IMPACT OF ASYMMETRIC INFORMATION ON FOREIGN DIRECT INVESTMENT

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ABSTRACT

This study examines the existence of asymmetric information in foreign capital flows. This paper focuses on FDI and the asymmetric information captured by market microstructure. Eight countries have been selected as the candidate countries in this study because consistently with the ASEAN + 3 countries. The method of Amivest and Proportional Spread has been applied in this study to capture the asymmetric information problem. Daily data from all companies in eight countries that available from 2000 until 2011 is collected and analyzed using the Amivest and Proportional Spread method. Then, to see the relationship between asymmetric information and FDI, the panel data regression approach has been used. The other factor that affects the capital flow also included in the panel data regression to clarify the relationship between asymmetric information and FDI. GDP, Inflation, Market Capitalization, Exchange Rate Interest Rate and Trade Openness has been used as control variable besides of the asymmetric information. The result shows that the effect of asymmetric information on capital flow is significant.

Keyword*: Capital Flows, Capital Market, FDI, Market Microstructure, Amivest, Proportiona Spread*
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1.   Introduction

In this recent world, the Foreign Capital Flow became one of the most important economy factors. UNDP reported that capital flows (PCF) become a significant source of investment in many countries. That report also stated even world still concentrated in high-income and emerging economies, a flow of private capital flow that moving into low-income countries shows increasing. One of the most important components in the capital flow is Foreign Direct Investment (FDI).

In the OECD (2008), FDI reported as a key element of globalization. It's creating direct, stable and long lasting links between economies. It can be an important source for development and also help to improve the competitive position of both the recipient and investing country. FDI encourage the transfer of technology and provide an opportunity for the host economy to entering the international market and generally FDI is an important source of capital. Borensztein, Gregorio & Lee (1998) shows in their research that the FDI is one of the important channel to transfer the technology and it contributes more to growth than domestic investment.

FDI is always seen as a one of the factors of economic growth. FDI has been reliable having several positive effect including productivity gains, technology transfer, international production networks and access to the market. The result from IMF working paper shows the linking between FDI and economic growth. As reported in the 2015 World Investment Report, the current trends of the global FDI have been decreasing. The global FDI inflows declined in 2014 from the previous year which is fell by 16% to $1.23 trillion in 2014 from $1.47 trillion in 2013. The factor influences the declining of FDI inflows is fragility of the global economy, policy uncertainty for investors and elevated geopolitical risks. Foreign Direct Investment (FDI) is a key driver of international integration. It can provide the financial stability, promote economic development and can enhance the well-being of societies.
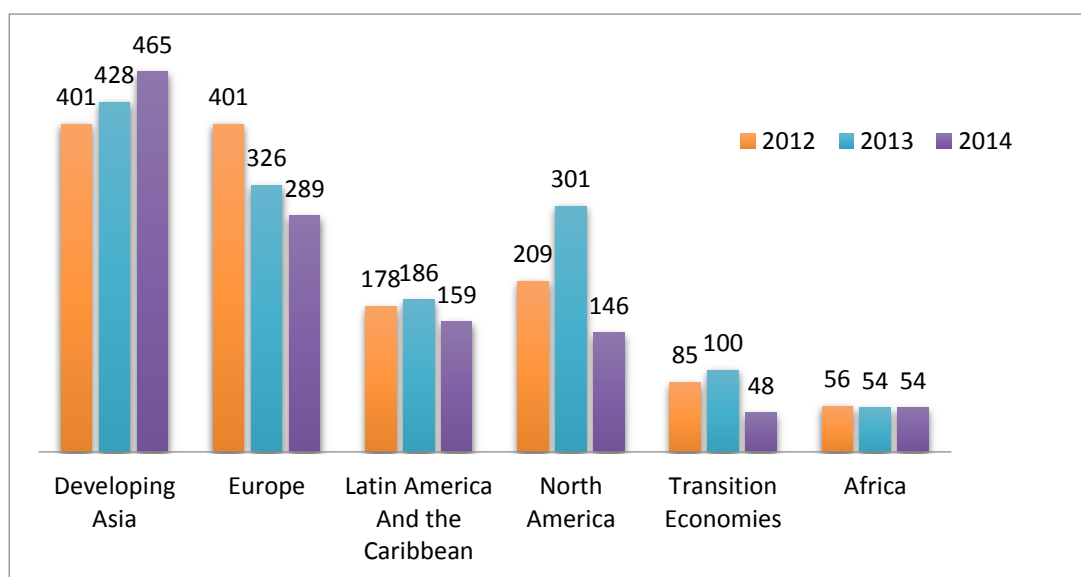

