



The Effectiveness of Monetary Policy and The Effect of Global Economic Shock on Net Financial Accounts in Indonesia

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Article

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Abstract

The majority of recent research has looked at the effect of the crisis on capital flows. Using Indonesia as a case study, this study examines the efficacy of monetary policy and the impact of global economic shocks on the Net Financial Account, a component of the Balance of Payments, from 1989 to 2020. Dummy variables were used to assess global economic shocks for three crisis periods: the Asian financial crisis in 1998, the global financial crisis in 2008, and the Covid-19 pandemic, which has been ongoing since the end of 2019. The Autoregressive Distributed Lag (ARDL) model was used to examine the long-term and short-term relationships between variables. The findings of the calculation reveal that all variables, that is monetary policy and global economic shocks, have a short-term and long-term relationship with the Net Financial Account. It is advised that the government and monetary authorities continue to improve economic fundamentals, including financial system stability.

Keywords: Net Financial Account; Monetary Policy; Global Economic Shock

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Introduction

In the age of globalization, economic borders between countries have been minimized, and an economic shock in one country can easily spread to other countries, especially those with poor economic fundamentals. The consequences of the crisis are not limited to decreased economic performance; they may also have a systemic impact (Raz et al., 2012). According to recent studies, the economic shock that emerged in the context of the Global Financial Crisis had a significant effect on economic growth in many countries (Fidrmuc & Korhonen, 2010; Stanciu et al., 2015).

The Asian financial crisis in 1998 and the global financial crisis in 2008, both caused by an economic shock in the United States, are examples of financial crises that have occurred and had a significant impact on the global economy.

The effects of the 1998 financial crisis differed from those of the 2008 financial crisis, according to research published in East Asian Economics. While both crises stemmed from the financial crisis, the 1998 crisis significantly affected the 2008 financial crisis. East Asian Economies were able to mitigate the effects of the global crisis (Raz et al., 2012).

Economic shocks have a significant effect on both developed and developing countries. According to research conducted in China between 1998 and 2018, financial cycle shocks significantly impact the Chinese economic cycle and the formulation of monetary policy to be implemented (Li et al., 2021). In greater detail, Fidrmuc & Korhonen (2010) examines the effects of the global financial crisis in China and India. The research discovered that the financial crisis had a significant effect on economic growth in developing Asian countries.

S.J. and Roy (2014), in particular, investigated the effect of the financial crisis on capital outflows as seen by future trade between India and Emerging Asia countries, such as China, Malaysia, Singapore, Indonesia, the Philippines, and South Korea, according to IMF, in the post-crisis period. The financial crises in 1998 and 2008 led to a contraction in potential trade between India and other emerging Asian countries, except for China and the Philippines. While this condition proves that the impact of the crisis was not too big for China and the Philippines, other countries, such as Indonesia, Malaysia, Singapore and South Korea, however, were severely affected by the financial crisis.

In the regional context, there are differences in the effects of the global financial shock that occurred in the US and the regional shocks in Japan and China on economic and financial integration in Asia. These Economic growth and interest rates are among the factors explored in this report. As a result of it, Chinese economic shocks had a more significant effect on Asian economies than the global financial crisis that hit the United States. On the other hand, another regional economic shock, Japan's, had a negligible effect on Asian economies. This condition shows that monetary policy in Asian countries should pay more attention to the possibility of shocks occurring in China (Ong & Sato, 2018).

The Covid-19 Pandemic is the most recent economic shock occurring now. The Covid -19 Outbreak was an external shock that no one could have anticipated and did not begin with a global financial crisis like the Asian Financial Crisis of 1997 or the Global Financial Crisis of 2008. The pandemic of Covid-19 had an unexpected economic and financial effect. Restricted population migration between countries and lockdown policy in many countries has affected many parts of the economy, including international trade, investment, and, more importantly, the stock market (Yong & Laing, 2020).

