Economic Value Added and Traditional Accounting Measures for Shareholder's Wealth Creation

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ABSTRACT

This paper investigated performance measurement tools and shareholder's wealth relationships in the context of Malaysian public listed construction companies. Conventional measures are still utilized by many Malaysian listed companies even though it has been criticized by many researchers. Both traditional accounting measures and economic measures fail to reflect a company's true value due to the lack of long-term sustainability of a business. The study used panel data analysis techniques, particularly Error Correction Models (ECM) to test the relationship of error terms and panel Ordinary Least Square (OLS) regression to test the hypothesis. Panel data comprised of 280 observations over the period of 2003-2012 indicates that shareholder value is a function of performance measures. The results conclusively support the claims made by previous studies on the role of earnings per share, economic value added (EVA) and dividend payout ratio; and further support the potential usefulness of the performance metric for internal and external performance. Furthermore, market value added (MVA) is found to have a negative relationship with created shareholder value (CSV) contradicting with the theory that confirmed, the increase in shareholder value when there is an increase in stock market value and efficiency.

Keywords: EVA; traditional measures; shareholder's wealth; dividend policy; Malaysia

INTRODUCTION

In a globalized market, "many companies strive to create wealth of shareholders; whereas other companies will undoubtedly destroy it" (Grant 2003). For corporate managers, wealth creation is fundamental to the economic survival of the company. No company will be able to exist if it fails to create sufficient wealth for their shareholders (Panigrahi et al. 014). In other words, a company that does not add value to its wealth will struggle to survive and, over a period of time, will be either a subject of takeover or liquidation. During the past decades, the linkage between performance measurement tools and shareholder's value have been discussed by practitioners and academicians. But still it is a debatable concern to the corporate executives to identify appropriate performance measurement tool that recognizes shareholder value. In the organization, non-shareholders are favored at the shareholder's expenses (Brigham & Ehrhardt 2013).

The apparent failure of financial statements in determining a firm's true value has drawn the attention of research focusing on the broadening gap between a firm's market value and its book value (Othman, Ching & Ghazali 2012). Similarly, some studies argued that, in reality, traditional accounting measures and economic measures have failed to reflect a company's true value due to the lack of long-term sustainability of a business and the issue of cost distortion (Lev & Radhakrishnan 2003; Lev & Zarowin 1999; Vijayalakshmi 2014). Cost distortion occurs when the departments incur different types of overhead and the products are used to a different extent. One of

the key obstacles for shareholders is the identification of key performance tools that can help them obtain accurate profit information regarding a company. For managers, it has been a great challenge to increase their earnings in view of the shareholder return as they reflect historical performance (Bhunia 2012). According to Kapoor (2011), shareholder wealth maximization is the sum of all strategic decisions to increase earnings, dividend and market value, but there are few studies that have investigated all the measures simultaneously. Relevant issues that have not been investigated theoretically and empirically include the use of earnings explained by traditional measures; economic profits explained by economic measures, such as EVA and MVA; and dividends that are crucial to strategic management decisions. Operationally, EVA is defined as the difference between a company's net operating profit after taxes and its cost of capital (Stewart 1991). Furthermore, Pruthy and Hara (2014) define MVA as the difference between the current market value of a firm and the capital contributed by investors.

Previous studies investigate EVA and shareholder's return in the form of stock market performance (Sparling & Turvey 2003); EVA and its popularity in India (Bhattacharyya & Phani 2000); compare EVA and traditional measures in Egypt (Omran 2002); EVA and future earnings in United Kingdom (A. Ismail 2006); EVA and accounting profits in Greek firms (Kyriazis & Anastassis 2007); EVA and traditional performance measures in Indian firms (Sharma & Kumar 2012); and dividend policy with profitability, growth and opportunity in Malaysian firms (Issa 2012).

However, none of the aforementioned studies investigate the performance measures (i.e., traditional, economic and dividend policy) simultaneously as a measurement tool for shareholder's wealth creation. Thus, the present study focuses on all the aspects of performance measures in relation to shareholder's wealth, particularly since shareholder investment decisions are crucial to avoid risk in future investments.

The key aspects that leads to poor performance of Malaysian organizations highlighted by Ab Razak, Ahmad and Aliahmed (2008) may be attributed to agency problems. Most public listed companies in Malaysia still use traditional performance measures that consider accounting profits or ratios to measure shareholder return. However, Nahar Abdullah (2004) argues that, in Malaysia, ratios widely used by companies in order to measure firm value may not be able to measure and capture a firm's performance.

