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Original Article

The Role of Macroprudential Policy on Capital Outflow

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Abstract: *The Fed's 2021 tapering policy is putting pressure on the domestic economy. Capital outflows increase, the exchange rate experiences depreciation, and the potential opportunity for a decline in foreign exchange reserves is at significant risk. However, with the implementation of the Fed's tapering policy in 2022, the potential for a decrease in foreign exchange reserves will be replaced by the increasing role of the monetary authority's concern for banking liquidity. Meanwhile, capital outflows can increase more sharply after the new average period and the accelerated recovery of the United States economy in 2022. Various macroeconomic policies have been implemented to reduce pressure on capital outflows, especially in financial markets, which are known to be sensitive compared to other markets. In addition, economic market conditions, which are influenced by procyclicals, provide a strategic role for macroprudential policy as an appropriate macroeconomic policy. Using an annual data sample from 2013 – 2022, the VECM results show that the countercyclical capital buffer, macroprudential intermediation ratio, and macroprudential liquidity buffer do not have a direct effect on capital outflow but act as a cushioning policy. Increasing the role of quasi-debt management or non-conventional monetary policy is recommended.*

Keywords: *Capital outflow, Macroprudential Policy, New Normal, Procyclical, Tapering.*

I. INTRODUCTION

Tapering is an unconventional macroeconomic policy implemented by central banks in certain countries to increase economic growth and accelerate economic recovery after certain economic phenomena. The tapering policy is often implemented by the Fed during times of growing unemployment or domestic inflation, so to reduce inflationary pressure, the Fed must begin to reduce asset purchases from the market to encourage an increase in interest rates. When interest rates increase, exchange rate depreciation can be suppressed so that the supply of money to the demand decreases, making competition for funds higher and dollar liquidity tighter. This tapering policy by the Fed will ultimately impact the Indonesian economy, including volatility in the IHSG and bond markets, the rupiah exchange rate, and rising interest rates. In 2013, foreign ownership dominated the stock market. Now, the percentage has shrunk to 41.40%. Even though there will not be as severe a tapering as eighteen years ago, there will still be shocks. Then, when foreigners withdraw their funds from domestic stock or bond investment instruments, they will need US dollars. As a result, US dollar demand will increase, making the Rupiah slump. When the US economy recovers, inflation will rise, so the Fed has the potential to raise its benchmark interest rate. The effect is that Indonesian banks also have to raise the seven-day reserve repo rate to maintain investor attractiveness.

Indonesia is one of the ten countries most vulnerable to impacts. The other countries are Brazil, Colombia, Chile, Peru, Hungary, Romania, Turkey, South Africa and the Philippines. The first vulnerability is the heavy flow of foreign capital entering the financial markets of developing countries, including Indonesia. The second vulnerability is increasing debt to handle the pandemic. Debt is an option to fulfill shopping needs. Third, the widening fiscal deficit in developing countries has resulted in leaks in current account transactions. Ultimately, these three vulnerabilities from the tapering policy will impact a country's capital and investment. The first vulnerability is a vulnerability factor worth considering because, during the implementation period of the tapering policy, several previous empirical studies showed a link between capital flows, the policy's role, and the tapering policy's implementation period. Capital flows caused by the tapering policy encourage exchange rate volatility in Indonesia[1]. Macroeconomic policies such as monetary policy are needed to maintain exchange rate stability, and macroprudential policy is required to control excessive increases in asset prices. The role of policy and hearing behavior in the Indonesian financial market[2]. The results of his research show that policy plays a role in controlling hearing behavior and capital flow volatility, which means that policy affects capital flows. Taking the role of policy implications play a vital role in stabilizing financial and economic conditions during the implementation of the tapering policy[3]. The latest research from ADB found in its research that capital reversals in developing countries encourage policies and policy instruments to become the right choice as a strategic solution in overcoming the volatility of capital flows and complex policy trade-offs[4]. These previous studies also encourage researchers to conduct further research on the role of policy on the volatility of capital flows. Apart from that, the importance of knowing more about the impact of the tapering policy on the domestic economy in the most affected countries, especially Indonesia, is the most recent and novel step in this research.

