EVA versus traditional accounting measures of performance as drivers of shareholder value – A comparative analysis

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Abstract

Several researchers and practitioners, notably Stern Stewart Consulting Company and Associates, have claimed that economic value added (EVA) is superior to traditional accounting measures in driving shareholder value. Other researchers have refuted these claims by supplying data in support of traditional accounting indicators such as earnings per share (EPS), dividends per share (DPS), return on assets (ROA) and return on equity (ROE). This study endeavoured to analyse the results of companies listed on the JSE Securities Exchange South Africa, using market value added (MVA) as a proxy for shareholder value. The findings do not support the purported superiority of EVA. The results suggest stronger relationships between MVA and cash flow from operations. The study also found very little correlation between MVA and EPS, or between MVA and DPS, concluding that the credibility of share valuations based on earnings or dividends must be questioned.

Key words

Dividends per share (DPS)
Economic Value Added (EVA)
Earnings per share (EPS)
Market value added (MVA)
Return on assets (ROA)
Return on Equity (ROE)

1 Introduction

The usefulness of traditional accounting measures, such as earnings per share (EPS), return on assets (ROA) and return on equity (ROE), and their effect on shareholder (market) value, have been discussed for some time. Since the 1990s, strong arguments have been raised in favour of economic value added (EVA) as an accounting measure, mainly by the Stern Stewart Consulting Company and Associates (Stewart 1991:215; Stern 1993:36).

The purpose of this article was to use data from South African listed companies to investigate the strength of the relationship between EVA and other traditional accounting measures relative to market value added (MVA), and to compare the findings with those of

studies already published elsewhere. The results are of interest to financial managers and analysts because a way to identify the driver(s) of value with the strongest impact on MVA may be extremely helpful in developing financial strategies that can optimize value creation for shareholders. The approach that was followed was to use a 'clean' sample of locally listed companies for which all the required data is available for the specified period under review (the ten years from 1995 to 2004).

It can be proven theoretically that EVA is superior to other measures of performance (excluding residual income), on the grounds that it accounts for the full cost of capital, including the cost of equity. It is therefore a measure of pure economic profit; in other words, it reflects the full cost of the limited (capital) resources used by a company during a given period. Whether EVA is a new concept or not is debatable, because the residual income measure, introduced many years prior to EVA, is conceptually the same type of measure. The difference between EVA and residual income lies in the adjustments required to the net assets and operating profits for the calculation of EVA.

A survey of the available literature on this topic indicates that several studies have concluded that EVA has a stronger correlation with MVA than the other accounting measures tested. Supporters of EVA include O'Byrne (1996:119), Uyemura, Kantor and Pettit (1996:98) and Grant (1996:44, 1997:39). However, after initial strong support for EVA, some criticism of EVA has arisen, and some research results have been published that indicate that EVA does not explain MVA better than other measures. Researchers who have criticised EVA include Kramer and Pushner (1997:41), Makelainen (1998:21) and Biddle, Bowen and Wallace (1999:69).

2 Structure of the article

The article is divided into the following sections:

the calculation of EVA and MVA and the link between EVA and MVA;

research in support of EVA as the best driver of MVA;

criticisms of EVA and MVA;

summary of existing research results and South African research on EVA and MVA;

a South African empirical study; and

a conclusion.

3 The calculation of EVA and MVA and the link between EVA and MVA

A company's total market value is equal to the sum of the market value of its equity and the market value of its debt. In theory, this amount is what can be 'taken out' of the company at any given time. The market value added (MVA) is the difference between the total market value of the company and the economic capital (Firer 1995:57; Reilly & Brown 2003:591). The economic capital, also called the invested capital (IC), is the amount that is 'put into' the company and it basically refers to the fixed assets plus the net working capital.

MVA = Market value of company – IC

From an investor's point of view, MVA is the best external measure of a company's performance. Stewart (1991:153) states that MVA is a cumulative measure of corporate performance and that it represents the stock market's assessment from a particular time onwards of the net present value (NPV) of all a company's past and projected capital projects. The MVA is calculated at a given moment, but, in order to assess performance over time, the difference or change in MVA from one date to another can be determined to see whether value has been created or destroyed.

EVA is an internal measure of performance that determines MVA. Stewart (1991:153) defines EVA as follows: 'A company's EVA is the fuel that fires up its MVA.' EVA takes into account the full cost of capital, including the cost of equity. The concept of EVA is a measure of economic profit which was popularized and originally trade-marked by the Stern Stewart Consulting Company in the 1980s.

