

## **Market value added and traditional accounting criteria: Which measure is a best predictor of stock return in Malaysian companies**

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### **Abstract**

This study tests the hypothesis that market value added (MVA) is more highly associated with stock return (SR) than traditional performance measures. The purpose of this study is to provide empirical evidence on the relative and incremental information content of MVA and traditional performance measures, namely, net income (NI), net operational profit after tax (NOPAT), and earning per shares (EPS). The sample involved 395 non-financial companies listed in the main market of Bursa Malaysia over the period 2002–2011. To analyze the hypotheses panel data regression methods were employed. The results indicated that accounting measures (NI, NOPAT and EPS) have higher relative information content with stock return compared to MVA. Thus, the results do not support the hypothesis that MVA is superior to traditional accounting measures in association with stock return. Moreover, the findings showed that MVA has incremental information content with stock return compared to accounting measures. Consequently, MVA is a useful measure in describing the firm's stock return in Bursa Malaysia. Therefore, Malaysian companies can use MVA with traditional measures (NI, NOPAT, and EPS) in evaluating companies' performance.

### **Keywords**

Earning per shares, Market value added, Net income, Relative and incremental information content, Stock return.

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## Introduction

Maximization of shareholder value is the main purpose of each company. In this regard, evaluating companies' performance is vital in ensuring and achieving optimal allocation of limited resources. Large numbers of accounting performance measures have been developed. These criteria are often criticized for two reasons namely, not including the companies' capital cost and they are based on accounting information, which could be distorted by Generally Accepted Accounting Principle (GAAP). For this reason, the value based measures are presented to resolve the limitation of accounting measures (Nakhaei *et al.*, 2013). According to, Erasmus (2008b, p.66), "Value-based (VB) financial performance measures are often advanced as improvements over measures facilitates the evaluation of value creation. Furthermore, they attempt to remove some accounting distortions resulting from the limitations of conventional accounting information."

Incremental comparisons ask whether one accounting measure provides information content beyond that provided by another, and apply when one measure is viewed as given and an assessment is desired regarding the incremental contribution of another (e.g., a supplemental disclosure). Relative comparisons ask which measure has greater information content, and apply when making mutually exclusive choices among alternatives, or when rankings by information content are desired (e.g., when comparing alternative disclosures). Questions of both incremental and relative information content arise frequently in accounting. However, few previous studies have examined questions of relative information content. Possible explanations include unfamiliarity with the relative versus incremental distinction, and the additional statistical complexity involved in testing for relative information content (Biddle *et al.*, 1995).

MVA is an option to approximate the stockholder value creation. MVA is a contrast between market value of company and capital supplied by the investors over a period of time. MVA is connected to EVA because it is the present value of future EVA value (Baum *et al.*,

2004). Hence, EVA is a measure of performance in a given year, while MVA is the increasing calculate of future years (Kramer & Peters, 2001). Moreover, EVA is an internal performance measure and MVA is an external performance measure (Rahnamay-Roodposhti *et al.*, 2006).

Internationally, there are many studies directed to recognize the relationship between accounting and value based financial performance measures with stock return, but most of these studies have been managed in developed countries and very little research has been conducted on EVA in Asian countries specially in Malaysia (Sharma & Kumar, 2010). In addition, more research is needed on performance measures tools, especially on value based criteria (Al Mamun & Abu Mansor, 2012; Ismail, 2006).

Subsequently, there have been very little research conducted on MVA in Asian countries, including Malaysia (Al Mamun & Abu Mansor, 2012; Sharma & Kumar, 2010). The study aimed to examine the relative and incremental information content between MVA as proxy of value based measures and accounting measures (NI, NOPAT, & EPS) with stock return on non-financial firms listed in Bursa Malaysia over the period 2002 to 2011. In other words, this study seeks to investigate whether MVA is a superior measure in prediction of stock return compared to NI, NOPAT and EPS.

The remainder of the paper is organized as follows; literature review, hypothesis, research variables, methodology, empirical findings, conclusion, limitations, and recommendations for future research.