II. LITERATURE REVIEW

Several empirical studies discuss the relationship between taper tantrums, capital outflow, and the role of macroprudential policy in a country's economy. Researched developing countries; their study showed that capital flows to developing countries occurred during the Quantitative Easing (QE) period[5]. The impact is almost comparable to the period before the global financial crisis. Researchers also found that capital flows during the Quantitative Easing (QE) period, capital flow fluctuations such as high inflation, credit expansion, and a decline in the current account balance accounted for most of the destabilizing effects of the taper tantrum. Also stated that the taper tantrum affected all equities in emerging markets[6]. Highlighting that the impact of the taper tantrum could be a significant reversal of capital flows, the role of emerging market authorities must remain alert to the effect of developed countries' monetary policy on their financial stability. Examined the same regarding capital inflow during the taper tantrum 2013 research found that during the Quantitative Easing (QE) period by the Fed during Q1, 2009 – Q2, 2013, there was an expansion of capital flows to developing countries[7]. This tapering behavior caused the taper tantrum to get stronger in 2013, when the 2013 taper tantrum was marked by massive and sudden reversals of capital in developing countries. His research proves that macroprudential policy provides vital evidence and encouragement for pre-emptive pressure to prevent excessive capital flows. Then, he stated in his study that there had been a dramatic weakening in the stock market. Bond prices and trends were hit hard during the taper tantrum period. The Fragile Five countries were found to be successful in surviving[8]. India and Indonesia are two of the five fragile countries that managed to stay relatively unscathed by the taper tantrum and escape the significant economic shocks that rocked the other five fragile countries. During the taper tantrum period until the COVID-19 pandemic period, capital outflow was found to be within abnormal flow limits[9]. The magnitude of this capital outflow is indicated to be greater than in the case of ETFs in emerging market countries.

Not limited to the impact of the taper tantrum and capital outflow, several similar empirical studies provide solutions and views on the role of macroprudential policy and its transfer in maintaining stability and the flow of capital outflow so that it is not too dramatic. Provide an overview of macroprudential policies in loan recipient countries[10]. Before the taper tantrum occurred, the macroprudential measures implemented in the borrower's recipient country significantly reduced the negative impact of the tantrum on loan growth across countries. Stated similar results that to control long periods of turmoil, especially those related to boom and bust phenomena in the implementation of macroprudential policy, counters are needed so that they can run effectively[11]. For this reason, the researcher emphasized the importance of countercyclical action and buffers. A perspective that emphasizes that macroprudential policies and tightening foreign exchange can reduce the risk of movements in capital flows, considering the detrimental impact on capital flows[12].

In their research stated that financial volatility is sensitive[13]. EMEs are advised to build macroprudential buffers amidst the reversal of the global interest rate cycle to strengthen the financial system's stability. Also stated in their research that monetary and macroprudential policy elements are needed to control and monitor macroeconomic volatility[14]. The boom and bust phenomenon emphasizes the active dominance of countercyclical action and the active dominance of buffers in the economy[11]. Added that from the results of their research, the macroprudential liquidity buffer (MLB) and countercyclical capital buffer (CCyB) were proven to be significantly capable of reducing systemic risk in Indonesia [15]. Stated that the GMW, RIM, and PLM policy instruments influence banking liquidity. This can be interpreted to mean that the RIM and PLM used in this research suggest that macroprudential instruments play an essential role in maintaining financial stability in financial markets and have the potential to influence capital flows in Indonesia.

III. RESULTS AND DISCUSSION

In the capital outflow model as the dependent variable, the research variables have a balanced response in influencing the value of capital outflow, namely the countercyclical response of capital buffer and capital outflow from within the variable itself, which experiences the response decrease in the first years. Meanwhile, the macroprudential intermediation ratio and macroprudential liquidity buffer had an increasing response to the value of capital outflow in the first years. The development of each research variable has a reverse trend until the tenth year of response. For example, in the fifth year, the countercyclical capital buffer responded to a decrease in capital outflow growth of -0.180640, the macroprudential liquidity buffer was -0.205059, and capital outflow was 0.274071. Meanwhile, in the fifth year, the macroprudential intermediation ratio experienced an increase of 0.044021. The responses from the four variables were combined until the tenth year with a different two-way response pattern for each variable. The form of two opposite-way reactions from the four variables: capital outflow, countercyclical capital buffer, macroprudential intermediation ratio, and macroprudential liquidity buffer shows that in the capital outflow growth model, there are two forms of conditions of the same magnitude and the same influence in overcoming fluctuations in excessive fluctuations of each variable.