The calculation of EVA is very similar to that of the well-known 'residual income' measure used as a benchmark of divisional performance for some time. Horngren, Datar and Foster (2003:790) and Garrison, Noreen and Seal (2003:616) have compared EVA to residual income and other performance measures and they describe the growing popularity of EVA.

EVA is calculated as follows:

EVA = (ROIC - WACC) x IC

where

ROIC = return on invested capital

WACC = Weighted Average Cost of Capital

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

The ROIC minus the WACC is also called the 'return spread'. If the return spread is positive, it means the company is generating surplus returns above its cost of capital and this translates into a higher MVA. Lehn and Makhija (1996:34) describe EVA as follows: 'EVA and related measures attempt to improve on traditional accounting measures of performance by measuring the economic profits an enterprise – after-tax operating profits less the cost of the capital employed to produce those profits.'

The link between EVA and MVA is that MVA is the present value of all the future EVAs a company is expected to generate, discounted at the WACC:

MVA = PV (all future EVAs)

Hawawini and Viallet (1999:503) define MVA as follows:

MVA = EVA / (WACC – constant growth rate)

It therefore stands to reason that the external measure of performance (MVA) can be maximised by maximising the internal measure of performance, the EVA.

4 Research in support of EVA as the best driver of MVA

4.1 *The pioneering studies of Stewart*

According to Stewart (1991:215), financial analysts Stern Stewart & Co. started tracking the best 1000 industrial and services companies in the United States of America (USA) in

1989, after he had become disillusioned with the company rankings of the magazine *Business Week* at the time. These rankings were based on market capitalization and not on performance. Stern Stewart & Co. began to rank companies based on MVA. As they had expected, the new rankings were dramatically different from the *Business Week* rankings.

Taking the Stern Stewart 1000 companies as a point of departure and eliminating some companies for various reasons, such as incomplete information, Stern Stewart & Co. did some research on the EVA and MVA of 613 companies in the USA. The companies were ranked in terms of the average EVA for 1987 and 1988. The study was based on the average EVA and MVA for each of 25 groups of companies (making up the 613), as well as on changes in EVA and MVA. The groups were made up according to the companies' rankings in terms of average EVA.

The research found that for companies with a positive EVA, there was a very high level of correlation (as indicated by r^2) between the level of EVA and the level of MVA, both for the average values used and the changes in values. The averages (per group of 25 companies) of the 1987 and 1988 EVA values showed an r^2 of 97%, relative to the 1988 MVA values. The relationship for the changes in values was even better than that for the average values.

For the groups of companies with a negative EVA, the correlation between the EVA and MVA levels was not as good. Stewart's (1991) explanation for this was that the market value of shares always reflects at least the value of net assets, even if the company has low or negative returns. The potential for liquidation, recovery, recapitalisation or a takeover sets a floor on the market value (in other words, the market value does not drop far below the net asset value).

4.2 *Finegan's extensions of the EVA and MVA applications*

Finegan (1991:36) extended the initial analysis discussed above to include other measures. He focused on the middle 450 companies (actually 467 companies out of the original 613) where the MVAs were 'tightly clustered' and compared the power of EVA to that of more conventional measures such as EPS, growth in capital, return on capital and even growth in cash flow.

The results of the regression of MVA against EVA and other common performance measures showed that EVA outperformed the other measures quite considerably with an r^2 of 61%, compared to the second best other measure, which was return on capital, with an r^2 of 47%. The explanatory power of EVA was found to be six times better than that of growth in EPS.

Finegan (1991:36) then repeated the analysis of changes in MVA and again found EVA to be superior to the other measures. The r^2 of changes in EVA was 44%, compared to an r^2 of 35% for changes in return on capital, which was the measure that came closest to EVA in terms of its explanatory power. In this analysis, the r^2 of EVA was about three times better than that of changes in EPS growth.

4.3 *Stern's comparison of EVA with popular accounting measures*

Stern (1993:36) argues that the key operating measure of corporate performance is not popular accounting measures such as earnings, earnings growth, dividends, dividend growth, ROE, or even cash flow, but in fact EVA. The changes in the market value of a

selected group of companies (specifically their MVAs) have been shown to have a relatively low correlation with the above accounting measures.

