An appropriate financial perspective for a balanced scorecard

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ABSTRACT

The balanced scorecard has proved itself as a valuable strategic tool in measuring not only the financial performance, but also the customer focus, internal business processes and learning and growth of a company. To date, very little has been done to incorporate new breakthroughs in financial management in the financial perspective of the balanced scorecard. In this study, new trends in financial management research are recognised in suggesting a 'balanced financial scorecard' comprising only five selected measures of financial performance. The statistical technique of principal component analysis is used to test the ability of these five measures to predict the market value added (MVA) of a company, compared to the predictive power of a range of accounting ratios. The results show that over the long term, the five suggested measures out-perform traditional accounting ratios, thus lending support to the contention that the five suggested measures better represent the drivers of shareholder value than do the traditional accounting ratios. The search for a balanced financial perspective is an ongoing process, but the suggested measures could make a constructive contribution in taking this process forward.

INTRODUCTION

The concept of a balanced scorecard, introduced by Kaplan & Norton (1992: 71), has been one of the major contributions towards improved corporate performance measurement during the last few decades. Research evidence cited in the next section indicates that the majority of leading companies in the USA have adopted some version of the balanced scorecard, and institutions worldwide are catching up fast by following their example.

The financial perspective is frequently referred to as an important component of the balanced scorecard; yet it seems as if the development of the financial portion of the balanced scorecard has not moved much beyond the original suggestions of

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Kaplan & Norton. The latest research in financial management, especially the concepts of value creation and value management, necessitates adjustments to the suggested financial framework.

The purpose of this paper is to suggest a new balanced financial scorecard based on the latest developments in financial management. The approach taken will be to investigate the literature on financial management and to identify the latest trends. A balanced financial scorecard based on the results of our research will then be suggested, after which the usefulness of that balanced financial scorecard will be tested empirically. Based on the results of the research and empirical tests, it will then be concluded whether or not any adjustments to the original financial component of the balanced scorecard are justified.

The paper is set out as follows:

- Theoretical background of the balanced scorecard
- Financial perspective
- Suggested balanced financial scorecard
- Research methodology
- Research results
- Conclusion and recommendations.

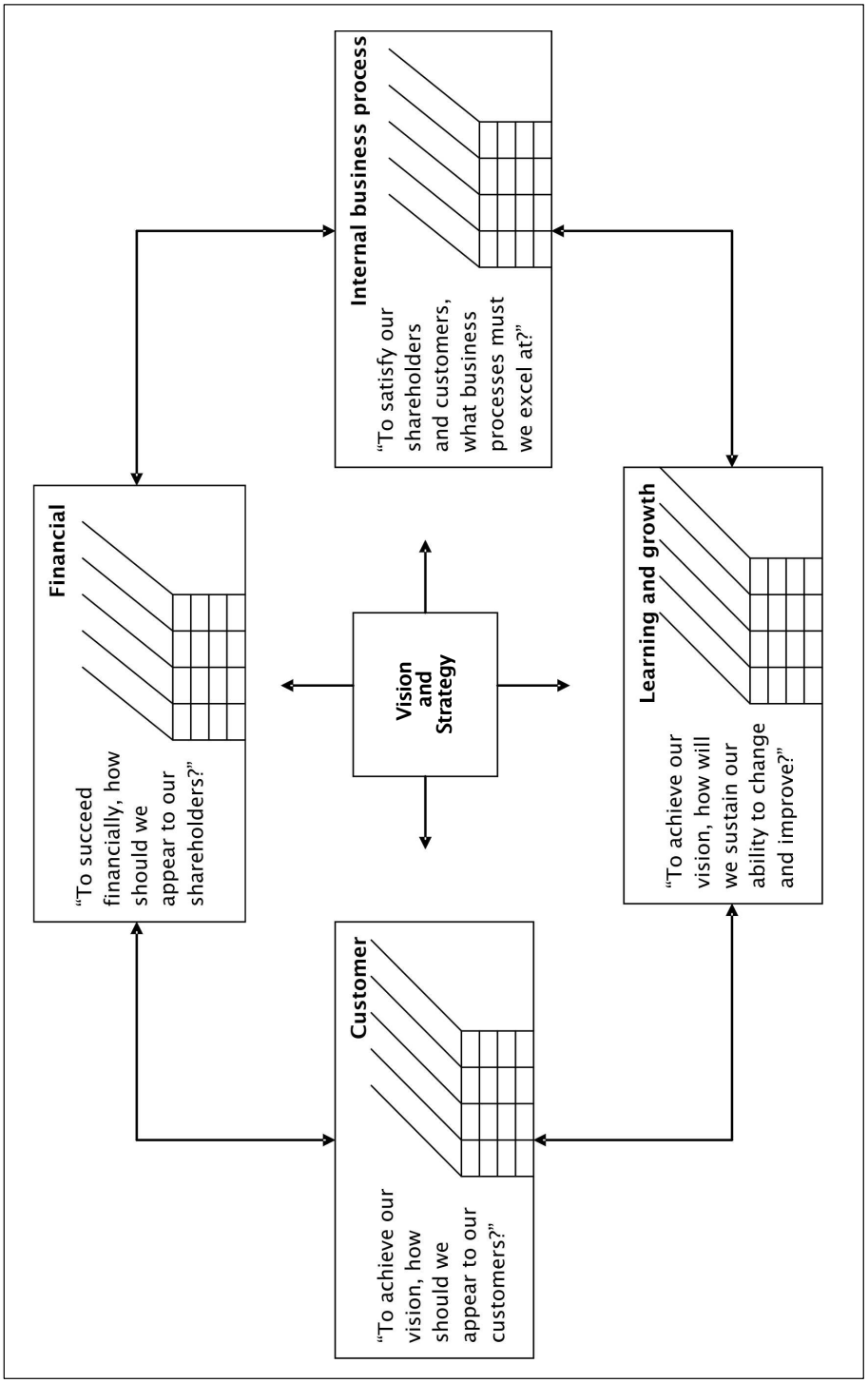
THEORETICAL BACKGROUND OF THE BALANCED SCORECARD

