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DEEPENING THE ROLE OF MACROPRUDENTIAL POLICY ON CAPITAL OUTFLOWS IN INDONESIA

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ABSTRACT

Foreign capital flows to EMEs have increased significantly since 2004. After falling sharply in 2008 due to the global crisis, foreign capital flows then increased sharply until 2013 and declined thereafter due to the influence of Fed tapering policy. The results of VECM testing on sample data 2013.Q1 - 2021.Q1 in Indonesia show that there is indeed an influence of macroprudential policy. The nature of macroprudential policy on capital outflows is only a buffer policy, so a combination of other economic mix policies is needed. The right policy forms can be in the form of triple intervention policy in the spot market, domestic non-deliverable forward (DNDF) market and SBN purchases from the secondary market.

Keywords: *taper tantrum, macroprudential policy, capital outflows, financial markets, VECM.*

INTRODUCTION

The COVID-19 pandemic has had a significant impact on various aspects around the world. Starting from the health aspect, education aspect, technology utilization to financial condition aspects, various efforts continue to be made by each country so that its economy is not mired in the threat of a prolonged global recession. Indonesia is one of the countries that actively carries out mitigation efforts to maintain economic stability from global economic threats during the COVID-19 pandemic. One of the global economic threats that has great potential to arise from the COVID-19 pandemic is the phenomenon of taper tantrums. If you look carefully, grammatically and termically, taper tantrum is a combination of the word tapering which is interpreted as a resting condition while tantrum has a meaning in turbulent conditions. However, in the financial world, the term taper tantrum has another definition, which refers to economic tightening caused by the Fed's policy in reducing the number of debt securities issued by the government.

Taper tantrums are often described as spikes in securities yields. In 2013, the Fed announced the introduction of quantitative easing policy. The Fed's official announcement on quantitative easing caused panic in emerging markets. Investors who invest in developing countries decide to move their investments to developed countries that are considered safer and more profitable. The impact of investor decisions in the short term and in large amounts of investment causes the flow of investment capital in developing countries to increase. Capital outflows increased compared to capital inflows at that time. As a result, exchange rates in developing countries such as Indonesia are under pressure and prices of government securities (SBN) are also depressed. Exchange rate pressures and pressures from securities from the impact of capital outflows trigger potential macroeconomic stabilization. This is because the amount of investment in Indonesia is dominated by foreign investment.

Macroeconomic stabilization in financial market aspects can be maintained by implementing policies that are responsive to various kinds of economic shocks. Smets (2014)

In his research, he taught policy observers and economic observers and central banks to be more responsive in paying attention to stability in financial markets, because learning from the experience of the global crisis of 2008/2009 ten years ago had a huge impact. Macroprudential policy is one of the policies relied upon to balance and maintain stability in financial markets. This action is commonly referred to as maintaining financial stability.

After the global crisis of 2008/2009, economic conditions showed economic recovery. In Indonesia, Indonesia's economic growth has increased gradually, Indonesia's gross domestic product has shown a significant increase since the post-crisis year. Meanwhile, in 2013, during the period of the first taper tantrum, Indonesia's gross domestic product declined. This shows that the taper tantrum has a significant impact on the Indonesian economy. The occurrence of asset bubbles in Indonesia indicates a considerable flight of capital outflows during these periods, which has an impact on domestic product and macroeconomic stability in Indonesia. The COVID-19 pandemic paints a bigger picture on the potential for possible global turmoil. Central banks in developed countries, namely the Fed and several other central banks impose unconventional monetary policy, quantitative easing (QE) and further supervision on yields in financial markets in order to maintain macroeconomic stability. Amid the high concentration of state officials and policy observers on the post-COVID-19 recovery policy package, the second taper tantrum again shook the world economy in 2022. The Fed re-imposed its monetary economic policy tightening to dampen economic turmoil at home. The impact caused by the re-enactment of this taper tantrum is the potential for the emergence of capital outflows that occur dramatically and suddenly in a certain period of time. Therefore, a responsive macroeconomic policy package such as macroprudential policy is needed to inhibit capital outflow growth in financial markets.

