ROE and EVA: Could They Explain Concurrently in Stock Return Association Model?

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Abstract
Based on empirical theories, EVA could explain better than ROE because it shows wealth creation to shareholders. However, it is still in a contradiction. This study investigates reliability of ROE and EVA in accordance with stock return model. They should explain concurrently in the association of accounting fundamentals and stock return if they are reliable measurement. This study finds that combination of ROE and EVA could not explain stock return variations. This study also finds that combination of high ROE and high EVA could not explain higher stock return variations than others. It means that EVA accompanied by ROE could not show the stockholders' wealthfares. Finally, because of their inconcurrency, this study suggests that they are factually weak and indifference in their ability to show stockholders' wealth creation when they are investigated in a stock return association model.

Keywords: *EVA, ROE, wealth creation, earnings yield, book value, growth opportunities.*

JEL Classification: M41 (*accounting*); G15 (*international financial markets*)

1. Introduction

Company value is created when the company book value exceeds its cost of capital (Black, Wright and Davies, 2001). This increase shows wealth creation magnitude, and it was expected by stockholders. The two current accepted measurements of wealth creation are ROE (return on equity) as the popular measure or EVA (economic value added) as the modern one. EVA is considered to be better than ROE because it adds internal firm performance to measure the increases of stockholder's wealth. Likewise, the EVA's calculation process considers economic profit (Wet and Toit, 2006). On the contrary, ROE user group still contributes as the best indicator because return on invested capital should always be increased and the cost of capital should always be decreased (Black, Wright and Davies, 2001).

Currently, the two stockholder's wealth additional value measure, ROE and EVA, are competing to show their usefulness reliability in performance measurement. Meanwhile, the role of fundamental accounting still shows association degree to stock price or return. The most modern empirical theory based fundamental accounting and stock return association is come from Chen and Zhang (2007) which is associates positively four-related cash inflows, namely earnings yield, book value, profitability, and growth opportunities. This four-related cash inflow is undisputable in explaining stock return movement.

This study's purpose is to identify ROE and EVA role contradiction or harmony by means of evaluating in return association based model (Chen and Zhang, 2007). ROE and EVA's establishment level should be in harmony with various accounting fundamental and stock return association degrees. In contradiction, ROE and EVA also could establish an inverse in explaining return association model. It means, ROE could explain return association model for a group of certain company meanwhile EVA couldn't, and so do the opposite. In other words, this study examines the superiority among ROE and EVA in return association model. Furthermore, this study examines ROE and EVA's contradiction or harmony with clustering its high-low in return association model.

This study becomes so important or dominantly contributes because of the ROE and EVA's discordance as the company financial performance measure and concerning the stockholder's wealth creation. If stockholder's wealth measurement is not so important, this study is still needed because it can identifies the stockholder's wealth increases trigger factors (main mover) or stock's market value. Finegan (1991), Stern (1993), O'Byrne (1996), Dodd and Chen (1996), Makelainen (1998) and Biddle, Bowen and Wallace (1999) suggest the importance of company internal performance measurement identification which affects stock's market value performance. Moreover, company internal performance measurement in accordance with company market value is empirically proved that their relationship is standard (Black, Wright, and Davies, 2001).

This study is based on these assumptions. First, company internal performance measure is linear-related to the company market value. This assumption considers that fundamental accounting based measurement associates with company market value or has a coherency value. Second, capital market in semi-strong hypothesis category which fundamental accounting information is reflected into the stock price. This assumption is used because it explains as if fundamental accounting information is the only one that explains stockholder's wealth value. These two assumptions are used because this study is based on Chen and Zhang's return association model (2007).

2. Literature Review and Hypothesis Development

ROE, Its excellences, and Weaknesses

ROE is one of the most favorite financial performance measures and it is used widely. The use of this measuring instrument is because investors should consider it as stockholder's financial performance (Rappaport, 1986, Monteiro, 2006). ROE is included in financial statement analysis which could shows company internal performance. It is also the performance end estuary which management should considers it for measuring accounting earnings successful level achievement. Also, why investors consider the ROE because it is

used for measuring company value performance in the meaning of wealth achievement (Firer, Ross, Westerfield and Jordan, 2004).

Currently, ROE is still used by managements and investors because it is seen practical and has excellence. Its excellence is on simplicity of measuring, requiring as a future investment project parameter, and could identify that the current investment has a high investment return exceeds its cost of capital equity at once. Some managements still commit using ROE because with its third excellence has showed that if the exceeds of return and cost of capital is positive, it shows that in ruining the business, company has a gain in form of certainty growth opportunities (Reimann, 1989, de Wet and du Toit, 2007). Likewise, that condition is also consequent to the management which always has to increase its return and decreased its cost of capital interest rate (Black, Wright and Davies, 2001).

