in invested capital. Therefore it does not necessarily describe whether the profitability has declined or improved and is thus not an optimal controlling tool or bonus base.

The next figure shows how EVA is calculated.

Figure 3.2: Calculation of EVA



ROI is a very opaque measure at the operative level. The cost or cost-savings of some process, function or line (production line, sales department and others) is very difficult to convert into change in ROI. Even if this were done, the result will not be very informative. With the EVA concept all costs, cost-savings, increased revenues and costs of employed capital are comparable and are in terms of final profitability (in absolute terms like EVA itself).

One of the claims made is that EVA is a superior metric in comparison to ROA and ROE. Turvey, Lake, Van Duren and Sparling (2000) investigates this claim by examining 17 Canadian food processing companies. They find that high EVA per share firms also have high ROA and ROE while low EVA per share firms have lower measures of profitability. Their regression results found that a dollar increase in EVA per share yields a 3.5 percent increase in ROA and an 11.3 percent increase in ROE. However, the R^2 was only 0.14 and 0.10, respectively, and the regression only included one year's worth of data.

Brewer, Chandra, and Hock (1999) discuss how EVA is superior to metrics such as ROI. Return on investment can encourage managers to make decisions that are in their own best interests rather than the company's best interest. If managers are judged using a hurdle rate for ROI, then projects that still add wealth may be excluded.

Despite the benefits of EVA analysis, there are three possible reasons why EVA might not be used (Brewer, Chandra & Hock, 2000). The first is size differences. Larger companies could create more wealth than smaller companies despite not using their assets as efficiently. Measures such as ROA and ROE do not have this problem. The second reason is that EVA is a short-term concept. Ideas that have a long-term payoff may be rejected because their future contribution may not be fully reflected in the figures used to calculate EVA. However, this short-term orientation applies to measures such as ROA and ROE as well. Finally,

EVA and other financial metrics are only guides and do not point to where the problems lie.

3.8 Conclusion

EVA is the first financial performance measure that can be maximized as a sensible objective. Capital and the growth of capital employed are integrated when compared to operating profit and ROI.

The whole concept of profitability is simplified when using EVA. With traditional measures this concept has been ambiguous and complicated.

EVA integrates the effects of profitability and growth into the same measure. The main objective of any company is to increase the value of the company. EVA measures value creation and by maximizing long-term EVA, the company is maximizing its own value.

In the next chapter the establishment and definition of co-operatives will be discussed. After that the method used to calculate EVA will be discussed in detail.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

In the previous chapters the development of EVA and comparisons between EVA and traditional performance measures were investigated by means of a literature study. To further examine the application of EVA on agricultural cooperatives, an empirical study was conducted.

This chapter focuses on the research methodology used to conduct the empirical study among the selected cooperatives. The chapter first defines co-operatives and then indicates how EVA can be determined for agricultural co-operatives.

4.2 Co-operatives

It is usually when people are in need that they decide to stand together and as a group look after their own interests. Such a period in history started at the beginning of the Industrial Revolution in England, when the introduction of machines in factories put thousands of craftspeople out of business. Since early times individual families supplied most of the needs of England. They spun wool and flax, wove cloth, made pottery and forged and cast iron objects. With the development of steam engines, for the first time in history, machines could do the same job far more effectively and cheaper than by hand.

Thousands of independent craftspeople went out of business and drifted to the cities, looking for work. Shantytowns developed round existing cities and as there were no trade unions, people had to accept whatever wages factory owners offered. As the working hours were often extremely long and husbands and

wives both had to work, there was little time to buy basic necessities. Many factory owners saw in this yet another opportunity for profit and opened grocery stores on their premises, so that the wages that factory workers earned, landed back into the coffers of the factory owners.

In the year 1844, in the town of Rochdale, England, 28 factory workers decided to start their own shop, so that they could obtain basic necessities at the lowest possible prices. They founded the world's first co-operative shop (National Department of Agriculture, 2000).

Co-operatives are a form of collective action in which individuals join together to accomplish what would be more costly or impossible to achieve individually. Farmers have formed co-operatives to ameliorate their disadvantages in the market system. (Parliament, Lerman and Fulton, 1989).

Co-operatives in South Africa started after the end of the Anglo-Boer War in 1902. During the war, agriculture in the Free State and Transvaal came to a complete standstill. Houses and buildings were burnt down and livestock killed as part of the British 'scorched earth' policy. Economic reconstruction had to take place despite the lack of capital to do so. The little that farmers could produce was usually sold to a general dealer who fixed a price for farm produce. The general dealer supplied the farmer with groceries, clothes and farming requisites. In good years farmers could produce a little more than they owed to the general dealer, but in years of adversity farmers could become deeply indebted. Farmers decided to stand together and find new ways to market their products. The government supported attempts to start co-operatives in the areas then known as the Transvaal, Free State, Cape Province and Natal. Many farmers were sceptical and did not trust the new development; all co-operatives could not count on the co-operation of all their members. The development of co-operatives was slow, but in the end they played a decisive role in the successes of the South African farming sector (National Department of Agriculture, 2000).

One of the most evident differences between a co-operative and other business types is the application of the principle of proportionality: the more a member transacts with the co-operative, the larger that members' bonus or voting privileges will be (National Department of Agriculture, 2000).

Beierlein, Scneeberger and Osburn (1995) defined co-operatives as follows: An enterprise freely established, owned and controlled by a group of legal persons with the purpose of providing themselves with mutual benefits on an equitable basis which arise from the activities of the enterprise and not primarily from investing in it.

This definition can be broken down in to seven categories:

- An enterprise...
It is an economic enterprise operating within a market-based economy, based on “self-help”. It is not a charity or a cartel.
- ...freely established...
Membership is entirely voluntary and not based upon any other affiliation (such as political, religious or race)
- ...owned and controlled by a group of legal persons...
It is controlled in a way which reflects the relationship that members have to the activity of the group. It is owned and controlled by the persons that benefit from the activities it undertakes. The organization may be comprised of individuals and/or legal entities. It will be based upon a stakeholder group with a basis of mutual interest. To function properly action needs to be taken to maintain and develop the solidarity of the group.
- ...with the purpose of providing themselves with mutual benefits...
It is primarily intended to benefit those who are members but it is not based on exploiting others. Benefits from further collaboration between other similar groups may also be sought.

- ...on an equitable basis...

It is not based on one set of members gaining benefit from other members of the group, but on the concept that benefits are shared fairly between members on the basis of their economic participation in the enterprise.
- ...which arise from the activities of the enterprise...

It undertakes activities which benefit the members. The activity of the enterprise is the basis of the benefits provided to members and not primarily any surplus which may arise from its activities.
- ...and not primarily from investment in it.

Other than for any fixed interest, benefits are not allocated to members on the basis of their investment. Participation in control is not based upon level of investment. This does not mean that a fair market rate return should not be made to those, including members, who invest in the business.

Co-operatives can generally be divided into two types: agricultural and marketing co-operatives. These two types occur in various organizational structures. The distinction between these structures lies in the nature of their membership. Natural persons form the central co-operatives and central co-operatives form federal co-operatives (National Department of Agriculture, 2000).

There are several ways to classify farmer co-operatives. The most common classification is by the type of commodity or product the co-operative deals in. This is the way in which the co-operatives are classified in this study. Examples are co-operatives that specialize in marketing grain or cotton, or in purchasing feed or fertilizer. Often a co-operative begins with a single commodity but later finds itself handling others as well. This diversification is also found in organizations that began by marketing products and later find themselves purchasing inputs as well. (Beierlein, Scneeberger & Osburn, 1995).

The structures and classifications of agricultural co-operatives are set out in a document written by the National Department of Agriculture (2000). Structures in which the farmer co-operatives are owned directly by their farmer members are called central co-operatives. These co-operatives operate local facilities to serve local farmers. The trend in recent years is for local co-operatives to organize on a regional basis to perform central functions, such as selling of products, processing of products and so forth. Some regional co-operatives have formed national co-operatives for similar purposes. These co-operatives are made up exclusively of other co-operatives. This type of organizational structure is called a federal co-operative.

Some groups use a combination of the central and federal structures. These are called mixed structures and use a variety of organizational structures to accomplish their objectives.

Co-operatives can also be classified according to the geographic area they cover. Co-operatives may serve more than one community or region and may find it necessary to divide their organization into different geographical parts to serve each area sufficiently. Either the central or federal organizational structure is used to accomplish this.

The type of function performed by the co-operative can also serve as a form of classification. Local marketing co-operatives are the first handlers of the farmers' products while local supply co-operatives provide retail services to farmers. However, each represents just a single function of all the functions that must be done to get inputs to the producers and to get farm products to the consumers. These different functions are normally handled by different parts of the federal co-operative, thus the backward vertical integration of supply functions to the producer and forward vertical integration of marketing functions toward the consumer can each be handled by a different unit within the co-operative.

To become a member of a co-operative and to share in all the advantages that membership brings, individuals must buy shares. There are no dividends to be earned on the basis of how many shares an individual has in the co-operative, as is the case with companies and closed corporations, but on the basis of how much business the individual has done with the co-operative (National Department of Agriculture, 2000).

At the end of the financial year the members may decide to divide the profit made during the year between them, only if capital is not urgently required for other purposes. The division is done according to the percentage of the business that each member has done with the co-operative.

The characteristics of a co-operative differ significantly from other business types such as partnerships, companies and closed corporations. A co-operative must also adhere to certain legal requirements to ensure that the rights and interests of all members are protected.

Shares in a co-operative did not originally appreciate in value and more shares did not give a member an advantage over members with fewer shares. The law has now changed because co-operatives also need financing. Co-operatives may now give competitive interest on shares, to encourage members to buy more shares. This will increase a co-operative's share capital. More shares do not entitle a member to more votes in the general meeting, as is the case in companies. But co-operatives may provide for a member's voting power to increase in proportion to the amount of business the member transacts with the co-operative. Co-operatives may also, like companies, buy shares back if they deem it necessary (National Department of Agriculture, 2000). However, this new law is not yet in use. The old law, law number 91 of 1981 is still in use. There were thus no changes in the financial statements in the time period of this study.

Co-operatives can also obtain share capital on a quota system. This is usually found in co-operatives handling fruit or wine. The member may deliver a certain tonnage of produce to the co-operative for a certain rand value worth of shares the member owns. If the member wants to deliver more produce to the co-operative he has to buy more shares. In this way the principle of proportionality still holds true, because members are compelled to help finance the co-operative to the extent that they make use of its services (National Department of Agriculture, 2000).

It is possible that a co-operative will need more capital to expand or improve its services. If this is the case, a co-operative can resort to a compulsory loan provided by members. Since members expect co-operatives to sell their farm produce, the co-operative can compel their members to contribute a percentage of the value of their produce to the co-operative on an annual basis in the form of a loan. The principle of proportionality holds true here as well (National Department of Agriculture, 2000).

4.2.1 Importance of agricultural co-operatives

Despite the relatively small share that agriculture contributes to the total Gross Domestic Product (GDP), it is an important sector in the South African economy. The agricultural sector consists of primary agricultural activities at farm level, input suppliers, financial sectors and the agro-processing firms. The agro-food sector provides food and fibre; which are two of the most basic needs of all human beings.

This sector (primary agriculture, inputs, finance and agro-processing) contributes between 14 and 20% of the GDP and is an important provider of employment, especially in the rural areas, and an important earner of foreign exchange. In most of the poor communities in rural areas the people rely on agricultural

activities as one of their main strategies to earn a living. The total gross value of agricultural production, which is the total production during a production season valued at the average basic prices received by producers, was estimated at R68,867 million in 2003. In 2002 this value was R70,774 million, representing a decrease of 2.7%. This decrease is a result of the significant decrease in the production of field crops (National Department of Agriculture, 2004).

The contribution of agriculture, fisheries and forestry to the 'value added' for 2003 is estimated at R41,935 million, representing 3.8% of the total value added to the economy. The value added is the value of total output less the value of intermediate consumption during the production period. The contribution of agriculture to the value added from 1998 to 2003 is displayed in Table 4.1.

Table 4.1: Contribution of agriculture to the value added

Year	Total Value added R'million	Contribution of agriculture to the value added R'million	Contribution of agriculture as % of total value added %
1998	673 860	20 285	3.0%
1999	728 785	20 537	2.8%
2000	808 461	21 032	2.6%
2001	895 533	25 343	2.8%
2002	1 021 685	35 383	3.5%
2003*	1 100 925	41 935	3.8%

** Figures for agriculture (including forestry and fisheries)*

Source: National Department of Agriculture

In 2003 the estimated value of imports was approximately R16,297 million, compared to R14,939 million for 2002. The estimated value of exports for 2003 was approximately R27,774 million, compared to R25,460 million in 2002 (National Department of Agriculture, 2004).

The most important import products for 2003 were rice, wheat, palm oil, undenatured ethyl alcohol and oil cake, while wine, citrus fruit, sugar, grapes, apples, pears and quinces were the most important export products. The share of processed agricultural products exported has increased as a proportion of the country's total agricultural exports (Ministry of Agriculture and Land Affairs, 1998). Co-operatives had a total of R6.7 billion in assets in 2002 and a net income after tax of R193 million.

4.3 Calculating EVA for Agricultural Co-operatives

The definition of EVA outlines three basic inputs needed for its computation. These are: return on capital earned on investments, cost of capital for those investments and the capital invested in them. The calculation of EVA is done in six steps.

The calculation of EVA is illustrated using an example. The example was randomly selected from all the agricultural co-operatives in operation during the years 1998, 1999, 2000 and 2001.

Table 4.2: Extracts from the financial statements of NCT for the financial years ending 2000 and 2001.

Balance sheet for the year ended 28 Feb	2000	2001
Reserves & undistributed income		
Total own resources	61,372,593	79,387,221
Total members' sources	2,081,929	2,087,194
Total members interest	63,454,522	81,474,415
External LT liabilities		
Total interest-bearings external liabilities	37,080,418	31,318,436
Deferred tax	4,076,326	3,906,155
Total LT liabilities interest free	-	-
Total LT liabilities	41,156,744	35,224,591
Total interest-bearing current liabilities	5,175,642	4,842,272
Other current liabilities	64,988,986	85,663,932
Total current liabilities	70,164,628	90,506,204
Total members interest & liabilities	174,775,895	207,205,210
Fixed assets		
Total LT assets	115,332,789	113,012,206
Total current assets	59,443,105	94,193,004
Total assets	174,775,895	207,205,210

Income statement for the year ended 28 Feb	2001
Net operating income before taking the following into account	26,949,960
Plus all interest received	4,582,479
Adjusted net income	31,532,439
Income from investments	-
Capital profit/(loss) on the disposal of fixed assets	154,265
Interest paid	(3,698,641)
Irrevocable debts written off	(252,420)
Provisions	-
Directors remuneration	(289,469)
Auditors remuneration	(137,878)
Lease monies	-
Depreciation of fixed assets	(1,637,327)
Net income/(loss) before taxation	25,670,969
Tax	(7,785,125)
Net income/(loss) for the year (after tax)	17,885,844

Step one: The necessary data has to be obtained. This data contains the financial statements – balance sheets and income statements – of the different co-operatives. For South African agricultural co-operatives this data has to be obtained from the Registrar of Co-operatives. Economic Value Added will be determined for all the agricultural co-operatives listed as co-operatives in 2001. This amounts to 66 agricultural co-operatives. Six of the co-operatives for which financial statements were obtained, was not included because of incomplete statements.

Step two: The *Net Operating Profit after Tax* (NOPAT) earned by a co-operative has to be estimated. The accounting measure of operating income has to be adjusted with equity equivalents. Adjustments are made to earnings and invested capital to obtain true economic profits, or NOPAT. The calculation of NOPAT for the selected co-operative is:

$$NOPAT = Net\ income/loss + [interest\ paid * (1 - tax\ rate)] + (Def\ tax - Def\ tax_{prev})$$

Where:

NIBT: *Net income/(loss) before tax*

Def tax: *Deferred tax*

NOPAT for NCT is:

$$\begin{aligned} NOPAT &= 17,885,844 + [3,698,641 * 0.7] + (3,906,155 - 4,076,326) \\ &= 20,304,722 \end{aligned}$$

Pool payments are regularly made by co-operatives to their members, however, the purpose of EVA is to determine if value has been created by co-operatives. Pool payments are therefore ignored, because they reflect value paid to members and not value created by the co-operative itself. NOPAT (net operating profit after tax) is used in the calculation, not net income.

Step three: Determining capital. The following equation was used to determine capital:

$$\text{Capital} = \text{Adjusted common equity} + \text{Total debt}$$

Adjusted common equity consists of the sum of total members' interest and deferred taxes of the previous year. Total debt consists of the sum of total interest-bearing external long-term liabilities and total interest-bearing current liabilities for the previous year. The previous year is used because initial capital must be used in determining EVA.

Capital for NCT is:

$$\begin{aligned} \text{Capital} &= (63,454,522 + 4,076,326) + (37,080,418 + 5,175,642) \\ &= 109,786,908 \end{aligned}$$

Step four: The *Cost of Capital* has to be calculated next. The cost of capital is generally the weighted average cost of capital, using the risk adjusted return from equity as calculated by the Capital Asset Pricing Model (CAPM) and the after-tax cost of debt (Weaver, 2001).

There is several accepted risk and return models in finance, but they all share some common views about risk (Rahl & Lee, 2000). Firstly, they all define risk in terms of variance in actual returns around an expected return. Thus an investment has no risk when actual returns are always equal to the expected return. Secondly, they all argue that risk has to be measured from the perspective of the marginal investor in an asset, and that this marginal investor is well diversified. The argument, therefore, is that only the risk that an investment adds to a diversified portfolio should be measured and compensated. It is this view of risk that leads risk models to break the risk in any investment into two components. These two components are the firm-specific component, which measures risk that relates only to that investment or to a few investments like it,

and a market component, that contains risk that affects a large subset or all investments. The latter risk cannot be diversified and should be rewarded. While all risk and return models agree on this crucial distinction, they part ways when it comes to the measurement of this market risk. The CAPM, which assumes no transaction costs or private information, concludes that the marginal investor hold a portfolio that includes every traded asset in the market, and that the risk of any investment is the risk added to this “market portfolio”.

The formula for this model is:

$$R_j = R_f + \beta(R_m - R_f)$$

Where: R_j = *Cost of capital*
 R_f = *Risk-free rate*
 β = *Beta*
 R_m = *Average market return*

Before calculating the cost of capital we need to follow a few steps:

Step 4.1: The risk-free rate has to be determined. Most risk and return models in finance start off with an asset that is defined as risk-free, the expected return on that asset is used as the risk-free rate. Expected returns on risky investments are then measured relative to the risk-free rate, with the risk creating an expected risk premium that is added to the risk-free rate. Risk in finance is viewed in terms of the variance in actual returns around the expected return.

Government securities are the only securities that have a chance of risk free, not because governments are better run than companies, but because they control the printing of currency. They should thus be able to fulfill their promises in nominal terms. This, of course, is not always the case, especially when

governments refuse to honour claims made by previous regimes and when they borrow in currencies other than their own.

The average return on the R150, a government security, will be used as the risk-free rate in the capital asset pricing model (CAPM). This was obtained from McGregor BFA.