Several empirical studies discuss the relationship between taper tantrums, capital outflows and the role of macroprudential policy in a country's economy. Park, Ramayand, & Shin (2016) who conducted research in developing countries, the results of his research showed the occurrence of capital flows to developing countries during the period of quantitative easing (QE). The impact is almost comparable to before the global financial crisis. researchers also found that capital flows during periods of quantitative easing (QE) capital flow turmoil such as high inflation, credit expansion and declining current account balance accounted for most of the destabilizing effects of the taper tantrum. Estrada, Park, & Ramayandi (2016) It also mentions that all equities in emerging markets are affected by the taper tantrum. Highlighting the impact of taper tantrums can be significant, there is a reversal of capital flows, so it is necessary for emerging market authorities to remain vigilant about the impact of developed countries' monetary policies on their financial stability. Shin (2017) Researched the same thing about capital inflow during the taper tantrum in 2013. From the results of his research, it was found that during the period of quantitative easing (QE) by the Fed during Q1.2009 – Q2.2013 there was an expansion of capital flows to developing countries. This tapering behavior caused the taper tantrum to get stronger in 2013 where the 2013 taper tantrum was marked by a massive and sudden capital reversal in developing countries. His research proves that macroprudential policy provides evidence and a strong impetus to suppress pre-emptive to prevent excessive capital flows. Basri (2017) Then mentioned in his research that there has been a dramatic weakening in the stock market. Bond prices and trends took a hit during the taper tantrum period. The fragile five states were found to have survived. India and Indonesia were two of

the five fragile five countries that managed to survive relatively unscathed by the taper tantrum and escaped major economic shocks that rocked the other fragile five countries. Ferriani (2021) found in his research that during the taper tantrum period until the COVID-19 pandemic period, capital outflows were found within abnormal flow limits. The amount of capital outflows is indicated to be greater than the case of ETFs in emerging market countries.

Not limited to the impact of taper tantrums and capital outflows, several similar empirical studies provide solutions and views on the role of macroprudential policy and its shift in maintaining stability and capital outflows so as not to over-dramatize. Takáts & Temesvary (2019) Provide an overview of macroprudential policy in the recipient country. Prior to the taper tantrum, macroprudential measures implemented in the borrower's receiving country significantly reduced the negative impact of the tantrum on cross-border lending growth. Hollander & Havemann (2021) Mentioning similar results that to control the existence of long fluctuations, especially those related to boom and bust phenomena in the implementation of macroprudential policy, a counter is needed to run effectively. Therefore, in his research researchers emphasize the importance of countercyclical action and buffers. Zehri (2022) provides a perspective that confirms that macroprudential policy and tightening foreign exchange can reduce the risk of capital flow movements given the adverse impact on capital flows.

In line with previous research, it can be concluded that there are long-term impacts and serious problems with the presence of the taper tantrum phenomenon. Given the condition of Indonesia's financial markets and economy that depends on foreign investors, as well as the fact that it will be included in the fragile economy (fragile five), by raising the issue of taper tantrum, researchers decided to conduct in-depth research and study on the impact of taper tantrum, capital outflows and macroprudential countercyclical action and buffer policies. The post-period taper tantrum that is the focus of this study is the main advantage of this study compared to other studies, and adding the design of predictions and simulations of policies and variables plays a role in the importance of this study.

Conceptually, macroprudential policy is a prudential regulatory instrument aimed at promoting financial system stability as a whole, not the health of financial institutions and individuals. By analogy, macroprudential policy is a prudential regulatory instrument aimed at maintaining the health of individual financial institutions. Thus, policy is used to prevent a boom-bust cycle of credit supply and liquidity that can cause economic instability. With the role of maintaining the stability of the supply of financial intermediation, macroprudential policy has a role that supports the objectives of monetary policy in maintaining macroeconomic stability.

There are two important dimensions of macroprudential policy. First, is the time-series dimension, namely macroprudential policy aimed at reducing the risk of excessive procyclicality in the financial system. In this context, macroprudential policy must be designed in such a way as to eliminate or at least mitigate cyclicality. The principle is how to encourage financial institutions to prepare adequate buffers when the economy is good, namely when imbalances in the financial system generally occur and how to use these cushions when the economy is deteriorating. The second is the cross-section dimension that shifts the focus from prudential regulation applied to individual financial institutions to overall system regulation.

Theoretically, macroprudential policy instruments are divided into 6 forms of instruments, namely macroprudential incentives, inclusive financing ratio (MIR), loan to value (LTV), short-term liquidity loans (PLJP), countercyclical capital buffer (CCyB), macroprudential intermediation ratio (MIR), and monetary liquidity buffer (PLM). Three of the macroprudential policy instruments used in this study are countercyclical capital buffer (CCyB), macroprudential intermediation ratio (MIR), and monetary liquidity buffer (MLB).

Countercyclical capital buffer (CCyB) is an additional capital that functions as a buffer to anticipate losses in the event of excessive credit growth and/or excessive credit growth, potentially disrupting financial system stability. This risk is related to the procyclical behavior of bank lending, which tends to increase during periods of economic expansion (boom) and slow down during periods of economic contraction (bust). The amount of Countercyclical capital buffer (CCyB) is dynamic, ranging from 0% to 2.5% of Weighted Assets.