### **Literature review**

Finding a superior measure to evaluate a company's performance is one of the important subjects of recent financial researches. MVA is an option to approximate the stockholder value creation. MVA is a contrast between market value of company and capital supplied by the investors over a period of time. MVA is connected to economic value added (EVA) because it is the present value of future EVA value (Baum *et al.*, 2004). Moreover, EVA is a measure of performance in a

given year, while MVA is a market generated number that we calculate by subtracting the capital invested in a firm from sum of the total market value of the firm's equity and the book value of its debt (Kramer & Peters 2001).

MVA is explained as the difference between the firm's market value (including equity and debt) and the total capital invested in the company (Young & O'Byrne, 2001). It is an external performance measure, which is considered to be the best index of creation shareholder value. MVA has presented a new shareholder value measure by Stewart (1991) which describes the value market adds over the book value of invested capital (Khan *et al.*, 2012). Karpik and Belkaoui (1990) used market model and found that value added variables process incremental information content beyond accrual earnings and cash flows in the context of explaining market risk. Likewise, Peixoto (2002) examined the relative information content of EVA against operational profit (OP) and net profit (NP). The results illustrated that net profit (NP) have provided more explanatory power beyond operational profit (OP) and EVA in relevant of total stock return (dependent variable).

De Wet (2005) investigated the relationship between EVA and traditional accounting measures (OCF, ROA, EPS, and DPS) with MVA. The study rooted on the data of firms listed on the JSE South Africa from 1994-2004. The findings discovered that year-on-year basis; EVA did not reveal the strongest association with MVA. The results also demonstrated the strongest association between MVA and operational cash flow (OCF). Furthermore, the study also found very little relationship between EPS and DPS with MVA.

Furthermore, Wong (2005) examined the impact of EVA and traditional performance measures (ROA, ROE, and EPS) on stock returns in the public companies listed in the main market of Bursa Malaysia for the year 1990-2000. The findings revealed that ROA, ROE, and EPS have significant influence on stock returns. Nonetheless, EVA was found to be the worst performer in predicting stock returns. Beside, Yaghoob-nejad and Akaf (2007) studied the relationship between EVA, residual income (RI), return on sales

(ROS), return on investment (ROI), and MVA on companies listed in Tehran stock exchange (TSE). Their results revealed there is meaningful relationship between EVA, RI, ROS, and ROI with MVA. Ismail (2011) also used EVA as a predictor for predicting company performance after 1997 economic crisis. His results showed that EVA had a better relationship with stock return than traditional tools (EPS, DPS, and NOPAT) for the period of 1997-2002, for the main board company listed in Bursa Malaysia.

Talebnia and Shoja (2011) investigated the relation between market Value Added (MVA) to earnings ratio and economic value added (EVA) To earnings ratio in companies listed on Tehran Stock Exchange over the period 2003 to 2007. The findings exhibited that there is a weak positive relationship between MVA to earnings ratio and EVA to earnings ratio. Thus, EVA to earnings ratio as an internal performance measure cannot predict the market value of firms.

Ramana (2005) used regression analysis to examine the correlation between EVA and MVA in Indian companies, and compared it with common measures of accounting (net operational earnings after tax, earnings before interest and tax, etc.). The results of the study suggest EVA does not outperform common accounting criteria. Likewise, Ghanbari and More (2007) empirically tested the relationship between EVA and MVA in Indian automobile industry over the period 2001-2005. Their findings indicated that there are strong evidences to support Stern-Stewart's claim that EVA is greater to the traditional performance appraising, and it is the best internal evolution of firm success in adding value to shareholders' investments.

Accordingly, Yahaya and Mahmood (2011) measured the property firms' performance under EVA criterion. Their sample involved 27 Malaysian property firms over the period of 1997-2006. Their results revealed that most Malaysian property firms failed to generate enough revenue for covering their capital cost. Therefore, these companies are failure in creating company wealth. Pourali and Roze (2013) also studied the relationship between EVA, REVA, and accounting criteria with MVA in firms listed in TSE over the period 2006-2010. The findings showed there is positive and significant relationship between

MVA as dependent variable and all independent variables (EVA, REVA, ROA, ROE, and EPS).

