ECONOMIC VALUE-ADDED IN THE MALAYSIAN LISTED COMPANIES: A PRELIMINARY EVIDENCE

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ABSTRACT

This study examines the nature and characteristics of Economic Value-Added (EVA) in 100 largest non-financial companies listed on the Malaysian stock exchange, and to assess its impact on stock value. The evidence suggests that, in general, the EVA has a superior influence over firms' market values compared to the traditional accounting measures such as the earnings per share. Its superiority becomes more apparent when regression tests are conducted separately for companies with positive EVA (value creators) and those with negative EVA (value destroyers). There is a strong positive relationship between EVA and market values for value creators, while the relationship is negative for value destroyers. The negative relationship for value destroyers is inconsistent with expectations and may be sample and period specific.

INTRODUCTION

In recent years, Economic Value Added (EVA) has gained significant attention as an alternative to traditional accounting measures for use in corporate performance, company valuation as well as incentive compensation. Much of this publicity may be attributed to a September 20, 1993 article in the Fortune magazine (Tully 1993), which mentions that that managers and investors are handsomely rewarded when they consider EVA in their decisions. EVA is touted as being today's hottest financial idea and getting hotter, and EVA is praised for its strong link to stock prices (Tully 1993).

The EVA, however, is not a new concept. The need to earn more than the cost of capital is actually one of the oldest ideas in business (Hamilton 1777, Marshall 1890). EVA is a variant of the residual income concept, which has been around a long time but in many different forms.[1] Marshall (1890) defines residual income as total net gains less the interest on invested capital at the current rate. In short, residual income is the after-tax operating profit minus a charge for invested capital.

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[1] *See for example, (Edey (1957), Edwards and Bell (1961), Kay (1976), Peasnell (1982), and Feltham and Ohlson (1995)).*

It was not until the late 1980s that Joel Stern and Bennett Stewart begin popularising the EVA idea.[2] Stewart (1991) describes EVA as the only measure that tie-in directly to intrinsic market value and the fuel that fires up a premium in the stock market value. Stewart (1991) advocates that EPS should be abandoned, and net income (NI), NI growth and EPS are misleading measures of corporate performance. Ehrbar (1998) lends support by stressing that when EVA becomes the focus for all decisions, it establishes clear and accountable links between strategic thinking, capital investments, operating decisions and shareholder value.

Essentially, proponents of EVA have made two major assertions, that is (1) EVA better explain stock returns and company values than the traditional accounting measures like EPS and ROE, and (2) they better motivate managers to create shareholder wealth. If these assertions are true, then managers should use EVA as a tool for capital budgeting decisions while investment analysts and investors should use EVA to measure corporate performance and value companies.

The value creation concept also has major implications for companies. The Asian financial crisis in 1997 and 1998 points to the existence of value destroyers, that is, companies having negative EVA due to the fact that their investments provide returns below their cost of capital. This is partly due to the top management's preoccupation with growing in size rather than in value. However, as competition for capital intensifies globally, it is expected that the market will drive the emphasis on shareholder value. Furthermore, academic research on EVA, especially on Malaysian companies, remains sparse. Studies conducted overseas especially on U.S. companies, for instance, on the impact of EVA on MVA have produced mixed results. This study hopes to contribute to the small but growing body of research on EVA.

The objectives of this study are to examine the nature and characteristics of EVA in large Malaysian companies listed on the local stock exchange, and to compare the impacts of EVA and traditional accounting measures like EPS on stock value. Stock value is measured using a market-based measure, the Market Value Added (MVA).

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[2] *They register EVA as a trademark of Stern Stewart & Company, a consulting firm that is based in New York City.*

The remainder of this paper is organized as follows. Section 2 provides the EVA framework. Section 3 presents a review of past studies on EVA. Section 4 discusses the research methodology while Section 5 provides and reports the empirical results. Finally, Section 6 concludes the study.

THE EVA FRAMEWORK

Stewart (1991) defines EVA as the net operating profit after tax (NOPAT) in excess of a capital charge taken by the company. Companies that earn NOPAT in excess of the cost of invested capital will have positive EVA. These companies are referred to as "value creators". Those that earn NOPAT less than the cost of invested capital will have negative EVA, and are referred to as "value destroyers".

EVA can be calculated using the following formula:

$$EVA = NOPAT - Capital\ Charge$$

$$EVA = NOPAT - (Invested\ Capital \times WACC)$$

NOPAT is profit arising from a company's operation after depreciation and taxes but before interest and non-cash entries like goodwill amortisation and deferred tax reserve. Indeed, NOPAT is the total pool of profits available to provide a cash return to all financial providers of capital to the company.

