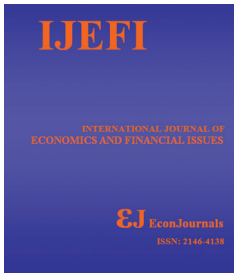

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The Determinants of Investment Rewards: Evidence for Selected Developed and Developing Countries

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ABSTRACT

The empirical studies on investors' investment reward rarely focus on the performance of excess returns across the developing and developed countries: Investment in the developing countries has higher risk thus requires higher return compared to developed countries. Therefore, study on investors' investment reward cannot rule out the role of the performance of excess returns simply because of data mining, complex data collection process and misspecification of the model. The objective of this study is to examine the underlying determinants of investors' investment reward on excess stock return such that provide better understanding on the fact that the developing countries has more risk compared to developed countries and the internal factors are important for investors in the investment decision making process. The findings of this study indicate that there is an equilibrium relationship between investors' investment reward and its determinants, namely, risk premium of market, firm size and book-to-market value. In addition, the internal factors are important to the investors in making investment decisions and the relationships of the underlying determinants are prevalent in the developing countries. This study suggests that risk premium of market, firm size and book-to-market value can serve as indicators of the investors' investment reward that provide better understanding that developing countries has more risk than developed countries. This study also suggests that the investors and policy makers should consider the role of the underlying determinants in the investors' investment decision making process.

Keywords: Excess Stock Return, Risk Premium of Market, Firm Size, Book-to-market Value
JEL Classifications: D46, G31

1. INTRODUCTION

Stock return refers to the reward for investments in the stock market. The early work by Sharpe (1964) and Lintner (1965) have described the expected return for risky investment. The potential return posed by the fast financial innovations in financial market induces recurrent financial destructions and thus affect the investors' investment rewards (Gennaioli et al., 2012). Enormous of emphasis has been focused on explaining the behaviour of stock return and investors' rationality, which result in the study on pricing of securities in efficient market (Fama, 1991; Fama and French 1995; Gozbasi et al., 2014). Despite of these researches, the performance remains vague and is not in line with the experience of practitioners. Therefore, the question arises on whether research in this area could improve our knowledge concerning the underlying determinants affecting the investors' investment reward.

The motivation of this study is that the empirical literatures on investors' investment reward rarely focus on the performance of excess returns across the developing and developed countries: Investment in the developing countries has higher risk thus requires higher return compared to developed countries (David et al., 2014; Bekaert and Harvey, 1997). The differences of investors' investment reward between the developing and developed countries is stemming from the causes of institutions and market structures (Bruner et al., 2002; Steil, 2001; Knight, 1998). Therefore, study on investors' investment reward cannot rule out the role of the performance of excess returns simply because of data mining, complex data collection process and misspecification of the model. Empirical studies on the stock return are typically focused on risk premium of market, firm size, book-to-market value, interest rate and inflation. With respect to risk premium of market, Savor and Wilson (2014) discover that the risk premium

of market is positively related to stock return in US on important news announcement days. Moerman and Van Dijk (2010) find this positive relation implies that investors are risk averse in the G5 countries. Santosa and Laksana (2011) reveal that positive risk premium of market compensates investor on the losses from the market volatility in Indonesia. So and Tang (2010) and Hodoshima et al. (2000) find the present of significant market risk premium during the period of up and down markets in Singapore and Japan. Chen and Huang (2007) find important evidences of the switching of market risk premium in high and low volatility regimes on the excess return of stock indices in Hong Kong, Malaysia, South Korea and Taiwan. Clare et al. (1997) point out that the importance of risk premium of market in explaining the portfolio returns in UK depends on the techniques used.

With respect to firm size effect, Wong (1989) finds that stocks of small firms earned higher returns than stocks of big firms. The results of the studies by Martani et al. (2009), Bagella et al. (2000) and De Groot and Verschoor (2002) corroborate the findings of Wong (1989) in Indonesia, UK, India, Korea, Malaysia, Taiwan and Thailand. Rutledge et al. (2008) reveal negative return for small firms during bear market in China. Chen and Chien (2011) claim that size effect is apparent for small firms with higher risks in the month of January in Taiwan. Lischewski and Voronkova (2012) argue that though small stocks perform better than big stocks, they do not capture entirely the total equity premium in the Poland stock exchange. Kassimatis (2008) suggest that the firm size could be accounted for the changes in market risk in Australia as a result of the business cycle variation. On the other hand, Fama and French (1998) claim that the value premium is pervasive in the cross section of stock return in international markets. Drew and Veeraraghavan (2002) find that stocks with higher book-to-market value ratio, i.e., the value stock earns higher returns in Malaysia. The findings of Drew and Veeraraghavan (2002) are supported by the studies of Cakici et al. (2013), Athanassakos (2009), Ooi and Liow (2004), Davis et al. (2000) and Daniel and Titman (1997) in developing and developed countries. Bali and Engle (2010) point out that book-to-market value is a priced factor in US which moves closely with the investment opportunities that induce additional risk premium on individual stocks and portfolios.