Additionally, Nakhaei *et al.* (2014) examined the relationship between EVA, return on assets (ROA), return on equity (ROE), net income (NI), and earning per share (EPS) with share market value (MV). The sample involves 87 non-financial companies listed in Tehran Stock Exchange (TSE) over the period 2004–2008. The results indicated there are meaningful relationship between EVA, ROE, NI, and EPS with MV, but there is not meaningful association between ROA and MV.

### Research hypotheses

Evaluation of companies is always a main concern participators in capital markets, especially those interested in how the financial performance related to stock returns (Huang & Wang, 2008). This research was carried out to study the relative and incremental information content between MVA and accounting performance measures (NI, NOPAT and EPS) with stock return in Bursa Malaysia.

Creating highest capital wealth (owner and lenders) and increasing the firm value is the important goal of financial management. The question appears is, which criteria appraise value of companies correctly. In response to this question, it can be supposed different accounting measures such as EPS, NI, NOPAT and dividend per share (DPS) have been applied to evaluate the company performance. Likewise, proponents of the value based financial performance measures demonstrate these criteria as a main development over the accounting measures and statement high levels of association among these criteria and stock returns. The numbers of studies including inconsistent results have been printed. Based on these conflicting results, it is not clear whether the value based financial performance measures are able to outperform accounting performance measures in explanation stock returns. Furthermore, it is not clear which measure (or measures) has highest (or higher) relative information content with stock return. For this reason, the main goal of this study is to investigate the relative and incremental information content of MVA

with stock return compared to NI, NOPAT and EPS. Accordingly, the related hypotheses are as follow:

**H1:** MVA has higher relative information content with stock return compared to accounting measures.

**H2:** MVA has higher incremental information content with stock return compared to accounting measures.

### Research variables

Market value added (MVA), net income (NI), net operational profit after tax (NOPAT), and earnings per share (EPS) are independent variables and stock return (SR) is dependent variable.

This study deflates all numeric independent variables (MVA, NI and NOPAT) by the market value of equity ( $MVE_{t-1}$ ) at the beginning of the firm's financial year. For reducing the heteroscedasticity and improving the data normality (Biddle *et al.*, 1997; Chen & Dodd, 2001; Erasmus, 2008a; Jabbarzadeh-Kangarlouei *et al.*, 2012; Nakhaei *et al.*, 2014; Parvaei & Farhadi, 2013). Furthermore, this study does not deflate EPS and SR since they are already divided by the total common stock and sale per share at the beginning of the firm's financial year ( $P_0$ ), respectively. By dividing the values of the measures by the market value of the equity, the independent variables are adjusted for the size of the firms.

### Market value added (MVA)

MVA is difference between the company's market value and book value of shares. According to Stern Stewart, if the total market value of a company is more than the amount of capital invested in it, the company has managed to create shareholder value. If the market value is less than the capital invested, the company has destroyed shareholder value (Khan *et al.*, 2012).

$$MVA = MV - IC \quad (1)$$

$$SMVA = MVA / MVE_{t-1} \quad (2)$$

where MVA is market value added, MV is company's total market value, IC is invested capital, SMVA is standard market value added,

and  $MVE_{t-1}$  is market value of equity ( $MVE_{t-1}$ ) at the beginning of the firm's financial year.

If  $\longrightarrow$   $MVA > 0$   $\longrightarrow$  Wealth is created  
 If  $\longrightarrow$   $MVA < 0$   $\longrightarrow$  Wealth is destroyed

MVA is a cumulative measure of the value created by management in excess of the capital invested by shareholders. Although the calculation of MVA uses the book value of capital, which is subject to inflationary distortions, it provides an excellent measure of a company's ability to create wealth (Kramer & Peters 2001). Stern *et al.* (1995) saying, "... there is one measure, Market Value Added (MVA), that captures all the dynamics of corporate performance."