Table 4.3: Average return of R150 for the period 1997 to 2001

1997	1998	1999	2000	2001
14.57%	15.03%	14.49%	13.17%	10.78%

The cost of equity capital is the opportunity cost which shareholders forgo by investing in a specific company. While this opportunity cost does not appear in any financial statements, Stern Stewart approximates it, based on the CAPM, by adding an individual company's adjusted risk premium to the return on long-term government bonds. The adjusted risk premium equals the company's stock beta multiplied by 6%, a long-term risk premium common to equities in general (Brigham, 1999). The usage of 6% was discussed with Stern Company in Johannesburg. They confirmed that they would use a similar risk adjustment for agricultural co-operatives in South Africa.

Step 4.2: To use the capital asset model (CAPM) we still need to determine the Beta. The average betas, over a five-year period, of certain companies listed on the JSE were used to determine expected return. The selection of the companies was random. The only prerequisite was that the company had to have direct linkages with agriculture, based on principle of their main activities. Table 4.4 shows the chosen companies and their nature of business.

Table 4.4: Listed companies and their nature of business

Company	Main activities
Afgri Ltd. (Afgri)	AFGRI is a leading South African agricultural services business offering a wide range of physical and intellectual inputs to farmers, processors and users of agricultural products
Distell Group Ltd. (Distell)	Distell emerged as a consequence of the merger between Distillers Corporation (SA) Ltd (Distillers) and Stellenbosch Farmers' Winery Group Ltd (SFW). Distell is a producer and wholesaler of wine, spirits and alcoholic beverages.
Omnia Holdings Ltd. (Omnia)	Omnia is an investment holding company whose subsidiaries are involved in the manufacture, distribution and trade in fertilizer.
Rainbow Chicken Ltd (Rainbow)	Rainbow Chicken Limited is a public company which incorporates Rainbow Farms (which supplies the South African market with fresh and frozen chicken, Epol (feed mills) and Cobb SA (the breeding stock operation). Rainbow Chicken Limited is the largest chicken processor in South Africa. It has a fully integrated broiler producer that breeds and rears its own livestock, processes the chicken and markets fresh, frozen, value added and further processed chicken nationally and internationally.
Sappi Ltd. (SAPPI)	Sappi is the world's largest producer of coated fine paper and dissolving pulp and is a leading international forest products company
Tiger Brand Ltd. (Tiger Brands)	Tiger Brands provides investors with the opportunity to participate in a balanced spread of African and selected international operations in the manufacturing, processing and distribution of branded food and healthcare products. Food brands include Tastic, Koo, All Gold, Ace, Albany, Jungle Oats, Sea Harvest, Dairybelle, Fatti's & Moni's, King Korn and Beacon.

Source: Alexander & Oldert (2003)

Table 4.5 shows the average betas of the selected companies for the period from 1998 to 2001.

Table 4.5: Average Beta used for the period from 1998 to 2001

1997	1998	1999	2000	2001
0.65	0.66	0.78	0.85	0.83

Source: McGregor BFA

Step 4.3: The *cost of equity capital* can now be calculated by using CAPM because all information needed to do the calculation has been determined.

The cost of equity capital for NCT can be calculated as follows:

$$R_j = 10.78\% + 0.83(16.78 - 10.78) \\ = 15.75\%$$

Step 4.4: The weighted average cost of capital (WACC) was used in determining the cost of capital. It is a weighted average of the costs of debt and equity capital, where the weights are the market values of debt and equity. To determine the cost of debt, the return on the R150 was used and a risk premium of two percent was added. This approximation was necessary, since the co-operatives were reluctant to give information of their debt capital. The two percent correspond further fairly well when compared to the average interest rates available to agriculture from the Land Bank, co-operatives and commercial banks. The head of the agribusiness department of Absa said that co-operatives usually receive finance at a rate of prime plus two percent. Co-operatives normally receive finance from the Land Bank and commercial banks.

Indicated in Table 4.6 are the average interest rates available to agriculture.

Table 4.6: Interest rates on loans from the Land Bank, agricultural co-operatives and commercial banks.

Year	Land Bank	Agricultural Co-operatives	Commercial Banks	Average
Weights	31.2	26.3	42.5	100.00
1997	16.35	20.19	20.13	18.97
1998	17.05	20.90	21.64	20.01
1999	19.13	17.72	18.23	18.38
2000	15.48	14.91	14.50	14.91
2001	14.99	14.05	13.83	14.25

Source: Republic of South Africa (2003)

The cost of debt must be after tax to take the tax benefit of debt into consideration.

The formula for WACC is:

$$WACC = \left(CAPM * \frac{Adjusted\ Common\ Equity}{Capital} \right) + \left((R150 + 2)(1 - 0.3) * \frac{Total\ Debt}{Capital} \right)$$

WACC for NCT was calculated as follows:

$$WACC = \left[15.75\% * \left(\frac{67,530,848}{109,786,908} \right) \right] + \left[(10.72 + 2)(0.7) * \left(\frac{42,256,060}{109,786,908} \right) \right]$$

$$= 13.13\%$$

The WACC of the co-operatives reflects their unique mix of debt and equity. This reflects the risk of the co-operative.

Step five: EVA for the different co-operatives can be calculated by applying the formula:

$$EVA = \left(\frac{NOPAT}{Capital\ invested} - Cost\ of\ Capital \right) \times Capital\ invested$$

EVA for NCT co-operative is:

$$EVA = \left[\left(\frac{20,304,722}{109,786,908} \right) - 0.1313 \right] * 109,786,908$$

$$= 5,889,701$$

Step six: Interpret the results of the formula. A positive EVA implies that the rate of return on capital exceed the required rate of return. If the company's EVA is greater than zero, the firm is creating (adding) value for its shareholders. This is the case for NCT timber co-operative. If the company's EVA is less than zero, value is destroyed.

4.4 Conclusion

Co-operatives in South Africa started after the Anglo Boer War in 1902 when farmers found it necessary to stand together and to find new ways to market their products.

Co-operatives can be defined as enterprises freely established, owned and controlled by a group of legal persons with the purpose of providing themselves with mutual benefits on an equitable basis which arise from the activities of the enterprise, and not primarily from investing in it.

To become a member of a co-operative and to share in the advantages, the individual has to buy shares in that co-operative. Dividends are not earned on the basis of how many shares an individual has in the co-operative, but on the basis of how much business the individual has done with the co-operative. Profits made during the year are divided between members, if the members decide to do so. The profit is also divided according to percentage of business the individual did with the co-operative.

There are a few reasons why the establishment of co-operatives is a good idea. These reasons are to protect the co-operatives' members; to counteract the negative impact of monopoly or near-monopoly powers; to gain access to markets where existing structures fail to provide producers with fair returns; to provide services to consumers which would otherwise not be available; to add value to products and to provide a secure, sufficient scale.

Advantages of co-operatives are as follows: separate legal entity enjoyed by members and good prospects of continuity for the co-operative. The surplus made by the co-operative is divided between the members according to how much the individual member supported the co-operative; joint action by the members result in savings which would not have been obtained if they had acted

on their own. There are a number of statutory provisions which regulate certain aspects of the co-operative, such as management and control (Van Zyl, Kirsten, Coetzee & Blignaut, 1999).

Insufficient member capital can be a huge problem for co-operatives, as it can be lacking member support.

To calculate EVA, three basic variables need to be computed: return on capital earned on investments, cost of capital for those investments and capital invested in them. This is done in six steps.

Firstly the necessary data have to be obtained. This data contain income statements and balance sheets for the different co-operatives over a four-year period, 1998 to 2001. Secondly, NOPAT earned by the co-operative has to be estimated. The accounting measure of operating income has to be adjusted with equity equivalents. The third step is to calculate how much capital is invested in current assets and in expected future growth of the co-operative. Adjustments for equity equivalents have to be made in this case as well. In the fourth step cost of capital needs to be calculated based upon market values. The CAPM model is used to calculate the cost of equity capital. This model assumes there are no transaction costs or private information. The WACC is used to determine total cost of capital. It is a weighted average of the costs of debt and equity capital, where the weights are the market values of debt and equity. Finally, in the fifth step, EVA can be calculated by applying the EVA formula, and in step six the results are interpreted. A positive EVA value indicates value creation, while a negative EVA indicates value destruction.

In the next chapter the results of the calculation of EVA are given and interpreted. Firstly the EVA results for all the co-operatives for the period 1998 to 2001 are given and interpreted. Then the averages of the EVA results of the different groups of co-operatives, over the same period, are given and

interpreted. The same is done with the average of all the EVA results. Correlation between EVA performances over the years will be discussed, as well as the sensitivity of EVA.

CHAPTER FIVE

RESULTS AND INTERPRETATION OF EVA CALCULATIONS

5.1 Introduction

EVA was calculated for all the agricultural cooperatives for which the Registrar of Co-operatives has income statements and balance sheets for the period 1998 to 2001. These co-operatives were classified according to their main activities and include grain and oilseeds, wine, meat, timber, tobacco and fruit and vegetables, general and requisites. Financial statements of 66 co-operatives were obtained, but only 60 of these received financial statements were used in the study. The six co-operatives which were not included in the study were not included because of their incomplete financial statements. Four grain and oilseeds co-operatives, 35 wine co-operatives, four meat co-operatives, three timber co-operatives, two tobacco co-operatives, six fruit and vegetable co-operatives, four general co-operatives and two requisites co-operatives were included in the research.

In this chapter EVA is firstly calculated for all the co-operatives, the results are given and interpreted. Secondly the averages of the EVA results of the different groups of co-operatives are calculated, the results are given and interpreted. The average EVA results of all the co-operatives are given and interpreted as well. Thirdly a graph is used to see whether there is any correlation of EVA performance over certain years and between the individual groups of co-operatives. Lastly the sensitivity of EVA will be discussed.

5.2 Results and Interpretation

In this first part EVA is calculated for all the separate co-operatives. The results are given in separate tables. Each table represents a different group of co-

operatives. The EVA results of the grain and oilseeds co-operatives are shown in Table 5.1.

Table 5.1: EVA calculation of grain and oilseeds co-operatives for the period 1998 to 2001.

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
Langkloof	1998	2,523,536	22,562,110	11.18	13.45	(2.27)	(512,024)
	1999	396,398	24,186,713	1.64	13.09	(11.45)	(2,769,502)
	2000	2,357,217	27,188,676	8.67	11.88	(3.21)	(873,620)
	2001	2,419,489	27,615,992	8.76	10.07	(1.31)	(361,048)
Natal	1998	6,382,095	163,151,446	3.91	14.98	(11.07)	(18,063,545)
	1999	16,450,192	161,804,884	10.17	15.07	(4.90)	(7,926,638)
	2000	4,018,047	127,481,415	3.15	15.32	(12.16)	(15,506,787)
	2001	7,204,360	199,197,317	3.62	11.66	(8.04)	(16,020,957)
Sentraal-suid	1998	11,692,504	119,493,393	9.79	16.20	(6.41)	(7,660,362)
	1999	9,984,124	129,550,268	7.71	15.71	(8.01)	(10,373,173)
	2000	6,123,615	119,946,344	5.11	14.82	(9.71)	(11,648,372)
	2001	6,558,300	130,651,000	5.02	12.21	(7.19)	(9,392,693)
Vrystaat	1998	32,499,601	432,528,765	7.51	16.19	(8.68)	(37,547,185)
	1999	24,679,115	516,065,000	4.78	15.73	(10.95)	(56,503,600)
	2000	29,506,300	562,928,000	5.24	14.47	(9.23)	(51,946,753)
	2001	27,795,200	386,546,000	7.19	13.67	(6.48)	(25,037,667)

The income statement and balance sheet of five grain and oilseeds co-operatives were obtained from the Registrar of Co-operatives. One of these co-operatives, the Vaalharts co-operative, was not included in because the data in the income statement and balance sheet was incomplete.

Langkloof co-operative has negative values for the four years under review. From 1999 to 2001 the negative EVA value decreased. The greatest negative EVA value occurred in 1999 (R2,769,502) and the smallest in 2001 (R361,048). Return increased from 1.64% in 1999 to 8.76% in 2001. The WACC decreased from 13.45% in 1998 to 10.07% in 2001. This resulted in the negative value of the spread, bearing in mind the formula for EVA $((r-WACC)*capital)$. The negative values of the spread decreased from 11.45% in 1999 to 1.31% in 2001. NOPAT from 1999 to 2001 improved, while the capital invested increased. The performance of this co-operative was the best of all the co-operatives in this

sector, because it used much less capital (both debt and equity) than the other co-operatives in this sector.

As can be seen from the EVA values of Natal co-operative, negative EVA values occur during each of the four years, 1998 to 2001. The highest negative value occurred in 1998 (R18,063,545) and the lowest negative value occurred in 1999 (R7,926,638). In the year 2000 the EVA value is negative again, but almost double the value of 1999, R15,506,787. The next year the negative value is even higher at R16,020,957. The WACC increased from 14.98% in 1998 to 15.32% in 2000 and then decreased to 11.66% in 2001. This is a high value for WACC. The rate of return (r) increased radically from 3.91% in 1998 to 10.17% in 1999. In 2000 it decreased again to 3.15% and in 2001 r increased to 3.62%. The rate of return is very low for this co-operative because of the high values of debt used. Bearing in mind the formula for EVA $((r-WACC)*capital)$, the spread ($r-WACC$) remains negative, thus EVA remains negative as there exist a correlation between EVA and the spread. In 1998 the spread was negative 11.07%, for this year the greatest negative EVA value was calculated. The spread in 1999 is the smallest negative spread (4.90), the smallest EVA value was calculated for this year. In 2000 the spread was the greatest negative value (12.16), in this year the negative EVA value almost doubled from 1999. Although the negative spread decreased in 2001 to 8.04, the negative EVA value still increased. This was because of a rapid increase in capital invested in 2001.

In the case of the Sentraal-suid co-operative, the EVA values are also negative for the four years under review. The lowest negative EVA value of R7,660,362 occurred in 1998 and the greatest negative EVA value occurred in 2000 (R11,648,372). From 1998 to 2000 the negative EVA values increased, in 2001 the value decreased. The increase in the negative EVA values from 1998 to 2000 can be explained by both the rate of return and WACC decreasing. The rate of return decreases at a faster rate than WACC, which results in the negative value of the spread increasing and thus the negative value of the EVA increasing. In

2001 the rate of return decreased at a slower rate than in the previous two years and WACC decreased at a faster rate than the previous two years, with the result that the negative value of the spread decreased and so did the negative value of EVA.

The results of the Vrystaat co-operative were negative for the four years under review. The highest negative EVA value occurred in 1999 (R56,503,600) and the lowest EVA value occurred in 2001 (R25,037,667), reflecting a significant improvement in value creation during 2001. This improvement was the result of an increase in the rate of return from 4.78% in 1999 to 7.19% in 2001 and a decrease in WACC from 16.19% in 1998 to 13.67% in 2001. Because of the changes in the rate of return and WACC, the negative value of the spread decreased from 1999 (10.95%) to 2001 (6.48%). NOPAT increased from 1999 to 2001, Capital invested increased sharply from 1998 to 2000, but decreased just as fast in 2000.

Table 5.2 shows the EVA results of wine co-operatives.

Table 5.2: EVA calculation of wine co-operatives for the period 1998 to 2001.

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
Aan de Doorns	1998	629,648	7,377,194	8.54	15.99	(7.46)	(550,256)
	1999	604,964	9,279,114	6.52	15.29	(8.77)	(813,977)
	2000	358,522	9,394,546	3.82	15.37	(11.55)	(1,085,271)
	2001	879,119	10,353,695	8.49	12.99	(4.49)	(465,387)
Agterkliphoogte	1998	191,425	2,249,100	8.51	16.48	(7.97)	(179,279)
	1999	156,711	2,296,727	6.82	17.01	(10.19)	(233,965)
	2000	19,017	2,415,541	0.79	16.17	(15.38)	(371,509)
	2001	184,086	2,671,236	6.89	13.36	(6.46)	(172,687)
Badsberg	1998	339,404	5,641,457	6.02	15.98	(9.97)	(562,292)
	1999	485,001	6,797,409	7.14	15.56	(8.43)	(573,013)
	2000	463,481	6,418,551	7.22	14.77	(7.55)	(484,436)
	2001	572,739	7,812,535	7.33	11.97	(4.64)	(362,805)
Barrydale	1998	444,638	3,029,292	14.68	15.03	(0.35)	(10,602)
	1999	(213,288)	5,148,568	(4.14)	13.82	(17.96)	(924,591)
	2000	191,795	4,913,393	3.90	12.09	(8.19)	(402,455)
	2001	535,561	4,439,763	12.06	10.11	1.95	86,519
Bonnievale	1998	417,305	8,546,352	4.88	14.95	(10.07)	(860,221)
	1999	267,884	9,109,183	2.94	14.32	(11.38)	(1,036,871)

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
	2000	32,448	8,865,080	0.37	13.07	(12.70)	(1,125,953)
	2001	615,222	8,738,074	7.04	10.93	(3.89)	(339,820)
Botha	1998	864,476	10,106,792	8.55	15.07	(6.52)	(658,630)
	1999	1,223,537	16,585,758	7.38	14.00	(6.62)	(1,098,805)
	2000	992,224	12,188,043	8.14	13.85	(5.71)	(695,536)
	2001	1,674,017	12,217,642	13.70	11.82	1.88	229,441
Brandvlei	1998	734,149	10,868,387	6.75	14.55	(7.80)	(847,525)
	1999	674,433	10,720,827	6.29	14.91	(8.62)	(924,140)
	2000	648,107	9,447,375	6.86	14.69	(7.83)	(739,625)
	2001	797,821	11,779,828	6.77	11.85	(5.08)	(598,464)
Breeriviervallei	1998	2,163,309	11,771,115	18.38	17.74	0.64	75,538
	1999	1,547,343	14,162,125	10.93	18.36	(7.43)	(1,052,444)
	2000	1,579,435	15,996,441	9.87	18.27	(8.39)	(1,342,363)
	2001	2,141,925	18,822,732	11.38	15.75	(4.37)	(821,789)
Citrusdal	1998	392,467	8,263,821	4.75	16.89	(12.15)	(1,003,649)
	1999	355,894	12,714,809	2.80	15.68	(12.88)	(1,637,155)
	2000	3,346,959	15,693,623	21.33	14.22	7.11	1,116,031
	2001	2,987,721	19,802,316	15.09	11.89	3.20	633,378
De Wet	1999	1,087,866	13,873,347	7.84	14.64	(6.80)	(943,452)
	2000	367,491	14,904,117	2.47	13.57	(11.10)	(1,654,331)
	2001	772,349	13,450,849	5.74	11.59	(5.85)	(786,497)
Du Toitskloof	1998	1,299,906	7,377,190	17.62	15.21	2.41	177,702
	1999	953,757	9,046,989	10.54	15.18	(4.64)	(419,807)
	2000	74,671	8,254,169	0.90	15.45	(14.54)	(1,200,382)
	2001	377,595	9,165,539	4.12	12.19	(8.07)	(740,056)
Goudini	1998	997,833	11,334,324	8.80	15.68	(6.87)	(778,845)
	1999	694,821	11,607,124	5.99	16.12	(10.14)	(1,176,533)
	2000	384,789	11,804,545	3.26	15.42	(12.16)	(1,435,428)
	2001	1,548,923	10,558,099	14.67	13.45	1.22	128,863
Groot Eiland	1998	117,300	2,451,746	4.78	16.21	(11.42)	(280,043)
	1999	434,009	3,303,384	13.14	17.67	(4.53)	(149,544)
	2000	325,668	6,089,580	5.35	14.02	(8.67)	(528,142)
	2001	436,006	6,152,926	7.09	11.95	(4.87)	(299,343)
Ladismith	1998	155,711	4,419,687	3.52	16.11	(12.58)	(556,140)
	1999	1,023,925	3,810,382	26.87	15.98	10.89	414,908
	2000	230,009	5,560,911	4.14	14.81	(10.67)	(593,617)
Langverwacht	1998	869,932	4,636,439	18.76	15.70	3.07	142,148
	1999	399,173	7,593,332	5.26	14.59	(9.33)	(708,698)
	2000	300,974	6,444,910	4.67	14.43	(9.76)	(629,182)
	2001	(72,730)	8,026,129	(0.91)	11.67	(12.57)	(1,009,078)
McGregor	1998	8,020,042	9,038,455	88.73	15.13	73.60	6,652,196
	1999	764,771	9,826,219	7.78	15.33	(7.55)	(741,603)
	2000	740,927	8,942,372	8.29	14.80	(6.52)	(582,804)
	2001	970,114	8,766,513	11.07	12.95	(1.88)	(165,026)
Merwespont	1998	1,166,902	6,243,152	18.69	15.89	2.80	174,593
	1999	54,980	8,071,874	0.69	15.48	(14.80)	(1,194,274)
	2000	465,431	9,691,638	4.80	13.84	(9.04)	(876,090)
	2001	(46,084)	8,773,372	(0.53)	11.94	(12.46)	(1,093,592)
Merwida	1998	124,044	2,960,815	4.19	14.57	(10.38)	(307,243)
	1999	92,590	3,273,795	2.83	14.65	(11.82)	(387,042)
	2000	227,068	3,887,214	5.84	13.24	(7.39)	(287,432)
	2001	1,530,350	4,473,134	34.21	10.96	23.25	1,039,890

