Jurnal Penelitian Ekonomi dan Bisnis

Foreign Portfolio Investment Control Using Macroeconomic and Institutional Policies: Evidence from Indonesia and Thailand

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Article Information

Abstract

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This study analyzed the influence of macroeconomic and institutional variables on foreign portfolio investment inflows in two ASEAN countries, Namely Indonesia and Thailand, in 2005 – 2019. The analytical tools used in this research are Panel Vector Error Correction Model (PVECM) and Panel Ordinary Least Square (POLS). The estimation results show that the macroeconomic variables that are proxied using inflation and openness economy and institutional variables that are proxied using the variable level of corruption and quality of regulation have a significant effect. The inflation rate, the openness economy, and the quality of regulation variables significantly affect foreign portfolio investment in the long term. Meanwhile, in a short time, only the inflation rate variable and the openness ratio have a significant effect on foreign portfolio investment. The two analytical tools used found that macroeconomic and institutional variables consistently affect foreign portfolio investment.

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INTRODUCTION

Developed and developing countries have increasingly opened their economic systems since GATT opened international trade liberalization in 1947 (Staffs, 2001; Ayenagbo et al., 2011; Baldwin, 2016; dan DeMarco et al., 2020). Throughout the 1990s, the taps of the economy in developing countries were opened wide by the governments of their respective countries (Salazar-Xirinachs et al., 2014). The policies adopted in implementing an open economic system are carried out by eliminating restrictions on the domestic market (Strašek, 1994 dan Edeme et al., 2020). The removal of restrictions on the domestic market in these developing countries was accompanied by domestic capital markets and foreign portfolio investment (FPI). In the financial market, foreign portfolio investment (FPI) is used to increase domestic capital, increase the choice of sources for the national development budget and add investment products in the domestic financial market (Winona et al., 2016). Indonesia has adopted an open economic system since 1970 and is slowly becoming one of the destination countries for foreign investment in ASEAN (Mccawley, 2013; Khaliq & Noy, 2007). There are several reasons for choosing Indonesia as an investment destination. Apart from having a high return value, it is also known as a rice barn and has more stable economic growth in the long term (Quibria, 2002; Estrada et al., 2010 and Wibowo, 2017).

The world investment report released by UNCTAD in 2019 noted that Indonesia was in the eighteenth position as the country with the highest foreign capital inflows from the top 20 host economies in 2017 and 2018 (UNCTD, 2017). Other countries in ASEAN that were included in the top 20 host economies in 2017 and 2018 are Singapore, which is in the fifth position. Meanwhile, Thailand and several other countries in ASEAN were recorded as having high foreign capital outflows. The world investment report in 2019 released by UNCTAD noted that Thailand was in the eighteenth position in the top 20 host economies in 2017-2018, lower than Singapore, which was recorded at the eighth position as a country with high foreign investment capital outflows in 2017. the same one. Countries in ASEAN that are not listed in the top 20 host economies in the world investment report are classified as low foreign capital inflows and low foreign capital outflows.

Before the 1997 Asian financial crisis, FPI played an essential role in the Thai economy so that it was able to achieve the fastest growth rate in exports of manufactured goods among ASEAN countries (Tnyakhan, 2008). Historical data on net investment portfolios in current prices released by Knoema noted that in 2015, Thailand's FPI was the highest compared to its golden year before the Asian crisis, which amounted to US\$16,508,135,076 in 2015 and US\$3,985,000,000 in 1990. Meanwhile, FPI's golden year in Indonesia was recorded as being in 1990 – 2000. Knoema historical data noted that the net investment portfolio in 2000 was positive at 1,910,730,193 US Dollars, higher than 1990, which was positive at 93,000,000 US Dollars.

Other ASEAN countries, namely Malaysia, have better FPI than Thailand and Indonesia. 2018 was a golden year for Malaysia. It is recorded from Knoema's data that in 2018 Malaysia's net investment portfolio was 12,431,150,396 US Dollars, lower than Thailand and higher and better than Indonesia, which was dominantly negative. Singapore has a net portfolio investment of US\$106,451,719,314 in 2019, the highest recorded in the historical data for its portfolio investment net and higher than other countries. Higher than Indonesia, the Philippines had the most increased net portfolio investment in the country's history of 5,470,919,991 US Dollars in 2015.