According to Kaplan & Norton (1992: 71) "the balanced scorecard is like the dials in an airline cockpit: it gives managers complex information at a glance". Not only did the balanced scorecard move away from a narrow focus on traditional financial accounting measures of performance, but it integrated the vision and strategy with the operations of the organisation in such a way that in the words of Kaplan & Norton (1992: 79) it "keeps companies looking – and moving – forward instead of backward".

Kaplan & Norton (1992: 72) suggested four different perspectives for managers to look at and evaluate the company, namely:

- The financial perspective
- The customer perspective
- The internal business process perspective
- The innovation and learning perspective.

In addition to financial measures that reflect what has happened in the past (lagging measures), operational measures affecting future financial performance (leading measures), and specifically customer satisfaction, internal processes and innovation and improvement were included in the balanced scorecard. The balanced scorecard is presented in Figure 1.



Source: Kaplan & Norton (1996a: 76)

Figure 1: The balanced scorecard

Kaplan & Norton followed up their initial work on the balanced scorecard with a number of books and articles, expanding their initial theories and integrating performance with strategy (Kaplan & Norton 1996b; Kaplan 1998: 10; Kaplan & Norton 2001a: 87; Kaplan & Norton 2001b; Kaplan 2005: 41; Kaplan & Norton 2006). From the initial introduction of the balanced scorecard model, various aspects relating to the weightings, the linkages between the drivers of performance, and the alignment of strategy, people and performance measures have been elaborated on by various researchers, including Ittner, Larcker & Meyer (2003: 725), Banker, Chang & Pizzini (2004: 22), Cokins (2004: 67), Brewer (2004: 59), Dilla & Steinbart (2005: 51) and Dent (2005: 25). Some commentators have suggested combining the balanced scorecard with other vital management information not reflected in the balanced scorecard. Bukh, Johansen & Mouritsen (2002: 21) propose combining the balanced scorecard with an intellectual capital statement, and Beasley, Chen, Nunez & Wright (2006: 54) suggest combining the balanced scorecard with an enterprise risk management report.