Furthermore, Al Mamun, Entebang and Mansor (2012) note that conventional performance measures are criticized due to generally accepted accounting principles. Shareholders are suffering from having a suitable performance measurement tool that can aid investors to assess the investment return (I. Ismail 2011). Complementary to this, Vijayalakshmi (2014) mentioned that a variety of measures exists that identify shareholder's value, but none of the traditional measures are able to explain the changes in shareholder's wealth. In addition, the earnings per share that is considered as company's profit allocation to each outstanding share and also an indicator of company's profitability is criticized as it can be manipulated by various approaches like share buyback, merger & acquisitions changes in company's accounting policy and so on. The principal objective of the present paper is to fill the gap in the literature that was unable to provide appropriate measure to create shareholder's wealth. This study will provide an opportunity to advance the understanding of the firms' strategic decisions within the aspects of earnings, market value and dividend based measures as the benchmark to determine shareholder wealth.

INDUSTRY OVERVIEW

Construction firms requires more capital due to its significance; complexity; and nature of the work performed. However, cost management strategies in the construction industry worldwide still remain a chronic challenge (Chigara, Moyo & Mudzengerere 2013). Prior to the 1997 Asian financial crisis, Malaysia had experienced robust economic growth since the 1980s. The output of the Malaysian construction industry grew sharply between 1991 and 1997; to RM19103 million. During the Asian economic crisis, the output of the construction industry rapidly decreased to 13887 million (Khan, Liew & Ghazali 2014). Following the 1998 financial crisis and its protracted negative impact, economic growth declined. During the 1998 financial crisis, construction sector was the one greatly

affected due to decline in demand. The Oxford Business Group (OBG 2008) highlighted a range of issues negatively impacting the Malaysian construction industry. The construction industry is comprised of companies involved in the physical construction of rsidential construction; infrastructure; industrial construction; commercial construction; and building materials (Chan, Tam & Cheung 2005). Deep concerns exist that the Malaysian construction industry, as a whole, is underachieving in the following areas (Alfan & Zakaria 2013):

1. Unstable profitability rate.
2. Construction companies faces inefficiency due to different parties involved in different activities of the project.
3. Factors like savings, ease of maintenance, safety and innovative methods of constructs is not highly functional.
4. Unable to control cost related activities.

THEORETICAL BASE

Shareholder wealth creation has been an issue debated in literature concerning corporate finance and economics. Through the appropriate allocation of resources by managers, targets relating to wealth creation can be achieved.

The neo-classical economic theory known as the dominant model (Stormer 2003) indicates the main objective of a company is to maximize profits for shareholders by creating value. On the other hand, Tisdell and Wilson (2012) contend that while the application of neo-classical theory as a means to assess the EVA seems to be straight forward, it is problematic for several reasons. The principal issue is that the neo-classical approach assumes that investors are very well informed and possess all of the knowledge required for perfect decision making. In reality, economic benefits are not captured by neo-classical evaluation. This was the reason that the neo-classical theory was extended to the financial instruments and markets.

According to agency theory, managers or top management must act to maximize the value of shareholders since they are considered to be the true owners of a firm. Shareholders are prioritized after all other stakeholders like suppliers, debt holders, government agencies, paying taxes and other obligations under state and federal securities laws are satisfied (Frankel & Rose 1996). Thus, agency theory for shareholder value is still questionable. Agency theory links shareholder value with managerial incentives to avoid conflicts (Roth & O'Donnell 1996).

Freeman (1984) put forward stakeholder theory with the perspective of strategic management and has been adopted by many organizations as a part of management tool. However, the main weaknesses of stakeholder theory is that it does not focus on shareholder wealth maximization only is bound to serve all the stakeholders in a corporation; and is criticized due to its vagueness and ambiguity. Managers must favor the decisions towards

all the stakeholders engaged in the company. Firm value cannot be maximized by ignoring the value of shareholders (Jensen 2001). From the critical review, it was found that agency theory and stakeholder theory were facing critiques that made this research to reconcile the originality of agency theory and stakeholder theory favoring the shareholder wealth maximization.