#### **Net income (NI) or Net profit (NP)**

Net income (NI) is calculated by subtracting the total expenses of company from total revenues. It shows what the firm has earned (or lost) in a given period of time (usually one year). Furthermore, it is called net profit (NP) or net income (NI). In other words, net income represents the amount of money remaining after all operating expenses, interest, taxes and preferred stock dividends (but not common stock dividends) have been deducted from a company's total revenue (Nakhaei *et al.*, 2012).

$$SNI = NI / MVE_{t-1} \quad (3)$$

where SNI is standard NI;  $MVE_{t-1}$  is market value of equity at the beginning of the period t.

#### **Net operational profit after tax (NOPAT)**

Brigham and Ehrhardt, (2005) stated net profit is definitely important, but it does not reveal the true firm operating performance or the operating managers effectiveness. A better criterion to evaluate performance is NOPAT. It is the profit amount a firm would make if it did not have debt and did not hold financial assets. Earnings before interest and taxes (EBIT) or operating profit equals sales revenue minus cost of goods sold and all expenses except for interest and taxes. This is the surplus generated by operations. It is also known as operating profit before interest and taxes (OPBIT) or simply profit



before interest and taxes (PBIT). NOPAT is after tax profit of company for all investors, involving stockholders and creditors. It is defined as follows (Brigham & Ehrhardt, 2005):

$$\text{NOPAT} = \text{operating profit} \times (1 - \text{tax rate}) \quad (4)$$

$$\text{NOPAT} = \text{Net Profit after Tax} + \text{after tax Interest Expense} - \text{after tax Interest Income} \quad (5)$$

$$\text{SNOPAT} = \text{NOPAT} / \text{MVE}_{t-1} \quad (6)$$

where SNOPAT is standard NOPAT;  $\text{MVE}_{t-1}$  is market value of equity at the beginning of the period  $t$ .

### Earnings per share (EPS)

EPS is the portion of a company's profit allocated to each outstanding share of common stock. It is usually considered to be the single most significant variable in determining a stock's price. Furthermore, it is a main component used to calculate the price-earnings ratio (P/E ratio). According to Irala (2005), measuring the performance of firm's per share is EPS. It equal, the net profit divided by the number of outstanding stocks. In compared to profit, EPS is a relative criterion because it considers the capital size. It does not consider the capital cost same profit (Irala, 2005). EPS can calculate by the following equation:

$$\text{EPS} = \frac{(\text{Net profit} - \text{Dividends on preferred stock})}{(\text{Average outstanding shares})} \quad (7)$$

### Stock returns (SR)

In this study, stock return (SR) is a dependent variable. Stock return is the total earning derived from investment in a given period divided by investments made in the period (Nakhaei *et al.*, 2013). According to Davvani (2004), stock return is the change in the value of the shares in the end of given period, compared to begging of the same period, which this change in value is due to the changes in the price plus any dividends paid. For calculating of stock return, we can use the following equation:

$$\text{SR} = \frac{(D_t + P_t - P_{t-1})}{P_{t-1}}$$

where,

$D_t$  = dividend per share at the end of period  $t$ .

$P_t$  = stock price at the end of period  $t$ .

$P_{t-1}$  = stock price at the beginning of the period  $t$ , (or initial share price).

### **Relative and incremental information content**

The information content test is managed in two types: incremental information content (IIC) and relative information content (RIC). Incremental information content comparisons assess whether one accounting measure (or set of measures) provides information content beyond that provided by another. On other words, Incremental comparisons apply when one or more accounting measures are viewed as given and an assessment is desired regarding the incremental contribution of another, for examples IIC of cash flows beyond earnings and IIC of supplemental financial disclosures. Furthermore, Relative information content comparisons ask a subtly different question, which is whether one measure provides greater information content than another (Biddle *et al.*, 1995).

### **Methodology**

The sample data of this study was restricted to non-financial companies listed in Bursa Malaysia with available annual trading data over the period 2002-2011. The financial companies such as holdings and investments are excluded from the sample data in order to have consistent interpretation on certain company characteristics such as earnings and size. Furthermore, this financial sector in Malaysia is governed by specific rules and regulations known on the Banking and Financial Institutions Act 1989 (BAFIA). The final sample size became 3950 firm-year observations (involving 395 companies and 10 years period) after accounting for the missing data items and calculating variables.