Stewart (1991) defines invested capital as total assets minus non-interest bearing current liabilities. Alternatively, invested capital is the amount of debt and equity capital, plus other liabilities in a company. According to Stewart (1991), this is the sum of cash invested in a company's net assets over its life, without regard to financing form, accounting name or business purpose. The cost of capital is measured by the weighted average of cost of capital (WACC).

In practice, computing EVA is far more elaborate depending on the number and type of adjustments made to both Net Income and equity in order to arrive at NOPAT and invested capital respectively. These adjustments are made in order to overcome accounting distortions in the Generally Accepted Accounting Principles (GAAP) practices such as the use of last-in, first-out (LIFO) versus first-in, first-out (FIFO) accounting for inventory, full cost versus successful effort accounting, amortisation of goodwill, treatment of research and development (R&D) costs, and deferred taxation. The adjustments

are also made to ensure a fairer measure of assets employed in the business and that the profits are only those arising from the core business. Stewart (1991) has developed over 160 proprietary adjustments in order to arrive at NOPAT and invested capital.

MARKET VALUE-ADDED

Another performance measure that is frequently used in conjunction with EVA is the Market Value Added (MVA). Stewart (1991) defines MVA as the difference between the total market value of debt and equity of a company and its invested capital. Since in most instances it can be assumed that the market value of debt is equal to its book value, MVA is therefore solely dependent on the market value of equity. Market value of equity is usually determined by multiplying the number of shares outstanding by its market price.

The MVA measure indicates how much value a company has created or destroyed from its shareholders' capital. Successful companies will generate positive MVA and this implies that the company has created value for its shareholders in the long-term. Unsuccessful companies will generate negative MVA and this means that the company has destroyed the value of capital invested by its shareholders in the long-term. MVA, used as a corporate performance measure, therefore fits well with the primary goal of management that is to maximize shareholders' wealth.

THE LINK BETWEEN EVA AND MVA

According to Stewart (1991), MVA is also equal to the market's estimate of the net present value (NPV) of all future EVA. MVA is an external measure that captures the long-term wealth creation potential of a company. The EVA, on the other hand, is the internal measure that is most closely related to MVA. Rearranging the MVA equation, the relationship between MVA and EVA can be expressed as:

$$\text{MVA} = \text{NPV of future EVA}$$
$$= \text{EVA}_1/(1+k)^1 + \text{EVA}_2/(1+k)^2 + \ldots$$

where k is the opportunity cost of capital. This means that companies generating positive EVA should see a rise in their MVA, which in turn should drive up stock prices. Companies generating a stream of negative EVA will lead to lower MVA, which will cause stock prices to decline.

LITERATURE REVIEW

Previous studies in this area are mainly focused to determine the association between EVA and MVA, and whether EVA is a better measure of performance compared to the traditional accounting measures. However, these studies produced mixed results.

The earliest study was by Stewart (1991). His study is based on 613 U.S. companies and data from 1984 to 1988. Stewart finds a striking relationship between EVA and MVA, and between changes in EVA and changes in MVA. For the group of companies with negative EVA, the correlation is less evident. Until EVA becomes positive, market values are decoupled from current internal measures of performance. Stewart claims that adopting the goal of maximizing EVA and EVA growth will ultimately build a premium into the market value of company. In a follow-up study, Stewart (1994) adds that EVA stands out well among the other key performance measures as the single best measure of wealth creation on a contemporaneous basis.

Stewart's conclusions are strongly supported by O'Byrne (1996) and Ehrbar (1998).[3] O'Byrne (1996) studies the relationship between capitalized EVA and NOPAT with market value of the firm. He finds that EVA has a far greater explanatory power to market value compared to other operating performance measures. Ehrbar (1998) makes similar conclusions from his studies. Using the Stern Stewart Performance 1,000 database, he finds that EVA statistically explains about 50% of the movement in a company's MVA.

Other independent studies that support the use of EVA include those by Grant (1996), Lefkowitz (1999), Lehn and Makhija (1996), and Milunovich and Tsuei (1996).

