



Moderation Model on the Fed Funds Rate on Portfolio Equity Flows in Southeast Asia

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Abstract. The impact of globalization on cross-country portfolio investment is the high flow of stocks and bonds with the primary goal of taking high yields from rising prices without aiming to own a company. Emerging market have generally been net recipients of foreign capital in recent decades, including the countries in Southeast Asia consisting of Indonesia, the Philippines, Malaysia, Singapore, and Thailand. The Fed Fund Rate is believed to be the most influential factor in portfolio flows to various emerging market countries. This study will model portfolio equity flows to Southeast Asia over the last 20 years. Model testing uses moderation analysis process model 4 by Andrew F. Hayes. The findings of this study indicate that the Fed Funds Rate has a greater effect on Southeast Asia's Equity Flows Portfolio than Internal Gross Domestic Product, which indicates the economic strength of a country in Southeast Asia.

Keywords: Emerging Market, Fed Funds Rate, GDP, Portfolio Equity Flows.

1 Introduction

One of the effects of globalization is the high flow of cross-border portfolio investment into foreign stocks and bonds seeking higher yields and increased equity prices, not managerial control. This phenomenon is rooted in the revival of the invisible hand concept from Adam Smith, in which the loosening of capital controls and supported by the rapid growth of capital markets accompanied by the privatization of state-owned companies [1].

Developments in international financial markets encourage investors to diversify their portfolios internationally, according to the principle "Do not put all your eggs in one basket," which is the foundation of investing[2]. Several potential benefits make it attractive for investors to diversify their portfolios internationally, namely the higher the expected return, the lower the variation of returns, the lower the correlation of returns on foreign securities with the investor's domestic capital market, and the greater the share of imported goods and services in their consumption [3].

The relatively low international correlation implies that investors can reduce portfolio risk more if they diversify internationally rather than domestically. Because the magnitude of the advantages of international diversification in terms of risk reduction depends on the international correlation structure [1], [4]–[6]. Emerging markets have a low correlation with most developed markets and a low correlation among

themselves. Low correlation means that adding a portfolio in emerging markets can reduce risk and provide higher returns, thus making developing countries one of the leading destinations of international portfolio flows [7]–[10].

The flow of portfolio investments to emerging economies is subject to the influence of various factors, including tax rates on fruits or dividends, elevated interest rates in other countries, and fluctuations in exchange rates [11]. Portfolio flows are influenced by many factors, which can be simplified into push factors and pull factors [12], [13]. The driving factor that has the most influence on portfolio flows is the Fed's interest rate which has a relationship with portfolio flows where when there is an increase in the interest rate environment, it tends to harm portfolio flows and vice versa [14]–[23].

One of the attractive factors for foreign investment is a country's economic growth as measured by Gross Domestic Product (GDP). This can happen because foreign investors tend to invest in countries with good economic growth and bright prospects [24]. Internal economic growth (GDP) is related to portfolio investment flows [25], [26]. Southeast Asia is one of the fields of emerging countries and one of the leading destinations of cross-border investment; emerging countries are Indonesia, Singapore, Philippines, Thailand, and Malaysia (Onyiriuba, 2016). Portfolio flows into Southeast Asia in the last two decades have fluctuated (fig. 1). This is the impact of investors' investment strategy, one of which is cross-country investors.

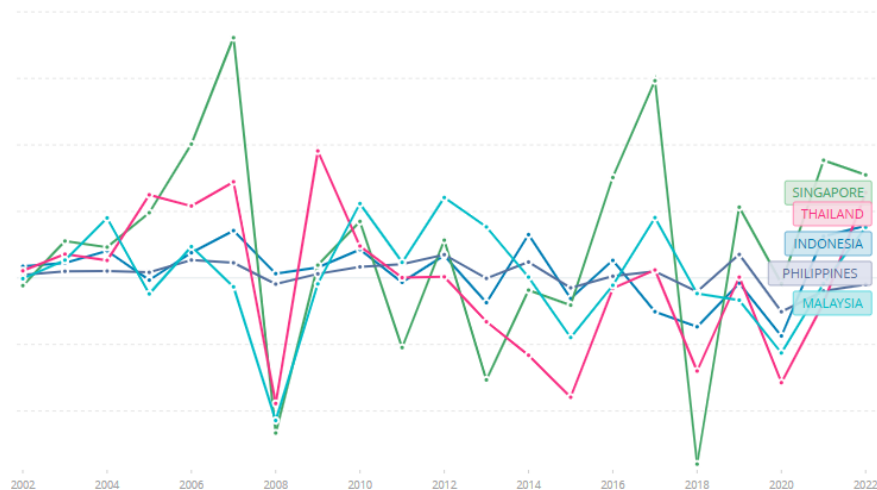


Fig. 1. Portfolio equity flows to Southeast Asia 2002-2022 (Author's work)