Numerous authors such as Atkinson & Epstein (2000: 28), DeFeo (2000: 33), Albrecht, Stice, Stice & Skousen (2002: 525), Hilton (2002: 456), Hansen & Mowen (2003: 404), Horngren, Datar & Foster (2003: 449), Davis & Albright (2004: 150), Drury (2004: 999), Garg & Ma (2005: 266) and Garrison, Noreen & Brewer (2006: 449) have acknowledged the importance and impact of the balanced financial scorecard in modern-day management. However, despite widespread support for the balanced scorecard, some criticisms have been aired, notably by Gering & Mntambo (2000: 19), who believe that the balanced scorecard has failed to balance the interests of the stakeholders, and by Angel & Rampersad (2005: 33), who point out that there has been little evidence indicating that adoption of the balanced scorecard results in improved financial performance.

Even after considering the criticisms in the previous paragraph, the impact of the balanced scorecard on modern-day management is indisputable. This is backed up by reports on the practical implementation of the balanced scorecard, which include comments by Bean & Jarnagin (2002: 55) that quote a survey finding that about 60% of Fortune 1000 companies either use some kind of scorecard system or are experimenting with it. Case studies highlighting the successful implementation of the balanced scorecard approach by different organisations were published by Sim & Koh (2001: 19) and Gumbus, Lyons & Bellhouse (2002: 50). Gumbus (2005: 617) reports a survey finding that more than 50% of Fortune 500 companies used the balanced financial scorecard as a strategic management tool.

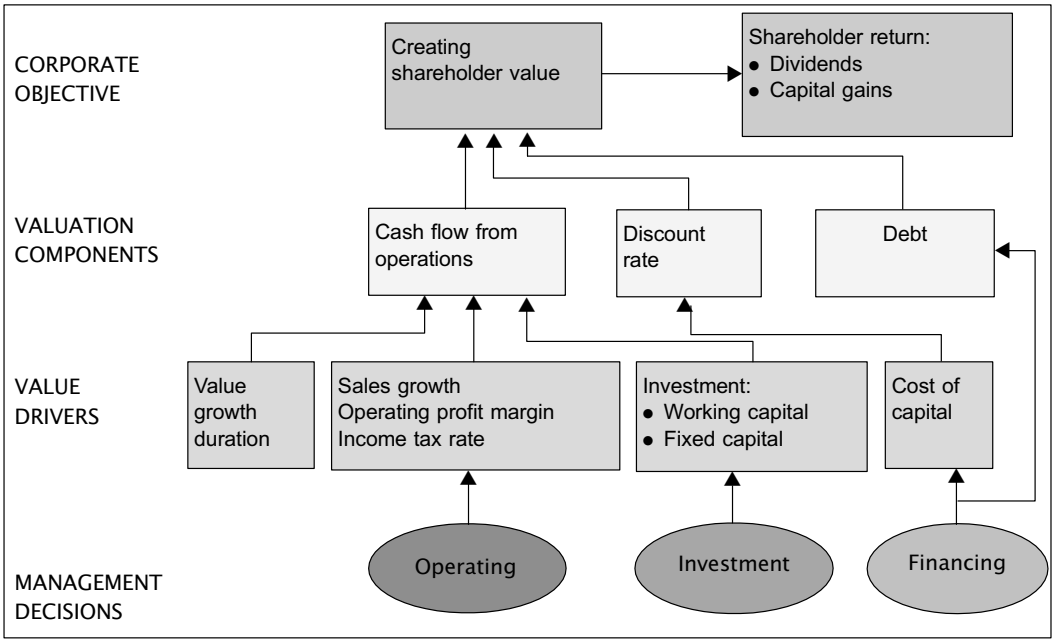
From the reports of the widespread implementation of the balanced scorecard mentioned in the previous paragraph, as well as evidence of the continued refinement of the balanced scorecard, one can conclude that it cannot be regarded as a passing fad, but that it is indeed a valuable contribution towards strategic performance management. The next section focuses on the financial perspective.

FINANCIAL PERSPECTIVE

In their first article on the balanced scorecard, Kaplan & Norton (1992: 76) mention the following measures as being important from a financial perspective:

- Cash flow
- Sales growth
- Operating income
- Market share
- Return on equity (ROE).

It is worth noting that two of the five measures mentioned, namely sales growth and market share, link directly to the customer perspective. Various developments in financial management research and practice just before and since 1992 have resulted in new thinking and refinements to the initial model. The most important of these developments are the shareholder value analysis (SVA) model of Rappaport (1986: 76) and the economic value added (EVA) and market value added (MVA) concepts popularised by Stewart (1991: 153) and Stern (1993: 36). The SVA model of Rappaport (1986: 76) is presented in Figure 2.