His research showed that the r^2 for the relationship between MVA and various independent variables ranged from 9% for turnover growth to 25% for ROE rates. By comparison, the r^2 for EVA relative to MVA was 50%. All the results were based on averages and they are set out in Table 1.

Table 1 MVA *vs* other financial performance measures

Correlation with MVA	r^2
EVA	50%
ROE	25%
Cash flow growth	22%
EPS growth	18%
Asset growth	18%
Dividend growth	16%
Turnover growth	9%

Source: Adapted from Stern (1993:36)

4.4 *Lehn and Makhija's work on EVA, MVA, share price performance and CEO turnover*

Lehn and Makhija (1996:36) conducted a study to find out how well EVA and MVA relate to share price performance and to see whether chief executive officer (CEO) turnover (the number of new CEOs during a given period) is related to EVA and MVA. They selected 241 large US companies and gathered information about them for the four years 1987, 1988, 1992 and 1993. About two thirds of the companies operated in the manufacturing industry.

Six performance measures were computed per company for each of the four years, namely three accounting rates of return (ROA, ROE and return on sales [ROS]), share returns (dividends and changes in share price), EVA and MVA. All six measures correlated positively with share returns. EVA correlated slightly better with the share returns than the other measures did.

Lehn and Makhija's findings regarding EVA, MVA and CEO turnover revealed that the CEOs of companies with high EVAs and MVAs had much lower rates of dismissal than CEOs responsible for low EVAs and MVAs. As expected, a strong inverse relationship was found between share prices and CEO turnover. The CEO turnover rate for companies with share returns above the median was 9.6%, compared to a 19% turnover for companies with share returns below the median.

In their study of the relationship between EVA, MVA and corporate focus, Lehn and Makhija (1996:36) distinguished between companies that focus on their core business and ones that diversify and become conglomerates in the hope of exploiting economies of scale. Their research showed that companies with an above median focus earn an average share return of 31.2%. Firms with a below median focus earn 25%. These findings prove that a greater focus on business activities leads to higher levels of EVA and MVA.

Lehn and Makhija (1996:36) have concluded that EVA and MVA are effective performance measures that contain information about the quality of strategic decisions and that serve as signals of strategic change.

4.5 *O'Byrne's findings on EVA's link to market value and investor expectations*

O'Byrne (1996:119) used nine years of data (for the period from 1985 to 1993) for companies in the 1993 Stern Stewart Performance 1000 to test the explanatory power of capitalized EVA (which is EVA divided by the cost of capital), net operating profit after tax (NOPAT), and free cash flows (FCFs) relative to market value divided by IC. His initial findings showed that FCF explained 0% of the change in the market value divided by the capital ratio, while the r^2 was 33% for NOPAT and 31% for EVA. It looked as if NOPAT and EVA had almost the same explanatory power.

Two adjustments were made to the original model of Stern and Stewart. The first adjustment allowed for the fact that the EVA multiples were bigger for companies with a positive EVA than the EVA multiples for companies with a negative EVA. The second adjustment allowed for different capital multiples for different capital sizes, in other words, a bigger multiple was used for companies with more invested capital. This adjusted model showed that EVA explained 31% of the variance in market values, compared to the 17% explained by NOPAT.

After making a further adjustment, by analysing the changes in the variables, changes in EVA explained 55% of the five-year changes in market value, compared to 33% explained by NOPAT. The corresponding figures for ten-year changes in market value were 74% explained by changes in EVA, compared to 63% explained by NOPAT.

O'Byrne (1996:119) concluded that EVA, unlike NOPAT or other earnings measures, is systematically linked to the market value and that EVA is a powerful tool for understanding the investor expectations that are built into a company's current share price.

4.6 *Uyemura et al.– EVA and wealth creation*

Uyemura *et al*. (1996:98) used a sample of the 100 largest US banks for the ten-year period from 1986 to 1995 to calculate MVA and to test the correlation with EVA, as well as four other accounting measures, namely net income (amount), EPS, ROE and ROA. The results of their regression analysis are set out in Table 2.

Table 2 Correlation of different performance measures with shareholder wealth

Performance measure	r^2
EVA	40%
ROA	13%
ROE	10%
Net income (amount)	8%
EPS	6%

Source: Uyemura *et al*. (1996:98)

The analysis above clearly shows that EVA is the measure that correlates the best by far with shareholder wealth creation. In an alternative approach where changes in the performance measures were regressed against standardised MVA, the results were not very different. Standardised EVA (EVA divided by capital) again had an r^2 of 40%, while for ROA it was 25%, for ROE it was 21%, for net income it was 3% and for EPS it was 6%.