Pandemics affect financial systems in addition to limiting economic growth in many countries. In Europe, the Covid-19 pandemic resulted in a 30 percent drop in European stock markets relative to before the pandemic (Buheji et al., 2020). By selling bonds, several countries have sought a fiscal deficit to fund breaking the virus's chain of transmission. As a result, the bond market is struggling to keep up with large-scale government bond issuance. The central bank will almost certainly be forced to intervene by purchasing these bonds on an unprecedented scale (Nicola et al., 2020). Moreover, (McKibbin & Fernando, 2020) expect that capital outflows will be generated in safer developed countries, such as the United States, Europe and Australia from economies that suffer badly from the pandemic Covid-19, such as China and developing countries or other emerging market countries.

Economic shocks will greatly affect capital inflows and capital outflows. The financial Account is one of the components of the Balance of Payments. Capital outflows and inflows from foreign investment, direct investment, and portfolio investment are included in the Financial Account. The Net Financial Account measures the deficit or surplus in capital flows from foreign investment. Economic shocks such as the Asian crisis in 1998, the global crisis in 2008, and the Covid-19 pandemic crisis, as shown in Figure 1, have had a significant impact on Indonesia's net financial account fluctuation. A decrease will follow each crisis period in the net financial account. This is in line with several findings that show that capital flight due to crises often occurs in various countries. Capital outflows amid a crisis often occur in the midst of economic uncertainty (McKibbin & Fernando, 2020; Kiendrebeogo, 2016; Santoso et al., 2020).

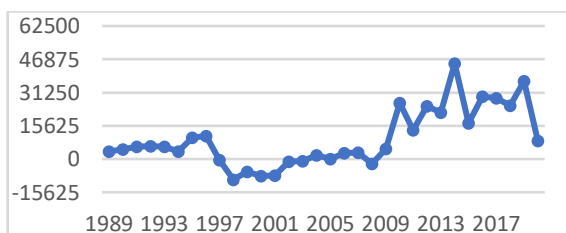


Figure 1. Indonesia's Net Financial Account (Million US Dollars)

Monetary policy plays a significant role in stabilizing the net financial account. Monetary policy is expected to be effective in increasing foreign investment into Indonesia. Several indicators of monetary policy in Indonesia are shown in Figure 2. The money supply (M2) and the interest rate rose dramatically when the monetary crisis struck in 1998. M2 increased by 62.3 percent, while the deposit interest rate increased significantly to 28.3 percent. Indonesia experienced a profound shock as a result of the crisis. During the global crisis in 2008, the monetary volume experienced an increase but was still within reasonable limits. Indonesia is one of the countries that survived the threat of the 2008 global crisis. Even in the post-crisis of 2008, there was an abundance of capital inflows from developed countries to Indonesia, as seen from the dramatic increase in net capital accounts after the crisis, that is, between 2009 and 2014. Unlike the Covid-19 pandemic-caused crisis, the monetary authority took steps to stimulate the economy by lowering interest rates. The monetary stimulus was followed by fiscal stimulus, causing the money supply to grow faster than expected.

Many studies have looked at the crisis' partial impact on foreign investment and the effectiveness of the policies put in place. Capital movements from the United States to emerging and developed countries are affected by the global financial crisis. By lowering interest rates, quantitative monetary policy have proven effective in increasing capital flows from the US to developing countries and developed countries. The end of this loose monetary policy is expected to cause capital outflows in countries that receive such capital overflows. Countries with strong financial system fundamentals, that is, that have great exchange rate flexibility, high capital mobility, and strong fiscal resilience, are expected to survive through the shock of changes in capital flow (Kiendrebeogo, 2016).

We can learn a lot from the case of Singapore's success in keeping capital flows stable during the Asian crisis of 1998. Investor confidence was boosted by strong economic fundamentals, resulting in a reduction in capital outflows. Well-defined macroeconomic and financial sector policies greatly influence investor confidence. This establishes that in order to survive an economic crisis, the financial system must be efficient and prudential supervision must be employed (Chow, 2010).

More specifically, many studies show the effectiveness of the monetary policy on foreign investment in both direct investment and portfolio investment. To increase foreign investment, the government took economic policies, including monetary policy. In a study in Turkey, the monetary policy with interest rates and exchange rates was found to have a causal relationship with foreign investment, foreign direct investment and portfolio investment (Gumus, 2015).

