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**ANALYSIS OF MONETARY POLICY INTERVENTION AND  
MACROECONOMIC VARIABLE SHOCKS AGAINST CAPITAL INFLOW  
IN 4 EMERGING COUNTRIES ASEAN**

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**Abstract**

*This study aims to analyze the effect of macroeconomic variable shocks, which include economic growth, real effective exchange rate, and world oil prices as a proxy for world price stability and monetary policy intervention through controlling the money supply against capital inflow in four ASEAN emerging market countries. This study uses a panel error correction model approach to fully utilize secondary data from 2000 to 2022 in Indonesia, Malaysia, the Philippines, and Thailand. The data is collected from the World Bank and Fred Economic Data. The results of this study indicate that monetary policy intervention through money supply control significantly influences capital inflows to ASEAN emerging market countries in the long run. Then, economic growth significantly affects capital inflows in ASEAN emerging market countries in the long run. Economic growth significantly affects capital inflows in the short term. Meanwhile, monetary policy intervention and the real effective exchange rate did not significantly affect capital inflows in the short term in ASEAN emerging market countries. The results of this research show interesting findings because the real exchange rate as the primary indicator in measuring a country's competitiveness does not significantly impact changes in capital inflows in ASEAN emerging market countries. Interestingly, the strength of the domestic economy and monetary policy intervention is quite effective in influencing capital inflows in emerging market countries. It can be concluded that foreign investors prioritize the real sector's strength and the monetary authority's ability to regulate the stability of domestic investment.*

**Keywords:** Capital inflows, ECM, Emerging market, Macroeconomics, Monetary policy

**Introduction**

Investment stimulation is necessary for accelerating up economic development in emerging economies. Investment is a sign of preserving national economic stability and has a significant multiplier effect on enhancing economic growth in emerging economies (Kimiagari et al., 2023). According to Kim & Pyun (2018) the economies of emerging market countries require stimulation of capital flows from abroad to meet funding needs to accelerate development, increase employment opportunities, and increase financial market integration.

The Southeast Asia region is an important region for economic and business development. ASEAN is a regional cooperation association made up of Southeast Asian countries. The key issue on which these ASEAN countries are focused is how to maximize development stimulation by optimizing foreign investment. Four ASEAN member countries have fairly favorable economic movements, considerable economic sizes, and are countries of interest to global investors. Indonesia, Malaysia, the Philippines, and Thailand are among them. These four countries are Southeast Asia's emerging markets.

According to Buffie et al., (2018) Emerging market countries have strong economic growth, a large population, and developing financial markets. This is the primary motivator for investors to make investments in their funds. Then, according to Iren, (2018) foreign investment has a fairly strong relationship with a country's economic prospects, so when economic growth shows a positive trend, investors perceive this as a positive signal to increase investment, resulting in economic growth having a positive effect on capital inflows.

Aside from the growth of the economy, the effectiveness of macroeconomic policies determines the magnitude of capital inflows into emerging market countries. As a developing country, policy performance is the primary metric for judging the government's ability to oversee the economy. The ability of the government to integrate macroeconomic measures toward market balance is seen as good policy performance (Petras, 2022). According to Dang & Dang, (2020) Monetary policy is a macroeconomic policy that directly influences capital inflows in emerging market countries. The expansionary monetary policy indicates that the monetary authority is able to increase domestic financial market activity so as to attract foreign capital flows into the economy.

Then, capital inflows are greatly influenced by exchange rate fluctuations. Ideally, real exchange rate fluctuations indicate the international economic situation, which is related to changes in international prices and determines costs in investment and production.. According to (Habib et al., 2017) Fluctuations in the real effective exchange rate are an indicator of a country's competitiveness. A country with a relatively low real exchange rate shows that it is highly competitive. The country's capacity to suppress the real exchange rate offers investors confidence that the country has low production costs and can export its products at lower rates.

However, past experience with several crises suggests that capital inflows are a trigger for crises. High capital inflows suggest an increasing danger of domestic economic shocks, which can be explained by a quick reversal (Ahmed & Zlate, 2014). Even while developing countries require foreign investment to encourage development, the government must recognize that when a global economic shock happens, there is a risk of capital reversal, which has a detrimental influence on the domestic economy

Based on these issues, the study attempts to investigate the short and long-term effects of macroeconomic variable shocks and monetary policy interventions on capital inflows in four ASEAN emerging market nations. The Panel ECM technique is used in this work to examine the impact and balance of macroeconomic variable shocks and monetary policy interventions in the short and long run.