In addition, Choi and Jen (1991) argue that interest rate is a significant source related to the expected portfolio return in US. Thorbecke (1997) claims that interest rate in US affects stock return by changing the firm's future cash flows or discount rate used to capitalise those cash flows. Petkova (2006) discovers that innovation to the interest rate explains future investment opportunities related to the portfolio returns in US. Lioui and Maio (2014) and Henry (2009) find that changes in interest rate affect the opportunity cost for investments in US and UK stocks. Moreover, Chen et al. (1986) and Fama (1981) discover that innovations in inflation are rewarded in the US stock returns. According to Modigliani and Cohn (1979), negative stock-inflation relation is an outcome of the inflation illusion characterizes by the stock market investors. Choudhry (2001) claims that investors expect lower return as a result of wealth contraction due to the inflation in Argentina, Chile, Mexico and Venezuela. Lin (2009) reveals that the effect of inflation on stock market leads to lower investment and economic growth in 16 industrialised organization for economic cooperation and development countries. Lee (2010) argues that there are positive and negative regimes in explaining stock return – inflation relations in the US and ten developed countries. Li et al. (2010) corroborate the finding of Lee (2010) reveals that the relationships of stock return is positive for expected inflation and negative for unexpected inflation in medium term in UK. Other determinants, such as default spread, output and exchange rate are also important in the stock return literature. Hartmann et al., (2008); De Bondt (2005), Fama and French (1989) demonstrate that there is a relation between stock returns and the default spread in the US. Output contains information about expectations of corporate earnings which is important in determining stock return across OECD countries (Madsen et al., 2013, Chun et al., 2013; Gallegati, 2008; Vassalou, 2003; Fama, 1990). Exchange rate affects stock return through changes in capital flows and international competitiveness in Asian-5 and developed economies (Liang et al., 2013; Katechos, 2011; Kanas, 2000).

The objective of this study is to examine the underlying determinants of investors' investment reward on excess stock return such that provide better understanding on the fact that the developing countries has more risk compared to developed countries and the internal factors are important for investors in the investment decision making process. Four selected developing countries, namely Indonesia, Malaysia, Singapore, and Thailand, and four selected developed countries, namely Canada, Japan, United Kingdom (UK) and United States (US) are included as samples in this study. For the analysis purposes, this study used the Granger causality and the bivariate vector autocorrelation methods. The rest of the paper is organized as follows. Section 2 presents the theoretical model of the stock returns. Section 3 explains the data and methodology used in this paper. Section 4 discusses the empirical results of this paper and conclusions are presented in Section 5.

2. MODEL SPECIFICATIONS

Sharpe (1964) and Lintner (1965) introduce the capital asset pricing model (CAPM) that explains the equilibrium relationship between risk and expected returns on risky asset. They claim that the investors' investment reward is related to the risk premium of market which represents the systematic risk associated to the market return. According to the CAPM, the expected return of an individual asset is a positive linear function of the risk premium of market. The investment reward for the investors can be stated in "excess return" form (Modigliani and Pogue, 1974; Black et al., 1972). The excess stock return is indicated by the following equation:

$$r_t - r_f = \beta_i (r_{mt} - r_f)$$

$$er_{jt} = \beta_1 (m_t) \quad (1)$$

where r_t is the expected stock return, r_f is the risk-free rate and r_{mt} is the return on market. The excess stock return, er_{jt} is the expected stock return minus risk-free rate. m_t is the risk premium

of market which is the differences between return on market and risk-free rate.

With the evidence of firm-specific characteristics in the literature (Banz, 1981; Reinganum, 1981 and 1982; Rosenberg et al. 1985; Chan et al. 1991), Fama and French (1992 and 1993) introduce a model that examine the joint roles of the conventional market factor and firm-specific internal factors in the cross-section of average returns on the US stocks. They find that firm size and book-to-market value play dominant roles to describe average stock returns. The standard CAPM model in equation 1 is extended to encompass firm size and book-to-market value factors. The inputs of the extended model are specifies as follows:

$$er_{jt}=\beta_1(m_t)-\beta_2(s_t)+\beta_3(b_t) \quad (2)$$

where er_{jt} is the excess stock return, m_t is risk premium of market, s_t is firm size, b_t is book-to-market value, β_1, β_2 and β_3 are coefficients for risk premium of market, firm size and book-to-market value respectively: j = 1, 2,…, and 7, j is different sets of investments, i.e., er_1 is the excess return on stock market index, er_2 is the excess return on small s and low b portfolio, er_3 is the excess return on small s and medium b portfolio, er_4 is the excess return on small and high b portfolio, er_5 is the excess return on big s and low b portfolio, er_6 is the excess return on big s and medium b portfolio, er_7 is the excess return on big s and high b portfolio.