Source: Rappaport (1986: 76)

Figure 2: Shareholder value analysis model of Rappaport

Rappaport's model indicates that shareholder value is driven by seven factors, namely sales growth, the operating profit margin, the cash tax rate, investment in

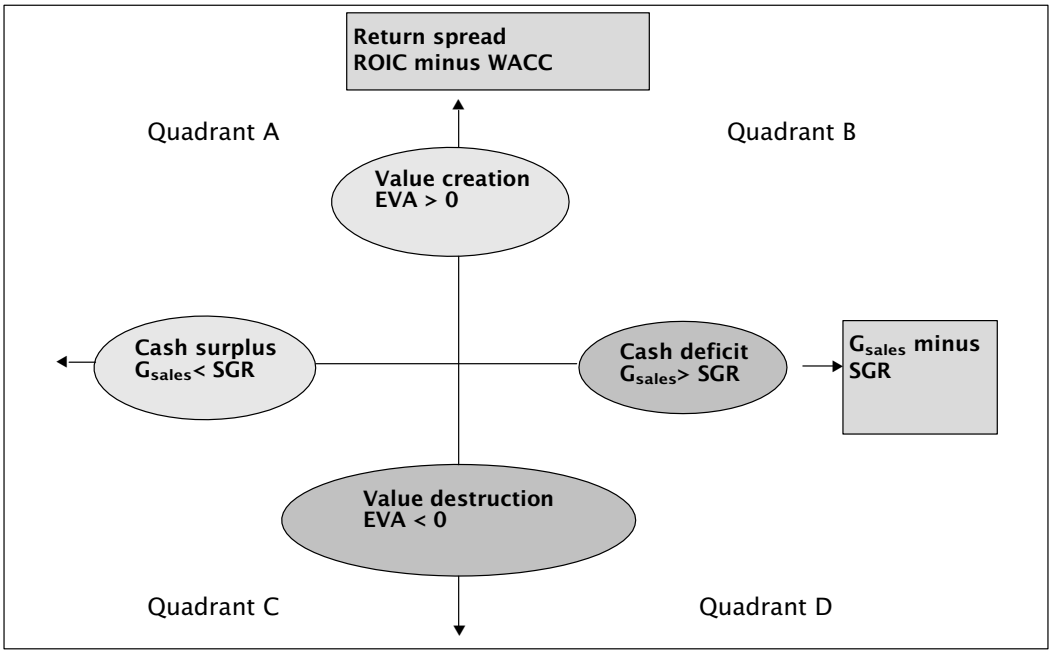
working capital, investment in fixed assets, the cost of capital and the planning period (the length of time over which the future cash flow projections are made). Support for using the SVA model to measure corporate financial performance came from Barsky & Bremser (1999: 4) and Barfield (1999: 33). Two limitations of the SVA model are the difficulty of estimating future cash flows and the absence of a performance measure to which remuneration can be linked.

The EVA model is based on the assertion that economic profits (EVA) have the greatest impact on shareholder value as measured by the MVA and that EVA should therefore be maximised. EVA is a better performance measure than net profit because it is calculated after taking into account the full cost of capital, including an opportunity cost for using equity. The biggest limitation of EVA (and also its strength) is the fact that it is a single measure of performance. In spite of early reports of good correlation between EVA and MVA (r^2 of 50%) by Stern (1993: 36), research to date has not proved conclusively that EVA correlates better with shareholder wealth than other traditional accounting measures. Support for using the EVA along with, or as part of, the balanced scorecard came from Cates (1997: 21; 1998: 60) and Skyrme & Amidon (1998: 23).

The financial strategy matrix by Hawawini & Viallet (1999: 507) is a noteworthy financial innovation in the context of finding an appropriate financial perspective. Two variables, namely wealth creation (EVA) and cash management, are used to evaluate a company and to place it in a certain quadrant on the financial strategy matrix. A relative measure of wealth creation, the return spread, is used instead of EVA, and the cash management is measured by the difference between sales growth and the sustainable growth rate.