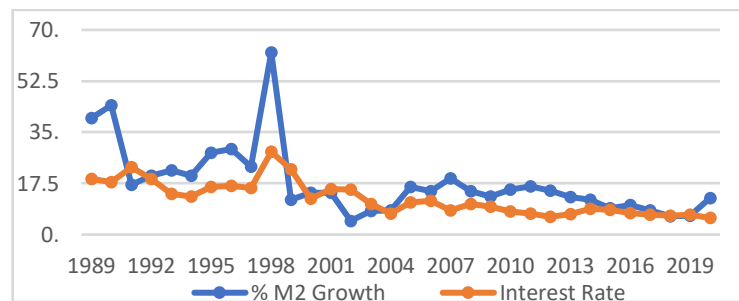


Figure 2. Growth in Money Supply (%) and Interest Rate (%)

The effectiveness of the monetary policy on investment in state-owned and private enterprises was investigated by (Zhao et al., 2018). In addition, this analysis includes the political role of local governments in the effectiveness of the monetary policy. As a result, government intervention has a significant effect on weakening the impact of monetary policy on reducing investment in state-owned and private enterprises with connections to the government. Conversely, contractionary monetary policy will reduce investment in state-owned and private enterprises that have no connection with the government.

In eight small open economies, including Indonesia, several reports on the effectiveness of monetary policy have found that the influence of monetary policy on interest rates directly affects exchange rates and stock prices. The increase in the interest rate causes an appreciation in each country's exchange rate, and on the other hand, reduces the share price (Pennings et al., 2015). According to Dang et al. (2020), monetary policy through the money channel, domestic credit, and interest rates all have a positive impact on private investment, including foreign investment, and Suriani et al. (2021) found that interest rates have a one-way relationship with foreign direct investment.

Wei & Han (2021) examined the impact of the Covid-19 pandemic on the effectiveness of monetary policy transmission to financial markets in 37 countries affected by the pandemic. Financial markets include government bonds, capital markets, exchange rates, and swap markets. The pandemic has weakened the effectiveness of the transmission of monetary policy on financial markets. In the future, a potent mix of monetary and fiscal policy will be needed to stabilize financial markets during the post-pandemic era.

Based on this background, this study will focus on the effectiveness of monetary policy by managing the money supply and interest rates on the net financial account. In addition, it will discuss how the global economic shock affects the Net Financial Account. Generally, the study of capital flow is mainly viewed from the perspective of the Balance of Payments. This study, however, focuses on changes in capital flow due to fluctuations in the Net Financial Account. There has been very little research on this topic. Another novel feature in this study is that the global economic shock variables used come from three different periods of recession, including the Asian financial crisis in 1998, the global financial crisis in 2008, and the crisis caused by the Covid-19 pandemic. Previous studies have only partially addressed the topic of economic shock. The previous study has not discovered much about the effect of the Covid-19 pandemic on Financial Accounts.

Research Method

The impact of monetary policy effectiveness using the interest rate and money supply, as well as the impact of global economic shocks on Indonesia's net financial accounts, is investigated in this study (1989 to 2020). The data comes from the Asian Development Bank's publication "The Key Indicators For Asia and the Pacific" (ADB). The Autoregressive Distributed Lag (ARDL) model was used. The ARDL model was selected because it can illustrate and explain the changing relationship between variables, including the relationship between past and current variables. (Gujarati, 2014) explains that the Autoregressive (AR) model is a model that uses one or more of the past data for the dependent variable among the independent variables.

Meanwhile, the Distributed Lag (DL) model is a model that involves data from the present and the past from independent variables. The advantage of the ARDL model is that it is unbiased and efficient because it can be used on short-series data and obtains both long-term and short-term estimates simultaneously, thus avoiding autocorrelation problems. Here is a model from ARDL:

$$\Delta Y_t = \beta_0 + \sum_{i=1}^p \beta_1 \Delta Y_{t-i} + \sum_{i=1}^p \delta_1 \Delta X_{t-i} + \phi_1 Y_{t-1} + \phi_2 Y_{t-2} + \dots + \epsilon_t \dots \dots \dots (1)$$

The first part of the equation with β and δ shows the short-term dynamics, the second equation with ϕ shows the long-term relationship, p shows the lag length and i shows the lag order and ϵt is the error term.