The impulse response function test results show that the volatility of capital outflows is monitored and handled by the macroprudential intermediation ratio above the positive baseline. In contrast, the volatility of the countercyclical capital buffer percentage is observed and regulated by the macroprudential liquidity buffer, which means that the countercyclical capital

buffer will work more optimally by collaborating primarily with the macroprudential liquidity buffer in influencing the growth of capital outflows from a positive baseline. The macroprudential intermediation ratio is limited to helping the volatility of capital outflows so that it is manageable in specific periods of the year, as seen in Figure 1.

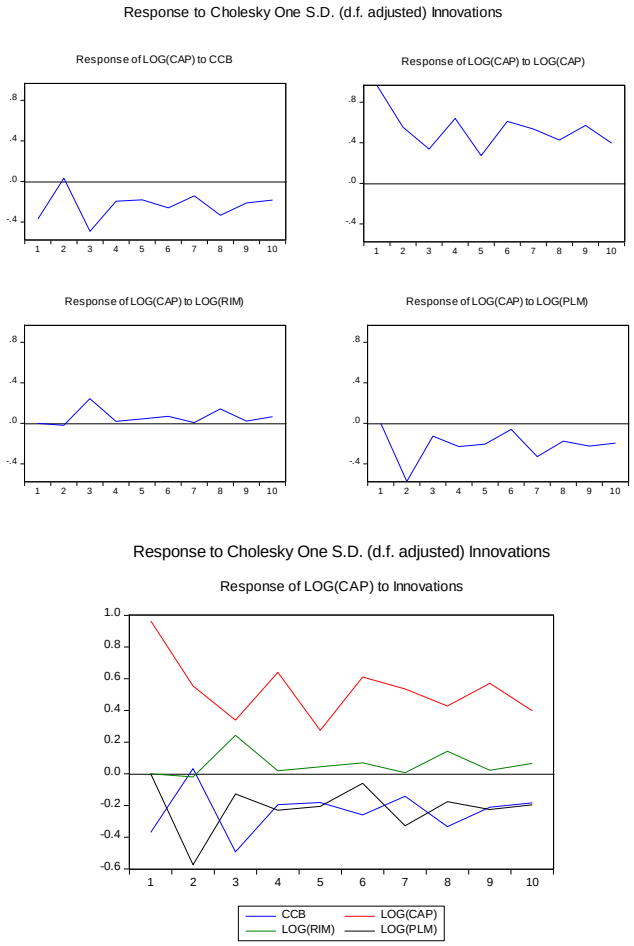

Figure 1: Impulse Response Function Test Results on Capital Outflow and Countercyclical Macroprudential Instruments Post Taper Tantrum in Indonesia

In the capital outflow growth model as an independent variable, the contribution of the countercyclical macroprudential policy instrument variable varies in each period. In the short term, the variable that has the most considerable decreasing contribution is the capital outflow variable and is followed in second place by the countercyclical capital buffer; meanwhile, in the long term, the declining contribution and the increasing contribution have the same contribution from both the countercyclical capital buffer and capital flows. The macroprudential intermediation ratio and the macroprudential liquidity buffer show that macroprudential policy instruments have a contribution that tends to be more constant and significant in the long term.

A. The Influence of Countercyclical Macroprudential Policy on Capital Outflow Growth During the Tapering Period and Post-Taper Tantrum Period in Indonesia

During the implementation of tapering, countercyclical to procyclical risk accumulation from booming commodity prices and speculation in the property sector encouraged macroprudential policies to suppress the increase in systemic risk originating from the financial system's procyclicality and interconnections. During the tapering period, procyclicals tend to increase because some capital outflows and a depreciating exchange rate encourage foreign capital flows to continue to leave the domestic financial market. However, after the tapering implementation period, capital flows increased in Indonesia. This was caused by the increase in the US domestic market, both the input market and the output market, after the Fed's large bond purchases during the tapering period to obtain a total of US$ 1.5 trillion in 2015. The results of the Fed's tapering policy indirectly provide investors with an overview of the domestic market in the USA, which has returned to stability and has a high

potential for an increase in yields. After the tapering period, the domestic market in Indonesia experienced a shortage of dollars. The development trend of capital outflow provides the potential for excessive risk accumulation from procyclical capital outflow. This has a significant chance of happening in the post-taper tantrum period, so the monetary authority implements countercyclical macroprudential policies to prevent increased risks from the procyclicality of increased capital outflow during the Indonesian tapering period. In the post-tapering period, namely in 2014 - 2021, the countercyclical macroprudential policy instrument, namely the countercyclical buffer, was implemented in a certain percentage on an ongoing basis to reduce the impact of the spread of capital flow volatility in the tapering and post-tapering periods. Implementing the countercyclical capital buffer (CCyB) macroprudential policy during the taper tantrum period and post-taper tantrum period can be concluded to have significantly reduced excessive risk accumulation.