4.7 *Grant's analysis of relative EVA and relative capital invested*

Grant (1996:44, 1997:39) studied the relationship between MVA divided by capital and EVA divided by capital for 983 companies selected from the Stern Stewart Performance 1000 for 1993 and 1994. The results for 1993 showed an overall r^2 of 32% for all the companies. For the 50 largest US wealth creators, the r^2 was 83%. For the 50 biggest US wealth destroyers, it was only 3%.

When the same tests were repeated for 1994, they showed that the r^2 was 74% for the 50 largest wealth creators and 8% for the 50 largest wealth destroyers. This is in line with the findings of other researchers. These findings revealed a high level of correlation between MVA and EVA for companies with a positive EVA, but low levels of correlation for companies with a negative EVA.

Grant (1996) found that the real corporate profits should be measured relative to the amount of capital needed to generate that level of profitability. This insight led him to use standardised values for EVA and market value, instead of absolute values. He concluded that his empirical results indicate that EVA has a significant impact on a company's MVA. The value of a company responds to variations in both the near-term EVA outlook and movements in the long-term EVA growth rate.

4.8 *Milunovich and Tsuei's study on the use of EVA and MVA in the US computer industry*

Milunovich and Tsuei (1996:111) investigated the correlation between frequently used financial measures (including EVA) and the MVA of companies in the US computer technology industry (so-called 'server-vendors') for the period from 1990 to 1995. The results of their study are set out in Table 3.

Table 3 Correlation of different performance measures with MVA in the US computer technology industry

Performance measure	r^2
EVA	42%
EPS growth	34%
ROE	29%
Free cash growth	25%
FCF	18%

Source: Milunovich and Tsuei (1996:111)

Clearly EVA demonstrated the best correlation and it would be fair to infer that a company that can consistently improve its EVA should be able to boost its MVA and therefore its shareholder value.

Milunovich and Tsuei (1996:111) argue that the relatively weak correlation between MVA and FCF is due to the fact that FCF can be a misleading indicator. They point out that a fast-growing technology start-up company with positive EVA investment opportunities and a loss-making company on the verge of bankruptcy can have similar negative cash flows. They concluded that growth in earnings is not enough to create value, unless returns are above the cost of capital. They are of the opinion that EVA works best as a supplement to other measures when one is evaluating shares and that EVA sometimes works when other measures fail.

5 Criticisms of EVA and MVA

5.1 *Kramer and Pushner's findings against EVA*

Kramer and Pushner (1997:41) studied the strength of the relationship between EVA and MVA, using the Stern Stewart 1000 companies for the period between 1982 and 1992. They found that although MVA and NOPAT were positive on average, the average EVA over the period was negative. This illustrated the significant impact of the cost of capital and the high future growth expectations for EVA.

The regression between the levels of MVA and the levels of EVA yielded an r^2 of 10%, which was significant, but left a large part of the MVA unexplained. Kramer and Pushner (1997:41) then proceeded to run regressions of MVA for the same period and lagged levels of EVA and NOPAT. They found that in all cases NOPAT explained more of the total variation in market value than EVA did.

When the regression above was expanded to incorporate changes in MVA and changes in EVA and NOPAT, it was found that changes in EVA were negatively related to changes in MVA, while the correlation between changes in MVA and changes in NOPAT was positive. These authors suggest that this means that the market is more likely to react favourably to profits than to EVA, at least in the short term. They found no clear evidence to support the general idea that EVA is the best internal measure of shareholder value creation. In fact, from their studies it seems as if the market is more focused on profits than on EVA. They also suggest that compensation schemes must rather be tied to profits than to EVA.

5.2 *Dodd and Chen's investigation of the explanatory power of EVA*

Dodd and Chen (1996:27) used the 1992 Stern Stewart 1000 database as a starting point and added some supplementary data for the ten years from 1983 to 1992. They gathered complete data for 566 US companies and set out to test the claim that EVA is a superior measure of shareholder value performance.

Although they did find a correlation between share returns and EVA (an r^2 of 20%), it was not as high as the r^2 of share returns and ROA, for which the r^2 was 25%. The r^2 for the other accounting measures tested, namely EPS and ROE, was very low (between 5% and 7%).