Meanwhile, Cambodia has a lower net portfolio investment than Thailand, Indonesia, and Malaysia. In the last 30 years, Cambodia's net portfolio investment was under one billion. Cambodia recorded its golden year in 2019 with a net portfolio investment of 12,453,079 US Dollars. Myanmar in 2017 recorded its best net portfolio investment of 44,393,624 US Dollars, while Laos recorded a golden year for its net portfolio investment in 2019 of 41,278,649 US Dollars. The net investment portfolio under one billion USD also applies to countries in ASEAN that are not mentioned, such as Brunei Darussalam. From the net portfolio investment data in ASEAN countries published by Knoema, it can be concluded that it is true that Indonesia and Thailand are classified as countries

with high FPI. However, Indonesia's net portfolio investment position is below the Philippines, Thailand, and Singapore. Indonesia has the most elevated GDP position and the lowest (tight) market openness ratio compared to Thailand and some of the top countries in Knoema's net portfolio investment.

Table 1. Nominal GDP and Market Openness Ratio of ASEAN Countries in 2019

No	Country	Nominal GDP (Millions of US Dollars)	Market Openness Ratio (Percent)
1	Indonesia	1,100,911	37.30
2	Thailand	516,662	110.39
3	Malaysia	373,447	123.00
4	Singapura	372,807	319.15
5	Filiphina	356,682	68.61
6	Vietnam	260,301	210.40
7	Myanmar	65,665	60.69
8	Kamboja	26,979	123.56
9	Laos	20,153	75.09
10	Brunei Darussalam	13,325	108.50

Source: *International Monetary Fund & World Bank* 2019, processed.

Table 1 shows that the economic growth of Indonesia and Thailand are the two strongest GDP countries in ASEAN. With a high GDP value, it is expected that portfolio investment inflows can increase. Portfolio investment can grow if a country's openness to international financial markets is wide open. Thailand's domestic financial market openness ratio is known to be lower than Indonesia's domestic financial market openness ratio. The significant difference in the openness ratio of the two countries with large GDP is most likely due to the post-traumatic economic recovery after the crisis. One conclusion can be drawn that the Indonesian state chose to tighten its market to avoid an international impact.

Some empirical studies show that there is a correlation between foreign portfolio flows and macroeconomic variables. Evans (2002) argues that foreign portfolio investment can support the running of the domestic economy in various ways. First, liquidity in the capital market. Second, increasing transparency and discipline in the capital market. Third, increasing company performance. Anwar's (2016) research results found that interest rates and inflation, the ratio of economic openness (openness) affect the formation of foreign portfolio investment in the ASEAN region. Research in recent years concerns the linking of foreign portfolio investment with the state of a country's institutions. Atrobah (2015), who examines foreign portfolio investment inflows in Sub-Saharan Africa, concludes that exchange rates, institutional quality, and inflation significantly affect. Al-Smadi (2018) reviewed the same case in Jordan, showing that political stability and corruption significantly role in the influx of foreign portfolio investment over a more extended period.

Corruption is one of the institutional factors that can affect the size of portfolio investment inflows in a country (Archana et al., 2014; Jain et al., 2017 dan Chamisa, 2020). In Indonesia, the Center for Strategic and International Studies survey found that 70 percent of entrepreneurs believe that corruption has increased (OECD, 2016) and makes it difficult for foreign companies or foreign investment to partner with local companies. The survey results further found that in 2016-2017, corruption was the main obstacle most frequently cited and discussed in electronic and print media for doing business in Indonesia (WEF, 2016). This is because public institutions in several ASEAN countries do not have vital transparency and accountability, coupled with weak anti-corruption laws and limited civil society involvement (Tranparency International, 2015; Zafarullah & Siddiquee, 2020

dan D. F. Anwar, 2020). Within the ASEAN countries, only Indonesia and Thailand have passed the law on freedom of information (Partridge, 2015).