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
Montagu	1998	444,322	8,363,420	5.31	14.79	(9.47)	(792,402)
	1999	544,992	12,912,288	4.22	13.70	(9.48)	(1,224,394)
	2000	594,913	9,694,048	6.14	13.59	(7.45)	(722,151)
	2001	376,224	10,498,142	3.58	11.39	(7.81)	(819,891)
Nordale	1998	1,430,092	9,209,350	15.53	15.47	0.05	5,007
	1999	714,600	9,582,588	7.46	15.82	(8.36)	(801,388)
	2000	147,296	12,021,607	1.23	14.08	(12.86)	(1,545,451)
	2001	(309,282)	11,138,129	(2.78)	11.96	(14.73)	(1,640,938)
Nuwehoop	1998	516,651	2,898,647	17.82	14.75	3.07	89,124
	1999	265,569	3,025,604	8.78	15.29	(6.51)	(196,917)
	2000	154,986	3,182,504	4.87	14.53	(9.66)	(307,391)
	2001	137,325	2,990,508	4.59	12.64	(8.05)	(240,780)
NUY	1998	413,414	8,141,837	5.08	15.59	(10.51)	(855,939)
	1999	470,227	8,212,882	5.73	16.05	(10.33)	(848,346)
	2000	528,604	8,538,357	6.19	15.03	(8.84)	(755,089)
	2001	269,330	8,075,154	3.34	13.43	(10.10)	(815,448)
Oranjerivier	1998	7,948,614	59,361,872	13.39	17.69	(4.30)	(2,554,726)
	1999	(2,692,606)	93,613,696	(2.88)	16.17	(19.04)	(17,825,351)
	2000	3,719,599	41,442,518	8.98	17.65	(8.67)	(3,594,340)
	2001	(1,342,148)	24,236,113	(5.54)	11.65	(17.19)	(4,165,296)
Overhex	1998	504,593	5,627,136	8.97	14.16	(5.19)	(292,131)
	1999	(76,083)	4,756,259	(1.60)	14.42	(16.02)	(762,022)
	2000	705,481	3,953,101	17.85	13.27	4.58	181,095
	2001	378,698	4,388,470	8.63	11.69	(3.06)	(134,438)
Perdeberg	1998	1,096,830	5,658,112	19.39	15.88	3.50	198,202
	1999	1,379,548	6,559,484	21.03	15.96	5.07	332,413
	2000	4,854,874	4,430,484	109.58	13.48	96.09	4,257,464
	2001	5,023,152	27,197,480	18.47	10.43	8.04	2,187,529
Robertson	1998	2,846,005	27,408,688	10.38	15.01	(4.62)	(1,267,121)
	1999	341,319	26,071,958	1.31	15.58	(14.27)	(3,720,630)
	2000	1,598,275	28,570,232	5.59	14.96	(9.36)	(2,675,237)
	2001	1,004,042	37,265,347	2.69	12.59	(9.89)	(3,686,064)
Romansrivier	1998	625,558	2,529,962	24.73	15.19	9.53	241,156
	1999	651,571	5,169,095	12.61	15.06	(2.45)	(126,739)
	2000	623,256	4,851,724	12.85	14.38	(1.54)	(74,568)
	2001	219,357	6,699,172	3.27	11.42	(8.14)	(545,556)
Roodezant	1998	1,226,221	12,662,541	9.68	15.63	(5.95)	(752,999)
	1999	937,426	12,200,320	7.68	15.86	(8.18)	(998,119)
	2000	1,465,356	11,508,133	12.73	15.20	(2.47)	(283,936)
	2001	1,294,635	11,101,770	11.66	13.35	(1.68)	(187,008)
Slanghoek	1998	1,195,078	10,027,464	11.92	15.90	(3.98)	(399,223)
	1999	721,054	11,551,359	6.24	15.69	(9.44)	(1,090,931)
	2000	(179,925)	11,492,229	(1.57)	15.11	(16.68)	(1,916,755)
	2001	402,605	11,252,508	3.58	13.29	(9.72)	(1,093,249)
Spruitdrift	1998	1,756,337	13,727,786	12.79	13.27	(0.48)	(65,664)
	1999	2,664,039	19,336,668	13.78	12.72	1.06	205,338
	2000	2,387,933	24,540,542	9.73	11.63	(1.90)	(466,491)
	2001	2,491,378	24,993,419	9.97	9.90	0.07	17,638
Tulbagh	1998	1,556,998	20,006,346	7.78	12.67	(4.88)	(976,816)
	1999	2,271,513	18,083,115	12.56	12.77	(0.21)	(37,422)
	2000	1,137,885	15,158,666	7.51	12.08	(4.57)	(693,279)
	2001	(238,668)	13,504,410	(1.77)	10.32	(12.09)	(1,632,439)

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
Vlottenburg	1998	1,086,174	7,078,412	15.34	14.61	0.74	52,216
	1999	396,277	8,948,310	4.43	14.39	(9.96)	(891,449)
	2000	741,586	10,029,669	7.39	13.46	(6.07)	(608,825)
	2001	1,378,648	9,375,185	14.71	12.59	2.12	198,640
Waboomrivier	1999	156,734	12,844,048	1.22	14.15	(12.93)	(1,661,006)
	2000	637,682	5,157,873	12.36	17.16	(4.80)	(247,428)
	2001	665,146	11,067,556	6.01	11.78	(5.77)	(639,015)
Wellington	1998	1,284,758	8,114,865	15.83	13.88	1.95	158,180
	1999	1,284,758	9,677,495	13.28	15.07	(1.80)	(174,112)
	2000	3,662,785	9,677,495	37.85	14.15	23.70	2,293,616
Windmeul	1999	723,601	6,976,163	10.37	15.47	(5.09)	(355,391)
	2000	1,265,516	5,711,980	22.16	15.48	6.67	381,263
	2001	1,063,314	8,307,247	12.80	12.59	0.21	17,537

It is very important to note that the purpose of EVA is to measure value created for the co-operative, therefore payments to members are not taken into consideration.

Income statements and balance sheets for 37 wine co-operatives have been received from the Registrar of Co-operatives. Only 35 of these were used. The Stettyn co-operative had an incomplete income statement, which meant that NOPAT and the rate of return could not be calculated. The income statement and balance sheet of the Stellenbosch co-operative were also incomplete.

The calculated EVA values for Aan de Doorns co-operatives are negative for the four years under review. The highest negative EVA value of R1,085,271.01 occurred in 2000 and the lowest negative value of R465,387.13 occurred in 2001. The rate of return decreased from 8.54% in 1998 to 3.82% in 2000, but increased again in 2001 to 8.49%. WACC decreased from 15.99% in 1998 to 15.29% in 1999, increased a little to 15.37% in 2000 and then sharply decreased to 12.99% in 2001. With the formula of EVA in mind $((r-WACC) \times \text{capital})$, this resulted in negative spreads $(r-WACC)$ for the four year period, the negative spread increased from 1998 to 2000 and sharply decreased in 2000 to the negative value of 4.49.

From the calculated EVA values for Agterkliphoogte co-operative it can be seen that the EVA values are all negative for the four years under review. During 2000 the highest negative value of R371,509 occurred, while the lowest negative value (R172,687) was achieved in 2001. A positive aspect for this co-operative is the fact that WACC decreased from 17.01% in 1999 to 6.89% in 2001. This means that the spread is still negative, but is becoming smaller.

The EVA results of the Badsberg co-operative were negative for the four years under review. However, the negative EVAs are becoming smaller between 1999 (R573,012.75) and 2001 (R362,805). This improvement resulted from the continuous increase in the rate of return from 6.02% in 1998 to 7.33% in 2001, as well as the decrease of the WACC from 15.98% in 1998 to 11.97% in 2001, thus the cheaper cost of debt. Although the spread is negative, it is becoming smaller. The improvement in EVA of this co-operative is remarkable if it is taken into account that the lower negative EVA values have been achieved with an increased amount of capital invested over the four year period reviewed.

The Barrydale co-operative improved their EVA from the negative value R924,591 in 1999 to a positive value of R86,520 in 2001. The rate of return has improved from a negative percentage (-4.14%) in 1999 to a positive percentage (12.06%) in 2001, while the WACC declined from 13.82% to 10.11% over the same period, thereby creating a positive spread in 2001. NOPAT improved over this period and capital invested remained constant. This co-operative is now in a position to invest more capital and become a constant value creator.

The EVA values for the Bonnievale co-operative remained negative for the four years under review. From 1998 to 2000 the negative EVA value increased from R860,221 to R1,125,953, however, in 2001 it decreased to R339,820. The rate of return decreased from 4.88% in 1998 to 0.37% in 2000 and increased to 7.04% in 2001, while the WACC decreased continuously from 14.95% to 10.93% over the four-year period. This resulted in the spread remaining negative, increasing

from 1998 to 2000 and decreasing sharply in 2001. NOPAT decreased from 1998 to 2000 and improved suddenly in 2001, while capital invested remained constant.

The Botha co-operative improved its EVA from a negative value of R1,098,805 in 1999 to a positive value of R229,441 in 2001. The rate of return increased from 7.38% to 13.70% from 1999 to 2001, while WACC decreased from 14.00% to 11.82% in the same period, creating a positive spread in 2001. NOPAT decreased from 1999 to 2000 and increased again in 2001, capital invested decreased from 1999 to 2000, but stayed constant from 2000 to 2001. Capital invested increased by R6 million from 1998 to 1999, in 2000 it decreased again with R4 million and stayed constant over the two years, 2000 and 2001. Keeping the formula for capital invested in mind (capital invested equals adjusted common equity plus total debt) it can be concluded that if adjusted common equity stayed constant over the four years, the increase in 1999 and decrease in 2000 of capital invested is a result of total debt. When looking at the balance sheet of the Botha co-operative, it is obvious that total interest-bearing external liabilities, which increased in 1999 and decreased in 2000, resulted in the change in total debt and thus in capital invested.

The EVA values for Brandvlei co-operative remained negative for the four years under review. The negative EVA values decreased between 1999 and 2001 from R924,140 to R598,464. The rate of return increased from 6.29% to 6.77% for the same period and the WACC decreased from 14.91% to 11.85%. Thus the spread remained negative, but became smaller.

The Breeriviervallei co-operative destroyed value. In 1998 its EVA value was a positive value of R75,538, the EVA value subsequently deteriorated to a negative value of R1,342,363 in 2000. In 2001 the EVA improved to a negative value of R821,789. The rate of return decreased from 18.38% in 1998 to 9.87% in 2000, but increased again in 2001 to 11.38%. The WACC amounted to 17.74% in 1998

and increased to 18.36% in 1999, between 1999 and 2001 it decreased to 15.75%. The WACC for this co-operative is much higher than for the other co-operatives as it used much less debt than the other co-operatives did. The changing rate of return and WACC resulted in a fluctuating spread which was positive in 1998, negative in 1999. The negative value increased in 2000, but decreased again in 2001. NOPAT remained fairly constant over the four-year period under review, while capital invested kept increasing over this period.

The EVA of Citrusdal co-operative improved from a negative value of R1,637,155 in 1999 to a positive value of R633,378 in 2001. This is a good example of a value destroyer that has become a value creator. The reason for this improvement lies in the rate of return which increased from 4.75% in 1998 to 15.09% in 2001. There was also a decrease in the WACC from 16.89% in 1998 to 11.89% in 2001. This means that a positive spread has been achieved and thereafter more capital was invested. With the positive spread, capital has been increased from R8,263,821 in 1998 to R19,802,316 in 2001. NOPAT decreased slightly between 1998 and 1999. In 2000 it drastically increased and in 2001 it decreased. The drastic increase in 2000 was a result of a drastic increase in the net income (after tax) for that year.

The 1998 values for the De Wet co-operative are not included in the table because there is no data available for this year. This co-operative is an example of a consistent value destroyer. The EVA values for this co-operative were negative for the three years for which data was available. The highest negative EVA value of R1,654,331 occurred in 2000 and the lowest negative EVA value of R786,497 occurred in 2001. The rate of return deteriorated from 7.84% to 2.47% between 1999 and 2000, but improved again to 5.74% in 2001. WACC decreased from 14.64% to 11.59% between 1999 and 2001. This is a positive sign for the co-operative. The spread was negative for all three years and the negative value increased between 1999 and 2000 and then decreased in 2000.

Du Toitskloof co-operative is an example of a consistent value destroyer. In 1998 a positive EVA value of R177,702 occurred, this value deteriorated to a negative EVA value of R1,200,382 in 2000. The negative value decreased to R740,056 in 2001. The rate of return decreased sharply from 17.62% in 1998 to 0.90% in 2000, it increased again in 2001 to 4.12%, while WACC increased slightly between 1998 and 1999 from 15.21% to 15.18%, increased to 15.45% in 2000 and decreased again in 2001 to 12.19%. This fluctuating WACC resulted in a positive spread in 1998, a negative spread in 1999, the negative value increased in 2000 and decreased in again 2001.

The Goudini co-operative destroyed value between 1998 and 2000, but created value in 2001. The lowest negative EVA value of R778,845 occurred in 1998 and the highest negative EVA value of R1,435,428 occurred in 2000. The EVA value that occurred in 2001 was positive (R128,862.85). The rate of return decreased from 8.80% to 3.26% for the period 1998 to 2000 and then increased to 14.67% in 2001. The WACC increased from 15.68% in 1998 to 16.12% in 1999 and then decreased to 13.45% in 2001. The spread resulting from these values were negative in 1998. The negative value of 1998 increased in the period up to 2000 and then became positive in 2001. NOPAT decreased between 1998 and 2000 and then increased sharply in 2001. Capital invested increased slowly between 1998 and 2000, but decreased in 2001.

The EVA created by Groot Eiland co-operative is an example of mixed results over the four-year period. The values varies from the highest negative value of R528,142 in 2000 to the lowest negative value of R149,544 in 1999. From 1999 to 2001 WACC decreased, while the rate of return fluctuated. From 1998 to 1999 the rate of return increased. It decreased in 2000 and increased again in 2001. This resulted in the spread fluctuating as well. The spread stayed negative over the four-year period, the negative value decreased from 1998 to 1999, increased in 2000 and decreased again in 2001. NOPAT varied over the four years, while capital increased from 1998 to 1999 and almost doubled in 2000. From 2000 to

2001 capital invested remained constant. This increase in capital in 2000 was a result of a drastic increase in the total interest-bearing external liabilities in 1999, which resulted in a drastic increase in the total debt used in 2000. The impact of this increase in capital was negative on the EVA values. The negative EVA value increased in 2000, but decreased again in 2001.

The 2001 values of the Ladismith co-operative are not included in the table as there is no data available for this year. The EVA values of the Ladismith co-operative shows mixed results. In 1998 the lowest negative EVA value of R556,140 occurred, in 1999 a positive EVA value of R414,908 occurred, but in 2000 another negative EVA value of R593,617 occurred. The rate of return improved drastically from 3.52% to 26.87% between 1998 and 1999, but deteriorated just as drastically again to 4.14% in 2000. However, WACC decreased from 16.11% to 14.81% from 1998 to 2000. This resulted in a fluctuating spread which was negative in 1998, positive in 1999 and again negative in 2000.

The Langverwacht co-operative is an example of a value destroyer. The EVA values of this co-operative decreased from a positive value of R142,148 in 1998 to a negative value of R1,009,078 in 2001. The reason for this deterioration lies in the rate of return which decreased from 18.76% in 1998 to a negative rate of 0.91% in 2001, although the WACC decreased from 15.70% in 1998 to 11.67% in 2001. NOPAT decreased from 1998 to 2001, in 2001 this value was negative. The capital invested increased from R4,636,439 in 1998 to R8,026,129 in 2001.

The EVA results calculated for McGregor co-operative shows a positive value in 1998 and negative values for the years 1999 to 2001. In 1998 the positive EVA value calculated was R6,652,196. In this year the rate of return was 88.73% with a WACC equal to 15.13%, this resulted in a positive spread of 73.60%. NOPAT in this year was also much higher than the NOPAT for the following three years. EVA decreased in 1999 to a negative value of R741,603. This is the highest

negative EVA value for the McGregor co-operative. The rate of return decreased to 7.78% and WACC increased a little to 15.33%, this resulted in a negative spread. The lowest negative EVA value of R165,026 occurred in 2001. The rate of return increased from 7.78% in 1999 to 11.07% in 2001, while WACC decreased from 15.33% to 12.95% for the same period. This resulted in negative spread values from 1999 to 2001, although the values are negative, they are decreasing. This is positive for the McGregor co-operative. Capital invested decreased continuously from 1998 to 2001, while NOPAT decreased sharply from 1998 to 2000, but increased again in 2001.

Merwespont co-operative is an example of mixed EVA results over the four-year period under review. In 1998 the EVA value of R174,593 was positive. The highest negative EVA value of R1,194,274 occurred in 1999, while the lowest negative EVA value of R876,090 occurred in 2000. It appears that WACC decreased from 1998 to 2001. The rate of return fluctuated a lot, from 1998 to 1999 it deteriorated from 18.69% to 0.69%, improved again in 2000 to a percentage of 4.80%, but deteriorated again in 2001 to a negative percentage of 0.53%. In 2001 NOPAT was negative. The only positive sign for this co-operative is the WACC that decreased.

The EVA of Merwida co-operative improved from a negative EVA value of R387,042 to a positive EVA value of R1,039,890. The reason for this improvement lies in the increase in the rate of return from 2.83% in 1999 to 34.21% in 2001, as well as in the decrease in the WACC from 14.65% to 10.96% over the same period. This means that a positive spread has been achieved in 2001 and that the correct action has been taken: to increase capital invested. Capital increased from R2,960,815 in 1998 to R4,473,134 in 2001.