Behind its excellences, ROE has weaknesses in form as following. First, ROE is measured in *generally accepted accounting principles* based accounting earnings (Reimann, 1989, de Wet and du Toit, 2007). In that measurement, policies and accounting methods affect ROE's magnitude. Second, ROE measurement is very weak because inside of it, there is assets turnover measurement which contained inflation. Therefore, ROE's magnitude is tended to increase because sales is affected by inflation, meanwhile capital book value does not affected inflation (Rappaport, 1986). Third, ROE is also affects on management's policies of choosing short-term profit. It means, because of its performance is measured on ROE basis; managements intend to focus on short-term profit and ignoring long-term profit. When this condition happens, company market value performance is decreasing because cost of capital equity intends to lower than weighted-average cost of capital equity (Copeland, Koller and Murrin, 1996).

Although, ROE measurement has some weaknesses as in case, ROE is still currently used as company internal performance measure and in accordance with stockholder's wealth measure. Consequently, the existence of ROE as performance measure needs to be investigated its relevance level in return association model. ROE should explain return association model degree.

EVA, Its excellence and Weaknesses

EVA emerges as the most modern company financial performance measure. The emerging of EVA is resulted from ROE's weaknesses aforementioned. Besides that, EVA has excellences as follows. First, EVA considers cost of capital equity because of fixed equity capital still needs capital interest or it means no free (Jensen and Meckling, 1999, de Wet and du Toit, 2007).

Second, EVA moves simultaneously with SVA (shareholder value added). This EVA and SVA movement conformity has been empirically proved that EVA is really could show the creation of stockholder wealth (Jensen and Meckling, 1999, Stewart III, 2003, and de Wet and du Toit, 2007). In other words, the excellences of EVA are properly the same with its ability to show economic profit. It means, EVA formulates economics profit which is calculated from accounting profit reduces by cost of capital equity.

Currently, many EVA weaknesses have not been identified. Actually, EVA weaknesses are also not a good performance measurer. Mangers which are focus to EVA wouldn't accept projects that have negative value of EVA. Although, this negative value of EVA could be adjusted to get positive value addition in the next year (Jensen and Meckling, 1999). Therefore, EVA is still used as company internal performance measurer nowadays and in relationship with stockholder wealth measurer. EVA as a performance measurer needs to be investigated its relevance level with return association model compared to ROE. EVA also still explains return association degree model.

ROE, EVA and Return Association Model

The association model between company fundamental value and the newest stock price is suggested by Chen and Zhang (2007). The study provided theory and also empirical evidences at once that stock return is function of accounting variables, specifically is consisted of earnings yield, capital equity, profitability, growth opportunities and cost of debt and capital discount rate. Reasoning the Chen and Zhang research (2007) is that company equity value contains assets value and growth opportunities in the future.

The return association model actually describes equity appraisal model. Company equity appraisal model for the first time correlated accounting data information and future cash flow prospects. This model's approach refers to Ohlson (1995), and Feltham and Ohlson (1995; 1996). The model took scale and profitability reasoning. In details, scaling and profitability is current condition function and future potential. Therefore, earnings role becomes so important because it could shows company growth tendency or stopping its operation.

Appraisal model is a measurement process of capital equity investment creation in company's growth framework or operation stopped (Burgstahler and Dichev, 1997). Zhang's equity appraisal model (2000) simplified company's growth framework or operating stopped.

This standardized return association model becomes vehicle, in this study, for examining ROE and EVA concurrency. All those related-cash flow factors should associate with stock return in various levels of ROE also EVA. If ROE and EVA both have a high validity as the company internal and also stockholder's wealth measurer, ROE and EVA should show synchronous or concurrent association degree. However, that association degree could be different if they are not synchronous or concurrent. Furthermore, this study examines that synchronous or concurrent.

Hypothesis Development

Using the return association model, this study examines the harmony and contradiction between ROE and EVA. ROE and EVA should consistent in various return association model clusters. This study divided ROE and ROA by ranked, high level and low level. Therefore, the cluster is divided into four cells, High-ROE and High-EVA, High-ROE and Low-EVA, Low-ROE and High-EVA, and Low-ROE and Low-EVA. Meanwhile, the standardized return association model that earnings yield, equity capital, profitability, growth opportunities associate positively to stock return. If ROE and EVA have high validity as company internal accounting performance and stockholder wealth performance measurer, ROE and EVA should consistent in explaining the four related cash flow factors in relation with stock return. In other words, ROE and EVA could explain association degree model return in the combination from both of them. If ROE and EVA could show those things, High-ROE and High-EVA have the highest association degree in explaining four-related cash flow relates to return. Thereby, this study hypothesized as follows.

H_A: ROE and EVA level combination could shows association degree the four related cash flows factors synchronous or concurrent in four stock return association cluster model, and furthermore High-ROE and High-EVA combination has higher association degree than the others.