Equation 2 is the three-factor asset pricing model proposed by Fama and French (1992 and 1993). The model indicates that the excess stock return is determined by the risk premium of market, firm size and book-to-market value. The risk premium of market is the differences between return on market and risk-free rate proposed by the CAPM, firm size is the difference of returns for small firm and big firm portfolios (small minus big in terms of firm size), and book-to-market value is the difference of returns for value stocks and growth stocks portfolio (high minus low in terms of book-to-market value). The excess return on stock depends positively on the risk premium of market and the book-to-market value and negatively on the firm size.

Risk premium of market affects the excess return on stock through increase in the degree of risk aversion of investors to the volatility of market. The greater the degree of risk aversion, the higher the rate of return required to compensate investors for bearing market risks and the higher the risk premium of market (Campbell, 1996; Lintner, 1965). Firm size is negatively related to excess return on stock where the average returns on small firms, i.e., stocks with low market equity outperform big firms, i.e., stocks with high market equity. According to Banz (1981), investors dislike small stocks that have inadequate information and subsequently lead these stocks to higher returns. Lakonishok et al. (1994) suggest the effect of value premium on stock return where the firms with higher book-to-market ratio, i.e., value firms outperformed firms with lower book-to-market ratio, i.e., growth firms. Fama and French (1993 and1995) claim the value premium is the compensation of risk neglected by the CAPM.

3. DATA AND METHODOLOGY

3.1. Data Description

The data used in this study is retrieved from the Thomson Reuters DataStream database. The analysis is conducted by using quarterly data from 1995 to 2014. Four selected developing countries including Indonesia, Malaysia, Singapore and Thailand, and four selected developed countries including Canada, Japan, UK and US are used as samples in this study. The data used in this study comprises the excess return on stock, risk premium of market, firm size and book-to-market value. The dependent variables for this study are excess return on stock market index and excess return on six size and book-to-market value sorted portfolios. The risk-free rate is proxy by the money market rates. The quarterly excess returns on stocks are calculated from quarter one to four for year t. The risk premium of market is proxy by the return on value weighted Morgan Stanley Capital International All Country World Index-Investible Market Index[1] (MSCI ACWI IMI). The MSCI has been used as the proxy for market index in numerous studies (Ferson and Harvey, 1994; Harvey and Zhou, 1993).

Firm size is measured by the market value of the equity. It indicates the market capitalization of a stock computed by multiplying the stock price by the number of shares outstanding. Firm size describes the difference between the returns on a portfolio of small stocks and a portfolio of big stocks. The book-to-market value is calculated by dividing one over the Price-to-Book value ratio[2]. It indicates the difference between the return on a portfolio of high book-to-market value and the return on a portfolio of low book-to-market stocks. It is computed from quarter three in year *t-1* due to the time lag in reporting accounting information (Fama and French, 1992 and 1993). Following previous literature, this study disregards firms with negative and missing book-to-market values (Gregory et al., 2013). The firm size and book-to-market value factors are constructed by using quarterly data of the firms that are traded continuously for the period of 1995-2014[3].

To construct the size and book-to-market value sorted portfolios as well as size and book-to-market value factors, six portfolios are created from the intersection between firm size and book-to equity value. At the quarter four in year *t-1*, the stocks are first ranked and assigned into two portfolios of size, namely small and big based on the median of the market value of all stocks. Small stocks are stocks that ranked above the median of market value and big stocks are below such value. The same stocks are independently ranked and sorted into three portfolios of book-to-market value. The bottom 30% of the ranked firms are named as low book-to-market value stocks, the middle 40% is called medium book-to-market value stocks and top 30% is identified as high book-to-market

1 This value weighted MSCI ACWI IMI is based on market cap weighted parent index, the MSCI ACWI IMI which covers approximately 99% of the global equity investment opportunity set. The index includes investment in large, mid and small capitalization stocks across 23 developed markets and 23 emerging markets.

2 This measure of book-to-market value is comparable to the approach proposed by Griffin (2002).

3 This is consistent with numerous studies on Capital Asset Pricing Model that construct portfolio with firms which exist within a specific number of times (c.f. Faff et al., 2002; Brailsford and Josev, 1997).

value stocks. Six value-weighted portfolios are constructed from the intersections of two firm size and three book-to-market value portfolios., namely small size and low book-to-market value, small size and medium book-to-market value, small size and high book-to-market value, big size and low book-to-market value, big size and medium book-to-market value, and big size and high book-to-market value. The returns for these six value weighted portfolios are the dependent variables used in this study, namely er_2, er_3, er_4, er_5, er_6, and er_7. The value-weighted portfolio returns are calculated each quarter over the year following the portfolio construction. Reiterating these portfolio construction procedures every year results in 80 value-weighted quarterly returns from 1995 to 2014.

The firm size and book-to-market value variables are calculated based on the following portfolio constructions. Firm size (s) is the simple average of the returns on the small stock portfolio minus the returns on big stock portfolios (small minus big) indicated as follows:

$$s = \left(\frac{SL + SM + SH}{3}\right) - \left(\frac{BL + BM + BH}{3}\right) \quad (3)$$

Book-to-market equity (b) is the simple average of the returns on the high book-to-market value portfolios minus the returns on low book-to-market value portfolios (high minus low) as below:

$$b = \left(\frac{SH + BH}{2}\right) - \left(\frac{SL + BL}{2}\right) \quad (4)$$

3.2. Methodology

The Granger causality and bivariate vector autoregressive (VAR) methods are used to test for the causality and simple relationship between excess stock return proxy by the excess return on stock market index and the size and book-to-market value sorted portfolios and its determinants of risk premium of market, firm size and book-to-market value.