The Montagu co-operative is an example of a consistent value destroyer. Negative EVA values were achieved for each of the four years under review. The highest negative EVA value of R1,224,394 occurred in 1999 and the lowest

negative EVA value of R722,151 occurred in 2000. The rate of return deteriorated between 1998 and 1999 from 5.31% to 4.22%. It improved to 6.14% in 2000, but deteriorated again to 3.58% in 2001. A positive sign for the Montagu co-operative is the fact that WACC decreased from 14.79% to 11.39% between 1998 and 2001. This resulted in negative spreads for the four years under review. The negative spread value decreased between 1998 and 2000, in 2001 it increased. The capital use over the four years fluctuated a lot.

The EVA results of Nordale co-operative show that this co-operative is also a consistent value destroyer. In 1998 the EVA value was positive (R5,007), though from 1999 the EVA values were negative and the negative value kept on increasing until 2001. The lowest negative EVA value of R801,388 occurred in 1999 and the highest negative EVA value of R1,640,938 occurred in 2001. The rate of return deteriorated from 15.53% to a negative percentage of 2.78% between 1998 and 2001. WACC decreased from 15.82% to 11.96% between 1999 and 2001; one positive sign. These percentages resulted in the spread being positive in 1998, but negative for the three years following. The negative spread values kept on increasing over the three years, 1999 to 2001.

The Nuwehoop co-operative is an example of a consistent value destroyer. As in the case of the Nordale co-operative, the EVA value in 1998 was positive (R89,124), but from 1999 to 2001 it was negative. The lowest negative EVA value of R196,917 occurred in 1999 and the highest negative EVA value of R307,391 occurred in 2000. The rate of return deteriorated from 17.82% in 1998 to 4.59% in 2001, while the WACC increased from 14.75% in 1998 to 15.29% in 1999 and decreased to 12.64% in 2001. This resulted in the spread value being positive in 1998, although between 1999 and 2001 the spread value was negative and decreasing. NOPAT kept on decreasing over the four years, while capital invested stayed constant.

In the case of the NUY co-operative, the EVA value stayed negative and constant over the four-year period under review. The lowest negative EVA value of R755,089 occurred in 2000, while the highest negative EVA value of R855,938 occurred in 1998. The rate of return improved from 5.08% to 6.19% between 1998 and 2000. In 2001 the rate of return deteriorated to 3.34%. The WACC increased from 15.59% in 1998 to 16.05% in 1999. From 1999 to 2001 the WACC decreased to 13.43%. The result was negative spreads for the four years under review. The negative spread decreased between 1998 and 2000, but increased again in 2001.

The Oranjerivier co-operative is also a consistent value destroyer with negative EVA values for each of the four years under review. The lowest negative EVA value of R2,554,726 occurred in 1998 and the highest negative EVA value of R17,825,351 occurred in 1999. The negative EVA value for 2001 was R4,165,296. The rate of return was negative in 1999 and in 2001. In these two years the NOPAT was negative as well. WACC decreased from 17.69% in 1998 to 16.17% in 1999, increased to 17.65% in 2000 and decreased again in 2001 to 11.65%. These fluctuating results resulted in a very fluctuating spread which remained negative over the four-year period under review. Capital invested increased drastically between 1998 and 1999, it decreased just as drastically between 1999 and 2001.

Overhex co-operative is an example of a co-operative with mixed EVA results over the four-year period under review. In 1999 the EVA value was the highest negative value (R762,022), in 2000 the EVA value was positive (R181,095), and in 2001 the lowest negative EVA value occurred (R134,438). The rate of return showed no consistency, in 2000 the rate of return was 17.85% and in 1999 it was negative 1.6%. The WACC decreased from 14.42% to 11.69% between 1999 and 2001. These fluctuating rates resulted in a very uneven spread. In 2000 the spread had a positive value, resulting in the only positive EVA value for the Overhex co-operative. The other three years had negative spreads. NOPAT

decreased to negative levels in 1999 because of a net loss after tax made by the co-operative in 1999. In 2000 NOPAT increased to a positive value larger than the value of 1998, this was the result of a net income after tax made by the co-operative in that year. As a result of a net loss after tax in 2001, NOPAT decreased again, but stayed positive.

Perdeberg co-operative is an example of a consistent value creator. A positive and increasing EVA has been achieved over the four-year period. EVA improved from R198,202 in 1998 to R2,187,529 in 2001. While the rate of return has remained constant at around 18% during this period, WACC has decreased from 15.88% in 1998 to 10.43% in 2001. The consistent positive spread caused the increase in EVA, together with an increase in capital invested over the four-year period.

Robertson co-operative is an example of a consistent value destroyer. Negative EVA values have been achieved over the four-year period. EVA decreased from a negative value of R1,267,121 in 1998 to a negative value of R3,686,064 in 2001. While the rate of return has declined from 10.38% in 1998 to only 2.69% in 2001, WACC has declined from 15.01% in 1998 to 12.59% in 2001. This means that a negative spread has been achieved. This value destruction situation has been worsened by the fact that in addition to a negative spread of around 10% for 2000 and 2001, an ever-increasing amount of capital has been invested. Capital invested increased from R27,408,688 in 1998 to R37,265,347 in 2001.

Another value destroyer is the Romansrivier co-operative. The EVA values decreased from a positive value of R241,156 in 1998 to a negative value of R545,556 in 2001. While the rate of return deteriorated from 24.73% in 1998 to only 3.27% in 2001, the WACC also decreased from 15.19% in 1998 to 11.42% in 2001. This means that the positive spread of 1998 turned negative in 1999. The negative value of the spread decreased in 2000 and increased again in 2001. NOPAT stayed constant from 1998 to 2000 and decreased sharply in

2001. The value destruction has been worsened by increased capital invested. In 1998 the capital invested was only R2,529,962, while in 2001 it increased to R6,699,172.

The EVA values for the Roodezant co-operative were all negative for the four years, although the EVA values increased. The highest negative EVA value of R998,119 occurred in 1999 and the lowest negative EVA value of R187,008 occurred in 2001. This improvement was due to an increase in the rate of return from 7.68% to 11.66% between 1999 and 2001. Over the same period the WACC decreased from 15.86% to 13.35%. This resulted in the negative spread values decreasing from 1999 to 2001. Capital invested decreased steadily from 1998 to 2001. NOPAT decreased with 31% between 1998 and 1999 because of the joint action of the variables used in the calculation of NOPAT. Net income for the year (after tax) decreased little between 1998 and 1999, tax savings on interest payments stayed constant over the two years while the deferred tax minus deferred tax of the previous year decreased to negative levels between 1998 and 1999, this is the main variable resulting in the large decrease in NOPAT. In 2000 NOPAT increased with R527,930, this was the result of a drastic increase of 70% in the net income after tax for the year 2000.

The Slanghoek co-operative is an example of a value destroyer. The EVA values for the four years under review were negative, with the lowest negative EVA value of R399,223 in 1998 and the highest negative EVA value of R1,916,755 in 2000. This high negative EVA value is the result of the negative NOPAT value, resulting in the negative rate of return and in turn resulting in a higher negative spread. The rate of return deteriorated from 11,92% in 1998 to a negative rate of 1.57% in 2000, this rate improved again in 2001 to 3.58%. One positive sign for this co-operative is the decrease in the WACC from 15.90% to 13.29% between 1998 and 2001. These percentages resulted in negative spread values. These negative values increased from 1998 to 2000 and decreased again in 2001.

The EVA values created by Spruitdrift co-operative show mixed results over the four-year period. The EVA varied from negative R466,491 in 2000 to positive R205,338 in 1999. What is also interesting about this co-operative is the very small spread. From 1998 to 2001 it appears that both the return and the WACC have decreased. The co-operative however is producing a very consistent and relatively high NOPAT throughout the four-year period. In addition to that, capital invested is not only at a high level, but has been increasing as well. It seems that a small increase in the rate of return or a small decrease in WACC will definitely bring about a large value creating opportunity.

The EVA values of Tulbagh co-operative show that it is a value destroyer. Negative EVA values were achieved over the four-year period. The lowest EVA value of R37,422 occurred in 1999, while the highest negative EVA value of R1,632,439 occurred in 2001. The rate of return decreased from 12.56% in 1999 to a negative percentage of 1.77%. WACC also decreased from 12.77% to 10.32% over the same period. This resulted in a negative spread, the negative spread values increased from 1999 to 2001. NOPAT and capital invested decreased as well, from 1999 to 2001. In 2001 NOPAT was negative.

Vlottenburg co-operative created value in 1998 although between 1999 and 2000 value was destroyed. The negative values of EVA improved from 1999 to 2000, in 2001 the EVA value turned positive again, thus creating value. The improvement in the EVA values between 1999 and 2001 was a result of the improvement in the rate of return from 4.43% to 14.71% and WACC decreased from 14.36% to 12.59% over the same period. As a result of these improvements the spread turned positive in 2001. This co-operative can now invest more capital.

Data of the Waboomrivier co-operative for the 1998 year was not available, thus data for this year is not included in the table. The Waboomrivier co-operative has mixed EVA values. For the three years, 1999 to 2001, all the EVA values were

negative, but highest negative EVA value of R1,661,006 occurred in 1999 and the lowest negative EVA value of R247,428 occurred in 2000, while the value of 2001 is in between these two negative numbers (R639,015). The rate of return improved from 1.22% in 1999 to 12.36% in 2000, but then deteriorated to 6.01% in 2001. The same trend was followed by the WACC, it increased from 14.15% in 1999 to 17.16% in 2000 and then decreased again in 2001 to 11.78%. The spread resulting from this was negative in all three years. The negative value decreased from 1999 to 2000 and then increased again in 2001. NOPAT increased from 1999 to 2001, while capital decreased from 1999 to 2000 and increased in 2001.

There was no data available for 2001 for the Wellington co-operative, thus the year 2001 is not included in the table. The EVA values of the Wellington co-operative are mixed. It varies between positive and negative values over the four years under review. In 1998 the lowest positive EVA value of R158,180 occurred and in 2000 the highest positive EVA value of R2,293,616 occurred. In 1999 the only negative EVA value of R174,112 occurred. The rate of return fluctuated just as much as the EVA values, between 1998 and 1999 the rate decreased from 15.83% to 13.28%, the rate increased in 2000 up to 37.85%. The WACC increased from 13.88% to 15.07% between 1998 and 1999 and decreased to 14.15% in 2000. These fluctuating rates resulted in an uneven spread. In 1998 and 2000 these values were positive while in 1999 the value was negative. Capital invested increased between 1998 and 2000, while NOPAT increased over the same period.

The values of 1998 of the Windmeul co-operative are not included in the table as there is no data available for this year. The Windmeul co-operative improved their EVA value from a negative value of R355,391 in 1999 to a positive value of R381,263 in 2000. The EVA value stayed positive in 2001 (R17,537), although the value was lower than in 2000. The reason for this improvement lies in the rate of return which increased drastically from 10.37% in 1999 to 22,16% in

2000, this rate decreased to 12.80% in 2001. Another reason for the improvement was the decrease in the WACC from 15.5% in 1999 and 2000 to 12.59% in 2001. The spread was negative in 1999, but positive in 2000 and 2001.

There is only one wine co-operative which created value consistently over the four-year period. This is the Perdeberg wine co-operative.

There are five wine co-operatives which improved from a negative EVA to a positive EVA. These are Barrydale, Botha, Citrusdal, Merwida and Windmeul co-operatives.

Three co-operatives had negative EVA values over the four years, but the EVA values are improving. This is the case with Badsberg, Brandvlei and Roodezant co-operatives.

Most wine co-operatives (18 of them) destroyed value. These are Aan de Doorns, Agterkliphoogte, Bonnievale, Breeriviervallei, De Wet, Du Toitskloof, Groot Eiland, Langverwacht, Montagu, Nordale, Nuwehoop, NUY, Oranjerivier, Robertson, Romansrivier, Slanghoek, Tulbagh and Waboomrivier co-operatives. Four others, Ladismith, Merwespont, Overhex and Spruitdrift, have mixed results.

The Goudini wine co-operative destroyed value between 1998 and 2000. These negative EVA values increased over these three years, but in 2001 this co-operative managed to create value.

In 1998 the EVA value was positive for the McGregor co-operative. It turned negative in 1999 and stayed negative up to 2001, although the negative values decreased, thus EVA improved.

The Vlotenberg co-operative created value in 1998 and 2001, but destroyed value in 1999 and 2000. The Wellington co-operative created value in 1998 and 2000, but destroyed value in 1999.

The EVA results in Table 5.3 are those of meat co-operatives.

Table 5.3: EVA calculation of meat co-operatives for the period 1998 to 2001.

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
Stock owners	1998	3,083,362	15,848,511	19.46	10.97	8.49	1,345,342
	1999	(5,046,891)	23,575,773	(21.41)	11.12	(32.53)	(7,668,679)
	2000	(20,545,600)	11,542,574	(178.00)	4.71	(182.71)	(21,089,140)
	2001	12,207,800	118,639,000	10.29	7.56	2.73	3,241,884
Sutherland	1998	158,671	1,355,033	11.71	18.98	(7.27)	(98,554)
	1999	195,539	1,733,282	11.28	17.75	(6.47)	(112,085)
	2000	58,095	1,534,446	3.79	17.72	(13.94)	(213,857)
	2001	(33,017)	1,443,088	(2.29)	15.42	(17.71)	(255,559)
Taurus	1998	649,327	9,487,446	6.84	18.63	(11.79)	(1,118,607)
	1999	(773,662)	10,211,636	(7.58)	19.01	(26.59)	(2,715,315)
	2000	(281,042)	9,439,934	(2.98)	17.99	(20.97)	(1,979,107)
	2001	286,049	10,236,155	2.79	14.81	(12.01)	(1,229,596)
Williston	1998	169,164	2,183,903	7.75	16.71	(8.96)	(195,726)
	1999	83,579	1,986,804	4.21	17.40	(13.20)	(262,200)
	2000	98,964	1,994,411	4.96	16.76	(11.80)	(235,379)
	2001	362,154	2,527,260	14.33	13.24	1.09	27,522

Income statements and balance sheets for five meat co-operatives were received from the Registrar of Co-operatives. Only four of these could be used as the Karoo co-operative had no data for 1997 or 1999. As a result, the adjusted common equity and total debt could not be calculated in 1998 and 2000.

The Stock owners co-operative had an accumulated deficit in 1999 and 2000 which resulted in large negative EVA values of R7,668,697 in 1999 and R21,089,140 in 2000. In the other two years, 1998 and 2001, where no accumulated deficits were recorded this co-operative had positive EVA values of R1,345,342 and R3,241,884 respectively. This is an increase in the EVA values. Thus, if the accumulated deficits are not taken into account, it is possible to say that Stock owners is a value creator. The rate of return deteriorated from 19.46%

in 1998 to 10.29% in 2001, while the WACC also decreased from 10.97% to 7.56% for the same period. These decreases in the rates resulted in the positive spread decreasing. The much higher capital invested resulted in the higher EVA value calculated for 2001.

The EVA values of the Sutherland co-operative show that this co-operative is a consistent value destroyer with negative EVA values in all four years under review. The lowest negative EVA value of R98,554 occurred in 1998 and the highest negative EVA value of R255,559 occurred in 2001. This shows a decrease in the calculated EVA values. The reason for this decrease lies in the decrease of the rate of return from 11.71% in 1998 to a negative rate of 2.29% in 2001, as well as in the decrease of the WACC from 18.98% to 15.42% over the same period. WACC decreased at a slower rate as the rate of return which resulted in a negative spread where the negative values of the spread increased over the four year period. NOPAT decreased from a positive value to a negative value between 1998 and 2001, while capital invested stayed fairly constant over the same period.

The Taurus co-operative has negative EVA values for all four of the years under review. From 1999 to 2001 the negative EVA values decreased, thus EVA improved. The lowest negative EVA value of R1,118,607 occurred in 1998 and the highest negative EVA value of R2,715,315 occurred in 1999. This negative EVA value decreased to R1,229,596 in 2001. The reason for this improvement in the EVA values lies in the improvement of the rate of return from a negative rate of 7.58% in 1999 to a positive rate of 2.79% in 2001, although this rate is much lower than the rate of return of 6.84% in 1998. The WACC decreased from 19.01% to 14.81% over the period of 1999 to 2001. The spread over the four years was negative, although the negative values decreased between 1999 and 2001.

The Williston co-operative turned their negative EVA value of R262,200 in 1999 into a positive EVA value of R27,522 in 2001. This resulted from the increase in the rate of return from 4.21% in 1999 to 14.33% in 2001, as well as the decrease in the WACC from 17.40% to 13.24% over the same period. As a result the spread turned positive in 2001 in contrast with negative values in 1998 and 1999. NOPAT and capital invested increased from 1999 to 2001.

Table 5.4 shows the EVA results of timber co-operatives.

Table 5.4: EVA calculation of timber co-operatives for the period 1998 to 2001.

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
NCT	1998	11,305,971	73,770,265	15.33	14.60	0.73	538,444
	1999	49,594,334	75,019,908	66.11	14.89	51.22	38,425,050
	2000	48,940,834	82,473,989	59.34	14.75	44.59	36,779,022
	2001	20,304,722	109,786,908	18.49	13.13	5.37	5,892,971
NTE	1999	7,858,900	48,808,000	16.10	14.15	1.95	950,272
	2000	2,357,200	49,266,000	4.78	15.02	(10.24)	(5,043,748)
	2001	4,999,700	49,168,000	10.17	13.92	(3.76)	(1,846,941)
Union	1998	33,667,477	146,490,181	22.98	16.85	6.13	8,985,046
	1999	37,578,634	106,928,701	35.14	18.64	16.50	17,646,964
	2000	31,245,118	112,689,738	27.73	18.03	9.70	10,925,837

In the case of Timber co-operatives, the income statements and balance sheets for four co-operatives were obtained from the Registrar of Co-operatives. Only three of the co-operatives' data could be used. The data of the TWK co-operative could not be used because of incomplete statements which meant that no reasonable result could be obtained from the calculations.

The NCT co-operative is an example of a consistent value creator. The four years under review have positive EVA values which range from R538,444 in 1998 to R38,425,050 in 1999. The positive EVA value of 1999 decreased to a smaller positive value of R5,892,971 in 2001. This decrease resulted from the rate of return which decreased from 66.11% in 1999 to 18.49% in 2001, this last value is still higher than the rate of return of 15.33% in 1998. The WACC decreased from 14.89% in 1999 to 13.13% in 2001. Because of these changes in

the rates, the positive spread values decreased over the three years. NOPAT decreased from 1999 to 2001 while capital invested increased over the same period.

The 1998 values of the NTE co-operative are not included in the table. There was no data for 1997, thus capital could not be calculated for this year, only NOPAT could be calculated. EVA can not be calculated without a value for capital. The EVA values of the NTE co-operative decreased from a positive value of R950,272 in 1999 to a negative value of R5,043,748 in 2000, and increased again to a negative value of R1,846,941 in 2001. The rate of return deteriorated from 16.10% to 4.78% between 1999 and 2000, but increased again to 10.17% in 2001. The WACC increased between 1999 and 2000 from 14.15% to 15.02% and decreased again to 13.92% in 2001. This resulted in a fluctuating spread which was positive in 1999 and negative in 2000 and 2001, the negative value decreased from 2000 to 2001. Capital invested stayed constant over the period 1999 to 2001, while NOPAT sharply decreased between 1999 and 2000, and then increased again in 2001.