Grant (1996) states that EVA has a significant impact on a company's MVA. In order to neutralize the size effect, Grant studies the relationship between MVA and EVA, using the Stern Stewart Performance 1,000 database for the year 1993. Grant finds that about 32% of the movement in MVA for the U.S. large-capitalization companies is explained by variations in EVA. He also finds that the relationship is

[3] *Both are employees of Stern Stewart & Company.*

very strong for value creators compared to value destroyers. For the fifty largest U.S. wealth creators at year-end 1993, the regression yields an R-square of 83%.

A somewhat similar study is conducted by Lefkowitz (1999). But Leftkowitz concentrates on change in MVA as opposed to the annual amount of MVA used by Grant. He uses the same data set, the Stern Stewart Performance 1,000 database, for the year 1996. Lefkowitz's study reveals that there is evidence of a significant positive linear relationship between EVA and the annual change in MVA.

Lehn and Makhija (1996) support the view that EVA and MVA, like the traditional accounting measures, are effective measures of performance and signals for strategic change. Their study centres on 241 U.S. companies and data in 1987-1988 and 1992-1993. Though not by a large difference, the correlations of both EVA and MVA with stock returns is slightly higher than the correlation of the other traditional accounting measures like return on equity, return on assets and return on sales. They conclude that EVA has a slight edge as a performance measure.

In studying the computer industry, Milunovich and Tsuei (1996) find that EVA correlates better with MVA (adjusted R-square = 42%) than other accounting measures like EPS growth (adjusted R-square = 34%) and EPS (adjusted R-square = 29%).

On the other hand, there is a group of researchers who do not support the contention that EVA is a superior corporate performance and valuation measure. They include Biddle, Bowen and Wallace (1997, 1999), Chen and Dodd (1997), Clinton and Chen (1998), Yau (1996), Peterson and Peterson (1996), and Kramer and Pusher (1997).

Biddle, Bowen and Wallace (1999) state that relative information content tests reveal that net income to be more highly associated with returns and firm values than EVA. Using a sample of 6,174 firm-years over the period 1984-1993, Biddle, Bowen and Wallace find that net income explains about 13% of market-adjusted returns, compared to EVA (adjusted R-square = 6.5%). Replicating and extending O'Byrne's (1996) study, Biddle, Bowen and Wallace find that EVA's superiority does not exist. In fact the net income regression has a higher association with firm value (adjusted R-square = 53%) than the EVA

regression (adjusted R-square = 50%). The authors add that while the charge for capital and Stern Stewart's adjustments for accounting distortions show some marginal evidence of being incrementally important, this difference does not appear to be economically significant.

Chen and Dodd (1997) acknowledge that EVA measures provide relatively more information than traditional accounting measures in terms of the strength of their associations with stock returns. However, Chen and Dodd state that EVA and residual income are highly correlated and are almost identical in terms of association to stock return. Although their study indicates a slight increase in the explanatory power of EVA compared to residual income, they feel that the gain is too small to be meaningful. They suggest that implementing performance measures based on residual income may be more than adequate and bring about the same benefits at a lower cost.

Clinton and Chen (1998) report evidence that suggests companies may be better off focusing on simple cash flow measures such as cash ROI instead of making the costly EVA adjustments. This is because the ordinary cash flow measure produces results as good as the EVA in terms of its association with stock value.

Yau (1996) studies the EVA and MVA of ten property companies listed on the Stock Exchange of Singapore from 1991 to 1993 using the nonparametric Wilcoxon statistical test. Yau finds that both EVA and traditional accounting measures produce relatively similar results and hence, concludes that there would be no value added in using EVA and MVA measures over traditional accounting measures.

RESEARCH METHODOLOGY

A total of 100 companies listed on the Kuala Lumpur Stock Exchange over the period 1992 to 1996 provide the database for this study. The sample is based on the largest non-financial companies listed on the exchange according to their market capitalization as at December 31, 1996. This listing is obtained from the Investors Digest, January 1997.

Data such as EPS and those used for the computation of EVA and MVA are obtained from the KLSE Annual Companies Handbooks and the annual reports of the respective companies. Share prices are obtained from the KLSE Daily Diary and Bloomberg. They are corrected for rights issue, bonus issue and stock splits.

The interest rates on debt are obtained from the respective companies' annual reports. In computing the cost of capital, where available, the average interest rates on the company's debt is taken as the cost of debt, taking into account the corporate tax rate.