Figure 1: FDI Inflows by Regions from 2012-2014

Source: World Investment Report 2014

The Figure 1 shows the inflows of FDI by region from 2012 until 2014. Even thought overall of the FDI trend recorded the declining, developing Asia drove the increasing from 2012 to 2014, meanwhile, the trend of inflows in Latin America and the Caribbean, North America and the Transition Economies shows fluctuation for that period. Europe zone shows the declining in the trend while the Africa regions remain flat. But, Zilinski (2010) stated FDI also has some negative effect. In the early stage of market economy, FDI may produce higher employment rates, technology transfer and also filling the gap between old and emerging market but FDI also causes a lot of harm. Example, the foreign investor can reduce the employment by dismissing the local worker, crowding out the local business that cannot compete with multinational or negative capital flow when the investor uses cheap local raw material and sell the output expensively. Asymmetric information also one of the capital flow problem. Some studies highlighted the problem of asymmetric information in capital flow. Asymmetric information exists from the adverse selection in the bid-ask spread. Numerous study is proven that the asymmetric information exists in the stock market.

The objectives of this paper are to measure the asymmetric information using the market microstructure approach through the stock market and capture the relationship between asymmetric information and foreign direct investment.

The scope of this study is using the ASEAN + 3 countries. Among 10 ASEAN countries, only 5 countries were selected which is Malaysia, Indonesia, Philippines, Thailand and Singapore. The reason why these 5 countries was selected is these 5 members have similarities in the economic size. These 5 countries also the member that initially formed the ASEAN countries and followed by the other 5 members (Vietnam, Burma, Cambodia, Brunei and Laos). Joining with the selected 5 countries is the + 3 countries that signing the free trade agreement which is China, Korea and Japan.

This paper organized as follows. Section 1 contains the literature review, section two showing the methodology and data. Section 3 provide the result and findings and section 4, summarize the finding of the paper and making a conclusion.

2 Literature review

Several researcher doing their study in asymmetric information. Haitao Li et al (2007) examine the liquidity and information risk price in the U.S treasury bond market. They measure the informational risk using the probability of information-based trading (PIN). Their result shows a strong relationship between the treasury bond market and their measurement of liquidity and informational risk. Kalok Chan et al (2008) doing their research of asymmetric information in China Share market. They examine the effect of asymmetric information on equity price in the local and foreign share market in china. Their result shows a significant effect of asymmetric information and foreign share market even after they controlling the other factor. Dongmin Kong et al (2010) also make a research about the impact on asymmetric information on the investment sensitivity to stock price and the impact of asymmetric information on the stock price sensitivity to investment and they find out that the asymmetric information had a significant effect for both ways. Jullavat Kittiakarasakun et al (2012) examine the impact of trades by informed traders and uninformed traders on the asymmetric volatility relationship. Their data is Nasdaq-100 index futures. They find the asymmetric volatile driven by the selling activity of

uninformed trader. Their result is significant but only in the first half of the period in their studies which is more volatile than the other half.

Alaudeen Hamid et al (2010) in the research of stock market declines and liquidity shows that the changes in the spread are negatively related to market return by using the proportional spread as on of their measurement of liquidity. Narasimhan & Avanidhar (1993) examine the of the stock market around the introduction of the Standard and Poor (S&P) 500 index futures contract on the NYSE. They find an evidence that the proportional spread in the stock market increase to the introduction of the future contract. When the spread increases, it will lead to the asymmetric information problem.