There is no data available for the 2001 year in the case of the Union co-operative, thus there are no data for the 2001 year included in the table. The EVA values of the Union co-operative shows that this co-operative is a consistent value creator. The EVA values for 1998 to 2000 are all positive, with the lowest EVA value of R8,985,046 occurring in 1998 and the highest value of R17,646,964 occurring in 1999. In 2000 the EVA value was R10,925,837, a little lower than in 1999 but still positive. The rate of return in 1998 was 22.98%, which improved in 1999 to a rate of 35.14%, in 2000 the rate of return deteriorated to 27.73%. The WACC increased from 16.85% to 18.64% between 1998 and 1999, the rate decreased in 2000 to a value of 18.03%.

The EVA results in Table 5.5 are those of tobacco co-operatives.

Table 5.5: EVA calculation of tobacco co-operatives for the period 1998 to 2001.

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
Gamtoos	1998	173,157	5,296,829	3.27	18.30	(15.03)	(796,008)
	1999	69,205	4,934,124	1.40	19.12	(17.71)	(874,080)
	2000	460,606	5,397,924	8.53	18.27	(9.73)	(525,341)
	2001	24,344	6,743,803	0.36	15.33	(14.97)	(1,009,680)
Kango	1998	1,584,154	19,606,501	8.08	14.73	(6.65)	(1,304,581)
	1999	1,311,930	12,579,099	10.43	16.93	(6.50)	(817,553)
	2000	1,504,208	12,017,232	12.52	15.71	(3.19)	(383,129)
	2001	(866,405)	19,630,502	(4.41)	11.31	(15.72)	(3,085,919)

For the evaluation of tobacco co-operatives, the income statements and balance sheets of three of these co-operatives were obtained, but only two of the co-operatives' statements could be used. The income statement and balance sheet of the MKTV co-operative were incomplete. As a result, capital and NOPAT could not be calculated and EVA could thus not be estimated. MKTV is a new co-operative which was established through the merge of PTK and MTK. There is no data for 1998 available for this co-operative as it was established after that year.

The EVA values for the four years under review are negative for the Gamtoos co-operative. These negative values are not decreasing over time, thus this co-operative is a consistent value destroyer. The lowest negative EVA value of R525,341 occurred in 2000 and the highest negative EVA value of R1,009,680 occurred in 2001. The rate of return fluctuated, decreasing from 3.27% to 1.40% between 1998 and 1999, increasing to 8.53% in 2000 and decreasing again to 0.36% in 2001. The WACC increased from 18.30% to 19.12% from 1998 to 1999 and decreased to 15.33% over the period from 1999 to 2001. These rates resulted in a very fluctuating negative spread.

The EVA values of the Kango co-operative are negative for the four years under consideration, these negative values decreased from 1998 to 2000 and then increased sharply in 2001. This co-operative is a consistent value destroyer. The lowest negative EVA value of R383,129 occurred in 2000 and the highest

negative EVA value of R3,085,919 occurred in 2001. The rate of return increased from 8.08% to 12.52% between 1998 and 2000, however this rate decreased to a negative rate of 4.41% in 2001. The WACC increased from 14.73% to 16.93% between 1998 and 1999, but decreased to 11.31% from 1999 to 2001. This resulted in negative spread values over the four year period which decreased from 1998 and 2000, but increased sharply in 2001 because of the negative rate of return. NOPAT stayed constant between 1998 and 2000, but in 2001 it became negative because of a net loss the co-operative suffered that year. Capital invested decreased between 1998 and 2000, but increased again in 2001. This increase in capital invested and the net loss caused the negative EVA to decrease sharply.

The EVA results of the fruit and vegetable co-operatives are given in Table 5.6.

Table 5.6: EVA calculation of fruit and vegetable co-operatives for the period 1998 to 2001.

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
De Wet	1998	39,406	503,156	7.83	17.94	(10.11)	(50,863)
	1999	37,549	610,760	6.15	17.34	(11.19)	(68,353)
	2000	84,933	552,425	15.37	17.05	(1.67)	(9,239)
	2001	70,921	597,641	11.87	14.45	(2.59)	(15,449)
Karino	1998	97,569	2,372,936	4.11	18.91	(14.80)	(351,190)
	1999	65,000	5,755,842	1.13	17.92	(16.79)	(966,556)
	2000	70,000	5,901,160	1.19	16.91	(15.72)	(927,886)
	2001	77,000	6,720,011	1.15	14.14	(12.99)	(873,088)
Magalies	1998	16,093,597	19,220,958	83.73	15.66	68.07	13,083,087
	1999	16,723,802	22,252,356	75.16	15.45	59.71	13,286,045
	2000	22,752,021	18,614,127	122.23	15.62	106.61	19,844,887
	2001	18,146,420	19,985,376	90.80	13.95	76.85	15,358,599
Morone	1998	40,564	707,264	5.74	16.94	(11.21)	(79,251)
	1999	40,564	4,403,969	0.92	18.80	(17.88)	(787,324)
	2000	69,383	4,403,969	1.58	17.87	(16.29)	(717,523)
	2001	70,022	5,085,024	1.38	14.62	(13.24)	(673,364)
Onderberg	1998	1,549,453	12,887,892	12.02	15.94	(3.91)	(504,313)
	1999	1,924,505	17,570,092	10.95	14.77	(3.82)	(670,984)
	2000	1,576,421	15,862,458	9.94	14.19	(4.26)	(675,065)
Vyeboom	1998	2,770,744	25,421,403	10.90	15.86	(4.96)	(1,260,362)
	1999	1,344,135	25,555,254	5.26	16.72	(11.46)	(2,929,653)
	2000	707,190	24,253,428	2.92	16.01	(13.10)	(3,176,189)
	2001	(1,306,088)	22,591,398	(5.78)	14.09	(19.87)	(4,489,742)

Income statements and balance sheets for six fruit and vegetable co-operatives were obtained from the Registrar of Co-operatives. All of them were used in the evaluation of fruit and vegetable co-operatives.

The De Wet co-operative has negative EVA values for the four years under review. These negative EVA values decreased from R50,863 in 1998 to R15,449 in 2001, although the lowest negative EVA value of R9,239 occurred in 2000, the EVA values seemed to improve from 1998 to 2001 which resulted from an improving rate of return. This rate increased from 7.83% to 11.87% from 1998 to 2001, the rate of return in 1999 was the lowest at 6.15% and in 2000 it was the highest at 15.37%. WACC decreased from 17.94% to 14.45% between 1998 and 2001. These rates resulted in negative spread values over the four years under review.

The EVA values for the Karino co-operative are negative for the four years under review. From 1999 to 2001 the negative EVA values decreased from R966,556 to R873,088, although the negative EVA value in 1998 was much smaller at a value of R351,190. Thus the EVA values improved a little from 1999 to 2001 but not to the level of 1998. The rate of return fluctuated; in 1998 it was 4.11% which deteriorated in 1999 to 1.13%. In 2000 the rate of return was 1.19% and in 2001 it was 1.15%. The changes in WACC can be explained by the changes in adjusted common equity and total debt, and thus by the changes in capital invested, bearing in mind that the WACC is the weighted average of the costs of debt and equity capital, where the weights are the market values of debt and equity. Adjusted common equity increased by more than 50% between 1998 and 1999 and stayed constant over the three years, 1999 to 2001. Total debt increased from R23,979 in 1998 to R958,577 in 1999, stayed constant in 1999 and 2000, in 2001 total debt increased with R500,000. This resulted in capital invested more than doubling between 1998 and 1999, stayed constant in 1999 and 2000 and increased with R800,000 in 2001. As a result, WACC decreased by one percent between 1998 and 1999, as well as between 1999 and 2000.

Between 2000 and 2001 the WACC decreased by almost two percent. The rate of return and the WACC resulted in very fluctuating, negative spread values. The negative spread values increased from 1998 to 1999, but decreased between 1999 and 2001. NOPAT decreased between 1998 and 1999, but increased again from 1999 to 2001. Capital invested increased from R2,372,936 to R6,720,011 between 1998 and 2001.

The Magalies co-operative is an example of a consistent value creator. This assertion is based on the fact that all the EVA values for the four years under review, are positive. The lowest positive EVA value of R13,083,087 occurred in 1998 and the highest EVA value of R19,844,887 occurred in 2000. The rate of return improved from 83.73% in 1998 to 122.23% in 2000, the rate for 2001 was 90.80%. The 122.23% rate of return in 2000 is the highest rate of return of all the co-operatives under review. This resulted from the fact that NOPAT for the Magalies co-operative is larger than the capital invested, bearing in mind that the rate of return is NOPAT divided by capital invested. The WACC decreased from 15.66% to 13.95% over the four year period, 1998 to 2001. These rates resulted in positive spreads, increasing over the four year period. NOPAT increased between 1998 and 2000, in 2001 it decreased. Capital invested increased between 1998 and 1999, decreased in 2000 and increased again in 2001.

The Morone co-operative is also an example of a value destroyer. The EVA values for the four years under review were all negative, with the lowest negative EVA value of R79,251 in 1998 and the highest negative EVA value of R787,324 in 1999, although this negative EVA value did decrease to R673,364 in 2001. The rate of return for this co-operative decreased from 5.74% in 1998 to 0.92% in 1999, it increased to 1.58% in 2000 and decreased again to 1.38% in 2001. The WACC increased between 1998 and 1999 from 16.94% to 18.80%, between 1999 and 2001 it decreased to a rate of 14.62%. As a result of these rates the spread was negative. The negative spread increased between 1998 and 1999, then it decreased from 1999 to 2001. NOPAT stayed the same in the first two

years under review and then increased between 1999 and 2001. Capital invested increased drastically between 1998 and 1999, stayed the same in 1999 and 2000 and increased again in 2001.

No data was available for 2001 for the Onderberg co-operative, and it is thus not included in the table. The Onderberg co-operative is also a value destroyer, recording its smallest negative EVA value of R504,313 in 1998 and its highest negative EVA value of R675,065 in 2000. EVA is thus decreasing for this co-operative. The rate of return deteriorated from 12.02% to 9.94% from 1998 to 2000, while WACC also decreased from 15.94% to 14.19% over the same period. This resulted in negative spreads for the three years, with the negative value decreasing from 1998 to 1999 and increasing from 1999 to 2000. NOPAT and capital invested increased from 1998 to 1999 and decreased from 1999 to 2000.

The Vyeboom co-operative is a consistent value destroyer with the calculated EVA values negative and decreasing over the four year period under review. The lowest negative EVA value of R1,260,362 occurred in 1998 and the highest negative EVA value of R4,489,742 occurred in 2001. The rate of return decreased from 10.90% to a negative rate of 5.78% between 1998 and 2001. The WACC increased from 15.89% in 1998 to 16.72 % in 1999, from 1999 this rate decreased to 14.09% in 2001. These rates resulted in negative spread values, with the negative values increasing over the period. NOPAT decreased from a positive value in 1998 to a negative value in 2001. Capital invested decreased over the four year period.

The EVA results for general co-operatives are shown in Table 5.7.

Table 5.7: EVA calculation of general co-operatives for the period 1998 to 2001.

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
Hoeveld	1998	1,300,694	8,794,291	14.79	17.53	(2.74)	(241,206)
	1999	1,334,178	11,526,135	11.58	17.79	(6.22)	(716,738)
	2000	1,413,397	13,665,519	10.34	17.08	(6.74)	(921,140)
	2001	2,408,024	14,183,369	16.98	14.73	2.25	318,526
NCD	1998	9,560,500	464,737,000	2.06	18.65	(16.59)	(77,116,928)
	1999	(66,177,100)	737,292,000	(8.98)	16.24	(25.21)	(185,889,369)
	2000	14,921,200	639,275,000	2.33	14.95	(12.61)	(80,636,710)
	2001	(30,268,300)	660,725,000	(4.58)	12.88	(17.46)	(115,367,242)
Umzimkulu	1998	2,760,683	22,357,543	12.35	14.01	(1.66)	(371,539)
	1999	2,760,683	24,117,824	11.45	13.86	(2.41)	(581,034)
	2000	2,227,538	24,117,824	9.24	12.93	(3.69)	(890,921)
	2001	2,195,080	22,705,230	9.67	11.29	(1.63)	(369,117)
Villiersdorp	1998	1,853,726	14,183,736	13.07	18.35	(5.28)	(749,365)
	1999	1,208,080	16,888,293	7.15	17.82	(10.66)	(1,800,999)
	2000	797,873	19,114,935	4.17	16.27	(12.10)	(2,311,992)
	2001	1,499,953	18,540,660	8.09	14.10	(6.01)	(1,115,202)

For the EVA calculation of the general co-operatives, income statements and balance sheets of four co-operatives were obtained from the Registrar of Co-operatives. All four of these income statements and balance sheets were used.

From 1998 to 2000 the Hoeveld co-operative had negative and increasing EVA values, while in 2001 it had a positive EVA value. The lowest negative EVA value of R241,206 occurred in 1998 and the highest negative EVA value of R921,140 occurred in 2000, while a positive EVA value of R318,526 occurred in 2001. The rate of return for this co-operative decreased from 14.79% to 10.34% between 1998 and 2000, but it increased again to 16.98% in 2001. The WACC increased from 17.53% in 1998 to 17.79% in 1999, between 1999 and 2001 it decreased to 14.73%. These rates resulted in negative and increasing spread values between 1998 and 2000, in 2001 the spread became positive as a result of the high rate of return for that year and a decreasing WACC. Both NOPAT and capital invested increased from 1998 to 2001.

The NCD co-operative is a consistent value destroyer which recorded negative EVA values over the four year period under review. There is no trend to follow in

these negative EVA values. They fluctuate between the lowest value of R77,116,928 in 1998 and the highest value of R185,889,369 in 1999. The rate of return for this co-operative is also fluctuating: it was 2.06% in 1998, in 1999 the rate of return was negative 8.98%, while in 2000 it was positive again with a rate of 2.33%. The rate of 4.58% was negative again in 2001. The WACC decreased steadily over the four years, from 18.65% in 1998 to 12.88% in 2001. These rates resulted in negative spreads for the four years, fluctuating between a high value of 25.21% and a low value of 12.61%. NOPAT fluctuated as well, being positive in 1998, negative in 1999, positive in 2000 and negative again in 2001. Capital invested increased between 1998 and 1999, decreased in 2000 and increased in 2001.

The Umzimkulu co-operative is an example of a value destroyer with negative EVA values for each of the four years under review. The lowest negative EVA value of R369,117 occurred in 2001, while the lowest negative EVA value of R890,921 occurred in 2000. The rate of return decreased from 12.35% in 1998 to 9.24% in 2000, and increased to 9.67% in 2001. The WACC decreased constantly from 14.01% to 11.29% between 1998 and 2001, which is a positive sign for the co-operative. As a result of these rates the spread was negative in the four years under review. These negative spread values increased between 1998 and 2000, and decreased in 2001. NOPAT stayed the same in the first two years, but decreased between 1999 and 2001, while capital invested increased between 1998 and 1999, in 1999 and 2000 the value stayed the same, but decreased again in 2001.

For the four years under review, all EVA values were negative for the Villiersdorp co-operative. This co-operative is a value destroyer. Its lowest negative EVA value of R749,365 in 1998 and its highest negative EVA value of R2,311,992 in 2000. The rate of return decreased from 13.07% to 4.17% between 1998 and 2000, but increased again in 2001 to 8.09%. The WACC decreased from 18.35% to 14.10% between 1998 and 2001, this is a positive sign. These rates resulted in

negative spread values, increasing between 1998 and 2000 and decreasing in 2001. NOPAT decreased between 1998 and 2000, but increased again in 2001, while capital invested increased between 1998 and 2000, but decreased in 2001.

Table 5.8 shows the EVA results of requisites co-operatives.

Table 5.8: EVA calculation of requisites co-operatives for the period 1998 to 2001.

Co-op	Year	NOPAT	Capt.	Return	WACC	Spread	EVA
Coastal farmers	1998	870,079	10,439,592	8.33	18.71	(10.37)	(1,082,998)
	1999	605,181	10,924,606	5.54	19.12	(13.58)	(1,483,409)
	2000	(674,602)	12,484,833	(5.40)	17.59	(22.99)	(2,870,140)
East Cape	1998	12,233,706	66,603,202	18.37	13.37	5.00	3,329,037
	1999	2,945,775	64,528,793	4.57	14.14	(9.57)	(6,176,913)
	2000	7,964,569	65,113,060	12.23	12.92	(0.69)	(447,055)
	2001	4,525,164	71,048,235	6.37	11.14	(4.77)	(3,390,097)

In the case of requisites co-operatives, income statements and balance sheets of two co-operatives were obtained. Both of these were used in the calculation of EVA.

There was no data available for 2001 for the Coastal farmers co-operative and that year is thus not included in the table. The EVA results for the Coastal farmers co-operative shows that this is an example of a consistent value destroyer with negative and increasing EVA values for each of the four years under review. The lowest negative EVA value of R1,082,998 occurred in 1998 and the highest negative EVA value of R2,870,140 occurred in 2000. This shows a decrease in EVA. The rate of return decreased from 8.33% in 1998 to a negative rate of 5.40% in 2000, while the WACC increased from 18.71% in 1998 to 19.12% in 2000 and decreased to 17.59% in 2000. This resulted in a negative spread for each of the three years, with the negative value of the spread increasing. NOPAT decreased and became negative in 2000, while capital increased from 1998 to 2000.

The East Cape co-operative has mixed EVA results with a positive EVA value of R3,329,037 in 1998, the lowest negative EVA value of R447,055 in 2000 and the highest negative EVA value of R6,176,913 in 1999. The rate of return is also mixed. The rate of return decreased from 18.37% in 1998 to 4.57% in 1999, increased to 12.23% in 2000 and decreased again to 6.37% in 2001. The WACC increased from 13.37% in 1998 to 14.14% in 1999 and decreased to 11.14% between 1999 and 2001. The spread was positive in 1998 because of the high rate of return, from 1999 to 2001 the spread was negative. NOPAT decreased drastically from 1998 to 1999, increased from 1999 to 2000 and decreased again in 2001. Capital invested decreased from 1998 to 1999 and increased between 1999 and 2001.

5.3 EVA results of all the co-operatives

There are several ways in which farmer co-operatives can be classified. This classification can be done using the type of commodity handled, the organizational structure employed, the geographical areas covered or the type of function performed. Each category highlights a different way that co-operatives can go about meeting their members' needs. In this study co-operatives are classified according to the type of commodity handled. The different commodities handled are: grain and oilseeds, wine, meat, timber, tobacco, fruit and vegetable, general and requisites.

This section looks at the EVA performance of all the agricultural industries' co-operatives separately and then the total EVA performance of all agricultural co-operatives.