Granger (1969) introduces a simple test to explain causality between two variables, Y_t and X_t. Causality refers to the ability of one variable to predict other variable. For instance, Y_t granger cause X_t if X_t can be predicted with accuracy based on the past value of Y_t. Granger causality test for two stationary variables, Y_t and X_t, can be specified by the following bivariate VAR model:

$$Y_t = a + \sum_{i=1}^{n} \alpha_i Y_{t-i} + \sum_{i=1}^{n} \beta_i X_{t-i} + \varepsilon_t \quad (5)$$

where α is constant, n is the number of time lags and ε_t is the error term. If $\beta_i = 0$, X_t does not cause Y_t.

Bivariate VAR test describe the linear function of a set of endogenous variables in the system equations. Each equation consists of the endogenous variables with the lagged values of all endogenous variables in the system including its own lagged values. Assume y_t is influenced by present and past values of x_t and at the same time, x_t is affected by present and past values of the y_t. A simple bivariate autoregressive model is given as follows:

$$y_t = \beta_{10} - \beta_{12} x_t + \gamma_{11} y_{t-1} + \gamma_{12} x_{t-1} + u_{yt} \quad (6)$$

$$x_t = \beta_{20} - \beta_{21} y_t + \gamma_{21} y_{t-1} + \gamma_{22} x_{t-1} + u_{xt} \quad (7)$$

where both y_t and x_t are stationary, and u_{yt} and u_{xt} are uncorrelated white-noise error terms.

4. EMPIRICAL RESULTS

The unit root test is used to examine the stationarity of the variables, namely excess return on stock market index (er_1), excess returns on six size and book-to-market value portfolios (er_2, er_3, er_4, er_5, er_6, er_t), risk premium of market (m), firm size (s) and book-to-market value (b) factors in this study. The augmented Dickey Fuller unit root rests are presented in Table 1. The results indicate that all the variables are stationary at level, i.e., integrated of order zero, I(0).

4.1. Granger Causality Test Results

The Granger causality test is conducted to determine the causality between excess return on stock and its determinants. The causality between excess return on stock proxy by the return on market index and return on size and book-to-market value portfolios, risk premium of market, firm size and book-to-market value are conducted for each of the selected countries. To define the effect of the underlying determinants on the excess stock return, the following results are reported for the causality of the determinants on the excess stock returns only.

Table 2 indicate that the risk premium of market, firm size and book-to-market value generally Granger cause excess stock return in the developing countries, namely, Indonesia, Malaysia, Singapore and Thailand. However, the results show that risk premium of market do not Granger cause er_2 in Malaysia. In addition, the null hypotheses of firm size does not Granger cause excess stock returns on er_5 in Indonesia, er_2 and er_5 in Malaysia and er_7 in Thailand cannot be rejected. There is no causality between book-to-market value and excess stock returns for on er_1 and er_6 in Indonesia, er_1, er_2, er_3 and er_6 in Malaysia, er_1, and er_6 in Singapore and er_2, er_3 and er_7 in Thailand.

Table 3 indicate that generally there is causality between excess stock return and the risk premium of market, firm size and book-to-market value. But, risk premium of market does not Granger cause excess stock return for er_5 and er_7 in UK and er_1 in US. Moreover, there is no causality between firm size and excess stock return for er_1, er_2, er_3 and er_5 in Canada, er_5 in Japan and er_1, er_4, er_5, and er_7 in UK. Book-to-market value does not Granger cause er_3, er_6 and er_7 in Canada, er_1 and er_5 in Japan, er_3 and er_5 in UK.

4.2. Bivariate VAR

Table 4 reports the results of the bivariate VAR model of the investors' investment reward. The insignificant and incorrect expected sign variables are not presented in the Table 4. From the Table 4, it indicates that risk premium of market has a significant positive relationship with excess stock return. Risk premium of market in developing countries is higher than the developed countries in all sets of investment except for the small-sized and