To clarify the relationship between asymmetric information and FDI, the other factor that affecting the FDI also included. The other factor included in this study is GDP. GDP shows the country growth. Demirhan & Masca (2008) doing a research about determinants of foreign direct investment flows to developing countries. Based on their research, GDP has a positive sign and statistically significant on FDI. Cevis and Camurdan (2007) also investigate the economic determinant of foreign direct investment and their result is growth or GDP is the main determinant of FDI inflows. The second factor that affecting the FDI is inflation. Inflation mean continuously increasing in the price level. Saleem et al. (2013) doing their research about the impact of inflation and economic growth on FDI in Pakistan. Their result shows that FDI has direct relation between inflation and economic growth through their regression analysis. Erdal Demirhan (2008) also highlight the inflation are statistically significant with FDI but it has a negative sign. The third factor is market capitalization. Graeme O'Meara (2015) in his study title examining the determinants of foreign direct investment highlighted that the result is significantly relating to the size and scale of economic activity. So, from the results he concludes that the findings are equivalent with the research that shows the market size, economic openness and also quality of infrastructure is a key of driven to FDI. Next factor is the official exchange rate. Exchange rate defined as a domestic currency price of a foreign currency, matter both in term of their level and their volatility. Joseph D. Alba et al in their working paper examine the impact of exchange rate on foreign direct investment (FDI) into the U.S and their finding shows the exchange rate has a positive and significant effect on the FDI inflows. The fifth factor is the interest rate, Ismail & Burak (2007) in their paper the economic determinants of foreign direct investment in developing countries and transition economies found that the main determinant of FDI is interest rate beside the other economic factor. The last factor is trade openness. Faroh & Shen (2015) stated in their research impact of interest rate n foreign direct investment: case study Sierra Leone Economy that the trade openness and exchange rate are the key determinant of FDI flow and have a significant effect on FDI and the sign is positive. But in their research, GDP, inflation, and the interest rate is insignificant and also cause the variability in FDI flows in Sierra Leone.

3.   Data and Methodology

Our prediction in this study is asymmetric information will be one of the factor of capital flows. So the result will be significant. Its is based on the previous study that prove the existing of asymmetric information problem in capital flows.

The model estimated using the panel data regression approach. Daily data for selected country collected using data-stream. This study using the Amivest and Proportional Spread liquidity ratio to measure the asymmetric information. This paper uses the panel data contain the time series data annually from 2000 until 2011 and cross-sectional data containing the daily level firm data from 8 selected countries. The variable that uses in this study as the dependent variable is FDI and the data retrieve from the IMF database. The other control variable that uses to clarify the relationship with FDI is Gross Domestic Product(GDP), Inflation, Market Capitalization, Official Exchange Rate, Interest Rate and Trade Openness. The data of control variable collected from World Bank database.

Amivest ratio
Kerry cooper et al. (1985) develop a model to capture asymmetric information. This model follows the model that develop by Amihud which is using the percentage price change and volume. Amivest ratio defines as asset turnover over the daily absolute percentage stock return.

$$LR_{it} = \frac{Tn_t}{r_t} = \frac{\sum_{i=1}^{N} P_i \times Q_i}{r_t}$$

Proportional Spread Ratio
The proportional spread is a ratio that using the differences between ask and bid price quoted in the marketplace over the average price of the bid and ask.

$$Proportional\ Spread = \frac{Ask\ price - Bid\ price}{(Ask\ price + Bid\ price)/2}$$

The model equation are as follows:

$$FDI_{it} = a_{it} + Amivest_{it} + GDP_{it} + Inflation_{it} + Market\ cap_{it} + Exchange\ Rate_{it} + Interest\ Rate_{it} + Trade\ Openess_{it}$$

$$FDI_{it} = a_{it} + proportional\ spread_{it} + GDP_{it} + Inflation_{it} + Market\ cap_{it} + Exchange\ Rate_{it} + Interest\ Rate_{it} + Trade\ Openess_{it}$$

FDI_{it} measure the volume of the foreign direct investment in country *i* at time *t*. Amivest and Proportional Spread is the asymmetric information variable that measured with their own formula. GDP_{it} measure the level of economic development in country *i* at time *t*. GDP evaluate the economic performance, (Graeme O'Meara, 2015) so higher GDP mean the economic performance is in good condition. $Inflation_{it}$ defines as increasing quantity of money, bank notes and bank deposit in country *i* at time *t*, but citizen today use term of inflation to define rise in wages and price (Anish Zahid et al., 2013). $Market\ cap_{it}$ capture the development level of stock market in country *i* at time *t*. The official exchange rate is a domestic currency price of foreign currency in country *i* at time *t*. $Interest\ Rate_{it}$

is rate which is charged for the use of money as cost of borrowing, (Alie Faroh, 2015). Lastly $trade\ Openess_{it}$ define as restricted level rate of a country about their openness in trade.