In this study, panel regression method is used for testing the hypotheses by using E-Views 7 software. Baltagi (2008) claimed that panel data has some benefits such as giving a richer source of

variation which allows for more efficient estimation of the parameters. With additional informative data, one can get more reliable estimates and test more sophisticated behavioral models with less restrictive assumptions. In addition, another advantage is their ability to control for individual heterogeneity, whereby, No controlling for these unobserved individual specific effects leads to bias in the resulting estimates. Panel data sets are also better able to identify and estimate effects that are simply not detectable in pure cross-sections or pure time-series data. In particular, panel data sets are better able to study complex issues of dynamic behavior (Baltagi, 2008, p.305). Furthermore, for choosing the best model (fixed effect or random effect model), Hausman test is employed. According to the results, fixed effect model is more appropriate for all regression models in this study.

This study employed one variable regression for each measure to determine which measure has greatest relative information content (RIC). Then, the results are compared for R-square ( $R^2$ ). Whichever that has greater R-Square ( $R^2$ ), has also greater relative information content too. Many investigators applied this approach in their research, e.g. (Asadi *et al.*, 2013; Biddle *et al.*, 1997; Darabi & Esfandiyari, 2009; De Wet, 2012; Holiana & Reza, 2011; Ismail, 2011; Noravesh & Mashayekhi, 2004; Noravesh *et al.*, 2004; Parvaei & Farhadi, 2013).

For determining which measure or measures have the highest incremental information content (IIC), this study compared two multiple regression models together. Then, R-square of multiple regression No.2 is deducted from R-square of multiple regression No.1 ( $R^2_2 - R^2_1$ ); whereby, the difference indicates the incremental information content. Moreover, for comparing the two R-Squares the Z Wong test is used. Asadi, *et al.* (2013), Worthington and West, (2004), Parvaei and Farhadi, (2013), Noravesh and Mashayekhi (2004), and Arabmazar-yazdi, (1995) applied this approach in their researches.

## Empirical Findings

### Descriptive statistics

In Table 1 provided the descriptive statistics for these variables. It is observed that EPS has the largest mean and MVA has the lowest mean. Moreover, this table shows MVA has the largest and NI has the lowest standard deviation. Furthermore, the pair-wise correlations between any two variables (dependent or independent) are presented in this table. Looking at the correlations among these measures, generally all independent variables are positively significant correlated with one another, except there is negative correlation between MVA with NI and NOPAT. There is not significant correlation between MVA and stock return. It is interesting to note that value based measure (MVA) under-performed standard accounting profit measures (NI, NOPAT, and EPS), which refutes of MVA proponents that it is highly associated with stock return (Biddle *et al.*, 1997).

Table 1. Descriptive Statistics and correlation

Descriptive Statistics					
	DV	Independent Variables			
	SR	NI	NOPAT	EPS	MVA
Mean	0.137855	0.103652	0.134151	0.155209	-0.040482
Median	0.122660	0.078764	0.105751	0.121955	-0.024727
Maximum	1.337840	0.680244	1.069134	1.082270	2.011375
Minimum	-0.936830	-0.301599	-0.835374	-0.717450	-2.835573
Std. Dev.	0.287917	0.126080	0.187518	0.204168	0.615488
Skewness	0.364930	1.110544	0.376457	0.624041	-0.323074
Kurtosis	4.915227	5.733441	7.826219	6.113049	2.938914
Correlations					
	DV	Independent Variables			
	SR	NI	NOPAT	EPS	MVA
SR	1.000000				
NI	0.383867***	1.000000			
NOPAT	0.380785***	0.899385***	1.000000		
EPS	0.185117***	0.470596***	0.464990***	1.000000	
MVA	0.003815	-0.339658***	-0.307620***	0.046656***	1.000000

N= 3950 (number of observation); DV=Dependent variable;

SR= stock return; NI= Standard net income; NOPAT= standard net operational profit after tax;

EPS= earnings per shares; MVA= standard market value added. \*\*\* Correlation is significant at 0.01 Level; \*\* Correlation is significant at 0.05 Level; \* Correlation is significant at 0.10 levels.