Table 1: Summary statistics for the ADF unit root test

Variables	Developing countries				Developed countries			
	Indonesia	Malaysia	Singapore	Thailand	Canada	Japan	UK	US
er_1								
Level	−3.462*** [1]	−9.217*** [0]	−7.606*** [0]	−7.713*** [0]	−7.711*** [0]	−7.304*** [0]	−6.807*** [0]	−7.90*** [0]
First difference	−14.70*** [0]	−11.58*** [1]	−14.15*** [0]	−16.77*** [0]	−11.26*** [1]	−11.92*** [1]	−14.13*** [0]	−7.598*** [3]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
er_2								
Level	−8.868*** [0]	−8.123*** [1]	−8.994*** []	−8.195*** [1]	−8.544*** [1]	−15.58*** [1]	−9.097*** [1]	−9.163*** [1]
First difference	−10.49*** [1]	−8.441*** [3]	−6.45*** [8]	−7.98*** [3]	−13.79*** [1]	−10.17*** [3]	−8.003*** [4]	−9.87*** [3]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
er_3								
Level	−6.874*** [0]	−6.08*** [5]	−6.186*** [5]	−7.575*** [0]	−8.641*** [1]	−15.24*** [1]	−10.60*** [1]	−9.752*** [1]
First difference	−8.852*** [1]	−9.253*** [3]	−8.922*** [3]	−6.118*** [5]	−8.542*** [3]	−9.762*** [3]	−10.41*** [3]	−11.13*** [3]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
er_4								
Level	−8.237*** [0]	−6.899*** [3]	−7.579*** [1]	−7.892*** [1]	−7.155*** [3]	−15.88*** [1]	−7.669*** [3]	−7.487*** [3]
First difference	−6.189*** [7]	−9.556*** [3]	−8.738*** [3]	−8.831*** [3]	−10.11*** [3]	−9.763*** [3]	−10.67*** [3]	−7.505*** [5]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
er_5								
Level	−6.678*** [1]	−9.68*** [1]	−7.323*** [03	−8.026*** [1]	−9.961*** [1]	−6.532*** [3]	−9.068*** [1]	−7.128*** [3]
First difference	−8.514*** [2]	−9.056*** [3]	−8.726*** [3]	−6.72*** [5]	−8.163*** [4]	−8.50*** [3]	−7.973*** [4]	−8.275*** [3]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
er_6								
Level	−8.923*** [1]	−8.017*** [1]	−8.333*** [1]	−8.449*** [1]	−1.112*** [1]	−10.29*** [1]	−8.352*** [3]	−10.6*** [3]
First difference	−9.332*** [2]	−8.365*** [3]	−8.76*** [3]	−6.939*** [5]	−8.751*** [4]	−8.333*** [3]	−7.625*** [5]	−8.564*** [1]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
er_7								
Level	−8.819*** [1]	−8.705*** [1]	−9.011*** [1]	−8.036*** [0]	−10.53*** [0]	−13.78*** [1]	−9.161*** [1]	−8.743*** [1]
First difference	−8.869*** [3]	−8.043*** [4]	−9.66*** [2]	−6.462*** [7]	−7.988*** [4]	−6.085*** [8]	−7.619*** [5]	−9.653*** [3]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
m								
Level	−4.371*** [0]	−7.57*** [0]	−7.752*** [0]	−6.965*** [0]	−7.531*** [0]	−7.713*** [0]	−7.322*** [0]	−−7.599*** [0]
First difference	−10.67*** [0]	−8.693*** [2]	−8.818*** [2]	−8.382*** [3]	−8.773*** [2]	−8.893*** [2]	−8.649*** [2]	−8.899*** [2]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
s								
Level	−9.444*** [0]	−8.504*** [1]	−9.499*** [1]	−8.80*** [1]	−8.33** [0]	−14.29*** [1]	−11.22*** [1]	−9.834*** [1]
First difference	−12.24*** [1]	−7.492*** [4]	−7.315*** [6]	−9.082*** [3]	−11.95*** [1]	−10.91*** [3]	−9.894*** [3]	−7.38*** [5]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)
b								
Level	−12.04*** [0]	−8.975*** [4]	−7.022*** [3]	−3.431*** [2]	−9.144*** [1]	−10.71*** [1]	−8.907*** [1]	−9.99*** [0]
First difference	−13.61*** [1]	−9.282*** [1]	−8.076*** [6]	−12.95*** [26]	−8.419*** [3]	−7.715*** [4]	−9.05*** [4]	−10.22*** [2]
Decision	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)	I (0)

Source: Author's calculations using EViews software. Note: The sample period covers from 1995Q1 to 2014Q4. ** and *** denote the rejection of the null hypothesis of the unit root at the 10%, 5% and 1% significant levels. Figures in the [ ] are the lag length selected based on the Schwartz criterion. ADF: Augmented Dickey Fuller

medium book-to-market value sorted portfolio, and the small-sized and high book-to-market value sorted portfolio, er_{4t}. On the other hand, majority of the firm size variables have significant negative signs. Consistent with the theory (Fama and French, 1992 and 1993; Banz, 1981), the risk premium of firm size for small-sized portfolio (er_{2t}, er_{3t}, er_{4t}) is larger than the big-sized portfolio (er_{5t}, er_{6t} and er_{7t}) in Thailand. The firm size effect is stronger in the developing countries for the excess return on small-sized portfolios of er_{2t}, er_{3t}, er_{4t}. On the other hand, this effect is stronger in developed countries for the excess return on stock index, er_{1t} and excess return of a big-size portfolio of er_{7t}. The performance of big-sized portfolios of er_{5t} and er_{6t} are equivalent in both developing and developed countries.