4. Findings and results

In this study, company level data stock price has been collected through data-stream.

Amivest ratio
  I. Pooled data or fixed effect

Likelihood ratio test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	31.324719	(7,81)	0.0000
Cross-section Chi-square	125.783329	7	0.0000

H_0 = pooled   (>0.05)
H_1 = fixed effect   (<0.05)

The result of the test indicates that the suitable specification for the model is fixed effect. Both of the *f-test* and the *chi-square* is 0.000 which is less than 0.05. So the null hypothesis is rejected and the model is fixed effect.
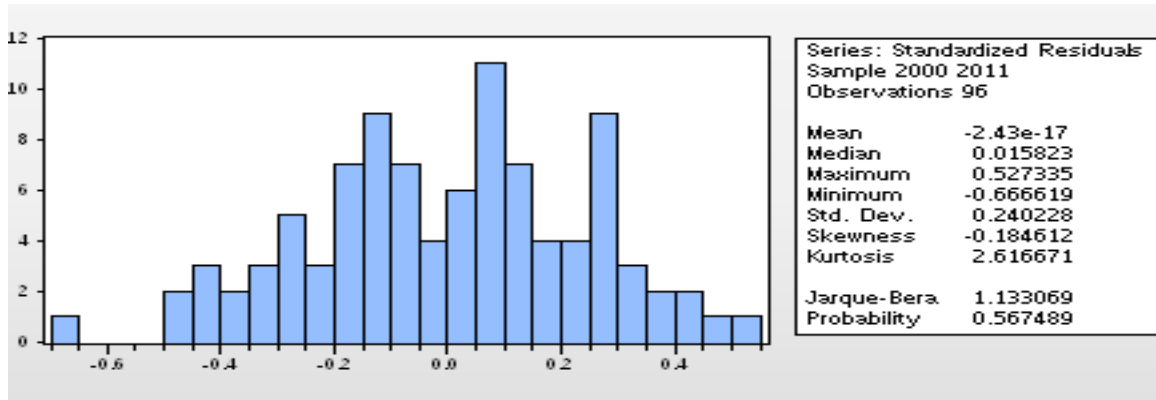
  II. Fixed or random effect

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	219.273030	7	0.0000

H_0 = random effect   (>0.05)
H_1 = fixed effect   (<0.05)

Based on the result, the *p* value is less than 0.05, so the null hypothesis is rejected which is the model is fixed effect.

III.   Normality

The null hypothesis of the Jarque-Bera test shows that the residual has a normal distribution because of the p-value is more than 0.05 which is 0.567489.

IV.   Heteroscedasticity and Autocorrelation

Regarding the problem of Heteroscedasticity and Autocorrelation, this study uses the white robust standard error to overcome the problem.

The result obtain for this model are describe as follows:

Table 1: Result of model 1

Result of Model 1		
Variable	Coefficient	Confidence level
C	-11.26342	***
Amivest	0.16809	***
GDP	2.03926	***
Market Capitalization	0.13003	*
Official Exchange Rate	0.000241	-
Real Interest Rate	-0.010506	-
Inflation	-0.019072	-
Trade Openness	-0.002488	**
R Squared	0.98120	
Adjusted R-Squared	0.97795	
F Statistic	301.920	***
Jarque Bera	1.133	N
Chi-Sq		
Hausman Test	219.27303	F ***
Likelihood Ratio	125.783329	P ***

     Confident level of 90 %   N = Normality of residual is accepted
 **   Confident level of 95 %   P = Panel data form is accepted
*** Confident level of 99 %   F = Fixed effect is accepted

Based on the result above, the Amivest ratio is statistically significant with FDI. Among all the control variable some variable is significant with the FDI which is GDP, market cap and trade openness. Meanwhile, Official Exchange Rate, Real Interest Rate and Inflation is not significant with the FDI. The F test shows that this model is statistically significant.