The cost of equity is calculated using the Capital Asset Pricing Model (CAPM).

$$K_e = R_f + ß\,(R_m - R_f)$$

Where K_e = cost of equity, R_f = risk free rate, R_m = market return and ß = beta. Malaysia's average 3-month Treasury Bills rate is used as the proxy for the risk free rate. This data is obtained from the Ministry of Finance Malaysia's Economic Report. The market return is computed based on a 15-year historical return on the KLSE Composite Index (KLSE CI) from 1981 to 1996, which is about 12.6%.

The beta values for the companies are obtained from the KLSE Beta Book 1994. The same beta for each company is used to compute the respective cost of equity for each of the five years. This study assumes that the beta values for companies are stable over the five-year period.

This study is conducted along the lines of Grant's (1996) and Lefkowitz's (1999) research. The relationships between EVA and MVA, and EPS and MVA are studied using the OLS simple and multiple regression. The following six regressions are run for the whole sample, as well as for the value creator

and value destroyer samples.

1. $MVA = a + bEVA + e$
2. $MVA = a + bEPS + e$
3. $MVA = a + bEVA + cEPS + e$
4. $\Delta MVA = a + bEVA + e$
5. $\Delta MVA = a + bEPS + e$
6. $\Delta MVA = a + bEVA + bEPS + e$

where:

MVA = MVA divided by invested capital

EVA = EVA divided by invested capital

EPS = earnings per share

ΔMVA = Annual change in MVA

CALCULATION OF EVA AND MVA

As mentioned in an earlier section, EVA is arrived at by taking the net operating profit after tax (NOPAT) and adjusts it against the capital charge. The capital charge is calculated by multiplying the Invested Capital with the weighted average cost of capital (WACC). The formula used is as follows:

$$EVA = NOPAT - Capital\ Charge$$

$$EVA = NOPAT - (Invested\ Capital \times WACC)$$

Detailed adjustment formula for the variables are shown in the box below:

NOPAT	**Invested Capital**
= NI to equity	= Equity
+ Increase in equity equivalents	+ Equity equivalents
Adjusted NI	Adjusted equity
+ Preferred dividend	+ Preferred stock
+ Minority interest provision	+ Minority interest
+ Interest expense (net of tax)	+ Long- and short-term debts

Equity equivalent adjustments

Add to NOPAT Increase in equity equivalents	Add to invested capital Equity equivalents
1. Exceptional loss / (gain) after tax	1. Cumulative exceptional loss / (gain) after tax
2. Fixed assets write-down	2. Cumulative fixed assets write-down
3. Loss / (gain) on disposal of fixed assets and investments	3. Cumulative loss / (gain) on disposal of fixed assets and investments
4. Increase / (decrease) in bad debt and stock obsolescence reserve	4. Cumulative increase / (decrease) in bad debt and stock obsolescence
5. Increase / (decrease) in prov for diminution in value of investments	5. Cumulative loss / (gain) for diminution in value of investments
6. Goodwill amortisation	6. Cumulative goodwill amortisation
7. Trademark amortisation	7. Cumulative trademark amortisation
8. Increase in deferred tax reserve	8. Deferred tax reserve
9. Restructuring costs written-off	9. Cumulative restructuring costs
10. Increase in LIFO reserve	10. LIFO reserve
11. Increase in net capitalized intangible	11. Net capitalized intangibles
12. Increase in full cost reserve	12. Full cost reserve
	13. Unrecorded goodwill

RESEARCH RESULTS

5.1 Sample Characteristics

Table 1 shows the representation of the sample in terms of the number of companies and market value sectors. The 100 largest companies represents about 28.5% of the total number of firms on the exchange. But in terms of market value, the sample constitutes about 71% of the total market capitalization. The largest sector represented in the sample is the trading/services sector that contains the 3 largest companies in the market.[4]

[4] *These are Telekom Malaysia, Tenaga Nasional and Sime Darby.*

Table 2 shows the distribution of profitable and losing companies as well as those with positive and negative EVA over the years of study. Although most of the large Malaysian companies are profitable during the period 1992 to 1996 as shown by the positive EPS, the majority of these companies are in fact value destroyers given their negative EVA. Over the five years, the percentage of value destroying companies ranges between 57% and 65% while the percentage of value creating companies ranges between 35% and 43%. The results reveal that 19% of the companies are able to generate positive EVA for five consecutive years as opposed to 35% of the companies generating negative EVA for five consecutive years.