The efficiency of EVA is also criticized in extant studies (Biddle, Bowen & Wallace 1997; Chen & Dodd 1997; Fernandez 2002; Tortella & Brusco 2003). EVA has been criticized as it does not analyze stock market reaction by the firms. EVA has also been criticized due to the lack of adoption of EVA by the corporations However, after examining the EVA data provided by Stern Stewart & Co (a management consultant firm), Biddle et al. (1997) found that operating cash flow performs better than EVA for the shareholder wealth. In response to the claims by Biddle et al. (1997), recent literatures like (Gupta et al. 2016 & Nakhaei et al. 2016) determined whether EVA as measurement tool be able to create shareholder's wealth? After analyzing extant literature (Alipour & Pejman 2015; Awan, Siddique & Sarwar 2014; Fayed & Dubey 2016; Liljeblom & Maury 2016) concerning EVA, it became evident that the studies obtained mixed results for the role of EVA on true wealth creation of shareholders. From such mixed results, there can be a theoretical argument on the properties of EVA. Many extant studies like (Chetty, Friedman & Rockoff 2014; Salehi, Enayati & Javadi 2014) examined the characteristics of EVA, but they also question its utility towards shareholders value. Thus, a research gap continues to exist in regards to identifying a true wealth creation measurement tool for shareholders. Thus, the main objective of this study is to identify the main performance measurement tool that is able to create shareholder's value.

LITERATURE REVIEW

The creation of shareholder value is one of the most important goals of an organization (Grant 2016). The importance of company valuation has increased over the past few decades (Fernandes 2015). Stakeholders are the group of people who are affected by or can affect an organization's activities. Equally important, Sundaram and Inkpen (2004) state that organization is unable to survive with unethical involvement of the stakeholders. Managers must execute decisions in the interest of shareholders (Freeman, Wicks & Parmar 2004). Thus, accurate information becomes obvious for the managers for determining company's future direction and valuation of business.

TRADITIONAL ACCOUNTING MEASURES

For years, managers have used traditional methods to measure financial performance, such as return on assets (ROA); return on equity (ROE); earnings per share (EPS); and net income. The heart of the issue concerning the use of accounting measures is whether a company's financial statements actually measure the economic value of the firm (Carton 2006). According to neo-classical economists, profit maximization is considered the legitimate objective of all private organizations. In addition, Carton (2006) states that "To maximize shareholder wealth, management must generate, evaluate and select business strategies that will increase the value of the company" (p.37). However, Chakravarthy (1986) concluded that traditional profitability measures are inadequate for evaluating a firm's strategic importance. Despite critics, Verweir (2006) claims that traditional financial performance measures continue to play an important role in the corporate world. Ohlson and Juettner-Nauroth (2005) highlighted the role of EPS and its role in security valuation. Collins, Pincus, and Xie (1999) discuss the effect of negative earnings on equity valuation. Furthermore, Dechow, Hutton, and Sloan (1999); Kasznik and McNichols (2002) stated that meeting the current earnings expectations reflects the market premium and rewards for the managers.

ROA is calculated as "operating profit divided by total assets" (Maury & Pajuste 2005:1814). ROA is used in many studies to measure firm performance (Andres 2008; Isik & Soykan 2013). However, when it comes to investigate the relationship between ROA and shareholder wealth maximization, there are mixed opinions among academicians and researchers. ROA, in the long term, not able to create value for shareholders due to a great degree of manipulation of the historical aspects of performance by managers (Benston 1982; Bergstresser, Desai & Rauh 2006; Coe 1981; Watts & Zimmerman 1990). In addition, Isik and Soykan (2013) find that large shareholders have a significant effect on the performance of a firm measured by ROA.

ROE is defined as "the return obtained on the book value of a company's shares" (Khan & Zuberi 1999, p.15). Essentially, ROE is a measure of the return that a company's management is able to earn on the money invested to it by its shareholders. In simple terms, ROE measures the return generated by the management for each invested dollar. ROE is not a good indicator for shareholder's wealth in both finance and accounting studies (Athanasoglou, Brissimis, & Delis 2008). For instance, Chen and Dhiensiri (2009) investigated three performance measures (i.e. ROE, ROA and market to book ratio) and found that the traditional measures are not significant measures. In addition, Magni (2010) examined ROE and its relationships with net present value (NPV) and MVA found that shareholder wealth is signaled from ROE. However, Kabajeh, Al-Nu'aimat and Dahmash (2012) examined the influence of ROA, ROE and return on investment (ROI) ratios on the share price and found no significant relationship between them.

Return on capital employed (ROCE) functions use two items (i.e., profits and capital employed). ROCE is calculated as "the ratio of operating profit with capital employed" (Khan & Zuberi 1999: 16). By using other sources of finance, management is able to increase the capital employed in the business. The effective use of this

enlarged capital base can be measured by comparing profits before interest charges to total capital employed (Coles 1997; Brigham & Houston 2011). ROCE is a traditional approach to investment appraisal that is known by different names and determined by a variety of computational methods.