Portfolio flows to countries in Southeast Asia are influenced by many factors, one of which is GDP. The rate of economic growth (GDP) in Indonesia positively and significantly influences the flow of foreign capital for the type of portfolio investment [27], [28].

Portfolio flows to southeast Asia as an emerging market country be more dominantly influenced by movements in the Fed funds rate [16], [29], [30]. When the Fed's interest rate rises, foreign investors tend to withdraw their investment from developing

countries such as Indonesia to invest in the US, which offers a higher rate of return. Conversely, when the Fed's interest rate falls, foreign investors tend to flow to developing countries such as Indonesia in search of a higher rate of return.

On the other hand, the Fed's interest rate does not only affect portfolio flows in emerging countries but also influences the country's economic growth [30], [31]. It is interesting to study the Fed Funds rate's indirect effect on Portfolio flows to southeast Asia through GDP. The present study posits two hypotheses. First, it suggests that the federal funds rate exerts a direct impact on portfolio flows within the Southeast Asian region. Second, it proposes that the federal funds rate influences portfolio flows in Southeast Asia indirectly, by means of its effect on GDP.

2 Methods

The design of this paper uses the conditional process model using a path analysis based on OLS (Ordinary Least Square) regression and the bootstrap method using the SPSS and PROCESS statistical tools version 4.2 by Andrew F. Hayes 4th model. Conditional process analysis is to describe and understand conditional properties through mechanisms that transmit the influence between variables. The variables used in this study consisted of 3 variables consisting of 1 exogenous, one mediator, and one endogenous variable. As the most dominant variable, Fed Fund Rate is used as a predictor/independent variable, GDP as a mediator variable, and Portfolio Equity Flows as a Dependent variable.

The data utilized in this study consist of secondary data sources, including the Fed Fund Rate, GDP, and portfolio equity flows. The data pertaining to the fed fund rate encompasses information regarding the fluctuations in the central interest rate administered by the Federal Reserve. The Gross Domestic Product (GDP) serves as an indicator of the magnitude of a nation's economy. Portfolio equity flows, on the other hand, represent the influx of investment funds in the form of equity into a country. It is worth noting that both GDP and portfolio equity flows are measured in terms of dollar exchange units. The data utilized in this study was sourced from reputable international institutions, namely the World Bank and the International Monetary Fund (IMF). The dataset encompassed five Southeast Asian countries, namely Indonesia, Malaysia, the Philippines, Thailand, and Singapore. The time frame for the data collection spanned from 2002 to 2022.

Statistically, it can be described as follows:

Total effect:

$$FEP = I_0 + cFFR + e_y$$

Direct and Indirectly:

$$GDP = I_1 + aFFR + e_m$$

$$FEP = I_2 + c'FFR + bGDP + e_y$$

3 Result

The outcomes of the computation utilizing the process macro of Andrew F. Hayes' fourth model can be succinctly summarized as follows:

Table 1. Summary of Results of the Conditional Process on the Fed Funds Rate on Portfolio Equity Flows in Southeast Asia

Variable	Variable									
	GDP				Portfolio Flows					
	coeff	se	t(F)	p	coeff	se	t(F)	p		
FFR	a	-4305	1760.3	-2.4453	0.016	c'	73.3808	32.906	2.23	0.028
GDP						b	-0.0008	0.0018	-0.4628	0.645
Constant		436.86	35.485	12.3111	0.00		-0.0912	1.0138	-0.09	0.929
R square		0.0549	66315	-5.9796	0.016		0.0556	21.901	2.9999	0.054

Table 2. Total, Direct, and Indirect Influence Fed Funds Rate to Portfolio Equity Flows

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		Conclusion
				Lower Bound	Upper Bound	
FFR - GDP - Portfolio Equity Flows	76.9481 (0.0175)	73.3808 (0.0279)	3.5673	-7.2932	14.1886	No Mediation