Companies placed in Quadrant A are those that have positive EVAs and are generating positive cash flows (on the grounds that their sales growth rate is smaller than their sustainable growth rate). Quadrant B companies have a positive EVA, but are growing too fast and are therefore building up cash deficits. Quadrant C companies have negative EVAs and are generating cash surpluses, while Quadrant D companies have negative EVAs and are building up cash shortfalls. Quadrant A is the best quadrant to be in and Quadrant D the worst. The placement of any given company is used to determine a financial strategy that is appropriate in that situation, taking into account that companies not in Quadrant A should aspire to move to Quadrant A. The financial strategy matrix is presented in Figure 3.

The financial strategy matrix is a better proposition than using EVA alone, but its drawbacks lie in the fact that it is a single year model and that the sales growth minus sustainable growth rate can be a misleading indicator of the cash management of a company. When an increase in assets is financed by new issues of debt or equity, the sales growth rate can be much higher than the sustainable growth rate, without causing cash deficits. The search for a balanced view of the most important financial indicators at a glance therefore continues.



Acronyms:
ROIC – return on invested capital; SGR – sustainable growth rate;
WACC – weighted average cost of capital

Source: Adapted from Hawawini & Viallet (1999: 507)

Figure 3: Financial strategy matrix

Putting forward a balanced financial perspective would need to take into account the original financial factors suggested by Kaplan & Norton (1992: 72) and to add new measures from subsequent developments in the field of finance and strategy, such as shareholder value analysis and EVA and MVA. Frigo & Krumwiede (2000: 52) and Berkman (2002: 3) stress the importance of limiting the number of performance factors included in the scorecard. Their view is supported by Cleverley (2001: 32) and Cleverley & Cleverley (2005: 64), who comment on financial dashboard reporting in the hospital industry.

In order to develop an appropriate financial perspective, several financial components considered to be most important and representing a balanced overall picture (dashboard), need to be included. Based on the theoretical analysis, these could include:

- Some traditional accounting measures, such as operating income and ROE
- Some factors linking customer perspective to financial perspective, such as sales growth and market share
- Some measure(s) of cash flows
- EVA and MVA.

The financial measures included in the financial perspective of the balanced scorecard should have the following characteristics:

- They must be small in number
- They must be vital to the financial success of the company
- They must be closely linked to the overall strategy of the firm
- They must have a balance between leading and lagging indicators
- They must correlate well with value creation (Frigo & Litman 2002: 11).

SUGGESTED BALANCED FINANCIAL SCORECARD

The emphasis on the creation of value for shareholders as a corporate goal is clear from our literature study. MVA is the variable that management must aim to maximise in order to deliver value to shareholders (Stern 1993: 36).

The goal of the study is to suggest a small number of financial measures that top management must keep track of and manage in order to maximise MVA. The process for selecting the five ratios to be included in the balanced financial scorecard was loosely based on the results of the literature review (which indicated the ratios that others had found essential). The correlation matrix of the complete list of 65 ratios, judgement based on experience of accounting and the objective of using a particular ratio also played a role in the final selection process.

The following internal performance measures were used as the selected ratios for the balanced financial scorecard:

- The performance spread, or 'Spread', which is standardised EVA (EVA/IC_{beg})
- Invested capital at the beginning of the year, or 'IC_{beg}'
- Economic value added, or 'EVA'
- The cash flow from operations (after tax, but before interest and dividends), standardised as CFL/IC_{beg})
- The sales growth percentage from the previous period.

The justification for using these five variables is as follows: the first two, spreads and IC_{beg}, are the components that make up EVA. EVA, in turn, is claimed by Stewart (1991: 153) and Stern (1993: 36) to be the best internal driver of MVA and therefore the one measure that should be maximised. A measure of cash flows, CFL/IC_{beg} is included because of the strong link between free cash flows and the value of an organisation as well as the importance of cash flows for the ultimate survival of a company. The sales growth percentage is retained on the grounds that it is the important link between the customer focus and the financial perspective. The motive for selecting only five measures is ascribed to the 'few in number' requirement.

Based on the theoretical analysis, the main hypothesis to be tested can now be postulated. There is an expectation that the five measures suggested would have the

same or greater impact on shareholder value, as indicated by the MVA, compared with traditional accounting ratios. The empirical tests used to select appropriate financial measures are discussed in the next section.