In addition, the book-to-market value generally has significant positive sign. The book-to-market value is larger for high book-to-market portfolios, i.e., er_{4t} and er_{7t} compare to low book-to-market value portfolios, i.e., er_{2t} and er_{5t} in Malaysia and Singapore. This result is consistent with the study of Drew and Veeraraghavan (2002). It supports the study by Fama and French (1998) who reveal that annual return in value portfolios (high book-to-market value) is higher in emerging market than the developed countries. The book-to-market value is generally higher in developing countries compare to the developed countries for the portfolios of er_{1t}, er_{3t}, er_{4t}, and er_{6t}. Overall, it indicates that the relationship of excess stock return and risk premium of market, firm size and book-to-market value in developing countries is more dominant than developed countries, although some of the portfolios are not favourable in developing countries.

Form the above discussion, few findings can be drawn for this study. First, there is an equilibrium relationship between investors' investment reward and its determinants, namely, risk premium of market, firm size and book-to-market value. This finding supports

Table 2: Causality between excess stock return (er_{jt}) and risk premium of market (m), firm size (s) and book-to-market value (b) in developing country

Null hypothesis	Indonesia	Malaysia	Singapore	Thailand
er_1 with m, s and b				
m does not Granger cause er_1	89.17*** [1] (Reject)	2.966** [3] (Reject)	4.372** [2] (Reject)	2.810* [2] (Reject)
s does not Granger cause er_1	4.099* [1] (Reject)	5.566*** [2] (Reject)	4.200** [1] (Reject)	3.889** [2] (Reject)
b does not Granger cause er_1	1.474 [8] (Do not reject)	1.219 [16] (Do not reject)	0.902 [7] (Do not reject)	3.247** [2] (Reject)
er_2 with m, s and b				
m does not Granger cause er_2	9.174*** [2] (Reject)	0.752 [2] (Do not reject)	16.45*** [1] (Reject)	33.68*** [1] (Reject)
s does not Granger cause er_2	2.838** [3] (Reject)	1.720 [2] (Do not reject)	1.853* [14] (Reject)	3.552** [2] (Reject)
b does not Granger cause er_2	4.166** [1] (Reject)	0.933 [1] (Do not reject)	5.834** [1] (Reject)	1.411[2] (Do not reject)
er_3 with m, s and b				
m does not Granger cause er_3	7.766*** [2] (Reject)	5.734*** [2] (Reject)	17.67*** [1] (Reject)	15.57*** [1] (Reject)
s does not Granger cause er_3	2.373** [5] (Reject)	4.430** [2] (Reject)	3.116*** [12] (Reject)	2.627** [5] (Reject)
b does not Granger cause er_3	2.317** [7] (Reject)	1.427 [6] (Do not reject)	3.855* [1] (Reject)	2.111[3] (Do not reject)
er_4 with m, s and b				
m does not Granger cause er_4	6.294*** [2] (Reject)	6.749*** [2] (Reject)	10.91*** [1] (Reject)	17.32** [1] (Reject)
s does not Granger cause er_4	2.256** [14] (Reject)	4.190** [1] (Reject)	1.733* [13] (Reject)	4.512** [2] (Reject)
b does not Granger cause er_4	4.986*** [2] (Reject)	2.676** [6] (Reject)	8.060*** [2] (Reject)	3.818** [2] (Reject)
er_5 with m, s and b				
m does not Granger cause er_5	24.96 *** [1] (Reject)	1.817* [8] (Reject)	18.90*** [1] (Reject)	16.66*** [1] (Reject)
s does not Granger cause er_5	2.423 [1] (Do not reject)	4.459 [2] (Do not reject)	1.922* [12] (Reject)	1.860* [13] (Reject)
b does not Granger cause er_5	1.990** [16] (Reject)	2.181* [6] (Reject)	1.374* [1] (Reject)	4.167** [2] (Reject)
er_6 with m, s and b				
m does not Granger cause er_6	2.065*** [1] (Reject)	5.396*** [2] (Reject)	26.74*** [1] (Reject)	19.60*** [1] (Reject)
s does not Granger cause er_6	1.990 [3] (Do not reject)	2.417* [2] (Reject)	2.130** [12] (Reject)	3.159** [2] (Reject)
b does not Granger cause er_6	2.057 [1] (Do not reject)	0.991 [2] (Do not reject)	2.234 [1] (Do not reject)	5.575*** [2] (Reject)
er_7 with m, s and b				
m does not Granger cause er_7	2.832*** [1] (Reject)	6.699*** [2] (Reject)	29.38*** [1] (Reject)	12.29*** [1] (Reject)
s does not Granger cause er_7	2.118 ** [8] (Reject)	1.772* [14] (Reject)	2.165** [12] (Reject)	1.099 [6] (Do not reject)
b does not Granger cause er_7	3.827** [2] (Reject)	2.036* [6] (Reject)	2.173* [4] (Reject)	1.856 [6] (Do not reject)

Source: Author's calculations by using Eviews software. The sample period ranges from 1995Q1 to 2014Q4. *,** and *** denote the 10%, 5% and 1% significant levels. Figures in [ ] denote the lag order and ( ) denote decision to reject or not to reject the null hypothesis of no Granger causality