Table 5.9: Total EVA results for the Grain and Oilseeds co-operatives for the period 1998 to 2001

Grain and Oilseeds		1998	1999	2000	2001
EVA	Total	(63,783,116)	(77,572,913)	(79,975,533)	(50,812,365)
	Average	(15,945,779)	(19,393,228)	(19,993,883)	(12,703,091)
NOPAT	Total	53,097,736	51,509,827	42,005,179	43,977,349
	Average	13,274,434	12,877,457	10,501,295	10,994,337
Capital	Total	737,735,714	831,606,865	837,544,435	744,010,309
	Average	184,433,929	207,901,716	209,386,109	186,002,577
Equity	Total	409,791,506	432,308,225	432,036,053	415,360,976
	Average	102,447,877	108,077,056	108,009,013	103,840,244
Debt	Total	327,944,208	399,298,640	405,508,382	328,649,333
	Average	81,986,052	99,824,660	101,377,096	82,162,333
Return	Average	8.10	6.07	5.54	6.15
WACC	Average	15.21	14.90	14.12	11.90
Spread	Average	(7.11)	(8.83)	(8.58)	(5.75)

Table 5.9 shows the totals and averages of four grain and oilseeds co-operatives. From this table it can be concluded that the grain and oilseeds co-operatives as a group are consistent value destroyers with negative EVA values in each of the four years under review. The highest average negative EVA value of R19,993,883 occurred in 2000, while the lowest EVA value of R12,703,091 occurred in 2001. The rate of return deteriorated from 8.10% to 5.54% between 1998 and 2000, but improved again in 2001 to 6.15%. The WACC decreased from 15.21% to 11.90% over the four year period; a positive sign for the group. As a result, the spread stayed negative for all four the years, increasing from 1998 to 1999, decreasing from 1999 to 2001.

The average NOPAT and capital invested decreased from 1998 to 2000, but increased in 2001. It stayed positive over the four years under review. Capital invested increased from 1998 to 2000 and decreased in 2001. The ratio between debt and equity remained constant from 1998 to 1999. From the amount of capital employed, it is possible to say that this sector is very capital intensive. These co-operatives destroy value as a result of the low return generated using the invested capital.

Table 5.10: Total EVA results for the Wine co-operatives for the period 1998 to 2001

Wine co-operatives		1998	1999	2000	2001
EVA	Total	(6,585,683)	(43,777,473)	(19,696,028)	(20,127,514)
	Average	(188,162)	(1,250,785)	(562,744)	(575,072)
NOPAT	Total	42,860,133	21,362,911	34,795,118	28,173,270
	Average	1,224,575	610,369	994,146	804,951
Capital	Total	317,131,756	426,742,298	370,873,211	401,006,970
	Average	9,060,907	12,192,637	10,596,377	11,457,342
Equity	Total	164,860,178	207,479,543	197,547,661	182,874,001
	Average	4,710,291	5,927,987	5,644,219	5,224,971
Debt	Total	152,271,578	219,262,755	173,325,550	218,132,969
	Average	4,350,617	6,264,650	4,952,159	6,232,371
Return	Average	12.57	7.25	10.96	7.23
WACC	Average	14.05	15.22	14.49	11.75
Spread	Average	(1.47)	(5.16)	(3.54)	(4.52)

Table 5.10 shows that the average wine co-operative is a value destroyer with negative EVA values in each of the four years under review. 35 wine co-operatives' totals and averages were used in the calculation of EVA for this sector. The highest average negative EVA value of R1,250,785 occurred in 1999 and the lowest average negative EVA value of R188,162 occurred in 1998. The rate of return fluctuated over the four year period, deteriorating from 12.57% in 1998 to 7.25% in 1999, improving to 10.96% in 2000 and deteriorating again to 7.23% in 2001. WACC increased from 14.05% in 1998 to 15.22% in 1999, and decreased to 11.75% in 2001. These rates resulted in a fluctuating negative spread for each of the four years, the negative value increased from 1998 to 1999, decreased in 2000 and increased in 2001.

NOPAT decreased between 1998 and 1999, increased in 2000 and decreased again in 2001. The capital invested value did exactly the opposite of NOPAT: increasing between 1998 and 1999, decreasing in 2000 and increasing again in 2001. The value of capital invested shows this trend as a result of equity and debt capital showing the same trend.

Table 5.11: Total EVA results for the Meat co-operatives for the period 1998 to 2001

Meat co-operatives		1998	1999	2000	2001
EVA	Total	(67,545)	(10,758,279)	(23,517,484)	1,784,251
	Average	(16,886)	(2,689,570)	(5,879,371)	446,063
NOPAT	Total	4,060,524	(5,541,435)	(20,669,584)	12,822,986
	Average	1,015,131	(1,385,359)	(5,167,396)	3,205,746
Capital	Total	28,874,893	37,507,495	24,511,365	132,845,503
	Average	7,218,723	9,376,874	6,127,841	33,211,376
Equity	Total	9,715,700	11,590,502	3,199,791	(12,361,995)
	Average	2,428,925	2,897,626	799,948	(3,090,499)
Debt	Total	19,159,193	25,916,993	21,311,574	145,207,498
	Average	4,789,798	6,479,248	5,327,894	36,301,875
Return	Average	11.44	(3.37)	(43.06)	6.28
WACC	Average	16.32	16.32	14.30	12.76
Spread	Average	(4.88)	(19.70)	(57.35)	(6.47)

In Table 5.11 the totals and averages of four meat co-operatives are shown. With these totals and averages the total and average EVA for this sector was calculated. The first three years, 1998 to 2000, show negative, increasing EVA values while 2001 shows a positive EVA value. The lowest average negative EVA value of R16,886 occurred in 1998, while the highest average negative EVA value of R5,879,371 occurred in 2000. The positive EVA value in 2001 has a value of R446,063. From this it is possible to say that the meat co-operatives destroyed value between 1998 and 2000, but created value in 2001. The rate of return deteriorated drastically from 11.44% to a negative rate of 43.06% between 1998 and 2000, in 2001 the rate improved to a positive rate of 6.28%. The WACC decreased from 16.32% to 12.76% between 1998 and 2001. As a result of the rate of return and WACC, the spread remained negative over the four year period under review. These negative values increased between 1998 and 2000 and decreased in 2001.

Note that in 2001 there is a negative equity and a negative spread, these two negatives cancel each other out to give a positive EVA value.

The NOPAT decreased from an average value of R1,015,131 in 1998 to a negative average value of R5,167,396 in 2000. This negative value increased to

a positive average value of R3,205,746 in 2001. These low values for NOPAT resulted in the very low rate of return for the four years under review. Capital invested fluctuated over the four years, increasing between 1998 and 1999, decreasing in 2000 and increasingly drastically in 2001.

Table 5.12: Total EVA results for the Timber co-operatives for the period 1998 to 2001

Timber co-operatives		1998	1999	2000	2001
EVA	Total	9,523,490	57,022,286	42,661,110	4,046,031
	Average	3,174,497	19,007,429	14,220,370	1,348,677
NOPAT	Total	44,973,448	95,031,868	82,543,152	25,304,422
	Average	14,991,149	31,677,289	27,514,384	8,434,807
Capital	Total	220,260,446	230,756,609	244,429,727	158,954,908
	Average	73,420,149	76,918,870	81,476,576	52,984,969
Equity	Total	130,187,586	148,595,207	182,113,676	103,541,848
	Average	43,395,862	49,531,736	60,704,559	34,513,949
Debt	Total	90,072,860	82,161,402	62,316,051	55,413,060
	Average	30,024,287	27,387,134	20,772,017	18,471,020
Return	Average	12.77	39.12	30.62	9.55
WACC	Average	10.48	15.89	15.93	9.02
Spread	Average	2.29	23.22	14.68	0.54

Table 5.12 shows the totals and averages of three timber co-operatives. From this table it can be concluded that the timber co-operatives are consistent value creators, with positive EVA values in each of the four years under review. The highest average positive EVA value of R19,007,429 occurred in 1999 and the lowest average EVA value occurred in 2001 at a value of R1,348,677. The rate of return improved drastically from 12.77% to 39.12% between 1998 and 1999. From 1999 to 2001 this rate deteriorated from 39.12% to 9.55%. The WACC increased from 10.48% to 15.93% between 1998 and 2000, while it decreased in 2001 to a rate of only 9.02%. An increasing WACC is not a good sign for any co-operative. These rates resulted in a positive spread for each of the four years under review. The spread is only just positive in 2001, thus the EVA value is very near to being negative, which would imply that the co-operative destroyed value.

The average NOPAT increased from 1998 to 1999 and decreased between 1999 and 2001. The decrease between 2000 and 2001 is very drastic. Capital invested

increased between 1998 and 2000 as a result of an increase in equity capital. In 2001 capital invested decreased as both equity and debt capital decreased. Debt capital decreased over the four years.

Table 5.13: Total EVA results for the Tobacco co-operatives for the period 1998 to 2001

Tobacco co-operatives		1998	1999	2000	2001
EVA	Total	(2,100,590)	(1,691,633)	(908,470)	(4,095,600)
	Average	(1,050,295)	(845,816)	(454,235)	(2,047,800)
NOPAT	Total	1,757,311	1,381,135	1,964,814	(842,061)
	Average	878,656	690,568	982,407	(421,030)
Capital	Total	24,903,330	17,513,223	17,415,156	26,374,305
	Average	12,451,665	8,756,612	8,707,578	13,187,153
Equity	Total	12,593,132	13,734,957	13,390,772	13,156,406
	Average	6,296,566	6,867,479	6,695,386	6,578,203
Debt	Total	12,310,198	3,778,266	4,024,384	13,217,899
	Average	6,155,099	1,889,133	2,012,192	6,608,950
Return	Average	5.67	5.92	10.53	(2.03)
WACC	Average	16.52	18.02	16.99	13.32
Spread	Average	(10.84)	(12.11)	(6.46)	(15.35)

The totals and averages of two tobacco co-operatives were used in the calculation of EVA for this sector. The Tobacco co-operatives are value destroyers, a fact made clear by the fact that the EVA values for the four years under review are all negative. This can be seen in Table 5.13. The lowest average negative EVA value of R454,235 occurred in 2000 and the highest average negative EVA value of R2,047,800 occurred in 2001. The rate of return improved from 5.67% to 10.53% between 1998 and 2000, in 2001 this rate deteriorated to a negative rate of 2.03%. The WACC increased from 16.52% in 1998 to 18.02% in 1999 and decreased to 13.32% between 1999 and 2001. As a result of these rates the spread stayed negatives over the four year period. The negative values decreased between 1998 and 2000, but increased again in 2001.

NOPAT for the Tobacco co-operatives decreased from 1998 to 1999, increased in 2000 and decreased to a negative value in 2001. This resulted in the negative rate of return for 2001. Capital invested decreased over the first three years,

1998 to 2000, and increased to a value higher than the values of 1998, 1999 and 2001. Equity capital stayed constant over the four years, thus capital invested was mainly influenced by the debt capital as can be seen from the lower WACC-rates.

Table 5.14: Total EVA results for the Fruit and Vegetable co-operatives for the period 1998 to 2001

Fruit & Vegetable		1998	1999	2000	2001
EVA	Total	10,837,108	7,863,176	14,338,984	9,306,956
	Average	1,806,185	1,310,529	2,389,831	1,551,159
NOPAT	Total	20,591,333	20,135,554	25,259,948	17,058,276
	Average	3,431,889	3,355,926	4,209,991	2,843,046
Capital	Total	61,113,609	76,148,273	69,587,567	54,979,450
	Average	10,185,602	12,691,379	11,597,928	9,163,242
Equity	Total	34,964,598	45,499,864	46,179,863	41,670,209
	Average	5,827,433	7,583,311	7,696,644	6,945,035
Debt	Total	26,149,011	30,648,409	23,407,704	13,309,241
	Average	4,358,169	5,108,068	3,901,284	2,218,207
Return	Average	20.72	16.59	25.54	16.57
WACC	Average	16.87	16.83	16.27	11.88
Spread	Average	3.85	(0.24)	9.26	4.69

Table 5.14 gives the results of the Fruit and Vegetable co-operatives. Six co-operatives' were used in this case, for the calculation of EVA for this sector. From this table it can be concluded that this group of co-operatives are value creators, with positive EVA values in each of the four years. The lowest average positive EVA value of R7,863,176 occurred in 1999, while the highest average positive EVA value of R2,389,831 occurred in 2000. The rate of return fluctuated over the four years, from 1998 to 1999 the rate deteriorated from 20.72% to 16.59%, in 2000 it improved to 25.54% and deteriorated again in 2001 to 16.57%. The WACC decreased from 16.87% to 11.88% between 1998 and 2001. These rates resulted in positive spreads, except for 1999 which had a negative spread.

The average NOPAT decreased from 1998 to 1999, increased in 2000 and decreased in 2001. Capital invested increased from 1998 and 1999, between 1999 and 2001 it decreased.

Table 5.15: Total EVA results for the General co-operatives for the period 1998 to 2001

General co-operatives		1998	1999	2000	2001
EVA	Total	(78,479,037)	(188,988,141)	(84,760,762)	(116,533,036)
	Average	(19,619,759)	(47,247,035)	(21,190,190)	(29,133,259)
NOPAT	Total	15,475,602	(60,874,159)	19,360,008	(24,165,242)
	Average	3,868,901	(15,218,540)	4,840,002	(6,041,311)
Capital	Total	510,072,570	789,824,252	696,173,278	716,154,259
	Average	127,518,143	197,456,063	174,043,320	179,038,565
Equity	Total	469,409,170	482,682,582	394,816,516	416,376,822
	Average	117,352,293	120,670,646	98,704,129	104,094,206
Debt	Total	40,663,400	307,141,670	301,356,762	299,777,437
	Average	10,165,850	76,785,418	75,339,191	74,944,359
Return	Average	10.57	5.30	6.52	7.54
WACC	Average	17.14	16.43	15.31	13.25
Spread	Average	(6.57)	(11.13)	(8.79)	(5.71)

Table 5.15 consists of the totals and averages of four general co-operatives. From this table it can be deduced that the General co-operatives are value destroyers. The EVA values were negative for the four years under review. The lowest average negative EVA value of R19,619,759 occurred in 1998, while the highest average negative EVA value of R47,247,035 occurred in 1999. The rate of return deteriorated by almost half between 1998 and 1999, from 10.57% to 5.30%. It improved to 7.54% between 1999 and 2001. The WACC decreased from 17.14% to 13.25% over the four year period. These rates, especially the WACC which is consistently higher than the return earned on the capital employed, resulted in negative spread values for each of the four years under review. The negative spread values increased from 1998 to 1999 and decreased between 1999 and 2001.

The NOPAT values fluctuated over the four years. NOPAT decreased drastically between 1998 and 1999, decreasing to a negative value in 1999. It increased to a positive value in 2000 and decreased again to a negative value in 2001. Capital invested fluctuated as well. It increased between 1998 and 1999, decreased in 2000 and increased in 2001. The equity capital showed this same trend and thus is the main reason for this fluctuation in capital invested. The debt capital increased drastically from 1998 to 1999 as a result of an increase in the total

interest bearing long-term liabilities by NCD from R18,034,000 in 1998 to R169,618,000 in 1999, as well as an increase in the total interest bearing current liabilities from R3,816,000 to R115,536,000 over the same period. The total interest-bearing current liabilities of the Villiersdorp co-operative also increased from R105,725 in 1998 to R2,437,183 in 1999.

Table 5.16: Total EVA results for the Requisites co-operatives for the period 1998 to 2001

Requisites co-operatives		1998	1999	2000	2001
EVA	Total	2,246,039	(7,660,323)	(3,317,195)	(3,390,097)
	Average	1,123,019	(3,830,161)	(1,658,597)	(1,695,048)
NOPAT	Total	13,103,784	3,550,956	7,289,967	4,525,164
	Average	6,551,892	1,775,478	3,644,984	2,262,582
Capital	Total	77,042,794	75,453,399	77,597,893	71,048,235
	Average	38,521,397	37,726,700	38,798,947	35,524,118
Equity	Total	23,705,922	32,681,394	30,946,016	22,957,448
	Average	11,852,961	16,340,697	15,473,008	11,478,724
Debt	Total	53,336,872	42,772,005	46,651,877	48,090,787
	Average	26,668,436	21,386,003	23,325,939	24,045,394
Return	Average	13.35	5.05	3.41	3.18
WACC	Average	16.04	16.63	15.25	5.57
Spread	Average	(2.69)	(11.58)	(11.84)	(2.39)

Table 5.16 shows the EVA results of the Requisites co-operatives. Two co-operatives' data were used in this case. From this table it is possible to say that these co-operatives created value in 1998, but from 1999 they destroyed value. This can be said as the EVA value in 1998 was positive (R1,123,019), but from 1999 to 2001 all the EVA values were negative. The highest average negative EVA value of R3,830,161 occurred in 1999 and the lowest average negative EVA value of R1,658,597 occurred in 2000. The rate of return deteriorated from 13.35% to 3.18% between 1998 and 2001, while the WACC increased from 16.04% in 1998 to 16.63% in 1999 and decreased to 5.57% between 1999 and 2001. These rates resulted in negative spreads for each of the four years. Again this is possible as it is the average value for the whole group of Requisites co-operatives. The negative spread values increased between 1998 and 2000 and decreased in 2001.

The average NOPAT for the Requisites co-operatives shows a fluctuating NOPAT. It decreased from 1998 to 1999, increased in 2000 and decreased in 2001. Capital invested stayed constant in the first three years and decreased in 2001.

Table 5.17: Total EVA results for all the co-operatives for the period 1998 to 2001

All co-operatives		1998	1999	2000	2001
EVA	Total	(128,409,334)	(265,563,300)	(155,175,378)	(179,821,374)
	Average	(16,051,167)	(33,195,412)	(19,396,922)	(22,477,672)
NOPAT	Total	195,919,870	126,556,659	192,548,602	106,854,163
	Average	24,489,984	15,819,582	24,068,575	13,356,770
Capital	Total	1,977,135,112	2,485,552,414	2,338,132,632	2,305,373,939
	Average	247,141,889	310,694,052	292,266,579	288,171,742
Equity	Total	1,255,227,792	1,374,572,274	1,300,230,348	1,512,225,048
	Average	156,903,474	171,821,534	162,528,794	189,028,131
Debt	Total	721,907,320	1,110,980,140	1,037,902,284	1,121,798,224
	Average	90,238,415	138,872,518	129,737,786	140,224,778
Return	Average	11.90	10.24	6.26	6.81
WACC	Average	15.33	16.28	15.33	11.18
Spread	Average	(3.43)	(5.69)	(9.08)	(4.37)

Table 5.17 shows the average EVA results of all the co-operatives in this study, this amounts to 60 co-operatives. From this table it can be deducted that co-operatives in general are value destroyers because the EVA values for each of the four years under review are negative. The lowest average negative value of R16,051,167 occurred in 1998 and the highest average negative EVA value of R33,195,412 occurred in 1999. The rate of return deteriorated from 11.90% to 6.26% between 1998 and 2000, it improved to 6.81% in 2001. The WACC increased from 15.33% in 1998 to 16.28% in 1999, it decreased to 11.18% between 1999 and 2001. These rates resulted in negative spread values for the four years under review, the negative values increased between 1998 and 2000 and decreased in 2001.