The very high percentage of profitable large Malaysian companies (positive EPS) during 1992 to 1996 is to be expected given that this period coincides with the unprecedented economic boom enjoyed by Malaysia. Over the five-year period, Malaysia's economy grew at an average 8.7% annually. However, when it comes to creating value, a majority of these companies fail to live up to shareholders' expectations. This is shown by the fact that the average number of positive EPS firms over the years of study is 97.6%, yet the average number with positive EVA is only 38.5%. The negative EVA implies that these companies fail to earn a rate of return that exceeds their opportunity cost of capital.

Regression Analysis with MVA as Dependent Variable

Table 3a, 3b and 3c show results of regression equation 1, 2, and 3 respectively. Table 3a shows that EVA's explanatory power on MVA, as shown by its R-squared, is inconsistent of over the years. In some years EVA has good explanatory power, for example in 1992, 1994 and 1995. In other years the R-squared is very small and the relationship is not significant. The relationship is also not significant for the 5-year period (R-squared 0.2%). The overall results shown in Table 3a do not seem to be very encouraging in terms of supporting an expected positive relationship between EVA and MVA. In 1994, the relationship runs in the opposite direction. It is significantly negative.

Both the positive and negative relations between EVA and MVA can be explained as follows. MVA is calculated from market price, which, in an efficient market should take into account present and future profits of the company, whereas the EVA is a short-term historical measure of performance. A positive relationship will be obtained to the extent that EVA reflects future profits. A company with negative EVA

could still have a positive MVA if the stock market expects a turnaround in the near future. Likewise, a company with positive EVA may have a negative MVA if the market expects the company to face poorer prospects.

Table 3b reports the results of regression equation 2 between EPS and MVA for the period 1992 to 1996. The results show a poorer fit between the two variables compared to those in the previous table. Since the EPS used in the regressions are also historical values, similar explanation as those given for Table 3a applies. Comparing Tables 3a and 3b, for the years when the relationships are significant, the EVA regression on average produces a higher R-squared than the EPS regression. This suggests that EVA is a better predictor of MVA than EPS.

Table 3c shows the results when both the EVA and EPS variables are combined into a multiple regression. The results for the overall sample show a significant relationship between each of the two variables and MVA. However, the relationship is negative for EVA and positive for EPS. For the years that show significant relationship, EVA seems to dominate EPS. For example, in 1992 and 1995, the coefficients for the EVA are significant while those for EPS are not. It should also be mentioned that the R-squared of the multiple regression is only marginally improved compared to the earlier simple regressions. This shows that the EVA and EPS may have similar influence on MVA.[5]

The results in this section points to the superiority of EVA, compared to EPS, in explaining variations in MVA. These results support some of the previous proponents of EVA. However, one problem with our results is that it is inconsistent over time. In some years the relationship is significant, while in other years it is not. Additionally it is also inconsistent in terms of the direction of the relationship: in some years it is positive while in other years it is negative.

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[5] *The correlations between EVA and EPS are found to be 0.40 for the entire sample, and it ranges from 0.23 to 0.56 on year-to-year basis.*

Regression Analysis with DMVA as Dependent Variable

Following Lefkowitz (1999), three regressions that use annual change in MVA as dependent variable are run. This variable can be thought as the rate of growth of the MVA. These regression examine the extent to which the MVA growth rate is influenced by the EVA and/or the EPS. Table 4a, 4b, and 4c present present the respective results of regression 4, 5 and 6.

Table 4a shows that during the five-year period study, the EVA has a negative influence on the growth in MVA. For the annual regression, the table shows significant relationship in three out of five years, i.e., 1994, 1995 and 1996. During the years where the explanatory power is significant, the relationship is negative.

It is expected that under normal situation, the relationship between the EVA and MVA growth would be positive, implying that a large EVA should be accompanied by a positive growth in MVA. However, the inverse relationship in 1994 and 1996 implies that high EVA is associated with low MVA growth. This can be explained as follows: although a company is presently generating positive EVAs, the the stock market is anticipating the companies' EVA to deteriorate in the future, hence a negative growth in MVA. Another plausible explanation of the inverse relationship, particularly in 1994, is because of the stock market correction in 1994 after the strong run-up in share prices the year before. With most share prices closing lower by end 1994 compared to their peak prices at the beginning of 1994, the number of companies with a negative annual change in their MVA rose to 47 compared to 13 in 1993.

The results of regression 5 between EPS and the annual change in MVA are reported in Table 4b. The results clearly show that there is a very poor fit between the EPS and MVA growth. Although two of the annual regressions show a significant relationship, i.e. 1992 and 1995, the R-square is very small. The regression for the whole period is not significant, and the R-square is zero. Compared to the earlier regression on MVA and EPS (Table 3b) this regression exhibits a poorer fit.