**Relative information content test**

The results of Hausman test is indicated in Table 2. These findings showed the fixed effect model is appropriate for all regression models, except regression model No. 4, since the P-value of Chi-Sq. is less than 5%. Considering, some researchers have used fixed effect model for all regression models (Asadi *et al.*, 2013; Ismail, 2011; Parvaei and Farhadi, 2013). Based on Table 3 and Table 5, the value of Durbin-Watson test for all regression models is between 1.5 and 2.5. This result presented that there is no auto-correlation problems in these single and multiple regression models (Narimani, 2011).

**Table 2. Redundant and Hausman test**

N	Regression Model	Redundant test; Statistic and (P-Value)	Hausman test; Statistic and (P-Value)	Suitable Model
1	$SR_{it} = b_0 + b_1 MVA_{it} / MVE_{i,t-1} + \varepsilon_{it}$	862.058841 (0.0000)***	206.000687 (0.0000)***	Fixed effect
2	$SR_{it} = b_0 + b_1 NI_{it} / MVE_{i,t-1} + \varepsilon_{it}$	428.826154 (0.0495)**	9.165270 0.0025***	Fixed effect
3	$SR_{it} = b_0 + b_1 NOPAT_{it} / MVE_{i,t-1} + \varepsilon_{it}$	509.968729 (0.0027)***	9.084344 (0.0088)***	Fixed effect
4	$SR_{it} = b_0 + b_1 EPS_{it} + \varepsilon_{it}$	615.943027 (0.0000)***	0.846671 (0.3575)	Random effect
5	$SR_{it} = b_0 + b_1 NI_{it} / MVE_{i,t-1} + b_2 NOPAT_{it} / MVE_{i,t-1} + b_3 EPS_{it} + \varepsilon_{it}$	423.229384 (0.1491)	13.332636 (0.0040)***	Fixed effect
6	$SR_{it} = b_0 + b_1 NI_{it} / MVE_{i,t-1} + b_2 NOPAT_{it} / MVE_{i,t-1} + b_3 EPS_{it} + b_4 MVA_{it} / MVE_{i,t-1} + \varepsilon_{it}$	574.708727 (0.0000)***	144.732463 (0.0000)***	Fixed effect

Table 3: Cross-section fixed effect panel single regression results on RIC of MVA and accounting measures with SR (H1)

accounting measures with SR (11)						
Variable	Coefficient	T statistic (P-value)	R-square (R <sup>2</sup> )	Adj. R-square	F statistic (P-value)	Durbin-Watson (DW)
Model 1; SR <sub>it</sub> = b <sub>0</sub> + b <sub>1</sub> MVA <sub>it</sub> / MVE <sub>t-1</sub> + ε <sub>it</sub>						
C	0.146549	33.48997 (0.0000)***	0.196081	0.106732	2.194546 (0.0000)***	2.165616
MVA	0.214756	13.71107 (0.0000)***				
Model 2; SR <sub>it</sub> = b <sub>0</sub> + b <sub>1</sub> NI <sub>it</sub> / MVE <sub>t-1</sub> + ε <sub>it</sub>						
C	0.034870	5.150231 (0.0000)***	0.235072	0.150056	2.765038 (0.0000)***	2.211698
NI	0.993566	19.46110 (0.0000)***				
Model 3; SR <sub>it</sub> = b <sub>0</sub> + b <sub>1</sub> NOPAT <sub>it</sub> / MVE <sub>t-1</sub> + ε <sub>it</sub>						
C	0.054724	8.905422 (0.0000)***	0.229287	0.143629	2.676751 (0.0000)***	2.215263
NOPAT	0.619680	18.68732 (0.0000)***				
Model 4; SR <sub>it</sub> = b <sub>0</sub> + b <sub>1</sub> EPS <sub>it</sub> + ε <sub>it</sub>						
C	0.093883	14.55964 (0.0000)***	0.173706	0.081869	1.891470 (0.0000)***	2.238063
EPS	0.283306	9.309200 (0.0000)***				