RESEARCH METHODOLOGY

The source of the information used in the study was McGregor BFA, based at the University of Pretoria. McGregor BFA is a major provider of information for the financial analysis of South African listed and de-listed companies. Their Station product is a fundamental analysis tool, which contains information on listed companies, de-listed companies, commodities, N-shares and preference shares. What makes their information especially useful for this study is that they capture the data contained in the annual financial statements of listed companies on a yearly basis, standardise it and calculate a set of 42 standard financial ratios per company.

The 42 ratios have been pre-defined by McGregor BFA and are based on their initial study of the information required by analysts and the feedback that they have received from clients over the years. It can thus be said that the set of BFA ratios has been found useful by the market, as market feedback was used in compiling their set of financial ratios.

The final large data set used in the study consists of a matrix of 13 years of observations of 65 financial ratios for 53 companies. Each component of this 13x65x53 matrix will now be discussed in greater detail.

The years 1990–1994 can be regarded as a changeover period for South Africa from the political system of apartheid to that of a representative democracy. This political change would have influenced the South African capital markets. Markets are forward-looking, and since the negotiations that led to South Africa's first democratic elections on 27 April 1994 were completed in 1993, it was decided to limit the data used in the study to a period after this structural break. Data were obtained for the 13 years from 1993 to 2005.

The 65 financial ratios obtained for the study are a combination of traditional financial ratios, as represented by the 42 McGregor BFA standard financial ratios, and more modern financial ratios that have been identified in the literature on EVA. Table 1 presents the 65 financial ratios that were included in the final data set.

All companies listed on the Johannesburg Securities Exchange (JSE) on 25 January 2006 were identified as a first step in choosing the companies from which financial ratios would be obtained, a total of 325 companies. Banks, other financial institutions and mining companies were then excluded as they could not provide the required information to determine the critical variables for the analysis, for example, the cost of capital to determine the EVA. ALTX, development capital and venture capital listed companies were also excluded on the grounds that the ALTX had not existed for the full period of the data required and that companies not listed on the

main exchange would not be comparable to those that are. This brought the total down to 177 companies. Thinly traded shares were identified, and those companies were excluded from the study (113 companies). A further 11 companies were finally eliminated due to missing data or changes in financial year-ends during the 13 years under review. This left 53 companies for which the 65 financial ratios were obtained for the 13 years from 1993 to 2005.

Table 1: Financial ratios included in final data set

Ratio group	Description	Number of ratios in group
Traditional ratios	Ratios defined for this study	12
	BFA McGregor ratios	40
Modern ratios	Cash flow ratios	6
	Sales growth %	1
Value-based ratios	Balanced financial scorecard ratios (includes ratio to be backcasted – MVA)	6
Total		**65**

Description of procedure applied to datasets

Bouwman, Frishkoff & Frishkoff (1987: 1) state that the objective of financial reporting is to provide information that is useful in investment and credit decisions. In this study, the focus was on the usefulness of accounting information for investment purposes. The financial outcome MVA was chosen as a measure of external or market performance to be derived from other internal financial ratios.

The objective of this empirical exercise is to show that the five selected financial ratios suggested for tracking on the balanced financial scorecard are as accurate, if not more accurate, in predicting MVA as a much larger set of financial ratios. If true, a possible conclusion would be that the ratios included in the balanced financial scorecard should be the financial ratios that top management monitors and to which management gives special attention.

In deciding on the 'best' set of explanatory variables for a regression model, researchers often follow the method of stepwise regression. In this method, one proceeds either by introducing the X variables one at a time or by including all the possible X variables in one multiple regression and rejecting them one at a time. The decision to add or drop a variable is usually made on the basis of the contribution of the variable under consideration in explaining the changes in the dependent variable (the F-score and the R^2 value is frequently used). According to Goldberg & Jochems (1961: 105), stepwise regression, especially when multicollinearity is present, underestimates the contribution of variables not tested first.

It is common for data associated with financial markets to have a high degree of collinearity. This is characterised by a few sources of information in the data that are common to many variables. Collinearity in our dataset can be observed by studying the correlation diagram of the data. Eighty instances of correlation of more than 0.7 between one financial ratio and another can be observed.