Based on the data for this large number of companies over as long a period as 10 years, it appears that EVA does not relate well to share returns. The results that Dodd and Chen (1996) obtained imply that 80% of changes in share returns could not be accounted for by changes in EVA. In their study (bearing in mind that unadjusted data were used), the ROA displayed a better explanatory ability than EVA did.

Dodd and Chen (1996:27) also found that residual income, which is similar to EVA, except for the adjustments required to deal with the so-called accrual accounting distortions, gave results almost identical to those achieved using EVA. The r^2 of residual income relative to share returns was 19%, compared to EVA's r^2 of 20%.

Even when more complete multiple regression models were used, the results for the two measures were almost the same. The r^2 for EVA-based measures was 41%, compared to a

similar r^2 of 41% for residual income-based measures. Dodd and Chen (1996) concluded that EVA and residual income performance measurement systems would, in general, yield similar results.

5.3 *Biddle et al. find a lack of support for EVA*

Biddle *et al*. 1999:69) state that numerous claims have been made about EVA and MVA, most based on 'anecdotal evidence' or 'in-house studies'. They endeavoured to present 'independent research' covering a sample of more than 600 companies for the period from 1984 to 1993.

Their findings showed that current period accounting earnings (also called net income, or NI) is significantly more highly associated with market-adjusted annual share returns (an r^2 of 13%) than residual income (an r^2 of 7%) and EVA (an r^2 of 6%). The r^2 of cash flows from operations was an almost insignificant 3%. Their results show no evidence that EVA is superior to earnings in its association with share returns.

Biddle *et al*. (1999:69) actually reworked some previous research by O'Byrne (1996:119) (see Section 2.5). When they applied some adjustments in a consistent manner, they found a better correlation between net income and firm value (r^2 of 53%) than with the EVA regression (an r^2 of 50%). Again no support was found for the contention that EVA outdoes earnings in terms of its relevance for value.

The median values of EVA and residual incomes calculated for the period from 1988 to 1997 did not differ much from the above results. Biddle *et al*. (1999:69) concluded that the net effect of Stern Stewart Consulting Company's accounting adjustments is not significantly large on average.

6 Summary of existing research results and South African research on EVA and MVA

The two preceding sections discussed some of the research evidence used to support or oppose EVA as the best driver of shareholder value. Other authors who support EVA include Makelainen (1998:15) and Kleiman (1999:80). Some of the authors who do not support EVA are Keef and Roush (2002:20) and Ramezani, Soenen and Jung (2002:56).

Closer scrutiny particularly of results in support of EVA reveal that techniques like averaging and clustering have been used in order to improve the significance of the statistical relationships. At this juncture, at best, one could say that there was strong initial evidence in favour of EVA. However, subsequent findings (and such findings are growing in number) have raised some questions about the superiority of EVA. Some findings have even provided evidence that profits have greater explanatory power than EVA does. When the big picture is considered, taking into account all the cumulative findings to date, there is no conclusive proof that EVA is a better measure of corporate performance than other accounting benchmarks.

Hall (1998:198) investigated the relationship between MVA and EVA, as well as other financial ratios such as ROA, ROE and EPS for listed South African companies. The study was done on the top 200 companies listed on the JSE for the period from 1987 to 1996. The sample included only industrial sector companies (financial, investment and mining sector

companies were excluded). Companies with thinly traded shares were also not included in the sample, as this would have affected the reliability of the estimated WACC calculations.

Hall's (1998:198) study found relatively low correlation coefficients on the whole. The highest correlation was that between MVA and discounted EVA, with inflation adjustments to the data. He ascribes the low correlation to the fact that no distinction was made between companies that create wealth and those that destroy wealth. He cites Grant (1997:44), who had done a similar regression exercise and found a more significant correlation after splitting his sample between the top 50 wealth creators and the worst 50 wealth destroyers.

Based on his findings that EVA shows the best correlation with MVA, Hall (1998:198) also analysed the value drivers of EVA and proceeded to do stepwise regression between EVA and a number of independent variables.

7 A South African empirical study

7.1 *Research method*

The source for the data used in the study was the McGregor's BFA at the University of Pretoria. As a first step, it was decided to use all the companies listed on the JSE on 31 March 2005, a total of 347.