Empirical studies on the relationship between foreign portfolio investment and corruption have been investigated by Jain et al. (2017). The results of his research state that the level of corruption can reduce the level of foreign investment that enters a country. Jajkowicz & Drobiszová (2015), in their research, confirms that the corruption variable has a significant influence on the allocation of government spending. Furthermore, five out of ten government spending groups were found to have a substantial effect on FPI. Ciocchini et al. (2011) found that the perception of corruption in a country impacts the spread of companies, while the global bond market considers corruption to have an influential role in determining the distribution of debt for a company or in government.

Research on foreign portfolio investment and institutions has not become the subject of much research by economists. With the background of several studies with the same theme, the basis for thinking and several improvements will be included in this research. Adoption of ideas on existing research is used for writing, discussion, to econometric modeling. This study differs from previous research by comparing the scope of the study between Indonesia and Thailand. Previous research focused only on developed countries and was carried out by people outside Indonesia. Using PVECM analysis tools and different periods and case studies from other countries will produce different results and conclusions. This study adopts the model of Al-Smadi (2018) for PVECM analysis and the ordinary least square (POLS) panel model of Anwar (2016) using annual data in 2005-2019. The variables to be used differ from Al-Smadi's (2018) and Anwar's (2016) research. The addition of economic variables that are more balanced with institutional variables can compare the effects of economic and institutional variables on FPI.

METHOD

The data used are two regions representing two countries in ASEAN from 2005–2019. The annual data used for analysis are inflation rate data, economic openness ratio data, corruption level data, and regulatory quality data. These data are for Indonesia and Thailand in 2005 – 2019 obtained from the world bank, international transparency, the global economy, CEIC data, Bank Indonesia, and the Central Bank of Thailand (Bank of Thailand/BOT). In this study, the method used is the analysis method with Panel Vector Error Correction (VECM) and Panel Ordinary Least Square (POLS). This method uses a combination of time series and cross-sectional data, namely PVECM and POLS analysis methods that have several significant advantages over using only time-series data, such as increasing freedom levels and reducing multicollinearity between explanatory variables thus increasing efficiency in econometric model estimation.

The model used in this study adopts the model used by Al-Smadi (2018) with several different variables. Meanwhile, the simulation of the economic model formed in this study is as follows:

$$FPI = f(INF, OPEN, COR, REG)$$

Considering the panel data analysis method is a combination of time series analysis with cross-section analysis, the model can be written linearly with the linear equation:

$$FPI_t = b_0 + b_1 INF_{it} + b_2 OPEN_{it} + b_3 COR_{it} + b_4 REG_{it} + \varepsilon_{it}$$

Where FPI = Foreign portfolio investment, INF = inflation rate, OPEN = economic openness ratio, COR = Corruption, REG = regulatory quality and εit = error term.

In addition, specifically for macro variables, namely the ratio of economic openness. The proxy variable formula is calculated using the following formula:

$$OPEN = \frac{X+M}{GDP}$$

The proxy formula for the variable level of economic openness ratio aims to know the status of tight or loose economic openness to foreign investment. Using the net trade formulation, namely exports (X) minus imports (M), it is hoped that the variable can explain the economic openness of international fund flows.

RESULT AND DISCUSSION

The Panel Vector Error Correction Model (PVECM) begins the analysis step using the panel data regression method. The use of this method has the aim of determining the relationship of the independent variable to the dependent variable. Panel regression model from Anwar (2016), which have been implemented and adopted in this research variable, are as follows:

FPI = 1133,074 + β_1 35,11568 INF - β_2 0,000880 OPEN - β_3 52,69098 COR + β_4 17,76300 REG

Based on the results of panel data regression (POLS) using the E-views ten program, the panel tests for the two countries were obtained as follows.

Table 2. Classic Assumption Test Results

Classic assumption test				
Normality		Heteroscedasticity		Multicollinearity
Jarque-Bera Value	3,7910	Probability		INF – OPEN	-0,107890
Mean	-7,5815	INF	0,9410	INF – REG	-0,739091
Median	-95,2754	OPEN	0,8431	INF – COR	-0,737868
Maximum	866,6094	COR	0,8986	OPEN – INF	-0,107890
Minimum	-487,0992	REG	0,5801	OPEN – COR	0,204646
Std. Dev.	368,2467			OPEN – REG	0,219070
Skewness	0,8438			COR – INF	-0,737868
Kurtosis	2,5707			COR – OPEN	0,204646
F-statistic				COR – REG	0,792331
Probability	0,0161*			REG – INF	-0,739091
Jarque-Bera				REG – OPEN	0,219070
Probability	0,1502			REG – REGUL	0,792331

