

RESIDUAL VALUE ANALYSIS POST-PRIVATIZATION OF JAKARTA STOCK EXCHANGE (FROM AUGUST 1992 UNTIL JULY 1995)

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Abstract

The more-and-more efficient market shows the lessening difference between actual return and expected return on stocks being traded. In other words, the residual values are growing smaller. Such market brings in signals that the prices of stocks reflect all the necessary information suitable for the concept of the market efficiency itself. By making most use of all information available either in the form of regularly published reports or in any other relevant information on the movement of the capital market from year to year historically, it is highly expected that the efficiency be reached where the price has significance upon true fundamental values. The competition includes market participants as well as the competition in numbers and security. The steadily increasing informational efficiency results positively in the development of the upcoming market, namely bringing great credit to contribute to public interest. Naturally, the consequence is that there is more and more people involved in the market participating actively and thus each transaction is getting more competitive. In the end, illegal practices can be minimized and the market mechanism can roll forward propelled by the natural power of demand and supply for stocks expected having a prospect as provided by the available information.

Keywords: *informational efficiency, residual values, actual return, expected return.*

Capital Market as the investment and financing facility goes through three stages of important momentums, namely pre-deregulation era (1977-1987), deregulation (1997-1990), and post-deregulation (1990-today) (Bacelius Ruru, 1994). In the pre-deregulation era, there were only 24 *emiten* being noted, collected fund Rp. 131,4 billion, and 296,06 *IHSG* with 2,78 million pieces of outstanding stocks. The condition was getting better by deregulation as the intervention of the government in the form of three important packages, namely *Pakdes 87*, *Pakto 88*, and *Keputusan Menkeu No.1055.KMK.013/1989*, were known as the deregulation era. The content of the three important packages is the revocation of minimum limit definition of 4% fluctuation price, income-tax liability on time-deposit interest, chance for privates to administer exchange market outside Jakarta, and stock purchase by foreign capitalist for maximum 49%. Until December 1989, the amount of *emiten* were 57 with 399,69 *IHSG*. The market capitalization increased 8-fold to be Rp. 4.359,5 trillion. The top record was from April to August when 40 corporations *listing* in BEJ at once. The highest trade in May was as many as 74,25 pieces, valued for Rp. 880,33 billion, increased 4-fold compared to the end-year position of 1989. *IHSG* reached its highest position on April 4th, 1990, when Astra International stock made its quotation for the very first time, valued for Rp. 15.060,62 billion, total amount of *emiten* was 121. The last four months (September – December 1990) indicated the era of post-deregulation. The condition was upside-down pointedly so that *IHSG* decreased under the number of 400, until the lowest point in 1992, fewer than 250. In order to overcome this condition, the next concrete step that should be taken was privatization of PT. BEJ on July 13, 1992, with the main point to create proper, regular, and efficient *capital market*.

Based on the fact that fluctuation of stock-price was representative by *IHSG*, consequently the proper stock-price problem in PT.BEJ became a significant topic, especially after the market correction on stocks, which tend to be *overvalued*, as reflected on the decreasing of *IHSG* continuously until it reached the lowest point in 1992. The indications of market correction seemed to become slighter as the re-increase of *IHSG* in the following years, in spite of unable to equal the record in 1992. Actually, the real solution of that exchange market condition is the efficiency of the *capital market* itself.

The condition of informational efficient *capital market* optimizes the decision of production and investment, as the result of the unreal measurements being used. In the end, efficient market results in the healthy economic growth by allocating funds from unproductive sector to productive sector. The efficiency of capital market concept was written in different language by Reily (1989), Francis (1983), and Blake (1994), with the same main point, which is the concept of informational efficient market is market price security reflects on all relevant information. Based on that concept, the fundamental principle hypothesis of efficient market becomes significant to comprehend. Reily (1989) gave 3 fundamental assumptions, namely; (1) almost all of the market participants that oriented on profit maximization observed the analysis and security valuation independently; (2) any information which has something to do with security entered the market randomly and independently; (3) the investors transforms the security price quickly in order to reflect the effects of that new information. Fama gave efficient market hypothesis, by clarifying the market into three forms, based on the information in it (*three sets of information*), written by Brealey et al (1995) as followed:

(1) *Weak-form efficient (Price information tests)*, if the stock market price reflects all the information about the stock price itself historically; (2) *Semistrong-form efficient (Other Public Information Tests)*, if the stock market price reflects fully all of the public information, whether the stock exchange itself or all relevant public information, for corporate valuation including the price information in weak-form market; (3) *Strong-form efficient (Inside information tests)*, if the stock market price reflects all information available, whether public information in semistrong market or any other information, including private or inside information. This form assumes that there is a perfect market form, where all information is available for every individual at once. In the informational efficient context, the way to measure the market efficiency depends on the kind of information, that totality available.

Certainly, efficient market hypothesis implication contains three important things: The price behaviors quickly toward new information, price variation depends on *random walk*, and the most important is that price reflects *true economic fundamental value* until equal level so that it cannot achieve *abnormal return*. On the other hand, it is more difficult for investor to gain *abnormal return* by applying the available information, which also means that price reflects the proper level based on the *intrinsic* value of corporation. Fuller and Farrell (1990) defined *abnormal return* as a variation between *actual return* and *expected return*. *Abnormal return* named as *residual value*. The efficient market indication is the getting lower or not of residual value attained average *abnormal return* (Rappaport, 1986), for the whole stocks so that the investor gains *normal return* on proper price, no *under value* or *overvalue*, and conversely, the residual value is getting higher if a market is getting inefficient. If the residual value is positive, it means the actual return is higher than expected

return, stock indicator is *undervalue* and conversely, if the residual value is negative, means the stock indicator is *overvalue*, because actual return is lower than expected return.

Market model is needed in order to determine expected return. The reason of using this model, as stated by Elton and Gruber (1981) is that *market model* applied fundamental *single index model* which assumed that the rate of return is correlated only for one factor that already grouped in *single index*. Haugen (1991) explained about *single index* as followed, *all the numbers in the covariance matrix can be accounted for by the fact that all the stocks are responding to the pull of this single, common force*. For this *market model*, what is meant by *single index/factor* is *market index/factor*. Its speciality is that the measurement of *market index* is market portfolio, in which *market portfolio* functioned as indicator to tell about stock price movement from time to time significantly. This model is getting more accurate (precisely) because of variability in *market portfolio* already accounted all movements simultaneously among stocks individually. Refer to that assumption, therefore, the variability of stock return indicates *macro event* so it is consistent with external efficiency that was stated by Francis (1983). Mathematically, Fuller and Farrell (1990) wrote the equality of market model, as followed:

$$R_j = \alpha_j + \beta_j R_m + \varepsilon_j$$

In which,

R_j : is rate of return of individual security

α_j : is constanta/invariable, refer to average excess rate of return from realized stock in that period with zero market excess return

β_j : is regression coefficient, refer to sensitivity on market return.

R_m : is market return

ϵ_j : is error term, indicates residual value or abnormal return

Conceptually, what is meant by rate of return of individual security, according to Ross et al (1995) is rate of return gained from changing value on bought individual security as a form of financial investment, whereas market return grade according to Brigham and Gapenski (1993) is the rate of return from the whole investment chances in a market portfolio which contain a portfolio of the stocks deal in the market. In order to decide the return stock and market return, the *statistical models of stock returns (French)* is applied:

$$P_{(n+1)} = P_n \{ \exp[E(R_j) + \sum_n] - D_n$$

This model is equivalent to:

$$R_j = l_n \left(\frac{P_{(n+1)}}{P_n} \right) * 100$$

In which,

P_n : is j stock price for n period

$P_{(n+1)}$: is j stock price for n+1 period

Average propriety or normal return is:

$$\text{Normal return} = a_j + B_j R_m,$$

Therefore, ϵ_j , *error term, residual value or abnormal return* is:

$$\text{Residual value} = \text{actual return} - \text{expected return} \text{ or } \epsilon_j = R_j - (\alpha_j + \beta_j R_m)$$

Thus, the reason of applying *market model* is because of some advantages such as: (1) observing the *undiversifiable risk* with other stocks return; (2) its basic consideration, that rate of return of individual stock influenced by stock sensitivity on rate of return of the whole investment chances movement to represent market portfolio (*broad market movements*); (3) the appliance of market index represents the whole

investment chances that involving big observation to bring on unfairness *market model*; (4) when the *capital market* is in a *bullish* or *bearish* condition, the price of a stock also influenced by the situation that influence the whole stocks in that *capital market*.

