

The Effect of Inflation Rate and Rupiah Currency Exchange Rate Fluctuation toward Stock Risk at Indonesia Capital Market

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Abstract—Equity premium is stock investment risk that it is necessary to consider to be included into free-risk return becomes return investor expectation. Equity premium inquirer occurred since it has been excessively extended to explain on capital asset pricing of Sharpe model. Equity premium explaining factor has been invented some variables, the following research will examine inflation rate variable, the fluctuation of rupiah exchange rate based on macro-economics factor which has influence to equity premium. Sample using purposive sampling as much 213 stocks which have completed data during period January 2007 up to December 2015. Secondary Data was collected using documentation method through electronic media. The result of this analyze found that inflation rate has negative influence significantly not in line with the theory due to inflation rate in Indonesia both its amount and its fluctuation are inversely proportional to advanced countries such as USA, while the fluctuating rupiah exchange rate is depreciated by the significant positive influence to equity premium.

Keywords—equity premium; inflation rate and fluctuating Rupiah exchange rate

I. INTRODUCTION

This research is to examine both inflation rate and Rupiah exchange rate to stock investment risk. Stock investment risk is divided into systemic risk and non-systemic risk [1], on asset pricing theory measured by market risk premium [2], after researching on its literature changed into equity premium [3]. Equity premium is stock investment risk that used as additional return that investor expectation of risk free return [2]. According to Harbula equity premium is necessary for rational investor as an additional remuneration return in stock investment [4].

Equity premium was invented by Mehra and Prescott in advanced countries capital market became an issue with equity inquirement [5]. It describes the fact that equity premium is excessively extended to be explained by traditional asset price fixing model of Sharpe. The inquirement indicator of equity premium of market risk return reality is far exceeded risk free return. In different time Solomon and Grootveld found that equity premium in advanced countries is better than what happens on capital market in developing countries [6].

The solution to finding the explanatory of equity premium puzzle accomplished by Mehra and Prescott by analyzing explanatory factor for real return [5], responded by Fama and French invented dividend factor and capital gain up to five factors [7], however they are still unable to explain on the requirement of equity premium. The other solution which were accomplished by Fama and French by searching for the explanatory factor of equity premium by discovering dividend as a factor that affects equity premium [8]. The similar invention by Campbell and Shiller, Blanchard as well as Heaton and Lucas also by Hashemijoo et al [9-12]. However Goyal and Welch found inconsistency of research result between dividend payout ratio to dividend yield, which is dividend yield used for estimating equity premium as dividend ratio hardly can be used for estimating totally but postwar [13]. The invention of the explanatory factor of equity premium remains proceeding, upon the factor that affects equity premium proceeding by solving on volatility stock price by [14] Zhao and Wu, also by Chen et al, and by Feunou as well as Harbula [4,14-16]. The macroeconomics factor in advanced countries found that inflation can affect equity premium by Gowing, as well as fluctuating exchange rate invented by Mun KC and also by Jun Tu and Wang [17-19].

Indonesian capital market by Manurung found that volatility stock price strongly affects equity premium, unfortunately there is no research to continue [20]. Stock investment risk is at the same rate to return therefore it would be considered by the investors Kahneman and Tversky [21].

The explanatory factor of stock risk of Indonesian macroeconomics is form of both inflation rate and Rupiah exchange rate may possibly affect the emittance transaction at capital market so it needs to study on the influence of equity premium in Indonesian capital market.

II. METHOD

This research adopts quantified analytical method, analyzing secondary data in form of time series data source from Indonesia Stock Exchange, Bank of Indonesia and Central Bureau Statistics.

Data population of this research is all shares that are traded in Indonesia Stock Exchange. Data sampling method used purposive sampling which was categorized as judgment sampling that is sample which is assorted to match to some criteria's Cooper and Emory [22]. Sample criteria is shares of non-financial company which the financial statement report has been completed since 2007 up to 2015, reported as much as 213 shares.

Data which is used during this research is in form of secondary data with internet data bases in form of time-series data. Data source during this research is taken from Indonesia Stock Exchange, Bank of Indonesia and Central Bureau Statistics. Data collection technique with documentation method and can be accessed through electronic media.

Dependent Variable is monthly equity premium that is calculated from IHSG basis and monthly risk free return based on Bank of Indonesia rate, both monthly data inflation rate independent variable and monthly fluctuating Rupiah exchange rate.