Next, it was decided that for the purposes of this study, only industrial companies would provide the required information to determine the critical variables for the analysis. There were 220 industrial companies listed.

The next criterion was the availability of data. In order to have complete, calculated data for the ten-year period from 1995 to 2004, the raw data on each company had to be available for the full eleven-year period from 1994 to 2004 for each company. After the elimination of companies with incomplete data, 97 remained.

The final requirement for inclusion in the database was that the data had to be reliable. This aspect was pertinent to this study because the beta factor used in the determination of the cost of equity and the WACC cannot be determined reliably for companies with thinly traded shares. For this reason, all companies with thinly traded shares were eliminated from the database. Companies for which the average ordinary share trading volume was below 500 000 shares per year for the eleven years from 1994 to 2004 were excluded. The number of companies that remained in the final database was 89.

A standardised measure of external performance, MVA divided by the invested capital at the beginning of the period (MVA/IC_{beg}) was used instead of the MVA itself. The different internal performance measures to be used for the regression analysis were

the performance spread, or 'Spread', which is a standardised EVA (EVA/IC_{beg});

the cash flow from operations (after tax, but before interest and dividends) standardised as CFL/IC_{beg};

the return on assets, or ROA;

the return on equity, or ROE;

the earnings per share (EPS); and

the ordinary dividends per share (DPS).

The regression analysis was done for each of the six items mentioned above, one at a time, relative to the standardized MVA over the ten-year period from 1995 to 2004, on a year-on-year basis. The ROIC (required to determine the EVA) was calculated by dividing the net operating profit after tax (NOPAT) by the IC at the beginning of the year and expressing it as a percentage.

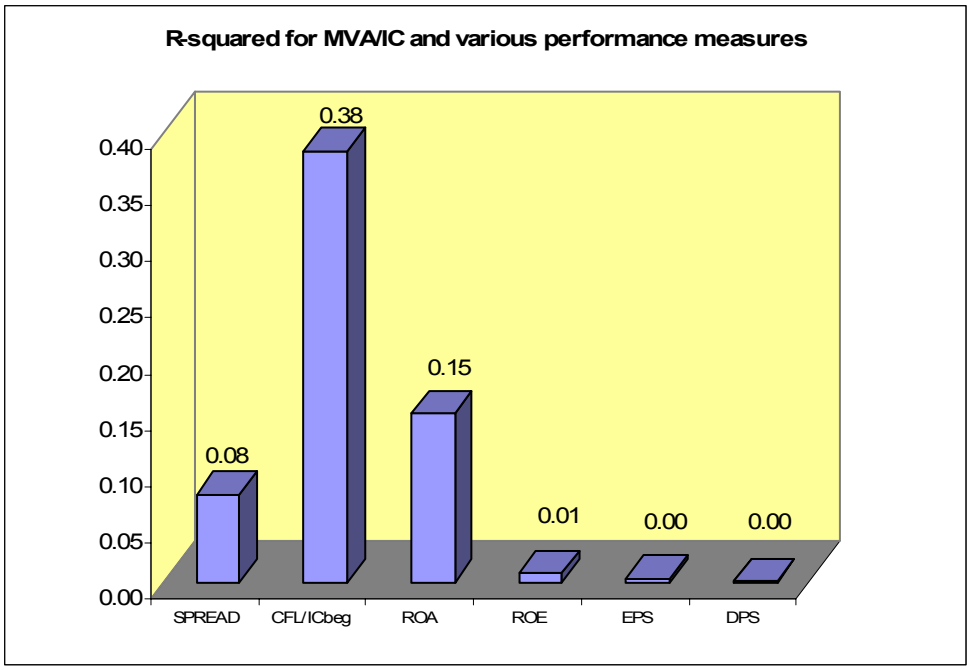
The WACC was determined by using appropriate weights (in terms of market value) for each component of long-term capital. A risk-free rate, the market premium and a beta-factor were used in the capital asset pricing model (CAPM) to calculate the cost of equity. The government bond R150 was used as a proxy for the risk-free rate and an estimated 6% was used as the market premium. The beta-factor was automatically calculated by the BFA database system. For the other components of long-term capital, such as long-term loans, the appropriate after-tax cost was used.

The spread, also called the 'return spread', was determined by subtracting the WACC from the ROIC. The EVA was calculated by multiplying the spread with the IC. The EVA was determined for a given year and was expressed as an amount in Rands.