Note: * is the level of significance 5%

Using an ordinary least square (OLS) panel, panel regression testing shows a significant level of 5%. In table 2, the f-statistical probability value is below the 5% level, which means that the model used in this study is feasible. The first rule, the conditions for passing the classical assumption test, are met. The jarque-fall value in the data normality test shows a significance of more than 5%, which is 3.79, and a probability of more than 5%, meaning that the data is normal. In the second rule, the conditions for passing the classical assumption test are met. The heteroscedasticity of the panels from the two countries used in the study showed a significance of more than 5%, which means that the data are free from relationships between variables. In the third stage, the requirements for passing the classical assumption test are met. Multicollinearity also shows more than 5% significance, which suggests that data is free from data shortages that lead to strong regression. The fourth stage of the classic assumption test condition is fulfilled. In theory, the results of the panel regression test in table 2 through the software can be said to be feasible and meet the classical

assumption test. A regression or econometric model calculation in economics is feasible if the model being tested is free from heteroscedasticity and Multicollinearity (Mulyono, 2019).

Table 3. Multiple Panel Regression Test Results in Indonesia and Thailand

Panel Test	
Common Effect (probability)	
INF	0.3670
OPEN	0.1238
COR	0.0484*
REG	0.2223

Note: * is the level of significance at 5%

After testing the type of panel regression model using the Likelihood ratio test, the common effect as the chosen model concludes that the level of corruption affects the formation of foreign portfolios in both countries (see table 3). In the results of table 3 regression, the institutional side has a more dominant role than the economic side. The significant influence of institutional variables in the two countries is most likely due to the government's active role in improving the quality of regulations every year, which then causes investor confidence in the environment and the economic cycle to increase (Tay & Tijaja, 2017). This is evidenced by the significance of the corruption level variable in table 3.

After knowing the data and obtaining the test results by panel regression and the model is free from the classical assumption test, data processing is continued with the presentation of the PVECM regression results and a brief discussion about the test results.

Panel Vector Error Correction Model (PVECM) Results

The Panel Vector Error Correction Model (PVECM) test results show that the independent variables on the macroeconomic side and the institutional side variables have a significant effect in the short and long term. In the short and long term, economic variables have a significant impact on foreign portfolio investment. Here are the PVECM test results.

Unit Root Test

Unit root testing is the first step in testing each variable. There are three stages to determine whether the individual variables used in this study are stationary at the level, the first differentiation level, or the second differentiation level. In this study, the unit root test results showed that the four variables used were in the first level of differentiation (see table 4). This test is used after the level test, which is the basis for the choice of the vector error correction (PVECM) panel to be used as a data analysis method on this panel data.

Table 4. Unit Root Test Results

First Level Differentiation	
Method ADF – Fisher Chi-square	Probability
D(FPI)	0.0097*
D(INF)	0.0104*
D(OPEN)	0.0003*
D(COR)	0.0007*
D(REG)	0.0174*

Note: * is the level of significance at 5%

Optimal Lag Test

Optimal lag determination has an essential role in the Panel Vector Error Correction Model (PVECM) model. In choosing the lag length of the variables that are considered in the model, it is desired that a sufficient lag length so that the researcher gets the dynamics of the system to be modeled (Davies & Chatfield, 1990; Ziegel, 1995 dan Utlaut, 2008). If the lag is too long, then it can result in more parameters to be estimated so that in the end, it can reduce its ability to reject H_0 and will reduce the degrees of freedom (Greenland et al., 2016 dan Cox, 2016).

Table 5. **Optimal Lag Test Results**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-252,1533	NA	268,2260	19,78103	20,02297*	19,85070
1	-217,4682	53,36169*	132,8152*	19,03602*	20,48767	19,45404*
Note: * significance of the number of lags						

In table 5 below, the PVECM optimum lag test results show the number of lags of 1. This indicates that the number of derivatives in this study is one model derivative.