### Research Method

This research completely uses secondary data in the period 2000–2022 and covers four countries, including Indonesia, Malaysia, Thailand, and the Philippines. Data is collected from FED (Fred Economic Data) and World Bank. The data set includes Capital Inflow (CI), Real Effective Exchange Rate (REER), Money Supply(Ms) Monetary Policy and Economic Growth (Gr)

Tabel 1 : Description of data and sources

Variabel	Abreviation	Description	Sources
Capital Inflow	CI	Capital Inflow is measured by the percentage of foreign direct investment to GDP	World Bank
Real Effective Exchange Rate	REER	Real Broad Effective Exchange Rate for Indonesia, Index 2010=100	FED
Money Supply	Ms	Money supply to GDP as a proxy for monetary policy action for controlling the money supply	World Bank
Economic Growth	Gr	The percentage change in GDP as an indicator in measuring economic growth	World Bank

The analytical method used in this research was an econometric model with a Panel ECM (error correction mechanism). A few of the steps for using the ECM test are as follows: the first is the data stationarity test using the Augmented Dickey-Fuller test, which seeks to determine whether there has been no significant change in the data; the second is if all variables pass the unit root test, then the next cointegration test is to determine whether there may be a long-term relationship; and finally. The Kao (Engle-Granger Based) method is used in this study to test the cointegration of variables by using the ADF test statistic to determine whether the error term (u) model has a stationary base. The third test is the long-run relationship test, where the long-run equation in the ECM model is the basic equation, which is not stationary in level. The fourth test is the short-term relationship test, where the stationary error term (u), in the basic model, is also used as one of the variables in the short term. Similar variables from the long-term equation are also used in the short-term equation. However, they are stationary in the same order.

This study uses four variables to analyze the interaction of macroeconomic variables and monetary policy interventions in influencing the capital inflow on emerging market ASEAN

$$CI = f(REER, Ms, Gr) \tag{1}$$

Based on the function equation, ECM model can be derived as follows:

$$CI_{it} = \alpha_0 + \alpha_1 REER_{it} + \alpha_2 Ms_{it} + \alpha_3 Gr_{it} + U_t \tag{2}$$

Where t = year;  $\alpha_0$  = constant;  $\alpha_{1-3}$ = coefficients; U = error term.

The second is cointegration of the basic model:

$$U_t = CI_{it} - \alpha_0 - \alpha_1 REER_{it} - \alpha_2 Ms_{it} - \alpha_3 Gr_{it} \tag{3}$$

The third is the ECM model:

$$\Delta CI_{it} = \alpha_0 + \alpha_1 REER_{it} + \alpha_2 Ms_{it} + \alpha_3 Gr_{it} \Delta U_{t-1} + \varepsilon_t \tag{4}$$

Where  $\Delta$  = change;  $U_{t-1}$  = the one period lagged value of the error term.

**Result and Discussion**

**Results**

The unit root test should be the initial step to ensure stationarity. This test is designed to investigate the likelihood of a spurious regression that would produce false positive and false harmful t- and f-statistics and result in wrong conclusions. T-statistics and p-values in Table 2 indicate that not all variables are stationary at the level. However, all variables are stationary at the first difference. Thus, the results of the stationarity test on this research variable meet the requirements for analysis using ECM.

Tabel 2 : Unit root Test

Variables	Level		First Different		Decision
	t-statistics	p-values	t-statistics	p-values	
CI	28.3196	0.0004	56.4902	0.0000	I(I)
REER	14.6495	0.0663	41.6455	0.0000	I(I)
Ms	8.43376	0.3923	23.6754	0.0026	I(I)
Gr	27.2375	0.0006	54.8327	0.0000	I(I)

Sources : data processed with eviews 10

The second analysis uses the ADF test statistic to do the Kao (Engle-Granger-based) method cointegration test to determine whether or not the error term in the basic model is stationary because the ECM model might be used in this study. Table 3 displays the outcomes. The estimations for Indonesia, Malaysia, Philippines, and Thailand based on Table 3 show that the study's variables have cointegration since the error term value of the core model is stable, indicating that the variables under consideration have a long-term relationship.