The volatility of capital outflows after the tapering policy shows a slowing response to implementing the countercyclical macroprudential policy instrument, the macroprudential intermediation ratio (RIM). The reaction to the macroprudential intermediation ratio (RIM) during the tapering period showed a response that tended to be calmer than the response to the macroprudential intermediation ratio (RIM) after tapering.

In the post-tapering period, the macroprudential intermediation ratio (RIM) response tends to increase. The increase in the response of the macroprudential intermediation ratio (RIM) after tapering was caused by a constant rise in capital flows. The increase in capital flows after tapering encouraged a response to the macroprudential intermediation ratio (RIM) to improve the management of the banking intermediation function. Post-tapering implementation of the macroprudential intermediation ratio (RIM) prevents excessive common risk exposure so that the aim of implementing macroprudential policy in countering excessive risk accumulation from capital flight flows can be covered stably by the macroprudential intermediation ratio (RIM).

Each procyclical response gives rise to another response to another countercyclical macroprudential policy instrument variable. Each type of macroprudential policy used to overcome the impact of volatility in capital outflows has varied responses in explaining the volatility of capital outflows during the tapering and post-tapering periods in Indonesia. The macroprudential liquidity buffer (PLM) was implemented in the post-taper tantrum period to determine and measure the percentage of liquidity loss that had to be replaced by the volatility of post-taper tantrum capital outflows. The need for liquidity buffers became higher after the taper tantrum period, which shows that it is true that the volatility of capital outflows affects the amount of domestic banking liquidity in a certain percentage so that buffer macroprudential policies are implemented continuously until 2021.

Of the three countercyclical macroprudential policy instruments implemented by the monetary authority to mitigate the spillover impact of capital outflow volatility during the post-taper tantrum period in Indonesia, the countercyclical buffer macroprudential policy instrument that has a significant and sustainable role is the countercyclical buffer (CCyB). This countercyclical macroprudential policy instrument, which has a role as a buffer in anticipating excessive credit growth that has the potential to disrupt the stability of the financial system, shows a constant and sustainable counter and buffer against the volatility of capital outflows, which significantly increased during the taper tantrum period in 2013 and the post-taper tantrum period in 2014 – 2021. Compared with the macroprudential intermediation ratio (RIM) and macroprudential liquidity buffer (PLM), the response of the two countercyclical macroprudential policy instruments, which were also implemented in overcoming the impact of global spillovers and volatility in capital outflows In Indonesia, it was observed to have a slow response and a weak role in mitigating capital outflow volatility in the post-taper tantrum period in Indonesia.

The debate over the form of a macroeconomic policy suitable for controlling capital flows in a country's economy is complex. Each macroeconomic policy authority is said to have ideas and solutions in the form of policies that are appropriate to economic conditions both in terms of developments in annual reports and external turmoil influenced by global and geopolitical uncertainty. Among the various forms of macroeconomic policy and packages of policy points, one form of macroeconomic policy is interesting to study further, namely macroprudential policy. Based on Smets' theory (2014), macroprudential policy aims to maintain and control the financial system's stability in a country, while monetary policy aims to maintain price stability. The forms of macroprudential policy also vary, starting from LTV/FTV and macroprudential intermediation ratios to macroprudential liquidity buffers, and each instrument has its role in creating financial system stability, especially closely related to buffers.

B. Dominance and Non-Domination of Countercyclical Macroprudential Policy Instruments on the Growth of Capital Outflow (Capital Outflow) Post Taper Tantrum in Indonesia

Determining the dominance and non-domination of the types of countercyclical macroprudential policy instruments that influence the growth of capital outflows is based on the conclusions referred to from a series of VECM test results. The Granger causality test in Table 1 shows that the macroprudential intermediation ratio affects the countercyclical capital buffer,

which means there is no link between macroprudential policy and the growth of foreign capital flows in the post-taper tantrum period in Indonesia.