Stability Test

The stationarity test is a regression test that aims to determine the stationarity of the variables used in the study. The data can be non-stationary if the modulus's significance value is more than one. Non-stationary data lead to false regression results (Lety Marvillia, 2013). Meanwhile, the stationary data provide evidence that the model used and the data used are valid.

Table 6. Stability Test Results

Root	Modulus
-0,479528	0,479528
-0,330839 – 0,240865i	0,409231
-0,330839 + 0,240865i	0,409231
-0,324317	0,324317
-0,034042	0,034042
Note: * is the level of significance at 1	

From table 6 above, the modulus value is in the range of 0.03 – 0.4. The coefficient value of the modulus value has a level of less than one, which means that the variables used per individual in this study are stationary or normal.

Cointegration Test

Before modeling the Vector Panel Error Correction Model (PVECM), it is recommended to perform a co-integration test conducted to find out if the variables used have a relationship or not (Sinay, 2014). The concept of co-integration is basically to see the long-term balance between the observed variables.

Tabel 7. Cointegration Test Result

	FPI	INF	OPEN	COR	REG
Probability	0,0000*	0,0000*	0,0002*	0,0005*	0,0046*
Note: * is the level of significance at 5%					

Stationary test results using critical values MHM 0.05 indicate that there are four cointegrated variables. Five independent variables used in this study have a relationship with other variables or a

relationship between variables. A second condition is fulfilled why PVECM is appropriate to be used in this study.

Granger Causality Test

Granger Causality Test tests whether an independent variable improves forecasting performance from the dependent variable (Suhel, 2008). One of the Panel Vector Error Correction Model (PVECM) analyses helps explain the relationship and answer research hypotheses by interpreting the probability of the Granger Causality Test results. This study used the Granger Causality Test to respond and strengthen the research hypothesis in the Panel Vector Error Correction Model (PVECM) method.

Table 8.Granger Causality Test Results

Equation	Exclude	Probability
INF	FPI	0,0018*
FPI	INF	0,0941
OPEN	FPI	0,1262
FPI	OPEN	0,0886
COR	FPI	0,1808
FPI	COR	0,3511
REG	FPI	0,5087
FPI	REG	0,2794
OPEN	INF	0,2037
INF	OPEN	0,2743
COR	INF	0,0138*
INF	COR	0,8356
REG	INF	0,0016*
INF	REG	0,3423
COR	OPEN	0,1944
OPEN	COR	0,1936
REG	OPEN	0,0496*
OPEN	REG	0,1331
REG	COR	0,5918
COR	REG	0,1684

Note: * is the level of significance at5%

On the panel, the two countries, Indonesia and Thailand, both show a close relationship between the inflation rate and foreign portfolio investment, the level of corruption, and the quality of regulations. This condition illustrates that the macroeconomic side has a significant influence on the level of corruption and the quality of regulations that affect the formation of foreign investment in the domestic market. In addition to economic variables, significance also occurs in institutional variables, namely the relationship between regulatory quality and the ratio of economic openness. From Granger causality, in table 8, one conclusion can be drawn that what affects the level of regulatory quality with the ratio of economic openness is the reactive state of loosening macroeconomic policies in ASEAN countries.

Throughout 2013, many changes in policy formulations were seen in both countries, both Thailand and Indonesia, both of which had secret policies to balance the economy (Chirathivat & Cheewatrakoolpong, 2015 dan Middleton, 2012). Since Indonesia has actively implemented macroprudential policies since 2013, Thailand has also implemented the same national financial policy to maintain stability in the financial market (Warjiyo, 2017). With the form of a systemic mitigation policy that supports and blocks the impact of high shocks from outside the country, it can

be ascertained that by the end of 2021, both countries can and are ready to face the taper tantrum that The FED will actively enforce.

The policy of reducing quantitative easing carried out by The FED had a significant enough impact on Indonesia in 2013. It is hoped that this will not happen again (Vahlevi & Muharam, 2017; Dinata & Oktora, 2020 dan Halimatussadiah et al., 2020). As a result of the weak financial market, the market quickly overheated, the dollar strengthened, and foreign portfolios declined rapidly (Ghossoub & Reed, 2017). The rapid breakdown of trust is why Indonesia is one of the most affected by the 2013 taper tantrum (fragile five) (Basri, 2017). Moreover, the COVID-19 pandemic crisis that began to be active at the end of 2019 has motivated financial institutions and several other institutions to strengthen coordination (both in Indonesia and Thailand).