7.2 *Research results*

The results of the regression analysis are set out in Figure 1 and in Figure 2.

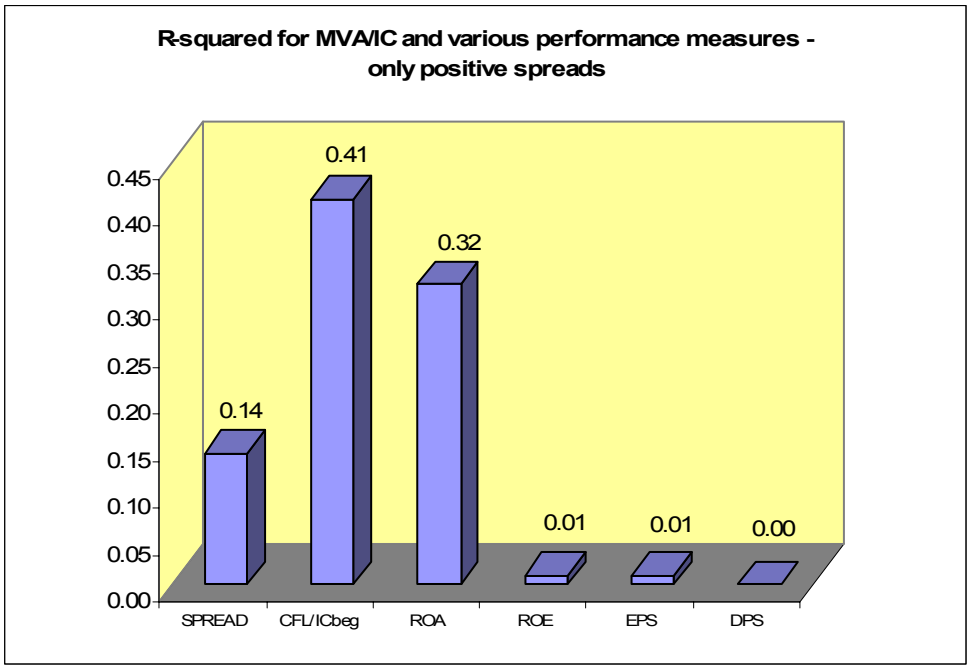
Figure 1 The coefficient of determination (r^2) of standardised MVA *vs* various financial performance measures



The results of the regression analysis show that it is not the spread (r^2 of 8%) that has the strongest correlation with market value, but the standardised cash flow from operations (r^2 of 38%). It is interesting to note that the ROA (r^2 of 15%) correlated better with MVA than

the spread (with MVA) and that the relationships of MVA with EPS and DPS were insignificant. Regressions run only for the data in the years when the spreads were positive showed slightly better results (for spreads relative to MVA/IC_{beg}) than those shown in Figure 1 and they are set out in Figure 2.

Figure 2 The coefficient of determination (r^2) of standardised MVA *vs* various financial performance measures – positive spreads only



More detailed information about each regression analysis (using all data) and specifying a confidence interval of 95% is presented in Tables 4 to 9.

It is interesting to note that in the South African study, the correlation between MVA and EPS and DPS was insignificant. Considering the fact that both earnings and dividends are still frequently used as a basis for share valuations, the findings cast some doubt on the reliability of these methods of valuation for South African listed companies.

Table 4 MVA/IC$_{beg}$ and Spread

Summary output

Regression Statistics	
Multiple R	0.278145812
R Square	0.077365093
Adjusted R Square	0.076420737
Standard Error	6.700937181
Observations	979

Anova

	df	SS	MS	F	Significance F
Regression	1	3678.585242	3678.585242	81.92373253	7.49149E-19
Residual	977	43869.80024	44.9025591		
Total	978	47548.38549			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1.14587676	0.217737815	5.26264471	1.74554E-07	0.718589157	1.573164363
X Variable 1	7.807250731	0.862567839	9.051172992	7.49149E-19	6.114551901	9.499949561

Table 5 MVA/IC$_{beg}$ and CFL/IC$_{beg}$

Summary output

Regression Statistics	
Multiple R	0.618516886
R Square	0.382563139
Adjusted R Square	0.381931166
Standard Error	5.481720428
Observations	979