The ARDL model used in this study was obtained from Chowdury (2012) and transformed from equation (1) into:

$$\Delta NFA_t = \beta_0 + \sum_{i=1}^p \beta_1 \Delta M2_Growth_{t-i} + \sum_{i=1}^p \delta_1 \Delta R_{t-i} + \sum_{i=1}^p \delta_2 \Delta DGS_{t-i} + \phi_1 M2_Growth_{t-1} + \phi_2 R_{t-1} + \phi_3 DGS_{t-1} + \dots + \epsilon_t \dots \dots \dots (2)$$

Where NFA is the Net Financial Account, which is a deficit or surplus of Financial Accounts in million USD; M2_Growth is the growth in the money supply (M2) in percent; R is the 6-month deposit interest rate as a proxy for monetary policy in percent; DGS is the Dummy Global Economic Shock, where the shock period seen is the period of the Asian financial crisis in 1998; the global financial crisis in 2008; and the pandemic crisis of Covid 19. In the ARDL model, several tests were carried out, including (1) Stationarity Test, (2) Optimum Lag Test, (3) Classic Assumption Test, and (4) Model Stability Test.

Results and Discussion

The calculation outcomes of the equations under consideration have been tested at several stages. The unit root test is the first test. The advantage of the ARDL model is that the data used does not have to be stationary at the same level. The unit root test here uses the Augmented Dickey-Fuller Test (ADF Test) method, where if the ADF value is greater than the Critical value, the data being tested is stationary. The test is carried out at the level (1 (0)) and continues at the first difference (1 (1)) level. Based on the test results, the Net Financial Account (NFA), M2 Growth (M2_Growth) and Interest Rate (R) variables were recorded as stationary at the stage level as well

as at the first difference level. The Dummy Global Shock (DGS) variable was recorded as not stationary at the stage level but stationary at the first difference level. From the test results, it can be seen that the variables under study can be estimated using the ARDL model approach.

Table 1
Unit Root Test

Variable	I(0)	I(1)
NFA	-5.7453***	-5.2654***
M2_Growth	-4.9613***	-9.2409***
R	-3.6607**	-7.1874***
DGS	-3.0847	-8.8812***

Note: ***, Sig. at 1%, **, Sig. at 5%

Table 2
Classic Assumption Test

Classic assumption test	Coefficient	Prob.
Heteroscedasticity Test Breusch-Pagan-Godfrey	18.45480	0.2395
Serial Correlation LM Test: Breusch-Godfrey	2.582049	0.2750
Normality Test: Jarque-Bera	0.269411	0.873973

Following the unit root test, we begin the quest for the best model and the optimum lag. The AIC measure is used to determine the optimum lag. Based on AIC, the optimal lag is in the selected ARDL model (3,4,2,3). Thus, the model used in this study is the ARDL model at lag (3,4,2,3). The estimation results of the selected model have also gone through the stages of the Classical Assumption Test and model stability test. Table 2 shows the results of the classical assumption test, including normality test, heteroscedasticity test, and autocorrelation test with the Serial Correlation LM Test. It is evident that the prediction model is free of the problems of the classic assumption test where the probability value is greater than 0.05. There are no issues with heteroscedasticity or autocorrelation in the estimation model. The information is often circulated. The model stability test, as seen in Figure 3 and 4, is the final test. The model used is graded as stable based on the outcomes of the Cusum and CusumQ tests.