Estimated Panel Vector Error Correction Model (PVECM)

The Vector Error Correction Model (PVECM) Panel method in this study analyzed the relationship between independent variables on dependent variables in the short and long term. Based on the PVECM empirical test results in table 9, the variables that affect FPI in the long term are macroeconomic variables, inflation, economic openness ratios, and corruption in Indonesia and Thailand.

There are two economic variables and one institutional variable that significantly influences FPI long-term in Indonesia and Thailand. The strong influence of macroeconomic variables and the weak influence of one of the institutional variables, in the long run, are most likely due to high global market competition and the industrial era 4.0, which demands the development of industries based on advanced technology (Salazar-Xirinachs et al., 2014 dan Cornick, 2014). As a result, the economic development plan is shifted to building a modern economy in the long term through the withdrawal of foreign investment regularly (Agyapong & Bedjabeng, 2019).

It is known from the t-statistics in table 9, the relationship between economic variables and institutional variables on the formation of foreign portfolio investment is apparent. Foreign portfolio investment in Indonesia and Thailand would increase by one unit if the inflation rate decreased by 3.45267 and the ratio of economic openness decreases by 6.50413. Meanwhile, the value of foreign portfolio investment in Indonesia and Thailand will increase by one unit if the quality of regulation increases by 4.11471. The results of the PVECM test in this study are following the empirical and theoretical, where when the inflation rate decreases, the amount of investment (domestic and foreign) in the financial market in a country will increase.

Table 9. Long-Term Estimation of Panel Vector Error Correction Model (PVECM)

Long-term		
Variable	Coefficient	t-statistics
LOG(FPI(-1))	1	-
INF(-1)	-0,463868	-3,45267*
LOG(OPEN(-1))	-3,286289	-6,50413*
COR(-1)	0,009047	0,14131
REG(-1)	0,170900	4,11471*
Note: * significant effect if $t_{statistik} > t_{tabel}$, T_{tabel} = 1,70814		

The effect of the independent variables on the macroeconomic side and the institutional side variables in the short term is less than the influence of the independent variables on the macroeconomic side and the institutional side variables in the long term. In table 10, the results of the PVECM test show that the formation of foreign portfolio investment in two countries in the

ASEAN region, namely Indonesia and Thailand, is influenced by two factors, namely the inflation rate and the ratio of economic openness.

In the first period, the decrease in the ratio of economic openness by one unit led to an increase in foreign portfolio investment of 1.76667. The cause of the increase in foreign investment due to a decrease in the ratio of economic openness can be caused by the precautionary principle applied by macroeconomic policymakers in Indonesia and Thailand (Boyer-Kassem, 2017 dan Hansson, 2020). The precautionary principle applied emphasizes that every policy made and formulated by macroeconomic policymakers must be appropriately filtered, starting from considering the cause and effect of creating investment conditions in a country. For example, the buyback relaxation policy provides a second chance for financial market participants in the capital market to make buybacks within a specific time limit (Buckley & Mason, 1990). The regulation and supervision policy in the financial market is classified as rescuing financial conditions when domestic stock prices experience a weakening (Tobal & Menna, 2020).

Efforts to save the financial market by authorized macroeconomic policymakers have indirectly provided a second chance for domestic capital market players to purchase investment products. The flow of foreign and domestic capital will increase, and falling financial markets' risk will also be high. For this reason, the policymakers implemented additional policies, namely the trading halt policy and the auto rejection policy, which caused a narrowing of the path for direct investment flows. They provided an avenue (capital inflow) for portfolio investment products (Humanicki et al., 2017).

Another factor that can affect the increase in foreign portfolio investment (FPI) when the disclosure ratio decreases are the weak condition of the domestic financial market. QUAH (2012)mentions that the characteristics of financial markets in developing countries are more vulnerable than those in developed countries. In addition to the problem of large discount cuts, the opportunity cost of investing is also significant in contrast to the financial market conditions in developed countries, which have a relatively low level of market competition and a strong and financially prepared market. Therefore, the relationship of a decrease in the ratio of economic openness causing an increase in foreign portfolio investment (FPI) was found to have a significant effect in Indonesia and Thailand.