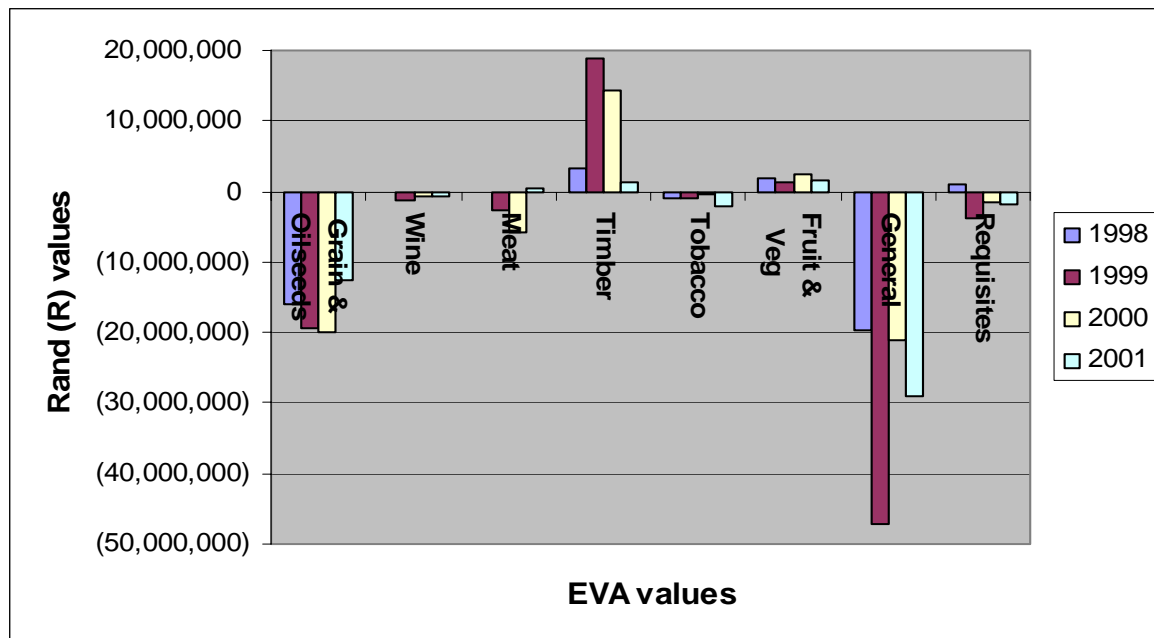
There are only two groups of co-operatives who are creating value, these are the timber and fruit and vegetable co-operatives. The meat co-operatives started to

add value in 2001, while the requisites co-operatives added value only in 1998 and from 1999 onwards it destroyed value. The other co-operatives, grain and oilseeds, wine, tobacco and general co-operatives, are value destroyers. As the value destroyers are the majority, this resulted in the average co-operative being a value destroyer.

5.4 Correlation of EVA performance over years

Correlation on EVA performance between the various groups of co-operatives were calculated to establish whether external influences play an important role in value creation or whether value creation is determined by internal factors in the co-operative. Figure 5.1 shows the correlation between the various groups of co-operatives over the four years, 1998 to 2001.

Figure 5.1: EVA performance for groups of co-operatives



From the graph it can be concluded that there is no correlation between the groups of co-operatives within a specific year as there is no trend or pattern in

the graph. It can also be seen that there is no correlation between the groups of co-operatives. No trend or pattern can be observed in this graph. From this it can be said that the EVA performance of co-operatives are not influenced by external factors, but is in the hands of the effective management and decision-making of the separate agricultural co-operatives.

5.5 Sensitivity of EVA

Since the selection of the listed companies was random, the study calculated EVA for the various co-operatives using different beta-values. Looking at the EVA formula again, it can be said that the Cost of Capital, or WACC, has a great influence on the value of EVA, if WACC changes.

$$EVA = \left(\frac{NOPAT}{Capital\ invested} - Cost\ of\ Capital \right) \times Capital\ invested$$

Both NOPAT and Capital invested will stay the same when Beta changes, only Cost of Capital changes. If beta increases, cost of equity capital increases and thus Cost of Capital increases. As a result of this EVA will decrease. If beta decreases, the cost of equity capital decreases, resulting in a higher EVA-value. The sensitivity of the determined EVA-values is tested by increasing and decreasing beta, by ten and twenty percent, respectively. Table 5.18 to 5.25 shows the new EVA-values for the various groups of agricultural co-operatives with a 10% and 20% decrease and increase in average beta values.

Table 5.18: Sensitivity of EVA for Grain and Oilseeds co-operatives for the period 1998 to 2001

Grain and Oilseeds		1998	1999	2000	2001
WACC	Average	15.21	14.90	14.12	11.90
EVA	Total	(63,783,116)	(77,572,913)	(79,975,533)	(50,812,365)
	Average	(15,945,779)	(19,393,228)	(19,993,883)	(12,703,091)
WACC with beta -10%	Average	15.02	14.69	13.89	11.69
EVA with beta -10%	Total	(62,162,554)	(75,539,076)	(77,775,260)	(48,747,855)
	Average	(15,540,639)	(18,884,769)	(19,443,815)	(12,186,964)
WACC with beta -20%	Average	14.84	14.49	13.66	11.47
EVA with beta -20%	Total	(60,541,993)	(73,505,238)	(75,574,987)	(46,683,345)
	Average	(15,133,498)	(18,376,310)	(18,893,747)	(11,670,836)
WACC with beta +10%	Average	15.39	15.11	14.35	12.12
EVA with beta +10%	Total	(65,403,677)	(79,606,750)	(82,175,806)	(52,876,875)
	Average	(16,350,919)	(19,901,688)	(20,543,952)	(13,219,219)
WACC with beta +20%	Average	15.58	15.31	14.59	12.33
EVA with beta +20%	Total	(67,024,239)	(81,640,587)	(84,376,080)	(54,941,386)
	Average	(16,756,060)	(20,410,147)	(21,094,020)	(13,735,346)
Capital	Total	737,735,714	831,606,865	837,544,435	744,010,309
	Average	184,433,929	207,901,716	209,386,109	186,002,577
% equity capital of capital		0.555	0.520	0.516	0.558
% debt capital of capital		0.445	0.480	0.484	0.442
% change in EVA with beta -10%		-0.025	-0.026	-0.028	-0.041
% change in EVA with beta -20%		-0.051	-0.052	-0.055	-0.081
% change in EVA with beta +10%		0.025	0.026	0.028	0.041
% change in EVA with beta +20%		0.051	0.052	0.055	0.081

The calculated EVA values stayed negative for all the years, even after the beta changes of 10% and 20%. When beta is decreased by 10%, EVA increased with only 2.5% in 1998, 2.6% in 1999, 2.8% in 2000 and 4.1% in 2001. If beta is decreased by 20%, EVA increased with only 5.1% in 1998, 5.2% in 1999, 5.5% in 2000 and 8.1% in 2001.

If the above is reversed and beta is increased by 10%, EVA decreased with only 2.5% in 1998, 2.6% in 1999, 2.8% in 2000 and 4.1% in 2001. When beta is increased by 20%, EVA decreased with 5.1% in 1998, 5.2% in 1999, 5.5% in 2000 and 8.1% in 2001.

These changes are very small as the amount of capital invested in this sector, over these four years, was very high, as can be seen in the table above. Equity capital is influenced most through the change in beta. In this case the equity

capital was just above 50% in all four years and thus the small changes in beta can be ascribed to the amount of capital invested.

Table 5.19: Sensitivity of EVA for Wine co-operatives for the period 1998 to 2001

Wine		1998	1999	2000	2001
WACC	Average	14.05	15.22	14.49	11.75
EVA	Total	(6,585,683)	(43,777,473)	(19,696,028)	(20,127,514)
	Average	(188,162)	(1,250,785)	(562,744)	(575,072)
WACC with beta -10%	Average	13.87	15.00	14.24	11.53
EVA with beta -10%	Total	(5,933,727)	(42,801,365)	(18,689,958)	(19,218,557)
	Average	(169,535)	(1,222,896)	(533,999)	(549,102)
WACC with beta -20%	Average	13.70	14.77	13.98	11.30
EVA with beta -20%	Total	(5,281,771)	(41,825,256)	(17,683,887)	(18,309,600)
	Average	(150,908)	(1,195,007)	(505,254)	(523,131)
WACC with beta +10%	Average	14.22	15.45	14.75	11.98
EVA with beta +10%	Total	(7,237,639)	(44,753,581)	(20,702,099)	(21,036,470)
	Average	(206,790)	(1,278,674)	(591,489)	(601,042)
WACC with beta +20%	Average	14.40	15.67	15.01	12.20
EVA with beta +20%	Total	(7,889,595)	(45,729,689)	(21,708,170)	(21,945,427)
	Average	(225,417)	(1,306,563)	(620,233)	(627,012)
Capital	Total	317,131,756	426,742,298	370,873,211	401,006,970
	Average	9,060,907	12,192,637	10,596,377	11,457,342
% equity capital of capital		0.520	0.486	0.533	0.456
% debt capital of capital		0.480	0.514	0.467	0.544
% change in EVA with beta -10%		-0.099	-0.022	-0.051	-0.045
% change in EVA with beta -20%		-0.198	-0.045	-0.102	-0.090
% change in EVA with beta +10%		0.099	0.022	0.051	0.045
% change in EVA with beta +20%		0.198	0.045	0.102	0.090

After the beta changes of 10% and 20%, all the calculated EVA values were still negative. EVA increases by 9.9% in 1998, 2.2% in 1999, 5.1% in 2000 and 4.5% in 2001 when beta decreases by 10%. If beta decreases by 20%, these percentages double. EVA increases by 19.8% in 1998, 4.5% in 1999, 10.2% in 2000 and 9.00% in 2001.

If beta increases by 10%, EVA decreases by 9.9% in 1998, 2.2% in 1999, 5.1% in 2000 and 4.5% in 2001. If beta increases by 20%, EVA decreases by 19.8% in 1998, 4.5% in 1999, 10.2% in 2000 and 9.00% in 2001.

In the case of the wine sector, the percentage changes in EVA in the year 1998 are larger when beta changes. This occurs as a result of lower capital investment in this sector for this year. In the years 1999, 2000 and 2001 the percentage changes in EVA were much smaller because of larger investments in these years. Total capital was evenly distributed between equity and debt capital in all four years.

Table 5.20: Sensitivity of EVA for Meat co-operatives for the period 1998 to 2001

Meat		1998	1999	2000	2001
WACC	Average	16.32	16.32	14.30	12.76
EVA	Total	(67,545)	(10,758,279)	(23,517,484)	1,784,251
	Average	(16,886)	(2,689,570)	(5,879,371)	446,063
WACC with beta -10%	Average	16.08	16.03	14.05	12.48
EVA with beta -10%	Total	(29,123)	(10,703,750)	(23,501,188)	1,722,807
	Average	(7,281)	(2,675,938)	(5,875,297)	430,702
WACC with beta -20%	Average	15.83	15.73	13.81	12.20
EVA with beta -20%	Total	9,298	(10,649,222)	(23,484,892)	1,661,363
	Average	2,325	(2,662,305)	(5,871,223)	415,341
WACC with beta +10%	Average	16.57	16.62	14.54	13.04
EVA with beta +10%	Total	(105,967)	(10,812,808)	(23,533,780)	1,845,695
	Average	(26,492)	(2,703,202)	(5,883,445)	461,424
WACC with beta +20%	Average	16.82	16.91	14.79	13.31
EVA with beta +20%	Total	(144,388)	(10,867,336)	(23,550,076)	1,907,139
	Average	(36,097)	(2,716,834)	(5,887,519)	476,785
Capital	Total	28,874,893	37,507,495	24,511,365	132,845,503
	Average	7,218,723	9,376,874	6,127,841	33,211,376
% equity capital of capital		0.336	0.309	0.131	-0.093
% debt capital of capital		0.664	0.691	0.869	1.093
% change in EVA with beta -10%		-0.569	-0.005	-0.001	-0.034
% change in EVA with beta -20%		-1.138	-0.010	-0.001	-0.069
% change in EVA with beta +10%		0.569	0.005	0.001	0.034
% change in EVA with beta +20%		1.138	0.010	0.001	0.069

In 1998, EVA increased by 57% with a change of 10% in beta; EVA increased by 114% with a change of 20% in beta. These large changes are a result of the debt to equity ratio of the meat sector in 1998. Three co-operatives were not using any debt financing in 1998.

In the years 1999, 2000 and 2001 EVA did not change much when beta increases or decreases. This is a result of the low percentages of equity capital

invested in the sector. When the beta changes, the weighted average of equity capital in the WACC formula does not change a lot and thus EVA does not change a lot.

All the negative calculated EVA values in 1999 and 2000 were still negative after beta decreased and increased. The positive EVA values in 2001, were still positive after the beta was changed.

Table 5.21: Sensitivity of EVA for Timber co-operatives for the period 1998 to 2001

Timber		1998	1999	2000	2001
WACC	Average	10.48	15.89	15.93	9.02
EVA	Total	9,523,490	57,022,286	42,661,110	4,046,031
	Average	3,174,497	19,007,429	14,220,370	1,348,677
WACC with beta -10%	Average	10.34	15.63	15.58	8.79
EVA with beta -10%	Total	10,038,330	57,721,367	43,588,579	4,560,675
	Average	3,346,110	19,240,456	14,529,526	1,520,225
WACC with beta -20%	Average	10.20	15.36	15.23	8.57
EVA with beta -20%	Total	10,553,170	58,420,448	44,516,047	5,075,319
	Average	3,517,723	19,473,483	14,838,682	1,691,773
WACC with beta +10%	Average	10.62	16.16	16.29	9.24
EVA with beta +10%	Total	9,008,650	56,323,205	41,733,642	3,531,386
	Average	3,002,883	18,774,402	13,911,214	1,177,129
WACC with beta +20%	Average	10.77	16.43	16.64	9.46
EVA with beta +20%	Total	8,493,810	55,624,124	40,806,173	3,016,742
	Average	2,831,270	18,541,375	13,602,058	1,005,581
Capital	Total	220,260,446	230,756,609	244,429,727	158,954,908
	Average	73,420,149	76,918,870	81,476,576	52,984,969
% equity capital of capital		0.591	0.644	0.745	0.651
% debt capital of capital		0.409	0.356	0.255	0.349
% change in EVA with beta -10%		0.054	0.012	0.022	0.127
% change in EVA with beta -20%		0.108	0.025	0.043	0.254
% change in EVA with beta +10%		-0.054	-0.012	-0.022	-0.127
% change in EVA with beta +20%		-0.108	-0.025	-0.043	-0.254

The changes in EVA are very small in the years 1998, 1999 and 2000. In the year 2001 EVA increased by 12.7% when beta decreased by 10%, when beta decreased by 20%, EVA increased by 25.4%. EVA decreased by 12.7% when beta increased by 10% and decreased by 25.4% when beta increased by 20%. The larger percentage changes in EVA in 2001 were a result of a smaller return, NOPAT was much smaller than any of the previous years. The WACC was also

much smaller as capital decreased as well, but at a much slower rate than NOPAT. This results in a low spread which can easily be influenced by any change in WACC. It can be seen from the table that the WACC increased or decreased a lot when there were changes in the beta. Equity capital in each of the four years was either equal or larger than 60% in each of the four years. Thus it influences the WACC a lot, as debt capital does not change together with changes in beta.

During all these changes, the calculated EVA values remained positive when the beta changed, for each of the four years.

Table 5.22: Sensitivity of EVA for Tobacco co-operatives for the period 1998 to 2001

Tobacco		1998	1999	2000	2001
WACC	Average	16.52	18.02	16.99	13.32
EVA	Total	(2,100,590)	(1,691,633)	(908,470)	(4,095,600)
	Average	(1,050,295)	(845,816)	(454,235)	(2,047,800)
WACC with beta -10%	Average	16.26	17.62	16.56	13.00
EVA with beta -10%	Total	(2,050,789)	(1,627,015)	(840,274)	(4,030,207)
	Average	(1,025,395)	(813,508)	(420,137)	(2,015,104)
WACC with beta -20%	Average	16.00	17.23	16.14	12.68
EVA with beta -20%	Total	(2,000,988)	(1,562,398)	(772,077)	(3,964,815)
	Average	(1,000,494)	(781,199)	(386,038)	(1,982,407)
WACC with beta +10%	Average	16.77	18.42	17.41	13.64
EVA with beta +10%	Total	(2,150,391)	(1,756,250)	(976,667)	(4,160,992)
	Average	(1,075,195)	(878,125)	(488,333)	(2,080,496)
WACC with beta +20%	Average	17.03	18.82	17.83	13.96
EVA with beta +20%	Total	(2,200,191)	(1,820,868)	(1,044,863)	(4,226,385)
	Average	(1,100,096)	(910,434)	(522,432)	(2,113,193)
Capital	Total	24,903,330	17,513,223	17,415,156	26,374,305
	Average	12,451,665	8,756,612	8,707,578	13,187,153
% equity capital of capital		0.505	0.784	0.769	0.499
% debt capital of capital		0.495	0.216	0.231	0.501
% change in EVA with beta -10%		-0.024	-0.038	-0.075	-0.016
% change in EVA with beta -20%		-0.047	-0.076	-0.150	-0.032
% change in EVA with beta +10%		0.024	0.038	0.075	0.016
% change in EVA with beta +20%		0.047	0.076	0.150	0.032

Although the value of beta changes, all the calculated EVA values in this sector remained negative. The changes in EVA were small in the years 1998, 1999 and 2001. In the year 2000 the EVA value increased by 7.5% when beta decreased

by 10%, increased by 15% when beta decreased by 20%, decreased by 7.5% when beta increased by 10% and decreased by 15% when beta increased by 20%. In this year equity capital consisted of 77% of total capital invested. Thus any increase or decrease in beta will have a large effect on WACC and thus on EVA, taking into account NOPAT and capital invested.

Table 5.23: Sensitivity of EVA for Fruit and Vegetable co-operatives for the period 1998 to 2001

Fruit and Vegetable		1998	1999	2000	2001
WACC	Average	16.87	16.83	16.27	11.88
EVA	Total	10,837,108	7,863,176	14,338,984	9,306,956
	Average	1,806,185	1,310,526	2,389,831	1,551,159
WACC with beta -10%	Average	16.60	16.51	15.90	11.55
EVA with beta -10%	Total	10,975,379	8,077,234	14,574,168	9,514,073
	Average	1,829,230	1,346,206	2,429,028	1,585,679
WACC with beta -20%	Average	16.32	16.18	15.52	11.23
EVA with beta -20%	Total	11,113,650	8,291,293	14,809,353	9,721,191
	Average	1,852,275	1,381,882	2,468,226	1,620,198
WACC with beta +10%	Average	17.15	17.16	16.65	12.20
EVA with beta +10%	Total	10,698,837	7,649,117	14,103,799	9,099,838
	Average	1,783,139	1,274,853	2,350,633	1,516,640
WACC with beta +20%	Average	17.43	17.48	17.03	12.52
EVA with beta +20%	Total	10,560,566	7,435,058	13,868,614	8,892,720
	Average	1,760,094	1,239,176	2,311,436	1,482,120
Capital	Total	61,113,609	76,148,273	69,587,567	54,979,450
	Average	10,185,602	12,691,379	11,597,928	9,163,242
% equity capital of capital		0.572	0.598	0.664	0.758
% debt capital of capital		0.428	0.402	0.336	0.242
% change in EVA with beta -10%		0.013	0.027	0.016	0.022
% change in EVA with beta -20%		0.026	0.054	0.033	0.045
% change in EVA with beta +10%		-0.013	-0.027	-0.016	-0.022
% change in EVA with beta +20%		-0.026	-0.054	-0.033	-0.045

The changes in EVA as a result of changes in beta are all very small. All the calculated EVA values stay positive after recalculating them with the changed betas.