Data Analysis Method. used descriptive statistics analysis and regressive estimation method. Descriptive statistic analysis covers up average, value maximum, value minimum, mean and deviation standard each variable.

Regressive estimation with time series data, determined $n = 108$ to arrange multiple regression model:

$$EP_t = \alpha + \beta_1 \text{Inflation}_t + \beta_2 \text{ER}_t + \epsilon$$

Regressive model needs to examine classic assumption test in order to become a model which results an unbiased linier estimator (Best Linier Unbiased Estimator). Classic assumption test covers up heteroscedastic test with Glejser test, autocorrelation test with Durbin Watson test, normality test with Kolmogorov Smirnov test, and multi collinear test by detecting Tolerance value and Variance Inflation Factor (VIF) as the opponent.

III. RESULT AND DISCUSSION

A. Hypothesis

Inflation represented as a tendency of a continuous general raising prices [23]. According to Fredman and Milton, Inflation rate determined by the growth of money currency and by public expectation on increasing price in the future [24]. According to Keynes theory, that inflation rate has a chance to happen due to inflationary gap [25].

Gowing obtained that the increasing of inflation rate has influence for increasing equity premium at capital market in advanced countries [17].

Hypothesis 1: inflation rate has positive influence toward Equity premium.

International exchange rate value will be changeable, which is caused by the export-import balance change, capital flow, international balanced trade structure. Fluctuating exchange rate also occurred as either goods or service price change which is affected by both offer and demand level against that currency. When an exchange rate of a country is depreciated, it

will cause the raising of operational costs on the emit in that country as well as raising up a business risk. Jun Tu and Wang found the res result that when an exchange rate is depreciated, it can increase equity premium [19].

Hypothesis 2: Depreciated Rupiah currency exchange rate affects positively toward Equity premium.

B. Data Analysis Result

1) *Descriptive analysis*: Descriptive analysis result of time series equity premium data, both inflation rate and fluctuating Rupiah exchange rate with monthly unit during 108 months as shown following table below:

TABLE I. THE RESULT OF TME SERIES DATA DESCRIPTIVE ANALYSIS

	EP	Exchange rate	Inflation
N	108	108	108
Valid	108	108	108
Missing	0	0	0
Mean	.4822	.3779	.5054
Std. Deviation	6.46940	3.28354	.59218
Minimum	-32.21	-8.09	-.36
Maximum	19.51	10.57	3.29

2) *Multiple regression analysis*: Time series data in monthly unit that started in January 2007 up to December 2015 thus n consisted 108 analyzed with obtained result regression model as following:

$$EP = 1,321 - 2,2081 \text{ Inflation} + 0,64 \text{ ER.}$$

Goodness of Fit Test of the obtained model:

a) *F Test*: Amount $F_{\text{counted}} 7,415$ with Prob. 0,001 which means its probability smaller than $\text{Prob}_{\text{standar}} 0,05$ meant that model which is obtained is fine and independent variables significantly affect Equity premium.

b) *Parameter significance test with t. Test*: The influence of each independent variable toward Equity Premium (EP) by *t* test as following:

- Inflation variable (Inflation Rate) consists t_{count} :

0,564. The influence of Rupiah currency fluctuation results positive significance 0,564 indicates if Rupiah Currency changed up to 1 (one) increases Equity premium amounted 0,564, and vice versa if Rupiah Currency decreased (depreciation) amounted 1 (one) will decrease Equity premium 0,564..

c) *Determination coefficient Test (R^2)*: Determination coefficient test result (R^2) up to 0,124 means independent variable both Inflation rate and Rupiah currency consists level of influence toward Equity Premium up to 12,4%.

3) Regression model assumption test

a) *Normality test*: Normality Test with Kolmogorov-Smirnov Test obtained statistics value up to 1,034 considered prob. Up to 0,235 indicates its probability > standard prob. 0,05. Means time series data residue considered normal data.

b) *Multi collinear test*: Multi collinear Test Result to Inflation Rate obtained Tolerance value 0,997 and VIF 1,003, as Rupiah Currency variable obtained Tolerance value 0,997 and VIF 1,003. Indicates both of variables result the inexistence of multi collinear.

c) *Autocorrelation test*: Durbin-Watson value d_{table} with $n = 108$ and number of columns = 3. amounted $d_u = 1,48$ and $4 - d_u = 4 - 1,482 = 2,528$.