Table 10. Estimated Panel Vector Error Correction Model (PVECM) in the Short Term

DependentVariables	D(LOG(FPI))	D(INF)	D(OPEN)	D(COR)	D(REG)
Independent Variables			t-statistik		
D(LOG(FPI(-1)))	-0.01545	-1.26299	-2.07301*	1.06441	0.91379
D(INF(-1))	1.44147	-5.52934*	1.57169	0.92645	0.61947
D(OPEN(-1)	-1.76667*	-1.97762*	-0.83192	0.29982	0.19957
D(COR(-1))	0.43488	-2.51300*	0.39572	-1.13146	0.52216
D(REG(-1))	-0.95137	-0.71476	0.13072	-1.31258	-0.44923

Note: * significant effect if $t_{statistik} > t_{tabel}$, T_{tabel} = 1,70814

The regression of the vector error correction model (PVECM) panel found that economic openness variables significantly affect foreign portfolio investment in the short term. Table 10 shows that the increase in the inflation rate was due to a decrease in the economic openness ratio of 1.97762 and a decrease in corruption of 2.51300. This suggests that the decline in political stability represented by variable levels of corruption and a decrease in economic openness is predicted to increase inflation quickly in the short term. A statement can be drawn that the condition of the global economy dramatically influences the achievement of macroeconomic stabilization in Indonesia and Thailand. In addition to the condition of the goods market and the domestic financial market, which

is not yet strong, institutional variables which are one of the factors why an investor wants to invest in a portfolio in these two countries, must also be considered.

Impulse Responses Function Test

Individual responses of economic variables and institutional variables to foreign portfolio investment show varying results. The variables used in this study, both economic and institutional, respond to other variables by forming a positive gap and a negative gap from the horizontal line.

The impulse responses function test results in figure 1 show that the variables that make up the positive gap consist mainly of the responses of macroeconomic variables to institutional variables. The variables that make up the positive gap consist of individual responses from FPI to FPI, FPI to inflation, FPI to the ratio of economic openness, inflation rate to inflation rate, individual responses to the ratio of economic openness, the level of corruption to the ratio of economic openness, the level of corruption to the level of corruption, the level of corruption on the inflation rate, the quality of regulation on the inflation rate, the quality of regulation on the ratio of economic openness and the response of the quality of regulation to its variables.

A positive variable response indicates that it has a strong and positive response to portfolio and macroeconomic investments over the next ten periods. Monetary policies such as lower inflation can be implemented to strengthen indices on Wall Street to maintain a stable FPI in Indonesia and Thailand. Meanwhile, variables that respond to other variables by forming negative gaps are FPI on regulatory quality, inflation rate to regulatory quality, inflation rate to corruption level, corruption level to regulatory quality, regulatory quality to corruption level, and regulatory quality to FPI.

Institutional variable responses to macroeconomic variables dominate variables that respond to causal relationships negatively in this study. The conclusion of this response is following the political conditions and quality of government in ASEAN countries where the current state of the economy results from a combination of institutions and economic policies. Macroeconomic factors and institutional factors in ASEAN countries work in different routes but have the same ultimate goal: macroeconomic stability.
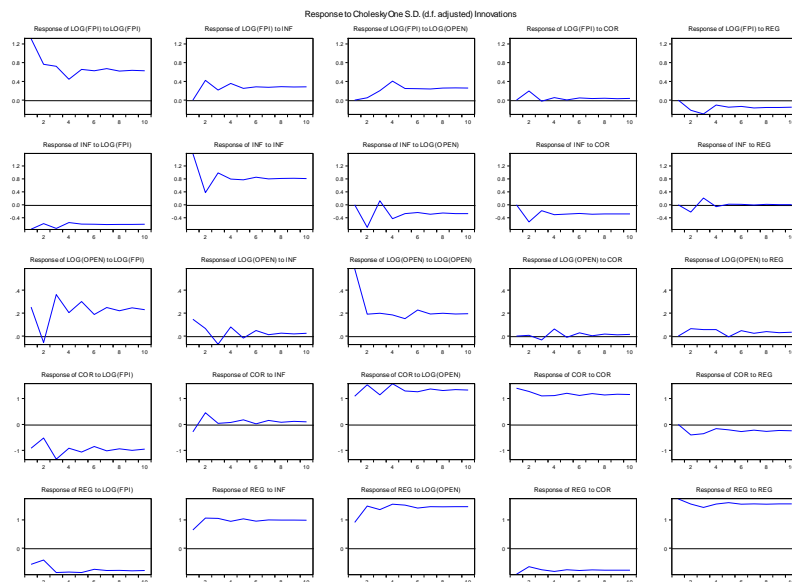