Table 3: Causality between excess stock return (er_{jt}) and risk premium of market (m), firm size (s) and book-to-market value (b) in developed country

Null hypothesis	Canada	Japan	UK	US
er_1 with m, s and b				
m does not Granger cause er_1	8.066*** [2] (Reject)	23.21*** [2] (Reject)	5.373** [1] (Reject)	0.818 [12] (Do not reject)
s does not Granger cause er_1	1.010 [3] (Do not reject)	5.222*** [2] (Reject)	1.832 [2] (Do not reject)	3.941** [2] (Reject)
b does not Granger cause er_1	2.351** [8] (Reject)	2.143 [1] (Do not reject)	1.621** [13] (Reject)	1.869* [7] (Reject)
er_2 with m, s and b				
m does not Granger cause er_2	19.36*** [1] (Reject)	17.29*** [1] (Reject)	6.863*** [2] (Reject)	65.55*** [1] (Reject)
s does not Granger cause er_2	0.327 [1] (Do not reject)	2.010* [10] (Reject)	2.204** [13] (Reject)	1.897* [8] (Reject)
b does not Granger cause er_2	2.28** [6] (Reject)	4.139** [1] (Reject)	1.373** [8] (Reject)	3.412* [1] (Reject)
er_3 with m, s and b				
m does not Granger cause er_3	73.95*** [1] (Reject)	17.70*** [1] (Reject)	14.66*** [2] (Reject)	48.97*** [1] (Reject)
s does not Granger cause er_3	1.721 [5] (Do not reject)	2.431* [2] (Reject)	1.970** [15] (Reject)	1.875* [10] (Reject)
b does not Granger cause er_3	1.352 [8] (Do not reject)	3.969** [1] (Reject)	1.691 [1] (Do not reject)	3.532* [1] (Reject)
er_4 with m, s and b				
m does not Granger cause er_4	48.09*** [1] (Reject)	15.15*** [1] (Reject)	6.411** [1] (Reject)	40.30*** [1] (Reject)
s does not Granger cause er_4	3.794** [3] (Reject)	1.857 [5] (Do not reject)	1.122 [2] (Do not reject)	4.502** [2] (Reject)
b does not Granger cause er_4	3.286** [3] (Reject)	4.223** [1] (Reject)	2.645** [4] (Reject)	4.022** [1] (Reject)
er_5 with m, s and b				
m does not Granger cause er_5	47.33*** [1] (Reject)	32.22*** [1] (Reject)	1.845 [2] (Do not reject)	40.25*** [1] (Reject)
s does not Granger cause er_5	1.729 [2] (Do not reject)	2.516** [4] (Reject)	1.122 [1] (Do not reject)	1.889* [10] (Reject)
b does not Granger cause er_5	2.171** [8] (Reject)	1.426 [1] (Do not reject)	1.616 [2] (Do not reject)	2.744* [6] (Reject)
er_6 with m, s and b				
m does not Granger cause er_6	39.49*** [1] (Reject)	20.05*** [1] (Reject)	3.779** [2] (Reject)	43.59*** [1] (Reject)
s does not Granger cause er_6	4.410** [2] (Reject)	5.712*** [2] (Reject)	3.769** [2] (Reject)	2.575* [3] (Reject)
b does not Granger cause er_6	1.848 [1] (Do not reject)	2.387** [17] (Reject)	3.070* [1] (Reject)	2.475** [8] (Reject)
er_7 with m, s and b				
m does not Granger cause er_7	6.593** [1] (Reject)	12.57*** [1] (Reject)	0.728 [2] (Do not reject)	29.16*** [1] (Reject)
s does not Granger cause er_7	4.802** [2] (Reject)	2.910** [5] (Reject)	0.897 [6] (Do not reject)	5.501*** [2] (Reject)
b does not Granger cause er_7	1.417 [4] (Do not reject)	3.109* [1] (Reject)	2.412** [10] (Reject)	4.256** [2] (Reject)

Source: Author's calculations by using Eviews software. Note: The sample period ranges from 1995Q1 to 2014Q4. *,** and *** denote the 10%, 5% and 1% significant levels. Figures in [ ] denotes the lag order and ( ) denotes decision to reject or not to reject the null hypothesis of no Granger causality