Durbin Watson stat obtained 1,575 stands between d_u and $(4 - d_u)$ or 1,482 – 2,528 means H_a rejected and H_o accepted means the inexistence of autocorrelation.

d) *Heteroscedastivity test*: Glejser test analysis result obtained $F_{statistik}$ 0,305 level of significance 0,738. Inflation rate variable consists significance 0,645 and rupiah Currency exchange rate consists significance 0,516. Both inflation rate and Rupiah currency exchange rate variable stated inexistence of heteroscedasticity.

Classic assumption test result of time series data regression model stated normal data, inexistence of auto correlation, inexistence of heteroscedasticity. Regression model that obtained by time series data analysis probably provides BLUE (Best Linear Unbiased Estimator).

C. Discussion

1) *Inflation rate influence toward equity premium*: Inflation rate provided through time series data analysis obtained affects negatively and significantly toward Equity Premium. Thus, 1 hypothesis 1 (H_1) that inflation rate affects positively and significantly toward equity premium is unproved. Inflation rate affects negatively and significantly is unmatched to the invention at capital market in advanced countries which was invented by Gowing [17]. According to Boediono inflation rate is a tendency of increasing prices generally and continuously as well [23]. Also, inflation would occur if there is the volume escalation of currency circulation both currency and demand deposit Friedman and Milton [24]. According to Keynes theory, that inflation indeed occurs due to the extravaganza of society, it will cause an inflationary gap [25]. Based on the theory, it can be concluded that inflation rate should be remarked by the increasing prices that indicating depreciation of number of products which being traded by the emitten as well as decreasing the purchasing ability of customers.

The causes of the unlinear invention in advanced countries capital market by Gowing possibly occurred by neither the increase of inflation rate in advanced countries nor level of fluctuation are similar compared to Republic of Indonesia [17]. Inflation rate in advanced countries such as USA are lower however Indonesia inflation rate is higher. Inflation rate condition between USA and Indonesia as shown in this following table below:

TABLE II. INFLATION RATE BETWEEN USA AND INDONESIA

No	Year	Rate of Inflation (%)	
		Indonesia	USA
1	2010	4,8	-0,4
2	2011	5,1	1,6
3	2012	5,4	3,0
4	2013	4,3	1,7
5	2014	8,4	1,5
6	2015	8,4	1,6
Average		6,067	1,5

Source: Central Beureau statistics data.

Comparative Data as shown in table II that inflation rate seen higher in Indonesia with tendency to increase, compared to USA shown lower and tendency to be stable. Increased Inflation rate causes increase of cost for emit, it potentially decreases both dividend and equity premium.

2) *The influence of Rupiah currency exchange rate fluctuation toward equity premium*: Rupiah currency exchange rate fluctuation toward both \$ USA and Equity premium analyzed using time series data, revealed affects significantly toward Equity Premium. In this case, hypothesis assumed that Rupiah Currency compared to depreciated US \$ affects positively toward Equity premium literally proved. This analysis result is linear with the invention Jun Tu and Wang in advanced countries capital market that when depreciated exchange rate possibly increases Equity premium [20]. International exchange rate possibly fluctuated every single minute. Exchange rate Fluctuation becomes either depreciated weakened or appreciated strengthened. US \$ Currency becomes an international transactional payment instrument. The influence Rupiah currency exchange rate toward equity premium becomes counterbalance to advanced countries applied \$ US.

Depreciated Rupiah Currency Exchange Rate toward \$ US caused the increase of cost that expensed by emit, therefore it contributes to decrease customer's purchasing ability. The Emit will bear the risk due to depreciated rupiah Currency, also decreasing profit potency which possibly decreasing dividend. Depreciation of Rupiah affects the potency of dividend, it will increase the ticker stock investment risk. Rupiah Currency Exchange Rate toward \$ US and also affecting Equity premium so it can be used as prediction of equity premium.

IV. CONCLUSION

Inflation rate found affect negatively significancy toward equity premium from time series data test. This test result is not accordance with the invention in advanced countries capital market. The difference is due the existence of high inflation rate and fluctuation both in Indonesia and in advanced country such as USA.

Depreciated Rupiah currency exchange rate toward \$ USA found affecting positively significantly toward equity premium. Hypothesis 2 (H_2) proved, therefore Rupiah currency exchange rate toward \$ US can be used to predict equity premium. This test result is accordance with invention in advanced countries that Rupiah fluctuation which is depreciated toward \$ US will increase equity premium.

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