3. Research Method

Data and Sampling Method

This study has population target of all Asia-Pacific and United States countries for the years 2007-2009. Alternately (country name (capital market name, central bank)) as follows, Indonesia (*JKSE, Bank Indonesia*), Malaysia (*KLSE, Bank Negara Malaysia*), Singapore (*Straits Times, Monetary Authority of Singapore*), South Korea (*Seoul Composite, Bank of Korea*), Taiwan (*TSE Weighted, Central Bank of China*), Japan (*Nikkei 225, Bank of Japan*), New Zealand (*NZSE 100, Reserve Bank of New Zealand*), India (*Bombay SE 200, Reserve Bank of India*), China (*Shanghai Composite, People's Bank of China*), Hong Kong

(*Hang Seng, Hong Kong Monetary Authority*), Australia (*ASX 200, Reserve Bank of Australia*), Pakistan (*Karachi 100, State Bank of Pakistan*), Sri Langka (*Colombo SE, Sri Langka's Central Bank*), Thailand (*SET, Bank of Thailand*), Philippines (*PSEi, Bangko Sentral ng Pilipinas*), Vietnam (*Ho Chi Minh SE, The State Bank of Vietnam*), Bangladesh (*DSE, Central Bank of Bangladesh*), Mongolia (*MSE, Bank of Mongolia*), and USA (*NYSE, Federal Reserve Bank*).

From all factors which determines return model in this study using financial statement data. These data generally have been presented in OSIRIS database. Specifically, equity interest rate growth was obtained from each countries central bank, although every company financial statement presented its long term debt interest rate or obligations. Discount rate growth proxy with long term obligation interest rate based on each central bank. Then, this study has extracted stock price and return for each companies from each country's capital markets directly.

Sampling has been done with fulfillment of some criteria as follows. In accounting scope, first, sampling selection is for manufacturing and merchandising companies or by eliminating financing companies and banks. Second, sampling selection is for companies that have complete data. This data completeness mainly is time to time stock price. Third, this study eliminates negative earnings, negative ROE and negative EVA. The elimination is intended to keep fundamental accounting information association stable to stock return.

Variables Measurement and Examination

EVA is calculated using earning after tax reduced by specific year discount rate which is multiplied by stock's book value and numbers of outstanding stocks. Whereas, ROE is calculated by earnings after tax divided by stock's book value multiplied by number of outstanding stocks. Then, this study rides Chen and Zhang return association model (2007) which has done linear regression examination as follows:

$$R_{it} = \alpha + \beta x_{it} + \gamma \Delta \hat{g}_{it} + \delta \Delta \hat{b}_{it} + \omega \Delta \hat{g}_{it} + e_{it} \quad \text{.....(1)}$$

in explanation, R_{it} is yearly company stock return *i* in period *t*, it is measured since the first day of beginning year period *t-1* until one day after financial statement publication or, if any, earnings announcement period *t;* x_{it} is earnings that generated by company *i* in period *t*, calculated with earnings that generated by common stockholder in period $t(X_{it})$ divided by capital equity market value in the beginning current period (V_{it-1}); $\Delta\hat{g}_{it} = (q_{it}-q_{it-1})B_{it-1}/V_{it-1}$ is the changes of company's profitability *i* in period *t*, which is deflated with book value in the beginning of current period and profitability that calculated with formula $q_{it} = X_{it}/b_{it-1}$; $\Delta\hat{b}_{it} = [(B_{it} - B_{it-1}) / B_{it-1}](1 - B_{it-1} / V_{it-1})$ is equity model or the proportional changes of book value company equity *i* in period *t*, which adjusted with one reduced by book to market value ratio in beginning current period; $\Delta\hat{g}_{it} = (g_{it} - g_{it-1})B_{it-1} / V_{it-1}$ is the changes of company growth opportunities *i* in period *t*, α, β, δ, and ω is the regression coefficient; and e_{it} is residual.

Chen and Zhang return model (2007) is used to examine each combination groups between ROE and EVA. Groups is divided into four clusters, that is dividing sample into two using median value as cutoff. Next, this study has done sensitivity test based on ratio market to book value (*M/B ratio*) which divided in low, medium, and high category. The examination of those four clusters is in Picture 1 as follows.

Insert Picture 1 about here
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4. Analysis, Discussion and Findings

This part discusses data analysis, discussion and research findings. Discussion starts from descriptive statistics, analysis and discussion and it is ended with research findings. Descriptive statistics begin the first discussion.

Descriptive Statistics

This study obtained sample data 3,958 (5,48%) of 72.285 (100,00%) exist population target. The data population is obtained from all capital markets that established in Asia, Australia, and USA. Sample data for the years 2007-2009. Reducing some data out of population based is caused by such factors as follows. First, the data incompleteness of stock price or stock return 40,655 (56,24%). Second, elimination of loss companies 27,672 (38,28%). The decrease of data amount is caused of those two factors 68,327 (94,52%). So do the elimination for companies for negative book value or there was decreasing negative book value has been done based on two previous criteria. Complete data is presented in table 1 as follows.