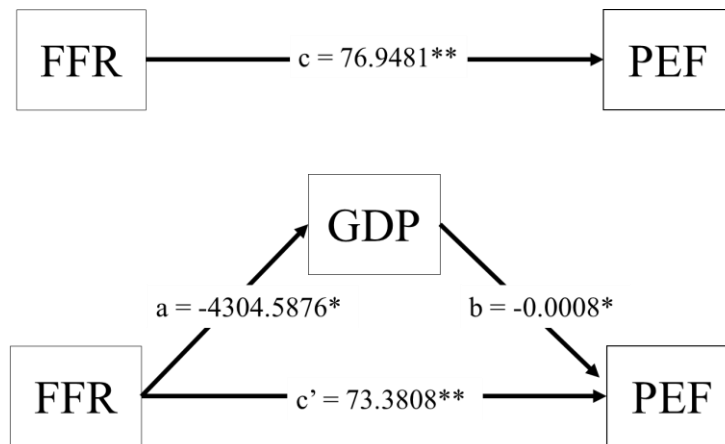


Fig. 2. Total, Direct, and Indirect Influence Fed Funds Rate to Portfolio Equity Flows

Direct and Indirectly effect:

$$\begin{aligned} \text{GDP} &= 436.86 - 4305 \text{ FFR} + e_m \\ \text{FEP} &= -0.0912 + 73.3808 \text{ FFR} + -0.0008 \text{ GDP} + e_y \end{aligned}$$

Based on the analysis output, it is found that the Fed Funds Rate has a significant effect on GDP, with a sig value of 0.016, and on Portfolio Equity Flows, with a sig value of 0.028. It was found that GDP on Portfolio Equity Flows had a sig value of 0.645, so it was concluded that there was no significant effect. The effect of the Fed Funds Rate on Portfolio Equity Flows through GDP has a total effect of 76.9481 with details of a direct effect of 73.3808 and an indirect effect of 3.5673. In the mediation test, although the total effect or direct is significant, it is found that the indirect effect (b) has a sig of 0.64, and there is a value of 0 between the Lower Bound and Upper Bound on the Confidence Interval so that it is concluded that there is no mediation in the model.

4 Discussion

The findings of this paper reinforce that the Fed Funds Rate is the dominant factor for portfolio flows to developing countries. The Fed Funds Rate, which is part of the United States' monetary policy, often changes, causing a gap in interest rates with developing countries which causes one of them a striking difference in market returns which makes one of the factors causing investment to enter [32], [33].

Emerging Market Countries have generally been net recipients of foreign capital in recent decades [34], [35]. Intuitively, this is because the economic, political, institutional, and even psychological factors that influence security returns tend to vary widely across countries, resulting in relatively low correlations among international securities. The relatively low international correlation implies that investors can reduce portfolio risk more if they diversify internationally rather than domestically. Due to the large advantages of international diversification in terms of risk reduction depending on the international correlation structure [4], [5].

Emerging markets have low correlation with most developed markets and low correlation among themselves. Low correlation means that by adding a portfolio in emerging markets it can reduce risk and provide higher returns thus making developing countries one of the main destinations of international portfolio flows [8], [10], [36].

In the Southeast Asian region, it is unique that GDP does not have a significant effect on portfolio equity flows; this is different from various studies which show GDP is one of the factors that significantly influences [14], [26], [37], [38].

The findings of this study indicate that portfolio flows to Southeast Asia are significantly influenced by the Fed Fund Rate, highlighting a concerning vulnerability. The influx of portfolio flows, which can be attributed to a significant factor, namely the volatility of the Federal Funds Rate, is not a phenomenon solely generated by Southeast Asian nations.

5 Conclusion

Portfolio flows to Southeast Asia in the last two decades reinforce previous findings that the Fed funds rate is the most dominant factor in Portfolio flows to developing countries. It is interesting to find that Portfolio flows to Southeast Asia are not affected by economic strength in the region, namely GDP. The limitation of this study pertains to its reliance on data solely from developing countries in Southeast Asia over a relatively short time span of 20 years. Consequently, the study's ability to establish a more precise relationship between the Fed Fund Rate, GDP, and the Portfolio is constrained. To address this limitation, future research is recommended to expand the coverage of developing countries and extend the duration of the study period.

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