Dividend policy due to its advantage of providing asymmetric information to managers and shareholders have been widely accepted as shareholder wealth creation (Panigrahi & Zainuddin 2015). Miller and Modigliani (1961) opined that "the effect of a firm's dividend policy on the current price of its shares is a matter of considerable importance" (p.412). Similarly, (Kapoor 2011) investigates the relationship between dividend policy and shareholder value and finds a negative association between the variables. The conclusion reached by Kapoor (2011) is that when shareholders receive dividend, it reduces firm's retained earnings.

Net operating profit after tax (NOPAT) is the first step in calculating EVA. NOPAT is the profit that remains after deducting all operating expenses, such as depreciation and cash taxes, but excludes interest on loans. NOPAT helps to find economic profit through a series of adjustments. In the underlying business process, NOPAT is considered as an important performance tool as it excludes excessive debts and the tax benefits associated with such debts. In order to get better results when using NOPAT as a performance measure, it is very important to compare values within the same industrial sector. NOPAT is very useful for the merger and acquisition process of a company, as acquisition can replace the debt arrangements of a company. According to Stewart (1991) in order to calculate NOPAT there have been made adjustments in the accounting profits of some companies. While calculating NOPAT, tax charge is adjusted since it includes the tax benefits of debts. Tax benefits are removed from the tax charge. Thus, to calculate NOPAT, profit after tax is determined first, then the net cost of interest is added to the tax charge using interest charge multiplied by (1 - corporate tax rate).

In order to calculate NOPAT, three basic steps need to be followed:
1. Start with earnings before interest and taxes (EBIT)
2. Making key accounting adjustments like accounting distortion
3. Subtract cash operating taxes

NOPAT is defined as "net operating profit remaining in the business after tax payments and before interest" (Bacidone, Boquist, Milbourn & Thakor 997. p.15). Accounting profits are turned into economic profits by adjusting the net operating income. The adjustment of NOPAT depends on the GAAP procedures of the country.

ECONOMIC VALUE BASED MEASURES

The primary aim of management is to increase the value of shareholders. Economic value added (EVA) is the economic value based measure that calculates shareholder wealth and is widely used by management for making decisions and increasing productivity; new capital investment; and as a guide for liquidating underperforming assets. According to Stewart (1991), EVA is a performance measurement tool reflecting the absolute amount of shareholder wealth creation through an effective investment decision. EVA is different from other traditional performance measures because it completely accounts for the firm's overall capital costs (Hiang Liow & Ooi 2004). The reason for emphasizing EVA as a value based measure is for increasing shareholder's wealth (Tong, Yao & Xiong 2010). Conventional accounting claims that majority of the firms generate profit, but are unable to create shareholder value.

For performance evaluation, it is important to encourage both managers and employees to work cooperatively together with the goal of increasing shareholder confidence. Furthermore, Tebogo (2011) mentioned that when companies work towards interest of the shareholders, it increases their confidence level. EVA calculation is criticized due to its numerous adjustments to profit and capital employed figures (Shil 2009). Thus, it can be said that mixed results have been obtained concerning the relationship between EVA and shareholder wealth creation in extant studies.

Market value added (MVA) refers to the market value of the firm and capital invested by the shareholders. MVA deducts the value of equity, loans and retained earnings from the market value of share capital and debt. MVA is similar to a book to market ratio, but the difference is that MVA is an absolute measure whereas market to book ratio is a relative measure. From MVA calculations, the value added by a company to shareholder investments can be achieved. Furthermore, de Wet (2005) mentioned that MVA is the best performance measure because it indicates market assessment. MVA is not a performance metric like EVA, but is a wealth metric that measures the level of value a company has accumulated over time (Dierickx & Cool 1989). Therefore, it is important to investigate MVA since performance metrics explain shareholder value.

HYPOTHESIS STATEMENTS

The following alternative hypotheses are formed based on an extent review of theoretical and empirical studies; and the overall research objective:

H_1. Earnings per shares (EPS) is an important performance measure for creating shareholder's wealth.

H_2. Return on assets (ROA) is an important performance measure for creating shareholder's wealth.

H_3. Return on equity (ROE) is an important performance measure for creating shareholder's wealth.