Proportional Spread Ratio

I. Pooled or fixed effect

Likelihood test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	31.324719	(7,81)	0.0000
Cross-section Chi-square	125.783329	7	0.0000

H_0 = pooled   (>0.05)
H_1 = fixed effect   (<0.05)

The result of the test indicates that the suitable specification for the model is fixed effect. Both of the f-test and the chi-square is 0.000 which is less than 0.05. So the null hypothesis is rejected. So the model is fixed effect.
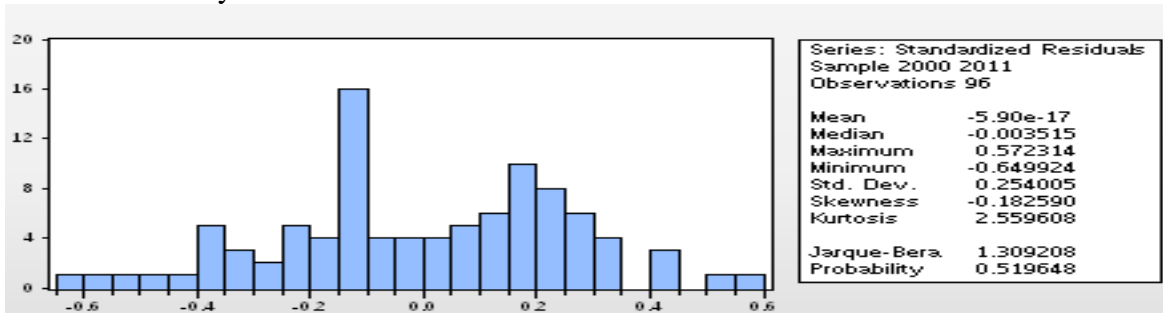
II. Fixed or random effect

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	219.273030	7	0.0000

H_0 = random effect   (>0.05)
H_1 = fixed effect   (<0.05)

Based on the result, the p value is less than 0.05, so the null hypothesis is rejected which is the model is fixed effect.

III. Normality

For this model, the null hypothesis in Jarque-Bera test also shows that the residual had a normal distribution because of the p-value is more than 0.05 which is 0.519648

IV.   Heteroscedasticity and Autocorrelation

For the problem of Heteroscedasticity and Autocorrelation, this study using the with robust standard error to overcome the problem.

The result obtain for this model are describe as follows:

Table 2: Result of model 2

Result of Model 2		
Variable	Coefficient	Confidence level
c	-14.63554	***
Spread	3.289866	**
GDP	2.016315	***
Market Capitalization	0.310167	***
Official Exchange Rate	0.000184	-
Real Interest Rate	-0.008489	-
Inflation	-0.015634	-
Trade Openness	-0.002465	**
R Squared	0.97254	
Adjusted R-Squared	0.96779	
F Statistic	204.871	***
Jarque Bera	1.309	N
Chi-Sq		
Hausman Test	219.27303	F ***
Likelihood Ratio	125.783329	P ***

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*    Confident level of 90 %        N = Normality of residual is accepted
**   Confident level of 95 %        P = Panel data form is accepted
*** Confident level of 99 %         F = Fixed effect is accepted
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Based on the result on the table above, the asymmetric information (spread) are statistically significant with the FDI. GDP, market capitalization and trade openness also show the significant p-value to FDI. The other variable which is Official exchange rate, real interest rate and inflation is not significant with the FDI. The F-test also shows that the model is significant.

5. Conclusion

The main objective of this study is to examine the relationship between asymmetric information and foreign direct investment. In order to meet the objective, this study start with estimating the asymmetric information problem using the market microstructure approach. Two measurements use in this study which is Amivest and Proportional Spread to capture the asymmetric information. Firm level data collected from data-stream. After get the result from calculating the asymmetric information, this study applied the panel data model to capture the relationship between asymmetric information and foreign direct investment. From the regression result, we find the significant relationship between asymmetric information and foreign direct investment. So, it proves that the asymmetric information exists in the capital flow.

Asymmetric information is one of the problem in capital flows. So, investor should include the asymmetric information in their investment decision to make sure they make an accurate decision. This study has some limitation which is lack of sufficient data. The available data for dependent variable only until 2011. So, this study unable to doing research until the current year. The firm level data also have some problem because too much data unavailable in the data-stream. So, it may effect the result. Our recommendation for further studies, researcher may prolong the time of research and also include all the ASEAN countries. So we can see the result of asymmetric information for all ASEAN countries.

Acknowledgement

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