Insert Table 1 about here and its notes

The descriptive statistics result showed in Table 3. Descriptive data processing interpretation shows things as follows. Because of this study bounds for positive earnings, ROE and EVA, descriptive statistics for entire data have positive value except for stock return. One year period return (R_{it}) which is shown the mean value 0,4851 (total sample). For data earnings that use earnings after tax (x_{it}), this study bounds for profitable companies only. As a result, ROE, EVA and earnings value (in total sample) always greater than zero, and minimum value for earnings is marked with magnitude closed to 0,0000. The mean value is 0,2090 and standard deviation is 3,1267. The others variables conditions, changes in profitable ability (Δq_{it}), changes in book value (Δb_{it}), and changes in growth opportunities (Δg_{it}) relatively shown movements as same as earnings movement.

In the all positive valued earnings, ROE and EVA condition, this study examines association degree model return consistency in four clusters matrix, if ROE and ROA able to explain wealth creations. Furthermore, high-ROE and high-EVA clusters should have the highest association degree model return. The sorted of positive-valued earnings, ROE and EVA is also expected supporting this research hypotheses.

Insert Table 2 about here and its notes

Analysis Results

The four factors that associated to return in Chen and Zhang model (2007) are earnings (x_{it}), changes in company's book value (Δb_{it}), changes in profitable ability (Δq_{it}), and changes in growth opportunities (Δg_{it}). Moreover, ROE and EVA which is used as clusters sharing basis and each rides the return association model. Partitioning value basis is median value for each ROE and EVA. This based model analysis results is presented in Table 3 as follows.

Insert Table 3 about here and its notes

Table 3 analysis result shows that the four type of cash flow were not able fully explain stock return. However, only one related cash flow could explain stock price variance. This study is reasonable because it is using at least one out of four type of related cash flow as the ROE and EVA synchronous or concurrency determiner in association model return. Low ROE and low EVA cluster, change in earnings power (Δq_{it}) and change in growth opportunities (Δg_{it}) positively associates to return and significant at 1% level. So do high ROE and high EVA cluster positively associates to return and significant at 1% level. Meanwhile, at low ROE and high EVA cluster, only change in growth opportunities (Δg_{it}) which shows the association at 1% level. Even there is no related cash flow that associated to return at high ROE and low EVA cluster. Thereby, ROE and ROA combination has not a concurrent result in riding associated model return. Therefore, the initial hypothesis is not supported and it follows on that the ending hypothesis is distinctly could not be examined and H_A is not supported as a whole.

Using all of four cells for examination is becoming so complex, if it is simplified with using only two clusters, high ROE and high EVA is able to explain higher association degree than low ROE and low EVA cluster, with 3.30% (*adj-*R^2) as compared to 2.41%. In a condition which only comparing two cells, ROE and ROA have a concurrent result in riding association model return. Therefore, the initial hypothesis is supported and it follows on that the ending hypothesis is distinctly could be examined and H_A is able to be supported.

Sensitivity Tests

Table 4 analysis result shows portioning P/B ratio based result. Panel A as the low P/B ratio result shows relatively the same result as compared to a whole sample examination as the previous examination did. It means, ROE and EVA combination is not a concurrent result in riding association model return. Therefore, the initial hypothesis is not supported and it follows on that the ending hypothesis is distinctly could not be examined and H_A is not supported as a whole. Further, in a condition which compares two cells only, low ROE and low EVA as compared to high ROE and high EVA, the initial hypothesis is supported and it follows on that the ending hypothesis is distinctly could be examined and H_A is able to be supported.

Panel B for low-medium P/B ratio, the measurement indicates that the difference result. Both low ROE and EVA clusters only change in growth opportunities (Δg_{it}) positively associates on return and the significant level is 10%. Another that, both high ROE and EVA clusters Meanwhile, in the high ROE and high EVA cluster, earnings (X_{it}) and change in growth opportunities (Δg_{it}) positively associates on return and the significant level is 1% and 10%. Temporarily, in the low ROE and high EVA clusters only change in growth opportunities (Δq_{it}) that indicates associates with the significant level 1%. Even tough, in the high ROE and low EVA clusters, there is not association to return. However, the combination of ROE and ROA is not concurrent about the result into be convey association return model to explain related cash flow factor on stock return. Therefore, the

first hypothesis is not supported and all subsequent then the ending hypothesis is not tested and alternatives hypothesis as a whole is not supported clearly.

If the testing is simplified using two clusters only are high ROE and high EVA, it can be explained higher degree of association with their competitor both low ROE and EVA that 8.28% (*adj-*R^2) compared with 2.98%. Therefore, in the partition of this P/B ratio, both ROE and ROA produce a concurrent result on riding association return model. After all, the first hypothesis is not supported and all subsequent then the ending hypothesis is not tested and alternatives hypothesis as a whole is not supported clearly.