Figure 1. Impulse Response Function Test Results

From the conclusions drawn from figure 1 above, the description of the cause and effect of the variable response is based on a negative gap and a positive gap concerning other horizontals. In

this section, the response variables that make up perfect and significant fluctuations are the ratio of economic openness to FPI, inflation rate, level of corruption, and quality of regulation. This concludes that macroeconomic variables have an influence on fluctuations in foreign investment portfolios and three other variables. The response of the ratio of economic openness to fluctuations in changes in the three research variables is most likely caused by the open economic system adopted by the two countries. An economic system that does not impose limits on international markets and its financial policies can affect inflation rates, levels of corruption, and the quality of regulations in the short term. To achieve long-term stability, policy mixing between the track record of the inflation rate, corruption rate, and regulatory quality that has been implemented can be used to achieve macroeconomic stability in the long term by controlling foreign portfolio investment.

Variance Decomposition

After knowing each individual's response and the effect of the independent variable on the dependent variable in the long term, the last step of PVECM is to predict the dependent variables that affect it in the long term. From the results of the PVECM empirical test, the results of the variance decomposition test show a tendency for the growth of each variable in the long term. In figure 2, it can be seen clearly that each dependent variable has a dominant influence in each variable. The foreign portfolio investment variable is predicted to have a major influence on changes in foreign portfolio investment for the next period, supported by changes in the inflation rate and the ratio of economic openness. Meanwhile, macroeconomic variables, namely the inflation rate and the ratio of economic openness, are predicted to influence the individual's response and other supporting factors such as FPI and the level of corruption.

Different things are found in institutional variables where in the next ten time periods, in the long term, apart from being influenced by individuals themselves, the level of corruption is influenced by the ratio of economic openness and FPI. The combination of the same magnitude of influence from the level of corruption, the ratio of economic openness, and FPI is visible in figure 2. The last variable, namely the variable quality of regulation, is predicted to be formed by the response of the regulation itself, the level of corruption, the level of inflation, the ratio of economic openness, and FPI. Regulatory quality has four responses from other variables in full. This illustrates that the quality of regulation is the final result of a summary of changes in corruption and the ratio of economic openness in maintaining foreign portfolio investment.
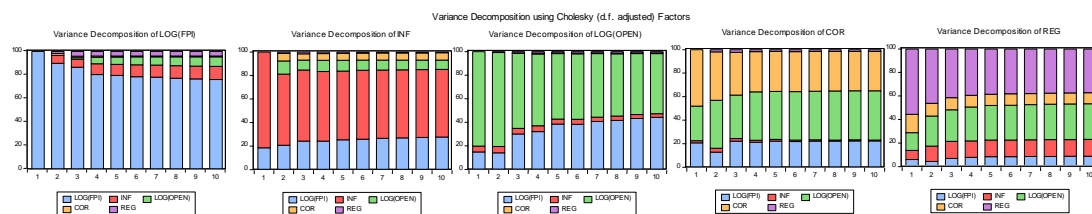

Figure 2. Variance Decomposition Test Results

CONCLUSIONS AND RECOMMENDATION

Controlling foreign portfolio investment through macroeconomic and institutional policies is quite effective in both Indonesia and Thailand. Through good macroeconomic policies and quality institutions, the economic risks resulting from increased foreign portfolio investments can be controlled under direct investment. In the short term, it is controlling the rate of inflation through controlling wages and prices. Another policy that can control inflation and keep the amount of foreign portfolio investment within normal limits under central bank regulations is maintaining bond prices

and short-term interest rates. Meanwhile, in the long term, the quality of institutional regulations can be improved, political stability and corruption are maintained at a low rank.

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