H_4. Return on capital employed (ROCE) is an important performance measure for creating shareholder's wealth.

H_5: Net operating profit after tax (NOPAT) is an important performance measure for creating shareholder's wealth.

TABLE 1. Variables and its calculations

Variables	Calculation of the variable
Earnings per Share	$\dfrac{\text{Net Income} - \text{Dividends on Preferred Stock}}{\text{Average Outstanding Shares}}$
Return on Equity	$\dfrac{\text{Earnings}}{\text{Sales}} \times \dfrac{\text{Sales}}{\text{Assets}} \times \dfrac{\text{Assets}}{\text{Equity}}$
Return on Assets	Net income / Total Assets
Return on capital employed	Operating Profit / Capital Employed
Dividend Payout Ratio	$\dfrac{\text{Yearly Dividend} + \text{Share Buyback}}{\text{Net Income}}$
Economic Value Added	NOPAT – (Capital Invested × Weighted Average Cost of Capital)
Net Operating Profit after Tax	PBIT (nnrt) × (1 – T)
Market Value Added	Common outstanding shares × Share price – Equity book value
Created Shareholder Value	EMV × (SR – Ke)

Note: PBIT (nnrt) = Profit before interest and Taxes (net of non-recurring transactions); T = Tax; EMV = Equity Market Value, calculated as (share price x number of shares); SR = Shareholder return, calculated as (Capital gain +Dividends); Ke is calculated as cost of equity calculated using a capital asset pricing model.

H_5. Dividend payout ratio (DPR) is an important performance measure for creating shareholder's wealth.

H_6. Economic value added (EVA) is an important performance measure for creating shareholder's wealth.

H_7. Market value added (MVA) is an important performance measure for creating shareholder's wealth.

METHODOLOGY

The data set for the present study is comprised of the annual reports of 43 Malaysian construction companies and Thomson Reuters Financial Database for the Malaysian market, which includes ten annual observations, from 2003 to 2012. Several construction firms from the sample were omitted because their shares were not publicly traded for the whole of the ten-year period. The sample is reduced further due to a lack of some accounting data in the database utilized for the present study. After accounting for missing data items and calculating the variables, the final sample size is comprised of 280 firm year observations. The panel data analysis was performed by using EVIEWS 8.0 software.

REGRESSION MODEL

The panel data regression model utilized in this study is as follows:

$$\begin{aligned} CSV_{it} = \beta_i &+ \beta_1 EPS_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{it} + \\ &\beta_4 ROCE_{it} + \beta_5 NOPAT_{it} + \beta_6 DPR_{it} + \\ &\beta_7 EVA_{it} + \beta_8 MVA_{it} + + \alpha_i + \mu_{it} + e_{it} \quad (1) \end{aligned}$$

Where:

i and t denote the company and time period; β is the intercept term; and β_1 to β_8 are the coefficients of independent variables. The variable α_i presents the unobserved factors. μ_{it} is a time varying error term that includes unobserved factors that change over time and affect shareholder value. e_{it} is the error term.

DATA RESULTS

TEST FOR HETEROSCEDASTICITY

Heteroscedasticity is used to know the variation in the accuracy of prediction across data groups in the value-added literature (Herrmann, Walsh, Isenberg & Resch 2013). Under certain assumptions, the OLS estimators under heteroscedasticity have normally distributed and centered data, but, due to maximum likelihood estimation, it is obvious to check the data for heteroscedasticity issues. If the estimation of shareholder value is desired, then the issue of omitted variable bias and unobserved heteroscedasticity are confronted. The OLS estimator is more reliable and consistent; and the usual standard error is valid. Thus, in the presence of heteroscedasticity, the result must make the standard error robust (Wooldridge 2003).

The diagnostic test identifies five different potential sources, each suggesting group wise difference in error variance with a group defining the dependent variable CSV and other groups defined according to the independent variables. The White Test is utilized to test the heteroscedasticity issue and is regressed upon the residuals to test if the regressors can explain the residuals.