Based on Table 3, the single panel regression with the common coefficients analysis for the period of 2002 to 2011 (period of 10 years), shows that for all independent variables F-statistics (P-value) are strongly significant at 1% level. The table also illustrated the T-statistic (P-value) of NI, NOPAT, EPS and MVA, are 19.46110 (0.0000), 18.68732 (0.0000), 18.68732 (0.0000), 9.309200 (0.0000), 13.71107 (0.0000), respectively. These results showed that coefficient of these independent variables are significant at the 1% level. It is also noted that there are positive coefficients of MVA (0.2148), NI (0.9936), NOPAT (0.6197), and EPS (0.2833) with stock return. Therefore, it can be concluded that there is a high positive significant relationship between MVA and accounting measures (NI, NOPAT, and EPS) with stock return.

Furthermore, Table 3 exhibited that NI had a strongest relationship with stock return and highest R<sup>2</sup> of 23.51% when compared to NOPAT, MVA, and EPS, R<sup>2</sup> of 22.93%, 19.61%, and 17.37%,

respectively. The findings of single regression models exhibited NI and NOPAT have higher RIC with SR compared to MVA. Meanwhile, EPS has not higher RIC with SR compared to MVA. In other words, the results do not support the MVA proponent's idea that MVA is superior to accounting measures. Consequently, the first hypothesis is rejected.

#### Incremental information content test

Tables 4 shows, variance inflation factor (VIF) value is less than 10 and tolerance value is more than 0.10. Therefore, there is no evidence of multi collinearity problem in these regression models. Furthermore, based on Table 5, the value of Durbin-Watson is between 1.5 and 2.5 for both models. This result presented that there is no auto-correlation problems in these multiple regression models.

Table 4. VIF and tolerance related to model 5 and 6

Variables	Model 5		Model 6	
	Tolerance	VIF	Tolerance	VIF
NI	0.188	5.330	0.181	5.527
NOPAT	0.189	5.295	0.189	5.301
EPS	0.769	1.300	0.721	1.387
MVA			0.829	1.206

Based on Table 5, the multiple panel regression with the common coefficients analysis for the period of 2002 to 2011 (period of 10 years), showed that for all independent variables jointly, F- statistics (P-Value) is significant at 1% level. It exhibited that there are positive significant relationship between all independent variables jointly (MVA, NI, and NOPAT) with stock return except EPS that has negative association with stock return. Moreover, this table indicates there is a high significant relationship between all accounting measures jointly ( $F = 2.824445$ ,  $P\text{-value} < 0.000$ ) and all accounting measures and MVA ( $F = 3.603297$ ,  $P\text{-value} < 0.000$ ) with stock return. Furthermore, Table 5 illustrates the R-square ( $R^2$ ) for accounting measures jointly and all accounting and MVA jointly are 0.239938 and 0.287679, respectively. The  $R^2$  of 0.239938 and  $R^2$  of 0.287679; indicates that the variables in the model 5 and in the model 6 explain only 23.99% and 28.68% of the variation in SR, respectively.

Additionally, it revealed after adding MVA in the model, the R-square has increased 4.77%; ( $0.287679 - 0.239938 = 0.047741$ ).

Furthermore, the results of Z Wong test are shown in Table 6. It revealed that in 95% confidence level, MVA has incremental information content. In conclusion, MVA has incremental information content with stock return compared to accounting measures jointly. Therefore, it can reasonably be concluded that second hypothesis (H2) is failed to reject.