Insert Table 4 about here and its notes

Panel C for medium-high P/B ratio, the testing indicates that the result is vice versa with two other preceding testing. Combination between ROE and ROA is not concurrent about the result into be convey of association return model for explaining related cash flow factor on stock return. However, both low ROE and EVA clusters have higher degree of association compared with high ROE and high EVA is 21.93% (*adj-*R^2) is compared with 5.22%. Therefore, first hypothesis is not supported and after that the ending hypothesis clearly cannot be tested and alternative hypothesis as a whole is not supported.

Panel D for high P/B ratio, the testing indicates the similar result relatively with both Panel A and B. Result that non concurrent from combination between ROE and ROA be convey that association return model for explaining related cash flow factors on stock return. Therefore, the first hypothesis is not supported and subsequently the ending hypothesis is also not tested and the last, alternative hypothesis is not tested clearly. Otherwise, the result only compares both low ROE and EVA on high ROE and high EVA indicates supporting on alternatives hypothesis.

The association analysis compares combination ROE, EVA and P/B ratio produce interpretation are as follows. Both low ROE and EVA cluster in low level of P/B ratio should have lower degree of association into comparing with low-medium, medium-high,

and high P/B ratios. The comparative between degrees of association is 3.44%, 2.19%, 21.93% and 2.43% respectively. This result is not concurrent to be conveying association model return that it was matched by market level base P/B ratio because of the low ROE and high EVA clusters have highest degree of association. Therefore, the first hypothesis is not supported and all subsequent then the ending hypothesis is not tested and alternatives hypothesis as a whole is not supported clearly.

The subsequent association analysis compares both high ROE and EVA clusters into each P/B ratio level. Both high ROE and EVA into low P/B ratio should have lower degree of association into their competitor low-medium, medium-high, and high P/B ratios. The testing result is 10.22%, 8.28%, 5.22%, and 4.17% respectively. This result is vice versa with both low ROE and EVA that they are able to explain with highest degree of association and then the result is not concurrent into be convey of association return model which it is matched with market level base P/B ratio. Therefore, the first hypothesis is not supported and all subsequent then the ending hypothesis is not tested and alternatives hypothesis as a whole is not supported clearly.

The change in adj-R^2 after sensitivity test is summerized in Table 5 as follows. Table 5 indicates that combinations of ROE and EVA shows better adj-R^2 except for High EVA-Low ROE under low level PB which shows a decline in adj-R^2. Therefore, it can noted that combination of ROE and EVA did not able to show consistent results.

Insert Table 5 about here and its notes

Findings

This study finds some research's findings that it different with other research's findings before. These findings are, first, research's result indicates that combination between ROE and EVA only are able to find degree of association return model partially is when the preceding findings compares two cluster low ROE and low EVA with both high ROE and EVA. If it compares them into all combination of ROE and EVA, it indicates non

concurrent result in explaining the relationship between four related cash flow factors and stock price variation. Second, combination between ROE and EVA are tested by consider market level into each P/B ratio basic that indicates the similar preceding findings.

Third, testing that compares between P/B ratio levels with another indicates vice versa result. The result indicates that both low ROE and EVA on low level P/B ratio doesn't have lower degree of association in its comparative other P/B ratio level. However, the result on both high ROE and EVA give highest degree of association return model is compared with other P/B ratio level. Therefore, combination between ROE and EVA is not able to concurrently or synchronously explain association of four related cash flow factors on stock price variation.

Fourth, from three preceding findings, these findings can be used to conclude that this research does not support the excellence of EVA that EVA can be able to indicates the wealth creation for stockholders as well as it is required by Jensen and Meckling (1999), Stewart III (2003), and de Wet and du Toit (2007). Therefore, this research does not support on the excellence of ROE that can be called the most common measurement to indicate capital market performance for stockholders (Rappaport, 1986, Firer, Ross, Westerfield and Jordan, 2004, and Monteiro, 2006). In addition, both the measurer of capital market performance internally using ROE and EVA actually is not able to indicate value creation to stockholders. This inability specifically can be indicated when it was investigated using association return model associates with four related cash flow on stock return does not concurrent.

5. Conclusions and Limitations

Conclusions

Combination of ROE and ROE not only concurrent about the result of riding association return model but also explain us about related cash flow factors on stock return. This research concludes that whole hypotheses are not supported. The test indicated the true result when it simplified with using two clusters are high ROE and high EVA that can

describe higher degree of association in the return model compared with both low clusters ROE and EVA. However, test using P/B ratio level shows that similar result for each P/B ratio from low, low-medium, medium-high and high levels. This continuing research compares ROE cluster with EVA to P/B levels basic ratio. Result's testing indicates that both low ROE and EVA in the P/B low ratio does not have degree of association lower than other level of P/B ratios. Another that, both high ROE and high EVA in the level low of P/B ratio does not give highest degree of association return model comparing with other levels of P/B. Therefore, this study concludes that combination between ROE and EVA is not able to concurrently or synchronously explain stock price variations.