The residual graph provided in Figure 1 indicates that the residuals follow the same path of the actual and fitted path. This signals a residual error, leading to heteroscedasticity.
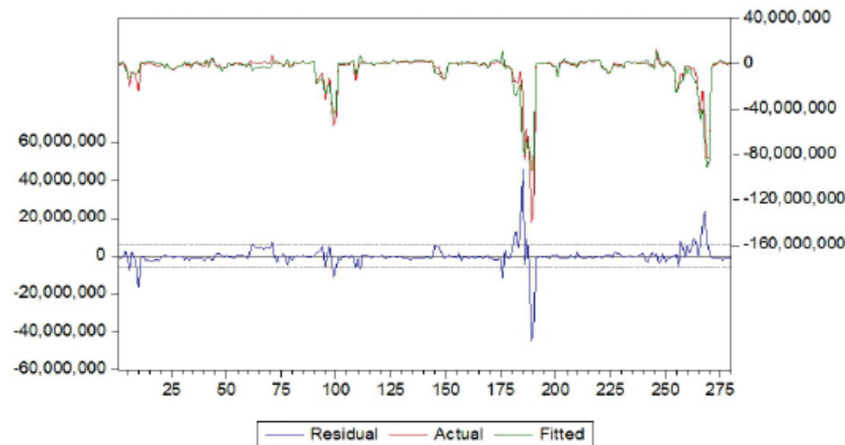
130

FIGURE 1. Actual, fitted residual graph

TABLE 2. Heteroscedasticity test: White

F-statistic	33.15988	Prob. F(8,271)	0.000
Obs*R-squared	138.5065	Prob. Chi-Square(8)	0.000
Scaled explained SS	1436.147	Prob. Chi-Square(8)	0.000

White heteroscedasticity-consistent standard errors and covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.48E+12	8.43E+12	-0.65025	0.516
EPS^2	2.88E+09	3.93E+09	0.73344	0.464
ROA^2	-7.14E+08	1.33E+09	-0.53823	0.591
ROE^2	-1.92E+08	2.04E+08	-0.94145	0.347
ROCE^2	8.87E+08	6.75E+08	1.31501	0.190
NOPAT^2	731.4203	869.4983	0.8412	0.401
EVA^2	-1304.32	4178.313	-0.31216	0.755
DPR^2	1.95E+09	8.55E+08	2.2752	0.024
MVA^2	0.000204	0.000112	1.82314	0.069
R-squared	0.494666	Mean dependent var		4.81E+13
Adjusted R-squared	0.479748	S.D. dependent var		2.27E+14
S.E. of regression	1.64E+14	Akaike info criterion		68.32531
Sum squared resid	7.25E+30	Schwarz criterion		68.44215
Log likelihood	-9556.544	Hannan-Quinn criter.		68.37218
F-statistic	33.15988	Durbin-Watson stat		1.81032
Prob(F-statistic)	0.000			

According to the guideline provided by research scholars like (Rice 1989; Greenland et al. 2016; Rindskopf 2016), if the *p*-value is less than 0.05, the null hypothesis is rejected. Here, the *p*-value was found to be less than 0.05 and, thus, the null hypothesis is rejected. In econometrics, White test is the most common test for heteroscedasticity to detect the variance of the errors (Cerasa, Torti & Perrotta 2016). In other words, the results indicate the presence of heteroscedasticity, which is not desirable. The model applies robust standard errors throughout for correcting heteroscedasticity issues as suggested by (White 1980). According to White (1980) in order to deal with the removal of heteroscedasticity, the variables must be modified to the logarithm, but this data consists of zero or negative values that limited the study to use this concept

of removal. Thus, the standard error test was performed where the co-variance matrix was adjusted to white and the cross terms were excluded in order to perform a residual diagnostic test (Brooks 2014). Thus, based on the residual tests, it can be concluded that heteroscedasticity issues can be found in cross-sectional or panel data and not only in the time series data (Islam 1995).

UNIT ROOT TESTS

Cross sectional data in the panel data analysis requires to be stationary. Panel data significance is achieved through the statistical confirmation of constant covariance, variance and mean (Levin, Lin & Chu 2002; Choi 2001). Therefore, it is important to consider whether or not the

data are stationary prior to estimating the relationship between the economic growth and its determinants. Equally important, Phillips and Perron (1988) and Wu (2000) stated that conducting regressions which employ non-stationary variables may lead to misleading results, showing apparently significant relationships where the variables are generated independently.

In addition, Levin, Lin and Chu (2002) stated that, empirical researchers have shown interest in the panel data analysis. It is crucial for the study to control the spurious regression due to the non-parametric characteristics. The unit root test for the variables must be significant and the t-statistics must be above the threshold value of ±1.96, confirming the null hypothesis that the data is stationary (Oh 1996). The unit root threshold value for all the variables were above ±1.96 (see. Table 3). Thus the variables are stationary and are confirmed to be non-parametric.