Table 4c presents the results of the regression of MVA growth against both the explanatory variables, the EVA and EPS. Over the five-year period, the explanatory power seems to have increased compared to the simple OLS regressions reported in Tables 4a and 4b. These results confirm the earlier findings

that suggest that EVA and EPS are poor predictors of the annual change in MVA for the period 1992 to 1996, although the EVA factor has an edge over EPS.

Regression Analysis for Wealth Creators

This section discusses the regression results for the wealth creators and wealth destroyers. Previous researchers have discovered that the two samples behave differently in terms of the explanatory power of the EVA on MVA. In order to examine if our sample exhibits similar behaviour, the total sample is divided into wealth-creator sample (those with positive EVA) and wealth-destroyer sample (those with negative EVA). The wealth creators range from 35 companies in 1992 to 43 in 1995. The wealth destroyers range from 57 companies in 1995 to 65 in 1992. It seems that for all the years of the study, the wealth destroyers far outnumbered the wealth creators. These results beg the companies to take a closer look at the viability of their investment projects.

All six regressions are run for each of the subsample. However, from the foregoing discussion, it seems that the results for EPS regressions and the combined EVA and EPS regressions are less useful. Hence these are not reported in this paper.[6]

Table 5a presents the regression results between EVA and MVA for the wealth creators. The results show that the regressions are statistically significant in each of the five years and for the whole five-year period. The results are also consistent in indicating the existence of a strong positive linear relationship between EVA and MVA. The explanatory power of the EVA has also increased substantially in this sample. The R-squares range from 41.1% in 1992 to 83.3% in 1995. For the overall sample the R-square is 58.8%. This finding compares favourably with our earlier results and with other studies.

The regression results between EVA and the annual change in MVA for the wealth creators are presented in Table 5b. Over the five-year period, the regression equation is statistically significant, but the adjusted R-square is quite low at 11.9%. Annually, the regression results show significance for the years 1993, 1994 and 1995. It is also interesting to note that all the significant relations are positive as opposed to the predominance of the negative relations in for the total sample (Table 4a).

[6] *The results of regressions 2,3, 5 and 6 are available from the authors.*

Regression Analysis for Wealth Destroyers

Table 6a reports the regression results between EVA and MVA for the wealth destroyers. It can be seen that there is a sharp contrast in the results for the value destroyers compared to those for value creators. First, the relationships are significant only in some of the years, as well as for the overall period. Second, and most interesting, the significant relationships are consistently negative. The same observations also apply to the regressions between the MVA growth and EVA as shown in Table 6b.

The negative relationships between MVA and EVA for value destroyers indicate that the market interprets the negative EVA as a temporary phenomenon and expects them to turn around in the near future. In addition companies suffering large losses (large negative EVA) are expected to bounce back more than the companies with small losses.

CONCLUSION

This study aims at examining the nature and characteristics of Economic Value-Added (EVA) in large Malaysian companies listed on the local stock exchange, and to assess its impact on stock value. Stock value is measured using a market-based measure, the Market Value Added (MVA). EVA is essentially the profits gained over and above the charge for the opportunity costs of capital invested. The data used for this study is 100 largest non-financial companies as measured by their market values as at the end of 1996. The period of study is 1992 until 1996.

The evidence generated indicates that, in general, the EVA has a superior influence over firms' market values compared to the traditional accounting measures such as the earnings per share. Its superiority becomes more apparent when regression tests are conducted separately for companies with positive EVA (value creators) and those with negative EVA (value destroyers). There is a strong positive relationship between EVA and market values for value creators, while the relationship is negative for value destroyers. The negative relationship for value destroyers is inconsistent with expectations and may be sample and period specific.

This study supports that the EVA has its merits for use in corporate performance and valuation measures in Malaysia. The results of the study serve as early indication that managers should take into account the opportunity costs of using capital in a particular business activity. The results are consistent with the contention that EVA drives firm values.

Table 1 Distribution of sample and its representation by sector.