Taking into consideration the high level of collinearity in the data and the problems noted with stepwise regression, it was decided to use principal component analysis (PCA) as the statistical method for the study. The principal component analysis tool reduces the many different variables describing a movement or change under investigation to orthogonal dimensions. This assists in overcoming the problems with data where the explanatory variables are highly collinear and the principal component technique can be used to fill in data points for variables where the variables in the system are highly correlated.

Specifically, the last 70 observations of the financial outcome MVA were removed from the data matrix and then backcasted/calculated using PCA based, in the first instance, on all 64 financial ratios. MVA was then backcasted using PCA based on only five selected ratios. The accuracy of the backcasted MVA values were compared with one another.

RESEARCH RESULTS

The 70 MVA values that were backcasted by the PCA statistical engine based on 13 years of observations of the five balanced financial scorecard ratios were extremely accurate. The results are surprising, as previous studies had shown that it is very difficult to predict external market variables by using internal accounting derived information.

Figure 4 suggests that the backcasted results based on the five balanced scorecard variables track the actual data values very well. The performance of all the accounting variables in backcasting the missing MVA variables is not nearly as good. This visual conclusion is confirmed by the root mean square error (RMSQE) of the missing MVA values backcasted by the PCA engine based on the five balanced financial scorecard variables being equal to R12 051 817. This is substantially less than the RMSQE of the missing MVA values backcasted by the PCA engine based on all the accounting variables, which is equal to R22 099 430 (Table 2).

It was initially intended to build the PCA backcasting engine on only ten years of data. When this was done, the results changed substantially. In this instance, the accuracy of the backcast based on the five balanced financial scorecard ratios was worse than the backcast based on all the accounting ratios. The accuracy of the backcast using all the accounting ratios was also relatively stable across the move from 13 years' worth of data to ten years' worth of data. As mentioned, the results for the backcast using the balanced financial scorecard were not very stable and the accuracy declined by a huge margin over ten years.

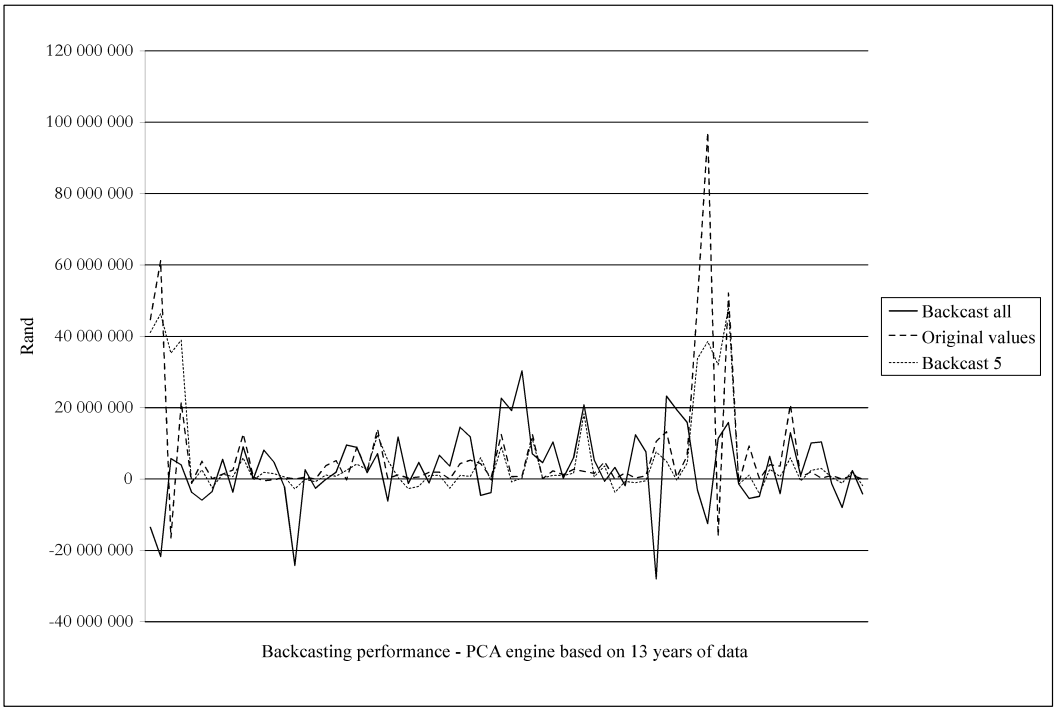


Figure 4: Backcasting results based on (1) all the accounting variables and (2) the five balanced scorecard variables