Table 4: Results of the bivariate VAR model of the excess stock return

Dependent variables	Developing countries				Developed countries			
	Indonesia	Malaysia	Singapore	Thailand	Canada	Japan	UK	US
er_1								
m	1.216*** [1]				0.499*** [1]	0.741*** [1]	0.233** [1]	
s	−0.201** [7]		−0.376** [11]	−0.419*** [1]		−0.385*** [2]	−0.179** [9]	−0.297** [2]
b	0.142* [8]	0.225* [13]	0.274* [15]	0.294** [1]	0.256** [10]		0.138** [3]	0.313** [4]
er_2								
m	0.848*** [1]	0.936** [16]	1.151*** [1]	1.141*** [1]	0.608*** [1]	1.132*** [1]		1.056*** [1]
s	−0.414* [1]		−0.778*** [12]	−0.302* [2]		−0.559** [2]	−0.629** [12]	
b	0.365** [1]	0.386* [1]	0.479** [17]			0.622** [12]	0.403** [7]	
er_3								
m	0.109*** [1]		1.243*** [1]	0.773*** [1]	1.270*** [1]	0.949*** [1]		1.061*** [1]
s	−0.558 ***[7]	−0.361* [9]	−1.140*** [12]	−0.413** [5]	−0.705** [11]	−0.453* [2]		−0.465* [2]
b	0.391** [7]	0.277** [6]	0.531* [17]	0.393** [11]		0.434* [12]		
er_4								
m	0.779*** [1]	0.561* [16]	1.013*** [1]	0.910*** [1]	1.103*** [1]	0.920*** [1]		1.056*** [1]
s	−0.354** [4]	−0.594** [16]	−0.943*** [12]	−0.410** [14]	−0.470** [5]	−0.496** [2]	−0.431* [12]	−0.828*** [2]
b	0.298** [2]	0.522*** [6]	0.483* [12]	0.432*** [2]	0.365** [10]	0.466** [4]		0.385* [2]
er_5								
m	0.898*** [1]		1.086*** [1]	1.095*** [1]	0.931*** [1]	1.015*** [1]		0.851*** [1]
s		−0.296* [6]	−0.725*** [12]	−0.537** [2]		−0.347** [2]		−0.363* [2]
b	0.224** [8]	0.294** [13]	0.330* [4]	0.499*** [2]	0.251* [7]			0.585*** [5]
er_6								
m	0.953*** [1]	0.589* [5]	1.095*** [1]	1.295*** [1]	0.831*** [1]	0.827*** [1]		0.925*** [1]
s	−0.288** [7]	−0.467** [9]	−0.640*** [12]	−0.685*** [2]	−0.406*** [2]	−0.554*** [2]		−0.508** [3]
b	0194* [7]		0.432* [16]	0.644*** [2]	0.227* [7]	0.516** [12]		0.408*** [5]
er_7								
m	1.672*** [1]	1.168** [10]	1.283*** [1]	1.229*** [1]	0.531*** [1]	0.701*** [1]		1.036*** [1]
s		−0.872** [9]	−0.656*** [12]		−0.756*** [2]	−0.460***[2]		
b		0.759** [4]	0.531*** [4]	0.448* [2]	0.611*** [4]	0.450** [4]	0.516*** [10]	0.546** [2]

Source: Author's calculations using EViews software. Note: er_{it} is the dependent variable where j=1, 2, …, and 7, *m*, *s* and *b* are the explanatory variables. *,** and *** denote the 10%, 5% and 1% significant levels. Figures in the [ ] are the lag length selected based on the AIC. AIC: Akaike information criterion, VAR: Vector autoregressive

that the risk premium of market, firm size and book-to-market value are risk factors in developed and developing countries (Gregory et al., 2013; Gaunt, 2004; Drew and Veeraraghavan, 2002; Drew, 2003). Second, the internal factors are important to the investors in making investment decisions (Fama and French, 1992, 1993). Third, the relationships of the underlying determinants of risk premium of market, firm size and book-to-market value are prevalent in the developing countries. This suggests that investment in developing countries has more risk thus is compensated with higher return. Cakici et al. (2013) reveal that returns in emerging market have higher volatility than the developed markets and the size pattern in emerging market value premium is different from the results in developed market. In terms of policy implications, this study suggests that risk premium of market, firm size and book-to-market value can serve as indicators of the investors' investment reward that provide better understanding that developing countries has more risk than developed countries. This study also suggests that the investors and policy makers should consider the role of the underlying determinants in the investors' investment decision making process.

5. CONCLUSIONS

This paper examines the relationship between the excess stock returns and the risk premium of market, firm size and book-to-market value in four developing countries, namely Indonesia, Malaysia, Singapore and Thailand, and four selected developed countries, namely Canada, Japan, UK and US. The findings of this study suggest that there is an equilibrium relationship between investors' investment reward and its determinants, namely risk premium of market, firm size and book-to-market value. Moreover, the relationships of the underlying determinants are prevalent in the developing countries. Therefore, this study suggests that risk premium of market, firm size and book-to-market value can serve as indicators of the investors' investment reward that provide better understanding that developing countries has more risk than developed countries. This study also suggests that the investors and policy makers should consider the role of the underlying determinants in the investors' investment decision making process. This study is subject to a few limitations that also offer the potential for future research. First, the study only conducted for eight countries and three variables in determining the investors' investment reward, namely the risk premium of market, firm size and book-to-market value. Other variables such as the capital mobility and economic uncertainty are suggested for future research. Second, this study only uses Granger causality and bivariate vector autocorrelation methods to examine the relationship between the investors' investment reward and its determinants. The Toda and Yamamoto causality test (1995) is suggested for the future research to examine the causality relationship between the investors' investment reward and its determinants.

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