Sector	No. of companies	Market cap. (RMm)	Market cap. (%)
Consumer products	20 (35.1%)	57.8 (78.1%)	14.0
Industrial products	21 (25.0%)	48.8 (46.7%)	11.8
Construction	7 (29.2%)	41.9 (78.5%)	10.2
Trading services	26 (38.8%)	204.8 (88.4%)	49.8
Hotels	3 (50.0%)	4.4 (77.7%)	1.1
Properties	12 (19.1%)	24.5 (42.3%)	5.9
Plantations	10 (25.0%)	25.5 (61.1%)	6.2
Mining	1 (10.0%)	4.0 (39.1%)	1.0
Total	100 (28.5%)	411.6 (71.1)	100.0

Note: The percentage in the bracket denotes its representation in terms of number of companies and market value respectively.

Table 2 Distribution of companies by the signs of EVA and EPS

Year	Positive EVA	Negative EVA	Total
1992	35	65	100
1993	39	61	100
1994	38	62	100
1995	43	57	100
1996	38	62	100
Year	**Positive EPS**	**Negative EPS**	**Total**
1992	95	5	100
1993	97	3	100
1994	99	1	100
1995	99	1	100
1996	98	2	100
EVA			**Total**
Positive EVA (5 consecutive years)			19
Negative EVA (5 consecutive years)			35

Table 3a Results of regression equation 1: MVA = a + bEVA + e

Year	a_1	b_1	Adj R^2	F-value	p-value	N
1992	1.329	11.714	33.8	51.54	0.000	100
		(7.18)*				
1993	3.496	3.351	1.8	2.85	0.094	100
		(1.69)				
1994	3.368	-13.300	24.5	33.11	0.000	100
		(-5.75)*				
1995	2.288	14.967	52.1	108.67	0.000	100
		(10.43)*				
1996	2.373	-0.427	0.0	0.09	0.762	100
		(-0.30)				
1992-96	2.554	-1.456	0.2	2.24	0.135	500
		(-1.50)				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.

2. Significant values at $p<0.05$ are indicated by an *.

Table 3b Results for regression equation 2: MVA = a + bEPS + e

Year	a_2	b	Adj R^2	F-value	p-value	N
1992	0.477	0.041	15.7	19.50	0.000	100
		(4.42)*				
1993	2.584	0.038	1.6	2.60	0.110	100
	(1.61)					
1994	1.644	0.071	3.9	5.03	0.027	100
	(2.24)*					
1995	1.005	0.042	8.5	10.24	0.002	100
	(3.20)*					
1996	1.856	0.013	1.6	2.66	0.106	100
	(1.63)					
1992-96	1.708	0.031	3.4	18.47	0.000	500
	(4.30)*					

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.

2. Significant values at $p<0.05$ are indicated by an *.

Table 3c Empirical results for regression equation 3: MVA = a+bEVA+cEPS+e

Year	a_3	$b_{3(i)}$	b_3	Overall	F-value	p-value	N
			Adj R^2				
1992	1.066	10.279	0.014	34.5	27.08	0.000	100
		(5.39)*	(1.44)				
1993	2.923	2.413	0.025	1.8	1.90	0.155	100
		(1.09)	(0.98)				
1994	0.331	-15.415	0.113	35.8	28.56	0.000	100
		(-7.04)*	(4.27)*				
1995	2.929	16.696	-0.020	53.1	57.14	0.000	100
		(9.71)*	(-1.78)				
1996	1.597	-2.068	0.019	2.3	2.18	0.119	100
		(-1.29)	(2.06)				
1992-96	1.355	-3.684	0.043	5.6	15.82	0.000	500
		(-3.57)*	(5.41)*				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.

2. Significant values at $p<0.05$ are indicated by an*.

Table 4a Empirical results for regression equation 4: $\Delta MVA = a + bEVA + e$

Year	a_4	b_4	Adj R^2	F-value	p-value	N
1992	0.229	1.982	0.7	1.75	0.189	100
		(1.32)				
1993	2.378	0.274	0.0	0.03	0.865	100
		(0.17)				
1994	0.797	-17.697	45.1	82.49	0.000	100
		(-9.08)*				
1995	0.171	3.928	8.7	10.46	0.002	100
		(3.23)*				
1996	0.682	-3.190	14.9	18.30	0.000	100
		(-4.28)*				
1992-96	0.822	-6.364	11.1	63.56	0.000	500
		(-7.97)*				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.
2. Significant values at $p<0.05$ are indicated by an *.