The comparative research reference is taken from Dawson S' research entitled: "*The Trend Toward Efficiency For Less-Developed Stock Exchange; Hongkong*". This published by a source of *Journal of Business Finance and Accounting* in 1984. Research question is examining on increasing informational efficiency in Hongkong *capital market*. The result of the research proves that there is an improvement of informational efficiency in Hongkong *capital market* from time to time. Principally, the research question is the same with the difficulty in this research, yet the difference is on the object, that is *Bursa Efek Jakarta*, while for the period selection of this research is based on a certain moment, namely post-deregulation era followed by post-privatization of BEJ for a point of time before economic crisis happened in Indonesia, thus the point of time is chosen from 1992 to 1995.

The aim of this research is to observe the difference through the comparison of informational efficiency in *capital market*, by the indication that in conformity with the exchange progress from time to time, so it is properly speaking that the efficiency of *capital market* is getting increase, on the other hand it is reflected on the getting lower of residual value. It is depend on the information available, whether public or individual information, in its access to form proper price that refer to the increase of the efficiency itself. Coates (1987) fortified that the more perfect of market mechanism will increase the market efficiency, means the investors will be more difficult to gain *abnormal return* and the

price has a tendency to approach normal. Dawson (1984) with his research had proved that the increasing of efficiency *capital market* in Hongkong was caused by the running of time.

M E T H O D O L O G Y

The facts as the result of the first observation that had been done, is the stock market index within 1992 until 1995, that was on post privatization era of BEJ and before the economic crisis in Indonesia indicates a very fluctuated condition, wherein on the post-deregulation before 1992, that was September 1990 until September 1991 experienced decreasing continuously from 454 to only about 429. Yet, on the post-deregulation and post-privatization happened something conversely, that was a trend that indicated the increase of stock market index from time to time, that was from December 1992 as much as 284 to be 515 by the end of December 1995. Thus, the proper problem of stock in BEJ become an important topic, particularly after the *market correction* on stocks which tend to be *overvalued*, as reflected from the IHSG that kept decreasing to the lowest point in 1992. The indication of market correction is getting slighter by the re-increasing of IHSG in the following years, that was during post-privatization of BEJ. It means that the tendency indication of exchange market condition as the result of privatization is positively indicated by the increasing of capital market informational-efficiency from the getting slighter of market correction, which meant that price is getting normal from time to time.

From the fact above, the research question can be stated as followed: “Is there any residual value difference in post-privatization of BEJ from time to time within 1992 until 1995, also how much is the differences?” “Descriptively, is there any residual value difference within

that point of time?” By observing the formulation of this research question and supported by theoretic scheme as explained in the previous description, the next step is the making of *task hypothesis* as followed:

“It is assumed that there is a residual value difference in the post privatization of BEJ from time to time within 1992 to 1996 and the residual value difference is getting lower from time to time within the point of time.”

The science research type that is applied is descriptive conclusive research, while the correlation pattern in this research is causal correlation pattern between market return with the individual security return on post-privatization of BEJ from August 1992 to July 1995 and the comparative correlation pattern between average informational efficiency on post-privatization in BEJ from August 1992 to July 1995. The variable applied in this research is informational efficiency, which defined operationally as average residual value, which is the variance between *actual return* and *expected return* within a year from weekly data. Heading for market return will be applied approach of market stock index weekly in BEJ from August 1992 to July 1995, that is *present value of total market value* divided by *basic-day market value* fold by 100. Whereas the individual security return is the *log* result from stock market price on $n+1$ week divided by n week then fold by 100.

The data sources gained from the secondary data, namely *capital market directory* and official publishing of Bursa Efek Jakarta. Collected particular data are: (1) Weekly IHSG BEJ from August 1992 period until July 1995; (2) The stock price and weekly stock transaction of the whole public corporations in PT BEJ from August 1992 period until July 1995.