Tabel 3: Cointegration Test

Variables	Level		First Different		Decision
	t-statistics	p-values	t-statistics	p-values	
Ect	-3.447271	0.0118	-	-	I(0)

Sources : data processed with eviews 10

The third analysis continues with the long-term analysis presented in Table 4 with coefficients, statistics, and probability because cointegration and a long-term correlation are indicated for these variables. Profitability, macroeconomic circumstances, and monetary policy are linked long-term because of variable cointegration. This research indicates that economic growth and monetary policy through money supply intervention significantly affect capital inflows into ASEAN emerging market countries. Meanwhile, the real effective exchange rate has the littlest capital inflows in ASEAN emerging market countries.

Table 4: Long run relationships from basic model

Variables	Coefficient	t-statistics	Prob
C	-2.589008	-1.934278	0.0563
Gr	0.182717	4.546844	0.0000
Ms	0.021840	6.703437	0.0000
REER	0.021791	1.691937	0.0942
R-squared	0.403449		

Sources : data processed with eviews 10

The ECM model can be applied in this research; consequently, short-term tests on each variable were conducted in the exact compliance for the fourth analysis. Table 5 provides the results, as well as the coefficients, statistics, and probabilities. Based on Table 5, a significant 1% mistake is seen in 4 emerging markets of ASEAN. This error is shown as the one-period lagged value of the short-term equation term error. This circumstance denotes a momentary issue brought on by trivial factors. According to the findings of this study, economic growth and monetary policy have a strong short-term effect on capital inflows. However, the real effective exchange rate only significantly affects capital flows in ASEAN emerging market countries.

Table 4: Short run relationships from ECM

Variables	Coefficient	t-statistics	Prob
C	-0.674388	-3.046156	0.0031
D(Gr)	0.156941	3.708261	0.0004
D(Ms)	0.058172	2.415155	0.0179
D(REER)	0.008011	0.297744	0.7666
ECT (-1)	-0.651796	-5.879405	0.0000
R-Squared	0.393911		

Sources : data processed with eviews 10

### Discussions

Capital inflows are crucial in supporting development and economic activity in emerging markets countries. Movements in capital flows reflect the occurrence of internal and foreign macroeconomic shocks. Then, macroeconomic policies, such as monetary policy, impact swings in capital inflows in emerging market countries. The findings of this study reveal that economic growth has a considerable short- and long-term influence on changes in capital inflows in emerging market countries. These findings support prior findings that economic growth indicates excellent prospects for a country's economy, attracting international investors to invest in countries with positive economic growth (Koepke, 2015). According to Vo (2018), positive economic growth is represented in the country's ability to maintain sustained economic activity and a favorable economic environment to ensure long-term economic stability.

Changes in capital flows are additionally impacted by monetary policy actions, particularly in financial markets. Monetary policy interventions in maintaining the money supply's stability reflect macroeconomic policies' effectiveness in sustaining the money market and financial market stability (Cacciatore et al., 2016). The results of this study reveal that monetary policy intervention has a considerable short and long-term impact on capital inflows into ASEAN emerging market nations. The findings of this study confirm previous conclusions that monetary policy is crucial in regulating the balance of foreign investment entering an economy (Shahmi & Aimon, 2020).

Capital inflows are ideally dependent on fluctuations in the real exchange rate. Fluctuations in capital inflows will respond to changes in the exchange rate balance. However, the findings of this study suggest that fluctuations in the real effective exchange rate have no meaningful impact on capital inflows in a country. The results of this study are supported by previous research, which states that investors tend to take risks in investment and have high confidence in economic prospects and policy performance; exchange rate fluctuations tend to be ignored as the primary indicator in considering investment decisions (Anaya et al., 2017)

### Conclusions

Capital inflows are the principal economic instrument that significantly accelerates development and raises economic activity. Economic development, monetary policy interventions, and real exchange rate stability should all impact capital inflows. According to the findings of this study, economic growth has a considerable impact on capital inflows to ASEAN emerging market countries. These findings indicate that robust economic growth in emerging market countries signals favorable long-term economic prospects. Then, monetary policy intervention through managing the money supply considerably impacts capital inflows into ASEAN emerging market countries. According to the findings of this study, monetary policy performance in four ASEAN developing market nations has been beneficial in influencing investor confidence to invest in these countries. Meanwhile, exchange rate fluctuations did not significantly affect capital inflows to the four ASEAN emerging market countries. The findings of this study indicate that changes in exchange rates tend to be ignored by investors as a consideration in investment decisions. This also indicates that investors prioritize the domestic economic situation and the performance of government policies in regulating a country's economy.

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