Table 1: Granger Causality Test Result on Capital Outflow and Countercyclical Macroprudential Instruments Post-Taper Tantrum in Indonesia

Variable Relationships	Probability
CCB causes CAP	0.4432
CAP causes CCB	0.5815
RIM causes CAP	0.1778
CAP causes RIM	0.7102
PLM causes CAP	0.5107
CAP causes PLM	0.9516
RIM causes CCB	0.0029*
CCB causes RIM	0.1410
PLM causes CCB	0.1336
CCB causes PLM	0.9215
PLM causes RIM	0.5398
RIM causes PLM	0.7839
Notes: significant on α = 0.05%* *CCB: countercyclical capital buffer, CAP: capital outflow, RIM: macroprudential intermediation ratio, PLM: macroprudential liquidity buffer.*	

The macroprudential intermediation ratio shows the contribution and response in the long and short term to the growth of capital outflows. In fact, in several forms of graphic testing, the three macroprudential policy instruments: countercyclical capital buffer, macroprudential intermediation ratio, and macroprudential liquidity buffer show synchronized and mutually sustainable cooperation and influence in the short and short term to provide a firm cushion in encouraging capital flow volatility. Outflows that are too low or suppress the volatility of capital outflows at the safe limit balance point through the stability of the financial market system. The countercyclical capital buffer is the dominant macroprudential policy instrument in influencing the growth of capital outflows. Unidirectional contribution is visible in the variance decomposition results, which run in the same direction as the capital outflow growth graph. Meanwhile, the macroprudential intermediation ratio and liquidity buffer are the dominant policies in Indonesia's countercyclical capital buffer after the taper tantrum.

C. The Form of a Countercyclical Macroprudential Policy Model in Controlling Capital Outflow After the Taper Tantrum in Indonesia

For the Indonesian economy, the policies implemented by the Fed have an indirect influence. The transmission mechanism for the impact of quantitative easing (QE) and tapering off policies in Indonesia occurs through capital outflow. The condition of the Indonesian economy changed when the Fed officially announced the tapering policy in December 2013. The immediate effect that was felt when discourse emerged about reintroducing the tapering policy was the return of capital flight in the first quarter of 2013 and the continuation of the trend of weakening of the rupiah exchange rate against the US dollar since the balance sheet deficit capital and financial transactions in the third quarter of 2011. During the tapering period, quasi-debt management policies or non-conventional monetary policies are recommended. Generally, quasi-debt management policies utilize the asset and liability sides of the central bank's balance sheet, designed to absorb shocks that hit the economy. Quasi-debt management is usually implemented when the post-crisis economy shows signs of improvement. Forms of quasi-debt management policies are considered to have quite an impact in Indonesia. First, a tight (hawkish) monetary policy was implemented in 2013 when the tapering policy was not officially implemented. Through this attitude, the central bank can maintain sentiment for investors to continue investing in Indonesia. Second, In 2013, before the tapering policy took effect, the Indonesian government used a strict fiscal policy. This decision was chosen to reduce the influence of inflation and the budget deficit since 2011. Third, after the taper tantrum, policy implementation involving macroprudential policy instruments that can be used for capital outflows includes open foreign exchange and foreign currency assets.

IV. CONCLUSION

The role of macroprudential policy in controlling capital outflow in the economy is weak. The vector error correction model (VECM) test results show minimal variables that influence, contribute, and respond to capital outflows. In the capital outflow research model, which acts as a dependent variable, it is known that only one or two macroprudential policy instruments influence capital outflow. The lack of significant influence of macroprudential policy instruments shows that in the volatility of capital outflows in 2013 - 2021, macroprudential policy instruments have a small role in influencing the volatility of capital flows. Macroprudential policy instruments only cushion if the capital outflow trend is too significant or exceeds the

safe limit rules set by the central bank and related authorities to maintain macroeconomic stability. Increasing the role of quasi-debt management or unconventional monetary policy is a more recommended policy form.

A. Interest Conflicts

The authors have no conflicts of interest to declare. All co-authors have seen and agreed with the manuscript's contents, and there is no financial interest to report. We certify that the submission is original work and not under review at any other publication.

B. Funding Statement

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