This research applies population target that consist of the whole public corporations in PT BEJ, as for the population characteristic are: (1) Element: that consist of the whole elements of trading stock transaction report from the whole public corporations; (2) Sampling unit: from the trading stock transaction report and deposit interest rate that represents its population element taken/becomes the basic research is IHSG as the indicator to define the residual value; (3) Scope: the corporation on this research is the whole corporations whose stocks are being traded actively in BEJ for 6 month continuously, which is observed based on the weekly scale; (4) Time: Post Privatization of BEJ is started from August 1992 to August 1995 before economic crisis period, that observes yearly based on the weekly activity.

Data collection instrument in this research is documentary, that is taking note and copying the whole trading stock transaction report from the whole public corporation in BEJ. Meanwhile, the data collection procedure is fulfilled, based on documentary method by visiting PT BEJ directly, to the *Communication & Public Promotion* division, and the next step is printing out the data in *research & development* section as a data preparation for analysis.

Data preparation methods that applied in this research are the calculating of:

1. Average residual value from every weekly active stock for a year, done as many as active stocks being traded for 3 periods, namely August 1992 – July 1993 period, August 1993 – July 1994, and August 1995 – July 1995.
2. Average residual value from total weekly active stock for a year, done until 3 periods started from August 1992 –July 1993, August 1993 –July 1994, and August 1994 – July 1995.

3. Weekly average residual value for active portfolio stock, done as many as 3 periods started from August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995.
4. Average residual value of j active stock for 3 years started from August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995.
5. Weekly standard deviation of j active stock in a year done for 3 periods August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995.
6. Standard deviation of average active portfolio stock in a year, done for 3 periods August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995.
7. *Chebyshev's theorem* (Levin and Robin, 1994)

After the processing of data preparation, statistic examination is done for examine the hypothesis by applying *Anova Satu Arah* (one way). *Level of significant* (α) as much as 5% for examining *F one tail test*.

RESEARCH RESULT

After deciding the draft of the evidence, the next step is collecting, processing, and preparing the data. According to the operational definition of variables that already stated on the previous section, then its population characteristic target is all public corporation since August 1992 and their active stocks being traded in Exchange market, excluding inactive stocks, as clarified by *Bapepam*. The whole corporations that already fulfilled the conditions above are 46 of 159 public corporations for August 1992 – July 1993 period, 77 of 193 public corporations for August 1993 – July 1994 period, and 74 of 226 go-public corporations for August 1994 – July 1995 period.

Based on the transaction report from trading division of PT BEJ, result in the collected data about stock price of all public corporations in PT BEJ and IHSG during research period, started from August 1992 to July 1995 based on the weekly transaction on every Friday. The report format is composed derived from all of the weekly trading transaction, so the clarification is based on time. The researcher classified the report on the trading transaction of every corporation during 52 weeks, done for 3x52 weeks, so the classification is the corporate classification. This kind of composition is used to calculate how much is the *regression coefficient* of each corporation by applying *market model*, indeed a *beta saham individual* of a corporation as an indicator of how much the risk systematically on individual stock, then doing the analysis to define wished limit of significant level, that is 5% by applying T test. This kind of process is done for three times by analogy-way along with the research period.

In relation to the steps of data processing method, by applying the formulas which already explained descriptively on the previous section, in order to come to the hypothesis analysis, firstly composing the calculation of residual value of each corporation's active stock in PT BEJ during 52 weeks for three times, started from August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995. Afterward, the calculation of average portfolio residual value for all corporations' active stock in PT BEJ for periods August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995, can be stated.

TABLE 1
AVERAGE PORTFOLIO RESIDUAL VALUE
FOR ALL CORPORATION'S ACTIVE STOCK IN PT. BEJ
FOR PERIODS AUGUST 1992 – JULY 1993, AUGUST 1993 –
JULY 1994, and AUGUST 1994 – JULY 1995

PERIODS	AVERAGE PORTFOLIO RESIDUAL VALUE
August 1992-July 1993	0.041972
August 1993-July 1994	0.033379
August 1994-July 1995	0.030048

The next step is calculating standard deviation from every type of active stock in PT BEJ during 52 weeks, which is done for three times for standard deviation, for periods August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995. Afterward, the next task is the calculation of portfolio standard deviation for all corporations' active stock in PT BEJ during 52 weeks, which is done for three times, August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995.