Table 4b Empirical results for regression equation 5: $\Delta MVA = a + bEPS + e$

Year	a_5	b_5	Adj R^2	F-value	p-value	N
1992	-0.068	0.015	3.2	4.26	0.042	100
		(2.06)*				
1993	2.316	0.025	0.0	0.02	0.894	100
		(0.13)				
1994	0.186	0.031	0.1	0.95	0.333	100
		(0.97)				
1995	-0.358	0.017	3.2	4.24	0.042	100
		(3.20)*				
1996	0.840	0.003	0.6	0.45	0.506	100
		(1.63)				
1992-96	0.744	0.006	0.0	0.76	0.384	500
		(0.87)				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.
2. Significant values at $p<0.05$ are indicated by an *.

Table 4c Empirical results for regression equation 6: $\Delta MVA = a+bEVA+cEPS+e$

Year	a	b	c	Overall Adj R^2	F-value	p-value	N
1992	-0.038	0.522	0.014	3.2	2.16	0.121	100
		(0.30)	(1.59)				
1993	2.347	0.223	0.001	0.0	0.02	0.984	100
		(0.12)	(0.07)				
1994	-1.454	-19.265	0.084	51.4	53.25	0.000	100
		(-10.23)*	(3.67)*				
1995	0.060	3.629	0.003	8.7	5.25	0.007	100
		(2.46)*	(0.36)				
1996	0.354	-3.884	0.008	16.3	10.64	0.000	100
		(-4.56)*	(1.63)				
1992-96	-0.014	-7.920	0.030	14.5	43.47	0.000	500
		(-9.28)*	(4.57)*				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.

2. Significant values at $p<0.05$ are indicated by an *.

Table 5a Results of regression equation 1 for wealth creators: MVA=a+bEVA+e

Year	a	b	Adj R^2	F-value	p-value	N
1992	0.728	22.508	41.1	24.69	0.000	35
		(4.97)*				
1993	1.303	34.991	69.8	88.89	0.000	39
		(9.43)*				
1994	2.130	14.586	61.2	59.35	0.000	38
		(7.70)*				
1995	1.399	20.040	83.3	225.92	0.000	46
		(15.03)*				
1996	1.911	11.645	59.4	55.05	0.000	38
		(7.42)*				
1992-96	1.690	18.270	58.8	279.84	0.000	196
		(16.73)*				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.

2. Significant values at $p<0.05$ are indicated by an *.

Table 5b Empirical results regression equation 4 for the wealth creators:

$$\Delta MVA = a + bEVA + e$$

Year	a	b	Adj R^2	F-value	p-value	N
1992	0.679	-1.541	2.8	0.08	0.774	35
		(-0.29)				
1993	0.383	24.945	61.9	62.86	0.000	39
		(7.93)*				
1994	-0.410	4.730	11.2	5.66	0.023	38
		(2.38)*				
1995	-0.300	5.830	24.5	15.63	0.000	46
		(3.95)*				
1996	0.829	-0.751	0.9	0.68	0.416	38
		(-0.82)				
1992-96	0.307	5.845	11.9	27.29	0.000	196
		(5.22)*				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.

2. Significant values at $p<0.05$ are indicated by an *.

Table 6a Results of regression equation 1 for wealth destroyers MVA=a+bEVA+e

Year	a	b	Adj R^2	F-value	p-value	N
1992	0.405	-1.463	0.1	1.08	0.303	65
		(-1.04)				
1993	1.513	-7.253	28.3	24.65	0.000	61
		(-4.97)*				
1994	0.005	-30.481	86.8	400.57	0.000	62
		(-20.01)*				
1995	1.205	-3.926	0.0	1.02	0.317	54
		(-1.01)				
1996	0.579	-12.116	59.0	88.91	0.000	62
		(-9.43)*				
1992-96	0.230	-17.895	53.7	352.19	0.000	304
		(-18.77)*				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.

2. Significant values at $p<0.05$ are indicated by an *.

Table 6b Empirical results regression equation 4 for the wealth destroyers

$$\Delta MVA = a + bEVA + e$$

Year	a	b	Adj R^2	F-value	p-value	N
1992	0.114	1.514	2.4	2.58	0.113	65
		(1.61)				
1993	1.107	-7.212	30.5	27.38	0.000	61
		(-5.23)				
1994	-1.731	-31.063	86.5	391.95	0.000	62
		(-19.80)				
1995	0.122	0.028	1.9	0.000	0.994	54
		(0.01)				
1996	0.088	-6.422	33.5	31.74	0.000	62
		(-5.63)				
1992-96	-0.635	-16.611	48.5	286.15	0.000	304
		(-16.92)				

Notes: 1. The t-statistic of the slope coefficient is shown in parentheses.

2. Significant values at $p<0.05$ are indicated by an *.

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