Table 2: Accuracy of different backcasts

Matrix name	Number of ratios in matrix (excluding MVA)	Type of matrix	R^2 of PCs included in back casting model (%)	No. of PCs used to backcast	RMSQE (Rand)
A	5	13 years of data used. Backcast with balanced financial scorecard ratios.	100	5	12 051 817
B	64	13 years of data used. Backcast with all ratios.	97	30	22 099 430
C	5	10 years of data used. Backcast with balanced financial scorecard ratios.	100	5	27 598 194
D	64	10 years of data used. Backcast with all ratios.	97	30	20 892 399

Interpretation of results

The focal point of this empirical exercise was to show that a carefully selected group of a few internal accounting ratios can be effectively used instead of a large group of detailed accounting ratios. The results, especially the long-term results, indicate that this is certainly worthy of consideration, as the forecasting ability of the large group and the smaller group is of the same order with the balanced financial scorecard ratios, outperforming traditional accounting ratios over the long term.

The remarkable accuracy achieved over the longer term by using the balanced financial scorecard ratios to backcast MVA and the subsequent disappearance of that ability over the ten-year period is more difficult to explain. A possible answer might lie in the South African business cycle, which, according to Smit (2003: 2), entered an upswing in June 1993 that lasted until December 1996 (the stock market, our ultimate data source, usually leads the business cycle). The difference between the ten-year data set and the 13-year data set is the exact period from January 1993 until December 1995. We believe that over the long term, the selected balanced scorecard ratios have predictive ability, and that over the short term, other factors dominate market movements.

CONCLUSION AND RECOMMENDATIONS

The balanced scorecard approach to evaluating corporate performance has certainly advanced the ability of management to add value to shareholders in the long term. However, the financial component of the balanced scorecard lagged behind in terms of reflecting the latest developments in financial management and contributing to the goal of maximising shareholder value.

The initial measures that Kaplan & Norton (1992: 76) considered important from a financial perspective were cash flow, sales growth, operating income, market share and ROE. New developments in financial management theory, which somehow need to be reflected in an appropriate financial perspective, include the shareholder value (SVA) model of Rappaport (1986: 76), the EVA and MVA concepts popularised by Stewart (1991: 153) and Stern (1993: 36), and the financial strategy matrix developed by Hawawini & Viallet (1999: 507).

In this paper, an updated approach is suggested for the financial component of the balanced scorecard based on the latest financial management theory. Recent research from various sources indicated the need to retain some measure of cash flow and sales growth from the original suggestions of Kaplan & Norton (1992: 76) and to augment these with three measures of value-creation, namely spreads, invested capital and EVA. Spreads represent a component of EVA (as does invested capital), but it was decided to include EVA as well as spreads and invested capital in order to have

absolute measures of value-creation, namely EVA and invested capital, as well as a relative measure of value creation, namely spreads. Being a relative measure of financial performance, spreads are ideal for the purposes of comparison between different companies. The statistical technique of principal component analysis was used to show that the five chosen financial ratios, the ratios suggested for tracking on the balanced financial scorecard, are as accurate or more accurate in predicting MVA as a much larger set of financial ratios.

Clearly, the 'holy grail' of a single reliable financial performance measure does not exist or has not been found. At least research to date has shown that some combination of measures would be required for a balanced financial view. It is concluded that the suggested balanced financial scorecard better predicts shareholder value (MVA) than traditional accounting ratios over the long-term. It is therefore recommended that as far as the financial perspective of the balance scorecard is concerned, traditional accounting measures be replaced by the real drivers of shareholder value, including EVA, spreads and invested capital. Other combinations of measures could undoubtedly be just as, or more, effective in measuring the drivers of shareholder value. Even so, it is believed that the suggested balanced financial scorecard, as part of a larger overall balanced scorecard, could make a significant contribution towards more elegant financial navigation.

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