TABLE 2
PORTFOLIO STANDARD DEVIATION
FOR ALL CORPORATIONS' ACTIVE STOCK IN PT BEJ
FOR PERIODS AUGUST 1992 – JULY 1993, AUGUST 1993 – JULY
1994, and AUGUST 1994 – JULY 1995

PERIODS	PORTFOLIO STANDARD DEVIATION
August 1992-July 1993	1.021077
August 1993-July 1994	0.019014
August 1994-July 1995	0.017819

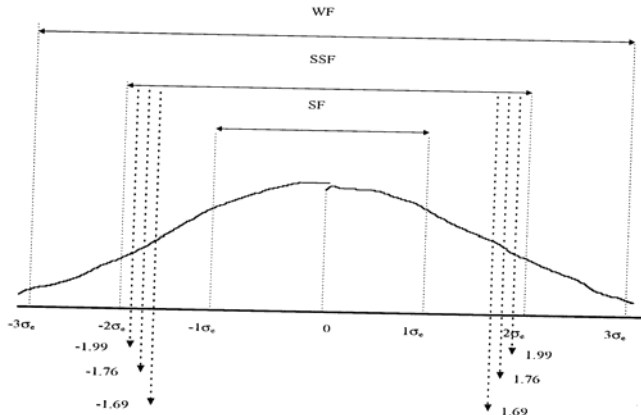
TABLE 3
INTERVALESTIMATES (AUGUST 1992 – JULY 1993,
AUGUST 1993 – JULY 1994, and AUGUST 1994 – JULY 1995)

PERIODS	INTERVAL ESTIMATES		
	$\mu \pm 1\sigma_e$	$\mu \pm 2\sigma_e$	$\mu \pm 3\sigma_e$
August 1992 – July 1993	0.063049 0.020895	0.084126 -0.000182	0.105203 -0.021259
August 1993 – July 1994	0.052393 0.014365	0.071407 -0.004649	0.090421 -0.023663
August 1994 – July 1996	0.047867 0.012229	0.065686 -0.005590	0.083505 -0.023409

TABLE 4
POINT ESTIMATES (AUGUST 1992 – JULY 1993, AUGUST 1993 – JULY
1994, and AUGUST 1994 – JULY 1995)

PERIODS	$\pm 1\sigma_e$	$\pm 1\sigma_e$	$\pm 1\sigma_e$	POINT ESTIMATES
August 1992 – July 1993	± 0.021077	± 0.042154	± 0.063231	± 1.9914105
August 1993 – July 1994	± 0.019014	± 0.038028	± 0.057042	± 1.755469
August 1994 – July 1996	± 0.017819	± 0.035638	± 0.053457	± 1.686265

FIGURE 1
LOCATION OBSERVATIONS OF WEAK FORM, SEMI-STRONG
FROM, AND STRONG FORM AROUND THE MEAN
FOR AUGUST 1992 – JULY 1995



The analysis result indicates that there is a variance of residual value from time to time of BEJ post-privatization, point of time August 1992 – July 1995, in which *Uji F* by applying *analysis of variance (Anova) one way* indicates *F-ratio* 28,211 along with probability 1,129E-11. The complete *print-out result* is shown on the table followed.

ANALYSIS OF VARIANCE

HEADER DATA FOR: C:EGAB123 LABEL: C:EGAB.DIF
 NUMBER OF CASES: 77 NUMBER OF VARIABLES: 3

ON-WAY ANOVA

GROUP	MEAN	N
1	.018	77
2	.042	77
3	.041	77
GRAND MEAN	.034	231

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	.028	2	.014	28.211	1.129E-11
WITHIN	.114	228	5.0154E-04		
TOTAL	.143	230			

DISCUSSION

As of the hypothesis analysis based on the *Anova one-way*, result in the outcome of *F-ratio* calculation 28,11 along with the probability 1,129E-11, indicates that *task hypothesis* (H_1) can be accepted by $\pm=5\%$, it means there is a significant variance on residual value in PT BEJ post-privatization from time to time, with periodically earlier than economic

crisis for three yearly periods continuously started from August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995, in which the continually residual value are 0,041972; 0,033379; and 0,030048.