The conclusion above impact consequently that excellence of EVA is able to indicate wealth creation for stockholders is debatable. In addition, the excellence of ROE as of the most measurement, indicates that firm's capital market performance is not as well as to stockholders. Both, ROE and EVA in fact, they are unable to indicate value creation of wealth stockholder's when it is investigated by using association return model of four related cash flow on stock return is not concurrent. In other words, both measurements above are weak and there is no difference when they are used to indicate wealth creation to stockholders.

Limitations

This research has boundaries are as follows. First, this study uses data sample with large amounts. Result analysis with huge data creates low degree of association that can be measured with *adj-*R^2 because of law of large data sample. This law indicated that using large data, degree of association with Adj-R square tend to decreasing. *Second,* this research has bias about the survivorship bias which used to proving hypothesis by hypothesis. From 72,285 firm-year, it only uses 3,958 (5,48%) because of some factors cannot be determined. In other words this study has mortality bias sample in large amounts of 68,327 (94,52%).

Third, it has bias about capital market unification in a form of intermediate efficiency to weak efficiency. Although its boundary can be avoided with large market regime concept, but advanced factors in economy, laws, trade and cultural, in sample countries are ignored in this research. In fact, these factors at the preceding sentence can affect return model. *At the end*, this research has a weakness in using earnings or EAT. Specifically, the weakness does not pay attention on earnings quality. Earnings quality is able to affect degree of association return model. In addition, this issue can be avoided by P/B ratio which is lower tends to firms with good quality earnings.

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Picture and Tables:

Picture 1: ROE and EVA Cluster in the Return Association Model Examination

		EVA	
		Low	**High**
ROE	**Low**	Low ROE and Low EVA (Cell 1)	Low ROE and High EVA (Cell 3)
	High	High ROE and Low EVA (Cell 2)	High ROE and High EVA (Cell 4)

Table 1 Data Sample

No	Description	Decrease		Sample	
		Number	%	Number	%
1	Population targets			72,285	100.00%
2	Return data unavailable	40,655	56.24%	31,630	43.76%
3	Elimination of negative earnings, ROE and EVA	27,672	38.28%	3,958	5.48%
	Total reductions	68,327	94.52%		

Note: All of 3,958 data sample has a composition based in each country as follow, Indonesia: 94; Australia: 203; China: 400; Hong Kong: 66; India: 71; Japan: 1,246; South Korea: 230; Malaysia: 234; New Zealand: 28; Pakistan: 7; Philippine: 23; Singapore: 237; Sri Langka: 2; Taiwan: 165; Thailand: 131; and US: 821. Meanwhile, Vietnam and Cambodia is not present because of sampling criteria.

Table 2 Descriptive Statistics

Years/N	Description	R_{it}	EVA_{it}	ROE_{it}	X_{it}	Δq_{it}	Δb_{it}	Δg_{it}
2007	Mean	0.5656	143,796	0.2320	0.2162	0.2283	9.4444	5.0215
N= 3,706	Std. Dev.	1.3180	985,260	3.5460	3.5366	3.2865	79.2418	200.7019
	Median	0.2120	17,211	0.1258	0.1169	0.0484	0.6310	0.0700
	Minimum	-0.7506	6.808	0.0004	0.0002	0.0000	0.0000	0.0000
	Maximum	27	41,615,000	196	196	176	2,519	10,714
2008	Mean	-0.1141	43,700	0.1392	0.1197	0.7404	0.1971	0.1694
N= 383	Std. Dev.	0.4325	145,592	0.1074	0.0892	5.0567	0.7321	0.1553
	Median	-0.1477	7,272	0.1093	0.0989	0.1057	0.0598	0.1316
	Minimum	-0.8906	35.365	0.0045	0.0052	0.0000	0.0000	0.0004
	Maximum	2	1,499,618	1	1	78	11	1
2009	Mean	0.4488	81,879	0.1206	0.1239	0.2101	0.1236	0.1798
N= 499	Std. Dev.	0.7506	199,620	0.1237	0.1404	0.9249	0.3092	0.2471
	Median	0.2184	18,180	0.0763	0.0826	0.0633	0.0381	0.1208
	Minimum	-0.9529	8.144	0.0011	0.0011	0.0001	0.0000	0.0010
	Maximum	6	2,029,368	1	1	20	5	4
ALL	Mean	0.4851	126,304	0.2090	0.1952	0.2755	7.3745	3.9416
N= 3,958	Std. Dev.	1.2161	873,254	3.1267	3.1184	3.3155	69.9617	176.9373
	Median	0.1706	15,676	0.1209	0.1115	0.0531	0.3593	0.0806
	Minimum	-0.9529	6.808	0.0004	0.0002	0.0000	0.0000	0.0000
	Maximum	27	41,615,000	196	196	176	2,519	10,714