ERROR CORRECTION MODEL

Error correction model describe the long run equilibrium between the variables. If the co-integration among the variables is confirmed, it shows the existence of error correction model in short run to equilibrium (Engle & Granger 1987). ECM also helps to test the causation between the constructs (Brooks 2008). In addition, "the t-statistics of the coefficients of the lagged error correction term ECT_{t-1} should indicate the significance of long-run causality between the two variables" (Maghyereh 2001 p. 136). The statistical significance of the t-statistics in tests should be at most 5%.

The error correction estimation presented in Table 4 above reveals that this error correction term or speed of adjustment coefficient is correctly signed with the negative Error Correction Term (U (-1)). The negative error correction term implies that any error generated in each period has a tendency to explode or wander further towards the equilibrium path over the time following disequilibrium in each period. The value of (U(-1))accounts for the correction of only 58 per cent of the error generated in the last period and, from the value of the t-statistic, the

error term's coefficient is statistically significant. The statistical significance of both the error-correction terms and the lag dynamics terms, as mentioned in Table.4e, implies that the short-term changes found in the level of shareholder's wealth are somewhat tied to the future changes in performance measures. Therefore in each short-term period, shareholder's wealth is adjusted by taking into account the difference between the indicators of performance measures in the previous time period.

OLS REGRESSION MODEL

The results of the wealth creation models from different perspectives is performed after conducting data validation using the unit root test and residual diagnostics analysis; and identifying the degree of validation and acceptance of data.

The OLS regression using panel data of created shareholder's value on the independent variables (EVA, MVA, DPS, EPS, ROA, ROE, ROCE and NOPAT) is addressed in Table 5. Additionally, fixed effect and random effect model is used in the pool regression model (Worthington and West 2004). From the empirical results, the R^2 for the fixed effect models is higher as compared to the random common effects. Furthermore, Hausman test is used as panel data analysis to select the appropriate model to estimate the regression analysis (Mojtahedi and Boka 2013). Similarly, Sharma and Kumar (2012) and Panigrahi, Zainuddin and Azizan (2014), found that the random effect is more appropriate to compare EVA and traditional measures.

The random effect panel regression analysis confirms EPS as a traditional measure; EVA as an economic value based measure; and DPR has a high impact on CSV. The combination of all three components as a performance measurement tool is able to explain shareholder value. For shareholders, EPS is important because it reveals information about the financial health of a company. Increasing EPS is a very good sign for an organization (Chatfield & Dalbor 2005). In regard to the investors, it can be claimed that as the earnings per share get bigger,

TABLE 3. Results of panel unit root test

Variables	Augmented Dickey-Fuller		Philips-Perror Fisher	
	ADF (0)	ADF (1)	P-P (0)	P-P (1)
CSV	-5.1531	-9.9899	-6.4398	-23.6997
EPS	-12.5125	-11.781	-12.56098	-172.102
ROA	-15.0057	-12.1586	-15.0095	-246.134
ROE	-17.339	-10.8024	-17.7244	-139.152
ROCE	-16.0159	-13.857	-16.00238	-130.138
NOPAT	-8.3233	-12.2537	-8.5066	-37.365
EVA	-11.2923	-11.4068	-11.3554	-77.843
DPR	-15.7944	-10.6576	-15.799	-113.96
MVA	-4.8325	-16.3232	-5.9984	-16.505

Note: t-statistics threshold value is ± 1.96

TABLE 4. The error correction model: CSV as dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-17671.02	382136.1	-0.046243	0.963
D(EPS)	138891.5	23050.23	6.025603	0.000
D(ROA)	15803.28	27867.44	0.567087	0.571
D(ROE)	-6522.125	10999.08	-0.59297	0.554
D(ROCE)	-9057.761	11103.24	-0.815777	0.415
D(NOPAT)	-40.05568	6.517373	-6.145986	0.000
D(EVA)	-2.024771	13.13631	-0.154135	0.878
D(DPR)	24876.28	6800.991	3.657743	0.000
D(MVA)	-0.033866	0.002756	-12.28782	0.000
U(-1)	-0.582629	0.060366	-9.651581	0.000
R-squared	0.744913	Mean dependent var		-2899.649
Adjusted R-squared	0.736379	S.D. dependent var		12431542
S.E. of regression	6382856	Akaike info criterion		34.21131
Sum squared resid	1.10E+16	Schwarz criterion		34.34146
Log likelihood	-4762.478	Hannan-Quinn criter.		34.26352
F-statistic	87.28268	Durbin-Watson stat		1.864441
Prob(F-statistic)	0.000			