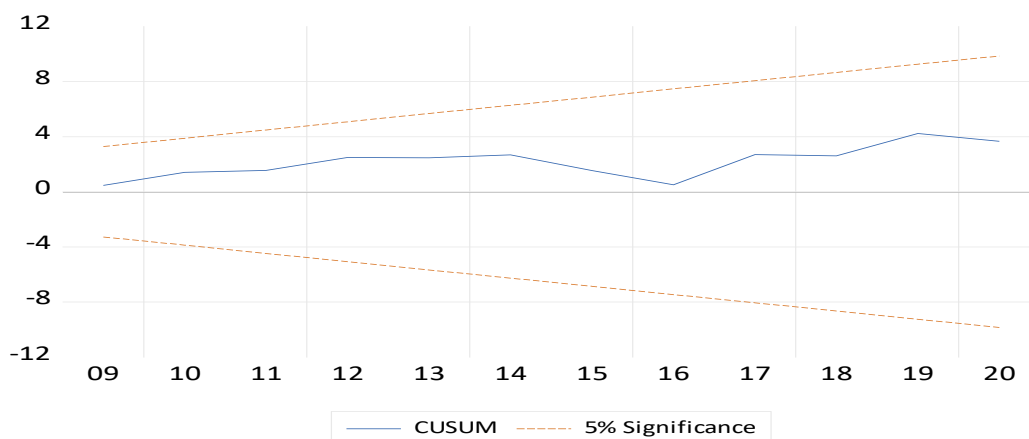


Figure.3. The Cusum Tests

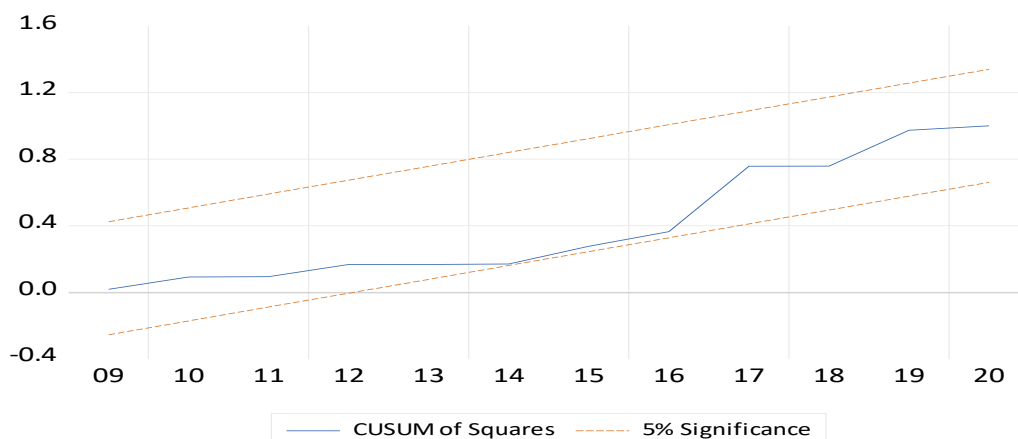


Figure.4. The CusumQ Tests

Table 3 shows the effects of the short-term predictions. The variables analyzed to have a short-term relationship in general. This is shown by the negative and significant value of the Error Correction term (ECT). The coefficient of ECT shows the speed of adjustment in the short-term to the long-term relationship. The short-term estimation results indicate that monetary policy, global economic shocks, and the Net Financial Account are interrelated in the short term. Monetary policy with the money supply and the effective interest rate affects capital flows in the short term. The variable global economic shock that occurs in the economy also affects changes in net financial accounts.

Partially, the money supply growth variable (M2_growth) has no significant effect on Net Financial Account (NFA) in the current period. M2_Growth has a negative and significant effect on Net Financial Account in the previous one, two, and three periods. This condition means that monetary policy does not immediately influence the Net Financial Account but rather involves a time lag.

Table 3
ARDL Error Correction Regression Dependent Variable: D(NFA) Selected Model: ARDL (3,4,2,3)

Variable	Coefficient
D(NFA(-1))	-0.7908***
D(NFA(-2))	-0.2986
D(M2_Growth)	436.85
D(M2_Growth(-1))	-1435.5***
D(M2_Growth(-2))	-906.99***
D(M2_Growth (-3))	-442.97**
D(R)	-1867.7**
D(R(-1))	2818.4***
D(DGS)	-1922.9
D(DGS (-1))	-4829.0
D(DGS(-2))	14259.7**
ECT	-0.601***
R_Square: 79,11 %	
Adjusted R-Square: 64,76 %	
Durbin-Watson Stat: 2.339558	

Note: ***: Sig. at 1%, **: Sig. at 5%

Furthermore, by increasing the money supply (M2), the monetary policy reduces the Net Financial Account, particularly during times of crisis. During the early stages of the financial crisis, economic uncertainty had a more significant impact on investor psychology. The increase in the money supply is usually the result of government measures aimed at containing the crisis, such as rising government bonds. This is similar to the crisis caused by the Covid 19 pandemic, where the money supply grew as a result of fiscal stimulus, which included the addition of government bonds. Furthermore, on many occasions, such as the 1997/1998 crisis, a loss of public trust in banking resulted in a rush (massive withdrawal of funds), causing the money supply to rise rapidly.