Table 3 Results of ROE and EVA Cluster Analysis

Var(s).	Pred.	Low ROE and Low EVA			Low ROE and High EVA		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	0.3255	6.7753	0.0000 ***	0.1687	2.7333	0.0064 ***
X_{it}	+	0.5666	0.8864	0.3756	0.7631	1.1147	0.2653
Δq_{it}	+	0.1151	4.1804	0.0000 ***	-0.0112	-1.5337	0.1255
Δb_{it}	+	-0.0002	-0.4734	0.6360	-0.0002	-0.3119	0.7552
Δg_{it}	+	0.1499	2.9946	0.0028 ***	0.4691	4.9086	0.0000 ***
F-value			8.7100	0.0000 ***		7.3169	0.0000 ***
R^2			2.72%			3.88%	
Adj-R^2			2.41%			3.35%	
Var(s).	**Pred.**	**High ROE and Low EVA**			**High ROE and High EVA**		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	0.5671	8.6923	0.0000 ***	0.5126	11.0536	0.0000 ***
X_{it}	+	-0.0771	-1.3806	0.1678	0.1820	1.5047	0.1326
Δq_{it}	+	0.0900	1.4652	0.1433	0.1956	5.6439	0.0000 ***
Δb_{it}	+	0.0000	0.0230	0.9817	0.0005	1.3068	0.1915
Δg_{it}	+	0.0002	1.1184	0.2638	0.1222	2.6516	0.0081 ***
F-value			0.8869	0.4710		11.6459	0.0000 ***
R^2			0.49%			3.61%	
Adj-R^2			-0.06%			3.30%	

Note: N for low ROE and low EVA: 1,249; low ROE and high EVA: 730; high ROE and low EVA: 731; and high ROE and high EVA: 1,248.

Table 4 Results of Sensitivity Test with P/B Ratio Portioning

Panel A: Low P/B Ratio

Var(s).	Pred.	Low ROE and Low EVA			Low ROE and High EVA		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	1.9048	11.6662	0.0000 ***	1.1501	6.2176	0.0000 ***
X_{it}	+	-0.1862	-3.2958	0.0011	-0.5198	-0.9420	0.3475
Δq_{it}	+	0.1036	1.8543	0.0646 *	0.5166	0.9367	0.3502
Δb_{it}	+	0.1129	2.0164	0.0446 **	0.0201	0.2617	0.7939
Δg_{it}	+	0.0204	0.3685	0.7128	0.0395	0.5215	0.6027
F-value			3.8158	0.0050 ***		0.3007	0.8770
R^2			4.66%			0.69%	
Adj-R^2			3.44%			-1.61%	
Var(s).	**Pred.**	**High ROE and Low EVA**			**High ROE and High EVA**		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	1.2224	4.4427	0.0000 ***	0.9672	8.2562	0.0000 ***
X_{it}	+	-0.1142	-1.4364	0.1527	-0.0558	-1.0363	0.3009
Δq_{it}	+	-0.0145	-0.1829	0.8551	0.3299	6.1267	0.0000 ***
Δb_{it}	+	0.0390	0.5227	0.6018	0.0578	1.0836	0.2794
Δg_{it}	+	0.1827	2.4404	0.0157 **	0.0581	1.0892	0.2769
F-value			2.3608	0.0550 *		9.9900	0.0000 ***
R^2			5.18%			11.35%	
Adj-R^2			2.98%			10.22%	

Note: N for low ROE and low EVA: 317; low ROE and high EVA: 178; high ROE and low EVA: 178; and high ROE and high EVA: 317.

Panel B: Low-Medium P/B Ratio

Var(s).	Pred.	Low ROE and Low EVA			Low ROE and High EVA		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	0.5638	7.3690	0.0000 ***	0.1832	1.3155	0.1898
X_{it}	+	-0.1622	-2.7027	0.0073	-0.0029	-0.0477	0.9620
Δq_{it}	+	0.0020	0.0333	0.9735	0.4924	8.2290	0.0000 ***
Δb_{it}	+	0.0209	0.3485	0.7277	-0.0186	-0.3055	0.7603
Δg_{it}	+	0.0976	1.6425	0.1016 *	0.0889	1.4646	0.1445
F-value			2.553	0.039 **		17.8622	0.0000 ***
R^2			3.59%			25.30%	
Adj-R^2			2.19%			23.88%	
Var(s).	**Pred.**	**High ROE and Low EVA**			**High ROE and High EVA**		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	0.4042	3.4040	0.0008 ***	-0.1698	-1.1804	0.2389
X_{it}	+	0.0800	1.0736	0.2842	0.2941	3.8706	0.0001 ***
Δq_{it}	+	-0.1251	-1.7233	0.0863	-0.0853	-1.1608	0.2467
Δb_{it}	+	-0.0467	-0.6832	0.4953	-0.0177	-0.3035	0.7617
Δg_{it}	+	0.0274	0.3897	0.6972	0.1165	1.9025	0.0582 *
F-value			1.0332	0.3910		7.2706	0.0000 ***
R^2			1.92%			9.60%	
Adj-R^2			0.06%			8.28%	