**Table 5. Cross-section fixed effect panel multiple regression results on IIC of MVA with SR compared to accounting measures (H2)**

Variable	Coefficient	T statistic (P-value)	R-square (R <sup>2</sup> )	Adj. R-square	F statistic (P-value)	Durbin- Watson (DW)
Model 5; $SR_{it} = b_0 + b_1NI_{it} / MVE_{i,t-1} + b_2NOPAT_{it} / MVE_{i,t-1} + b_3EPS_{it} + \varepsilon_{it}$						
C	0.036504	5.155137 (0.0000)***	0.239938	0.154988	2.824445 (0.0000)***	2.207498
NI	0.658395	7.019832 (0.0000)***				
NOPAT	0.283085	4.756144 (0.0000)***				
EPS	-0.031368	-0.915936 (0.3598)				
Model 6; $SR_{it} = b_0 + b_1NI_{it} / MVE_{i,t-1} + b_2NOPAT_{it} / MVE_{i,t-1} + b_3EPS_{it} + b_4MVA_{it} / MVE_{i,t-1} + \varepsilon_{it}$						
C	0.047379	6.874348 (0.0000)***	0.287679	0.207841	3.603297 (0.0000)***	2.135974
NI	0.700200	7.707153 (0.0000)***				
NOPAT	0.309821	5.373769 (0.0000)***				
EPS	-0.092660	-2.774585 (0.0056)***				
MVA	0.229292	15.42702 (0.0000)***				

**Table 6. Z wong test**

Model	R-Square (R <sup>2</sup> )	Z Wong (P-Value)
5	0.2399	2.728
6	0.2877	0.0146

## Conclusion

The study aimed to investigate the relative and incremental information content of MVA with stock return compared to



accounting measures, namely NI, NOPAT, and EPS in non-financial companies listed in the main market of Bursa Malaysia from 2002 to 2011. The RIC test showed that there is positive significant association between MVA, NI, NOPAT and EPS with stock return. Moreover, the findings revealed accounting measures have higher RIC with stock return compared to MVA as proxy of value based measures. Therefore, these results do not support the MVA proponent's idea that MVA is superior to accounting measures. The results of IIC test illustrate that MVA has higher IIC with stock return compared to accounting measures. Moreover, the findings acquired in this study consistent with the findings of researchers such as Uyemura *et al.* (1996), and Shahriari (2002), who conducted that MVA has greater incremental information content with stock return compared to accounting measures. In contrast, the results are inconsistent with the findings of researchers such as Moeinadin *et al.* (2011), Hajiabbasi *et al.* (2012), El Mir and Seboui (2008).

Additionally, the findings showed MVA as proxy of value based measures can be an effective measure in describing the firm's stock return in Bursa Malaysia. Malaysian companies can use MVA with traditional measures (NI, NOPAT, and EPS) in evaluating companies' performance. This measure can help managers/ owners to consider all the cost of capital (debt and equity) and capital returns for improving the company's performance and increasing the wealth of shareholders. Therefore, it is recommended that management of Bursa Malaysia requests and requires all listed companies to prepare the MVA along with accounting measures in an attempt to provide investors or potential investors with more accurate information on the firms' stock return.

### Limitations of the Study

Similar to any research, researcher was faced with several limitations in doing this research. first, in line with the study objectives, the sample of this study belong to non-financial public companies listed in main market of Bursa Malaysia, while financial institutions were not included in the sampling frame of this study due to the differences in

cash flow and accrual patterns (Edvinsson & Malone, 1997; Goh, 2005; Kamath, 2007).

Second, the lack of data on some variables identified in the research, noted that it was prevented from entering these variables into the model.

Third, this research has focused on the analysis of Malaysian companies' performance determinants and patterns, and has not sought to explain comparative differences between this data and that collected and analyses in different national and institutional contexts, even though we know there are significant differences between Malaysian and Western companies in their performance.

### **Recommendations for Future Research**

Based on the results obtained in this study, the following recommendations are offered for future research:

- This study was undertaken in general and non-separation of various industries. Therefore, it is recommended that future research should be done to differentiate the industry and different years.
- In this study, among various value based measures, just MVA measure has been used. Thus, it is recommended that in future research should be used from other value based measures such as; EVA, refined economic value added (REVA), cash value added (CVA), Tobin's Q, free cash flow (FCF), cash flow return on investment (CFROI).
- In this study was used from accrual accounting and value based metrics. Since accrual accounting is the accounting basis of the companies listed in Bursa Malaysia. So, it is recommended that future research should use the accrual accounting and value based metrics and cash accounting and value based metrics and compare the results.

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