The interest rate variable (R) has a negative and significant effect in the current period. However, in the previous period, this variable has a positive and significant effect on the increase in surplus in the Financial Account. In the current period, an increase in the interest rate will reduce the

Net Financial Account, but over time there will be an adjustment where the effective interest rate policy will further increase the Net Financial Account. The Dummy Global shock variable was noted to affect Net Financial Account in the previous three periods significantly. This variable does not directly affect the Net Financial Account as seen from the insignificant value of the DGC variable, both in the current period and in the previous period. This condition shows that the global financial shock requires adjustment time and that the impact of the shock on capital flows will be felt several periods later.

Table 4
Long-Term Relationships Using Bounds Test

Test Statistic	Value	Sig.	I(0)	I(1)
F-statistic	3.677591	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Table 4 displays the Bounds Test results for the long-term calculation. According to the prediction results, both variables tend to have a long-term relationship. The F value on the Bound Test statistic is higher than the critical value of the Bounds test both in order 1(0) and order 1 (1) at a confidence range of 5 to 10 percent, indicating a long-term relationship. This is supported by the long-term vector coefficient, which is seen in Equation 3 to impact Net Financial Account significantly.

Based on equation 3, it can be seen that in the long term, the money supply and interest rate variables have a significant effect on Net Financial Account. The money supply growth coefficient is positive and significant, while the interest rate coefficient (R) is negative and significant. In the long run, monetary policy by regulating the money supply is more effective at increasing the surplus in the financial account compared to interest rate policy.

$$EC = NFA - (2391.6346 * M2_Growth - 6363.1976 * R - 19747.6839 * DGS + 50201.1908) \dots\dots\dots (3)$$

In the long term, the coefficient of the Global Dummy Shock variable has no meaningful impact on Net Financial Account. This condition shows that although they are interconnected in the long term, partially global economic shocks are more influential in the short term while having no significant impact in the long term. In the long term, the post-crisis recovery process will cause investor confidence to re-strengthen so that the net financial account will again increase positively.

The relationship between monetary policy and net financial accounts in both the short and long term is in line with several previous research results that partially examine monetary policy variables with foreign investment, which are part of the Financial Account. The influence of the interest rate policy on foreign investment is in line with the results of a study conducted by Gumus (2015), Pennings et al. (2015), Dang et al. (2020). The effectiveness of the money supply on foreign investment is also in line with the findings of Zhao et al. (2018), Wei & Han (2021), Dang et al. (2020). Meanwhile, the impact of the Covid 19 pandemic on foreign investment and portfolio investment is in line with the findings of McKibbin & Fernando (2020), Buheji et al. (2020), Yong & Laing (2020).

Conclusions

In general, all variables, i.e., monetary policy and global economic shocks, have a short and long-term relationship with the Net Financial Account. Global economic shocks in the short term will greatly affect the Net Financial Account; however, the long-term effect will be lessened as the government's stabilization process continues. Monetary policy regulating the growth in the money supply is more effective at increasing the surplus in the Financial Account in the long run, whereas in the short term, the most effective monetary policy is to control the interest rate.

Based on the findings above, it is recommended that the government and monetary authorities continue to strengthen economic fundamentals, especially the financial system. Strong economic fundamentals will build economic resilience from various global economic shocks. In addition, it will build investor confidence to continue investing in Indonesia.

Monetary authorities are advised to continue to maintain a competitive and profitable interest rate differential for investors. The interest rate policy can be used to maintain a financial account surplus in the short term. In addition, the monetary authority must maintain stability in the growth of the money supply, given the shock to the growth in the money supply, which is relatively high and can cause a decline in the net financial account in the short term. It is, of course, related to the effects of excessive growth in the money supply, including rising inflation.

In terms of financial accounts, the government should prioritize increasing foreign direct investment over the portfolio and derivative investments, which are extremely volatile in nature. Since FDI is more robust, capital flows will be more stable. Compared to portfolio investments, which fluctuate, it is very effective in adjusting the position of the net financial account.

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