The increasing of informational efficiency based on the residual value in PT BEJ post-privatization within August 1992 until July 1995 as the result of this research, valid only for all active stock categories of public corporations during research period.

In relation to the population characteristic in this research, that consist of all public corporations' active stock, the increasing of informational efficiency based on the residual value is invalid for all kind of public corporation's active stocks in post-privatization of PT BEJ from time to time, started from August 1992 to July 1995.

The increasing of informational efficiency based on the residual value that happens in PT BEJ from time to time (August 1992 – July 1995) indicates the increased position of the informational efficiency level. The increasing is not great, but its trait gradually proven from the result of *standard error* calculation that getting lower from time to time, yet it is not obvious, continually as much as $\pm 1,99$; $\pm 1,76$; and $\pm 1,69$. It means that even if the value of *standard error* is decreasing from time to time toward the residual value as much as the numbers above, nevertheless the limit of wholly *standard error* numbers still on the range of $1,5 \leq e_{1,2,3} \leq 2$. Consequently, the three of them exists on the same limit range, although there is a correction descriptively through the decreasing of residual value from time to time. If it is classified in a more narrow range, the three research periods will be in the limit of $e_{1,2,3} \leq 1,5$. As a result, the conclusion is that market efficiency just achieved

the lower limit. This position is somewhat uneasy for the efficiency itself is not strong enough, in which it might cause position friction happens easily because of the influenced factors that will influence the efficiency itself. Therefore, a strong consistency pattern is considered necessary in order to keep this efficiency on a fair, normal, and transparent process.

Noticed from the portion of inactive stock (*saham tidur*) from time to time, continually as much as 71%, 60% and 67% for August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995, it means that this conclusion is not generalized yet for PT BEJ for not all *listings* is active stock.

CONCLUSION

Based on the data processing result and hypothesis analysis result, thus the conclusion is that *task hypothesis* (hipotesis kerja) which previously proposed considered acceptable, on the other hand it is verified that there is a significant variance of residual value in PT BEJ post-privatization from time to time started from August 1992 until July 1995 earlier than economic crisis period.

Descriptively, it is obvious on the average residual value as much as 0,041972; 0,033379; and 0,030048 continually for periods August 1992 – July 1993, August 1993 – July 1994, and August 1994 – July 1995. The variance of residual value in PT BEJ post-privatization from time to time, earlier than economic crisis period, indicates the increasing of informational efficiency from time to time, proved by the standard error which getting lower on average residual value continually from time to time, as much as $\pm 1,9914105$; $\pm 1,755469$; and $\pm 1,686265$ from August 1992 – July 1993; August 1993 – July 1994; and August 1994 – July 1995. Nevertheless, the increasing of efficiency is yet unable to

exceed the limit of 1,5 *standard error* for active stock category. It means that informational efficiency is still on the beginning category, although increases happened from time to time.

SUGGESTION

This research only able to observe the changes that happened on residual value of active stock category in PT BEJ post-privatization from time to time, earlier than economic crisis period, thus it is unable yet to wholly observe the informational efficiency in PT BEJ post-privatization for all stocks that already *listing* from August 1992 until July 1995.

The increasing of informational efficiency in this research applies the concept of *capital market* efficiency based on its significance toward *true fundamental value*, in which the content of the information used is daily *closing price* and daily portfolio stock price of all *listing* active stocks in BEJ started from August 1992 until July 1995 period. Therefore, informational efficient market is reflected on the variance indicator which getting slighter between *actual return* and *expected return* on stocks being traded, or on the other hand, it is indicated by the balance between *financial value* and *market value*, in order that the lower of residual means the closer of both values.

Noticed that this study still have much limitations, it is suggested for the next research to consider these following recommendations, namely (1) Identify such other factors that influence the increasing of informational efficiency of *capital market*, in BEJ particularly, whether economic factor or non-economic factor, (2) Doing informational efficiency test by involving all stocks that already *listing* in BEJ, in order to get the whole representation, (3) Other specific efficiency test model

can be applied, (4) Improving the research result to the deeper side, which able to classify the efficiency form of *capital market* in relation to the content of each information.

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