Anova

	df	SS	MS	F	Significance F
Regression	1	18190.25958	18190.25958	605.3480277	2.0858E-104
Residual	977	29358.1259	30.04925886		
Total	978	47548.38549			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.928989969	0.20112828	-4.618892834	4.37341E-06	-1.323683103	-0.534296836
X Variable 1	11.69790428	0.475450707	24.60382141	2.0858E-104	10.76488218	12.63092638

Table 6 MVA/ICbeg and ROA

Summary output

Regression Statistics	
Multiple R	0.386929877
R Square	0.149714729
Adjusted R Square	0.148844427
Standard Error	6.432842725
Observations	979

continued

Anova

	df	SS	MS	F	Significance F
Regression	1	7118.693667	7118.693667	172.0261372	2.56507E-36
Residual	977	40429.69182	41.38146553		
Total	978	47548.38549			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-1.309195835	0.20611687	6.351716078	3.25817E-10	0.904713117	1.713678554
X Variable 1	0.086901326	0.006625661	13.11587348	2.56507E-36	0.073899163	0.099903489

Table 7 MVA/IC$_{beg}$ and ROE

Summary output

Regression Statistics	
Multiple R	0.082850146
R Square	0.006864147
Adjusted R Square	0.005847631
Standard Error	6.95224288
Observations	979

Anova

	df	SS	MS	F	Significance F
Regression	1	326.3790904	326.3790904	6.752622256	0.009501997
Residual	977	47222.00639	48.33368106		
Total	978	47548.38549			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1.397899895	0.225745292	6.192376725	8.71577E-10	0.954898458	1.840901332
X Variable 1	0.344561101	0.132595876	2.598580816	0.009501997	0.084355613	0.604766588

Table 8 MVA/ICbeg and EPS

Summary output

Regression Statistics	
Multiple R	0.055887373
R Square	0.003123398
Adjusted R Square	0.002103054
Standard Error	6.965323742
Observations	979

Anova

	df	SS	MS	F	Significance F
Regression	1	148.5125551	148.5125551	3.06112142	0.080500243
Residual	977	47399.87293	48.51573483		
Total	978	47548.38549			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1.757949709	0.266524425	6.595829656	6.91637E-11	1.234923504	2.280975913
X Variable 1	-0.179084794	0.102357209	-1.749606076	0.080500243	-0.379950071	0.021780482

Table 9 MVA/ICbeg and DPS

Summary output

Regression Statistics	
Multiple R	0.020189329
R Square	0.000407609
Adjusted R Square	-0.000615515
Standard Error	6.9748051
Observations	979

Anova

	df	SS	MS	F	Significance F
Regression	1	19.38114961	19.38114961	0.398396378	0.528066232
Residual	977	47529.00434	48.64790618		
Total	978	47548.38549			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1.5318271	0.228024	6.717832774	3.12737E-11	1.084353939	1.979300262
X Variable 1	-0.040349948	0.063927142	-0.631186484	0.528066232	-0.165800253	0.085100357

8 Conclusion

A review of research to date on the relationship between MVA and EVA has shown mixed results. Some initial studies indicated that EVA does indeed have greater power to explain market value than other traditional accounting measures do. However, subsequent studies have contradicted these findings and have produced findings that support the claim that traditional accounting indicators are superior to EVA in explaining changes in market value.

A study based on the data of companies listed on the JSE South Africa for the period from 1994 to 2004 revealed that on a year-on-year basis, EVA did not show the strongest correlation with MVA. It is acknowledged that only 89 industrial companies were included in the final sample and that this imposes a limitation on the conclusions that can be drawn. However, of the performance indicators chosen for the study, the changes in the standardised cash flow from operations (CFL/IC_{beg}) explained the biggest percentage of changes in standardised MVA (38%). ROA came second best (15%) and standardised EVA (8%) third.

When data in the years when spreads were negative were left out, the results were only slightly better, with no difference in the ranking of the indicators. Hawawini and Viallet (1999:503) state that MVA is actually equal to the present value of all future expected EVAs. Therefore one can expect there not necessarily to be a strong correlation between MVA and EVA on a year-on-year basis. On a practical note, the study has reaffirmed the importance of cash flow management. The findings suggest that some caution is merited when focusing only on EVA as the measure of choice for internal company performance.

Another interesting finding of the South African study was the insignificant correlation between MVA and EPS and DPS. Considering the fact that both earnings and dividends are still frequently used as the basis for share valuations, one can infer that, at least for locally listed companies, these valuation methods are unreliable in the extreme.

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