Note: N for low ROE and low EVA: 279; low ROE and high EVA: 216; high ROE and low EVA: 216; and high ROE and high EVA: 279.

Panel C: Medium-High P/B Ratio

Var(s).	Pred.	Low ROE and Low EVA			Low ROE and High EVA		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	0.0449	0.6425	0.5211	0.1086	1.2552	0.2106
X_{it}	+	0.1419	1.7924	0.0743 *	-0.1155	-1.9253	0.0554
Δq_{it}	+	0.2359	2.4092	0.0167 **	0.1976	3.3613	0.0009 ***
Δb_{it}	+	0.0583	1.0440	0.2975	-0.0057	-0.0968	0.9229
Δg_{it}	+	0.1595	1.9145	0.0567 *	0.4139	6.9573	0.0000 ***
F-value			18.8358	0.0000 ***		15.2530	0.0000 ***
R^2			23.16%			20.61%	
Adj-R^2			21.93%			19.26%	
Var(s).	**Pred.**	**High ROE and Low EVA**			**High ROE and High EVA**		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	-0.0142	-0.1623	0.8712	0.0961	1.6685	0.0965 *
X_{it}	+	0.1709	2.5627	0.0110 **	0.1190	1.6814	0.0939 *
Δq_{it}	+	0.0476	0.7418	0.4589	-0.0794	-1.2974	0.1957
Δb_{it}	+	0.0049	0.0763	0.9392	0.0183	0.2986	0.7655
Δg_{it}	+	0.0025	0.0379	0.9698	0.1640	2.3135	0.0215 **
F-value			1.9527	0.1030 *		4.4838	0.0020 ***
R^2			3.22%			6.72%	
Adj-R^2			1.57%			5.22%	

Note: N for low ROE and low EVA: 255; low ROE and high EVA: 240; high ROE and low EVA: 240; and high ROE and high EVA: 254.

Panel D: High P/B Ratio

Var(s).	Pred.	Low ROE and Low EVA			Low ROE and High EVA		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	-0.0834	-1.9462	0.0526 *	-0.2051	-4.5154	0.0000 ***
X_{it}	+	0.2002	3.2874	0.0011 ***	0.2905	4.0423	0.0001 ***
Δq_{it}	+	-0.0441	-0.7417	0.4589	-0.1525	-2.2632	0.0247
Δb_{it}	+	-0.0322	-0.5555	0.5790	0.0121	0.1791	0.8581
Δg_{it}	+	-0.0496	-0.8384	0.4025	0.0424	0.5865	0.5582
F-value			2.8306	0.0250 **		6.4690	0.0000 ***
R^2			3.76%			11.72%	
Adj-R^2			2.43%			9.90%	
Var(s).	**Pred.**	**High ROE and Low EVA**			**High ROE and High EVA**		
		Coeff.	*t-value*	*Sig.*	*Coeff.*	*t-value*	*Sig.*
α	?	-1.2920	-13.0836	0.0000 ***	0.0888	1.4512	0.1478
X_{it}	+	0.9171	22.3128	0.0000 ***	-0.0102	-0.1585	0.8742
Δq_{it}	+	-0.1463	-3.5617	0.0005	-0.1521	-2.4470	0.0150
Δb_{it}	+	-0.0295	-0.8058	0.4214	0.1109	1.8628	0.0635 *
Δg_{it}	+	0.0156	0.4263	0.6703	0.1644	2.8452	0.0048 ***
F-value			138.3974	0.0000 ***		4.1853	0.0030 ***
R^2			73.95%			5.48%	
Adj-R^2			73.42%			4.17%	

Note: N for low ROE and low EVA: 295; low ROE and high EVA: 200; high ROE and low EVA: 200; and high ROE and high EVA: 294.

Table 5 The Change in Adj-R^2

	ROE	EVA	
		High	Low
Basic Model	**High**	3.30%	-0.06%
	Low	3.35%	2.41%
High PB	**High**	4.17%	73.42%
	Low	9.90%	4.17%
Medium High PB	**High**	5.22%	1.57%
	Low	19.26%	21.93%
Low Medium PB	**High**	8.28%	0.06%
	Low	23.88%	2.19%
Low PB	**High**	10.22%	2.98%
	Low	-1.61%	3.44%