TABLE 5. Cross-section random effect OLS model

Dependent Variable: CSV
Sample: 2003 2012
Total panel (balanced) observations: 280
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3269493	559103.2	5.847745	0.000
EPS	133003.8	27057.54	4.915592	0.000
EVA	33.72617	16.76371	2.011856	0.045
DPR	27160.79	9583.069	2.834248	0.005
MVA	-0.030237	0.001908	-15.84601	0.000
ROA	20766.53	38744.02	0.535993	0.592
ROE	3228.937	16687.32	0.193496	0.847
ROCE	10112.31	15351.78	0.658706	0.511
NOPAT	-57.05581	6.331977	-9.010743	0.000
		Weighted Statistics		
R-squared	0.835988	Mean dependent var		-4957563
Adjusted R-squared	0.831146	S.D. dependent var		17154915
S.E. of regression	7049270	Sum squared resid		1.35E+16
F-statistic	172.6645	Durbin-Watson stat		1.187303
Prob(F-statistic)	0.000			

the value of shareholders rises as well. Similarly, when the economic value of a stock is increased, the shareholder value also increases. Furthermore, firms paying dividends generate positive signals towards the future investment expectations of shareholders. The result is congruent with the expectations of stakeholder theory.

Contrary to the findings of other studies (Chen & Qiao 2008; Phani & Bhattacharyya 2000; Vijayalakshmi 2014), this research found that EVA creates shareholder wealth and focuses more on economic profit rather than bookkeeping profits. Thus, the EVA findings in this study are obvious and justified in relation to explaining and predicting stock prices and its valuations.

The final variable found to be positively significant is dividend payout ratio. According to Abdullah, Razazila, Ismail, Sadique and Bi (2005); Amidu and Abor (2006); Rehman and Takumi, (2012) and Zakaria, Muhammad and Zulkifli (2012), dividend payout matters for shareholders, as well as companies, in order to communicate financial well-being and sending a clear and powerful message about future prospects and performance.

Furthermore, most empirical studies reported that MVA has a positive effect on determining the created shareholder value. On the contrary, the tests performed in this study indicate a significant, but negative, relationship between MVA and CSV. The negative relationship between MVA

and CSV supports neo-classical theory, which suggests that value maximization and market efficiency fail to provide an explanation of crucial aspects of organizational development, such as technological progress and economic benefit. The neo-classical model also predicts that if the investment is sensitive to current financial performance, this is a sign that something is wrong and is to be regarded as a problem for corporate policy.

MANAGERIAL IMPLICATIONS AND CONCLUSION

This study investigated the relationship between performance measures and shareholder's wealth creation. It is an important study in the context of shareholder insight about their value for the investment made by them. The study found highly significant positive relationship between EPS, EVA, and DPR, as value-based measurement tools; and shareholder wealth creation. The findings of the panel regression analysis showed that the stakeholder theory hypothesis is valid for Malaysian public listed construction companies since economic value is created when the earnings of an organization are greater than the cost of operation and generating capital. In consequence, it can be said that increasing the economic value of shares and firm leads to increases in shareholder value. These findings are very meaningful for the shareholders and policy makers in the organization. This study provides important information for the managers in designing shareholder related policies for uplifting their morale and be committed to their organization.

A major policy implication from the results stems from the fact that a positive relationship exists between EPS, EVA and DPR towards CSV. To tap into the value generating capacity of these performance measures, it is essential to adopt measures favorable for shareholder wealth maximization. Using the economic model, it only matters where the cash outlay is recorded when it affects taxes. Companies must conduct corporate valuation periodically not only to select an effective strategy, but also to determine its shareholder's value. By using the EVA model, managers and practitioners are able to pay more attention to operations by understanding the relationship between changes in price and receivable or payable days. Thus, by using EPS, EVA and DPR as performance measurement tools, managers can ensure that the decisions made create value. The success of a firm is dependent on its ownership structure and, thus, incentives must be provided based on the performance of each business unit. Managers must be encouraged to be more aggressive in meeting their short and long term goals, along with their commitment to continuously create value.

It is highly recommended that researchers expand upon the present study by extending the data sampling period. Additionally, firm level analysis into the relationship between performance measures and shareholder wealth would be desirable to supplement the findings of this research. Future studies should include factors relating to financial and non-financial metrics, such as customer loyalty; research and development; firm size; employee satisfaction; and technology and productivity measures, including strategic management and operational management.

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