Table 5.24: Sensitivity of EVA for General co-operatives for the period 1998 to 2001

General		1998	1999	2000	2001
WACC	Average	17.14	16.43	15.31	13.25
EVA	Total	(78,479,037)	(188,988,141)	(84,760,762)	(116,533,036)
	Average	(19,619,759)	(47,247,035)	(21,190,190)	(29,133,259)
WACC with beta -10%	Average	16.84	16.13	15.00	12.94
EVA with beta -10%	Total	(76,622,712)	(186,717,313)	(82,750,040)	(114,463,476)
	Average	(19,155,678)	(46,679,328)	(20,687,510)	(28,615,869)
WACC with beta -20%	Average	16.55	15.83	14.68	12.62
EVA with beta -20%	Total	(74,766,386)	(184,446,484)	(80,739,319)	(112,393,917)
	Average	(18,691,597)	(46,111,621)	(20,184,830)	(28,098,479)
WACC with beta +10%	Average	17.43	16.73	15.62	13.57
EVA with beta +10%	Total	(80,335,363)	(191,258,969)	(86,771,483)	(118,602,595)
	Average	(20,083,841)	(47,814,742)	(21,692,871)	(29,650,649)
WACC with beta +20%	Average	17.72	17.03	15.93	13.88
EVA with beta +20%	Total	(82,191,688)	(193,529,798)	(88,782,205)	(120,672,155)
	Average	(20,547,922)	(48,382,449)	(22,195,551)	(30,168,039)
Capital	Total	510,072,570	789,824,252	696,173,278	716,154,259
	Average	127,518,143	197,456,063	174,043,320	179,038,565
% equity capital of capital		0.920	0.611	0.567	0.581
% debt capital of capital		0.080	0.389	0.433	0.419
% change in EVA with beta -10%		-0.024	-0.012	-0.024	-0.018
% change in EVA with beta -20%		-0.047	-0.024	-0.047	-0.036
% change in EVA with beta +10%		0.024	0.012	0.024	0.018
% change in EVA with beta +20%		0.047	0.024	0.047	0.036

There are no significant changes in EVA when beta changes in the General sector. All calculated EVA values remain negative even after the beta changes have been considered.

Table 5.25: Sensitivity of EVA for Requisites co-operatives for the period 1998 to 2001

Requisites		1998	1999	2000	2001
WACC	Average	16.04	16.63	15.25	5.57
EVA	Total	2,246,039	(7,660,323)	(3,317,195)	(3,390,097)
	Average	1,123,019	(3,830,161)	(1,658,597)	(1,695,048)
WACC with beta -10%	Average	15.81	16.32	14.94	5.49
EVA with beta -10%	Total	2,339,786	(7,506,570)	(3,159,593)	(3,275,989)
	Average	1,169,893	(3,753,285)	(1,579,796)	(1,637,994)
WACC with beta -20%	Average	15.58	16.00	14.63	5.41
EVA with beta -20%	Total	2,433,533	(7,352,817)	(3,001,991)	(3,161,881)
	Average	1,216,767	(3,676,408)	(1,500,995)	(1,580,941)
WACC with beta +10%	Average	16.27	16.94	15.56	5.65
EVA with beta +10%	Total	2,152,291	(7,814,076)	(3,474,796)	(3,504,204)
	Average	1,076,146	(3,907,038)	(1,737,398)	(1,752,102)
WACC with beta +20%	Average	16.50	17.25	15.87	5.73
EVA with beta +20%	Total	2,058,544	(7,967,828)	(3,632,398)	(3,618,312)
	Average	1,029,272	(3,983,914)	(1,816,199)	(1,809,156)
Capital	Total	77,042,794	75,453,399	77,597,893	71,048,235
	Average	38,521,397	37,726,700	38,798,947	35,524,118
% equity capital of capital		0.308	0.433	0.399	0.323
% debt capital of capital		0.692	0.567	0.601	0.677
% change in EVA with beta -10%		0.042	-0.020	-0.048	-0.034
% change in EVA with beta -20%		0.083	-0.040	-0.095	-0.067
% change in EVA with beta +10%		-0.042	0.020	0.048	0.034
% change in EVA with beta +20%		-0.083	0.040	0.095	0.067

In this case there are also no significant changes in EVA when beta changes. All the calculated EVA values in 1998 remained positive, even after beta had changed. After changing the beta the calculated EVA values for 1999, 2000 and 2001 also remained negative.

5.6 Conclusion

In the first case EVA values were calculated for all the separate co-operatives. Not one of the four grain and oilseeds co-operatives included in the study created value.

Only one of the 35 wine co-operatives is a consistent value creator. Five wine co-operatives improved from negative EVA values to positive values. In the case of three of the co-operatives, EVA was negative over four years, but these negative

EVA values decreased and thus improved. In 18 of the 35 cases the co-operatives destroyed value. Six wine co-operatives had mixed EVA results. One co-operative destroyed value in the first three years under review. These negative EVA values increased, but in 2001 this co-operative managed to create value. In the last case, a wine co-operative had a positive EVA value in the first year, but negative EVA values in the next three years. These negative EVA values decreased over the three years.

The first meat co-operative had mixed results as a result of an accumulated deficit. Two of the co-operatives are value destroyers. The last co-operative had negative EVA values for the first three years under review, these negative values turned positive and the co-operative created value.

In the case of the three timber co-operatives, two of them created value, while the other one created value in 1999 and destroyed value in 2000 and 2001.

Data for only two of the tobacco co-operatives are available and complete. Both of them destroyed value.

The income statements and balance sheets for six fruit and vegetable co-operatives are available and complete. After calculating EVA it can be concluded that five co-operatives destroyed value, while the other one created value.

Three of the four general co-operatives destroy value. The other co-operative destroyed value over the first three years. These negative EVA values increased, thus worsening. In 2001, however, this co-operative managed to create value.

In the case of the requisites co-operatives one of the co-operatives is a consistent value destroyer. The other one created value in the first year under review, but destroyed value over the next three years.

Thereafter the average EVA values for the different groups of co-operatives are calculated. There are only two groups of co-operatives who are creating value, these are the timber and fruit and vegetable co-operatives. The meat co-operatives started to add value in 2001, while the requisites co-operatives added value only in 1998 and from 1999 onwards they destroyed value. The other co-operatives (grain and oilseeds, wine, tobacco and general co-operatives) are value destroyers. As the value destroyers are the majority, this resulted in the average co-operative being a value destroyer.

No correlation exists between the groups of co-operatives between the four years under review or between the individual groups of co-operatives. Thus it can be said that the EVA performance of co-operatives is not influenced by external factors, but depends on effective management and decision-making within the separate agricultural co-operatives.

By increasing and decreasing beta by 10% and 20% and then calculating EVA with these changed betas, the sensitivity of EVA can be determined. There was no significant change in EVA as a result of the changed betas. EVA is thus not very sensitive to the changing betas.

In the final chapter this study will be summarized and conclusions will be drawn.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The main objective of this research is to determine EVA for the South African agricultural co-operatives. Further objectives are to determine whether co-operatives add value to their member's interest, whether correlation exists between EVA performances over certain years and whether a correlation exists between EVA performances between the individual groups of co-operatives.

6.2 Approach followed

EVA was introduced by defining it, discussing the calculation of EVA in general and stating how it could be improved. The advantages and limitations of EVA were discussed and the question asked: Why EVA? To answer this question EVA was compared to other evaluation techniques, IRR, NPV, ROA and ROE.

A general overview of co-operatives was given and then EVA was applied to all of the individual agricultural co-operatives for which income statements and balance sheets were available and complete. The calculation of EVA was done using the six steps of the calculation of EVA. These six steps were:

Step one: The necessary data was obtained from the Registrar of Co-operatives. This data contained the financial statements of the different co-operatives. The data were standardized and a database was developed.

Step two: The Net Operating Profit After Tax (NOPAT) generated by a co-operative was determined. The accounting measure of operating income was

adjusted with equity equivalents. Adjustments were made to earnings and invested capital to obtain true economic profits, or NOPAT. Pool payments made to members were ignored, as it reflects value paid to members and not value created by the co-operative.

Step three: The amount of capital invested in the co-operative was calculated. Adjustments for equity equivalents were also made.

Step four: WACC was used in determining the total cost of capital. To determine the cost of debt, the return on the R150 was used and a risk premium of two percent was added. The cost of equity capital was calculated, using CAPM. A risk premium of 6% was added and the average beta of six randomly selected companies listed on the JSE was used. Ross, Westerfield, Jordan and Firer (2001) calculated the average return on ordinary shares, long term government bonds and negotiable certificates of deposits, for the period 1925 to 1999, and stated that a true risk premium for South African companies would be 9.8%. Given the large negative EVA values generated by the co-operatives at a risk premium of 6%, the risk premium adjustment to 9.8% will result in a much larger negative EVA value. It can thus be concluded that the assumption of 6% risk premium will have no influence on the conclusions reached in this study.

Step five: EVA for the different co-operatives were calculated.

Step six: The EVA results were then interpreted.

6.3 Research results

The main aim of this study was to calculate EVA for co-operatives. Firstly for all of the separate co-operatives and secondly for the groups of co-operatives, classified according to the type of commodity handled. The EVA results were

interpreted to see whether agricultural co-operatives add value to their members' interest and whether there exist any correlation of EVA performance over certain years and between the individual groups of co-operatives. The sensitivity of EVA was determined to see whether a change in beta would result in a large change in EVA.

The financial statements of 66 co-operatives were obtained, but only the data for 60 of the co-operatives were usable since the financial statements of six were incomplete.

EVA values were calculated for all the separate co-operatives. None of the four grain and oilseeds co-operatives included in the study created value. Only one of the 35 wine co-operatives was a consistent value creator: the Perdeberg co-operative. The Barrydale, Botha, Citrusdal, Merwida and Windmeul co-operatives improved from negative EVA values to positive values. In the case of three of the co-operatives, Badsberg, Brandvlei and Roodezant co-operatives, EVA was negative over four years, but these negative EVA values decreased and thus improved. In 18 of the 35 cases the co-operatives destroyed value. These value destroyers are: Aan de Doorns, Agterkliphoogte, Bonnievale, Breeriviervallei, De Wet, Du Toitskloof, Groot Eiland, Langverwacht, Montagu, Nordale, Nuwehoop, NUY, Oranjerivier, Robertson, Romansrivier, Slanghoek, Tulbagh and Waboomrivier co-operatives. Co-operatives that have mixed EVA results are Ladismith, Merwespont, Overhex, Spruitdrift, Vlottenberg and Wellington. The Goudini co-operative destroyed value in the first three years under review. These negative EVA values increased, but in 2001 this co-operative managed to create value. In the last case, the McGregor co-operative had a positive EVA value in the first year, but negative EVA values in the next three years. These negative EVA values decreased over the three years.

For the meat co-operatives, the Stock owners co-operative had mixed results as a result of an accumulated deficit. The Sutherland and Taurus co-operatives

were value destroyers. The Williston co-operative had negative EVA values for the first three years under review, these negative values turned positive and the co-operative created value.

In the case of the three timber co-operatives, the NCT and Union co-operatives created value, while the NTE co-operative created value in 1999 and destroyed value in 2000 and 2001.

Only data for two of the tobacco co-operatives were available and complete. These were the Gamtoos and Kango co-operatives. Both of them destroyed value.

After calculating EVA for six fruit and vegetable co-operatives, five co-operatives (De Wet, Karino, Morone, Onderberg and Vyeboom co-operatives) destroyed value, while the Magalies co-operative created value.

Three of the four general co-operatives (NCD, Umzimkulu and Villiersdorp) destroyed value, while the Hoefeld co-operative destroyed value over the first three years, 1998, 1999 and 2000. These negative EVA values increased, thus EVA worsened. In 2001, however, this co-operative managed to have a positive EVA value and thus managed to create value.

In the case of the requisites co-operatives the Coastal farmers' co-operative was a consistent value destroyer. The East Cape co-operative created value in the first year under review, but destroyed value over the next three years.

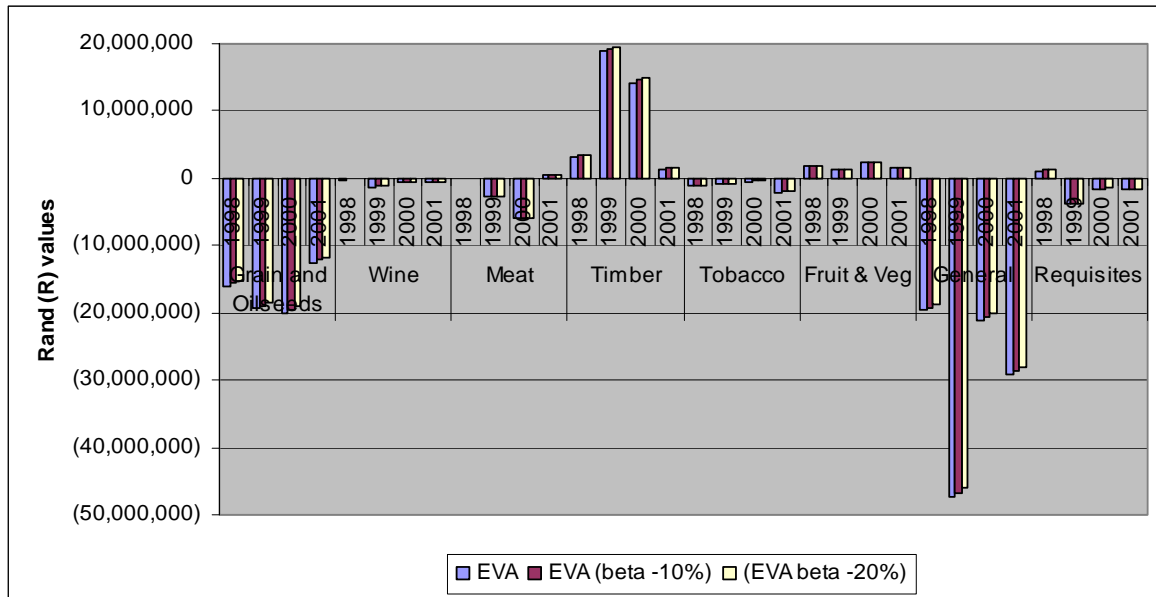
The average EVA values for the different groups of co-operatives were also calculated. There were only two groups of co-operatives who created value: the timber and fruit and vegetable co-operatives. Although five of the six fruit and vegetable co-operatives had negative EVA-values, the total EVA was positive. The positive EVA value was large enough to cancel out the negative EVA values

and resulted in this positive EVA value. The meat co-operatives started to add value in 2001, while the requisites co-operatives added value only in 1998 and from 1999 onwards it destroyed value. The other co-operatives, grain and oilseeds, wine, tobacco and general co-operatives, are value destroyers. As the value destroyers are the majority, this resulted in the average co-operative being a value destroyer.

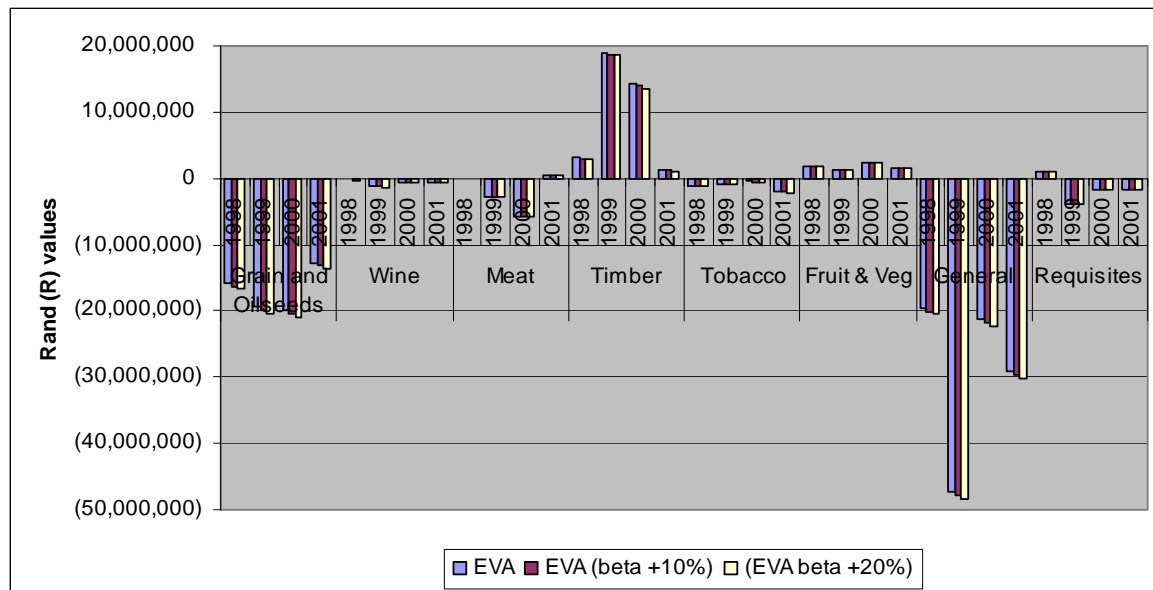
Looking at the correlation between the groups of co-operatives over the years under observation, it was clear that no correlation exists between them over these four years or within a specific year. Thus it can be said that the EVA performance of co-operatives are not influenced by external factors, but rests in the hands of the management and depends on the decision-making within the separate agricultural co-operatives. There is also no correlation between the EVA performances of the individual groups of co-operatives.

The study further calculated EVA values for all the co-operatives under changing beta-values. This was necessary since the study assumed the calculation of WACC for all the co-operatives. If large deviations were present, then the conclusions regarding value destruction would have been incorrect. Figure 6.1 shows the new EVA values when beta is reduced by 10% and 20% respectively.

Figure 6.1: Changes to EVA with negative changes to beta



It can be concluded that there was no significant change in the value of EVA after the adjustments of -10% and -20% were made to beta. Negative EVA values stayed negative, and positive EVA values stayed positive after beta was decreased. Figure 6.2 shows the new EVA values when beta is increased by 10% and 20% respectively

Figure 6.2: Changes to EVA with positive changes to beta

From the graph it can be seen that no significant change can be noted in the value of EVA after beta increased with 10% and 20% respectively. Negative EVA values stayed negative, while positive EVA values stayed positive after beta increased. Thus, it can be said the conclusions made in the study is not sensitive towards changing cost of capital rates and that the co-operatives are in general value destroyers.

6.4 Recommendations and areas of further research

This investigation may be regarded as an exploratory step towards the development of an alternative evaluation tool for agricultural co-operatives. The results by no means provide the final answer to understanding the complicated processes involved in value creation. Within the stated limitations, the findings nevertheless represent, in addition to obvious financial benefits and implications, a new approach to financial decision-making, with direct implications and research opportunities in the following areas:

- Determining possible reasons why South African agricultural co-operatives do not add value to their members' interest.
- Another research opportunity is to see if there is any correlation between the capital structures and EVA of the separate agricultural co-operatives.
- An in depth comparison of traditional evaluation techniques to EVA, to see whether the conclusions obtained in Chapter three holds.
- Many co-operatives turned into companies. Compare these companies' EVA values before they turned into companies to their EVA values after they turned into companies.
- Recalculate EVA for all the co-operatives by determining WACC for each co-operative by means of questionnaires.

6.5 Conclusion

The main aim of this study was to calculate EVA for the separate agricultural co-operatives in South Africa and to calculate EVA for the groups of agricultural co-operatives, classified according to the type of commodity handled. EVA was determined for the total amount of co-operatives as well. These results were interpreted to find that, in general, South African agricultural co-operatives do not add value to their members' interest. From the results it could also be concluded that there is no correlation of EVA performance over certain years or between the individual groups of co-operatives.

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