In the study, countercyclical capital buffer (CCyB) became an independent variable that influenced the dependent variable of capital outflow. The indicator representing the countercyclical capital buffer (CCyB) is a narrow credit to GDP. Systematically Pratiwik (2021) write the narrow *credit to GDP calculation formula* as follows:

$$Ratio_t = \frac{credit_t}{GDP_t} x\ 100$$

$$Narrow\ credit\ to\ GDP = ratio_t - trend_t$$

The Macroprudential Intermediation Ratio (MIR) is a macroprudential instrument aimed at managing the bank intermediation function in line with the capacity and target of economic growth while maintaining prudential principles. This macroprudential policy instrument is countercyclical and can be adjusted to changes in economic and financial conditions. In the study, the macroprudential intermediation ratio (MIR) was calculated systematically using a formula of Azwari, Bambang, & Waskito (2021). *Systematically, the macroprudential intermediation ratio (MIR) is written as follows:*

$$RIM = \sum \frac{credit + scurities}{third\ party\ funds\ (TPF) + Securities\ issued}$$

Macroprudential liquidity buffer (MLB). The Macroprudential Liquidity Buffer (PLM) is a minimum liquidity reserve in Rupiah that must be maintained by conventional commercial banks in the form of securities in Rupiah. In the study, the macroprudential intermediation ratio (MIR) was calculated systematically using a formula of Budiastuti, Wiralaga, & Zahra (2022). Systematically, the monetary liquidity buffer (PLM) is written as follows: PLM=4% ×DPU BUK

Macroprudential liquidity buffers (PLM) can be used in monetary operations, the amount of which is determined by Bank Indonesia at a certain percentage of the bank's Third Party Funds in Rupiah. The macroprudential liquidity buffer (PLM) also has a flexibility feature, which means that under certain conditions the securities can be used for repo transactions to Bank Indonesia in Open Market Operations (OPT) at a certain percentage of bank deposits in Rupiah.

METHOD

The form of the VECM standard model used in this study is as follows.

$$X_t = \beta_0 + \beta_n X_{t-n} + e_T \qquad ...(3.1)$$

The *Vector Error Correction Model (VECM)* model used in this study is a research model of Hidayati & Sugiyanto (2020), Satria & Juhro (2011) and Tambunan &; Fauzie (2017). Following the model (3.1) and research model from previous research, this research can write the following research model.

$\Delta OF_t = a_0 + \sum_{i=1}^{m} a_1 \Delta logCB_{t-1} + \sum_{i=1}^{k} a_2 \Delta RM_{t-1} + \sum_{i=1}^{k} a_3 \Delta PM_{t-1} + u_t$..(3.2)

Where α_0 is the matrix of cointegration coefficients obtained from the regression equation. α_1+α_2+...α_t is the first derived vector of the dependent variable. $\Delta logCB_{t-1}$, ΔRM_{t-1}, ΔPM_{t-1} is the first derived vector of the dependent variable with the 1st lag. u_t be *Error Correction Term.*

$$\Delta OF_t = a_0 + \sum_{i=1}^{m} a_1 \Delta OF_{t-1} + \sum_{i=1}^{m} a_2 \Delta logCB_{t-1} + \sum_{i=1}^{m} a_3 \Delta RM_{t-1} + \sum_{i=1}^{m} a_4 \Delta PM_{t-1} + a_5 ECT_{t-1} + \varepsilon_t \quad ...(3.3)$$

$$\Delta logCB_t = a_0 + \sum_{i=1}^{m} a_1 \Delta logCB_{t-1} + \sum_{i=1}^{m} a_2 \Delta OF_{t-1} + \sum_{i=1}^{m} a_3 \Delta RM_{t-1} + \sum_{i=1}^{m} a_4 \Delta PM_{t-1} + a_5 ECT_{t-1} + \varepsilon_t ...(3.4)$$

$$\Delta RM_t = a_0 + \sum_{i=1}^{m} a_1 \Delta RM_{t-1} + \sum_{i=1}^{m} a_2 \Delta OF_{t-1} + \sum_{i=1}^{m} a_3 \Delta logCB_{t-1} + \sum_{i=1}^{m} a_4 \Delta PM_{t-1} + a_5 ECT_{t-1} + \varepsilon_t ...(3.5)$$

$$\Delta PM_t = a_0 + \sum_{i=1}^{m} a_1 \Delta PM_{t-1} + \sum_{i=1}^{m} a_2 \Delta OF_{t-1} + \sum_{i=1}^{m} a_3 \Delta logCB_{t-1} + \sum_{i=1}^{m} a_4 \Delta RM_{t-1} + a_5 ECT_{t-1} + \varepsilon_t \quad ...(3.6)$$

Where is an independent variable OF*of capital outflow*, is an independent variable $logCB$*countercyclical buffer (CCyB),* $RM$is a macroprudential intermediation ratio, is a buffer of macroprudential liquidity, is an $PMECT$*error correction term* in VECM, is the value of the estimation coefficient and is an $\alpha\varepsilon_t$*error* that occurs in the VECM equation model.

RESULTS AND DISCUSSION

The results of the vector error correction model (VECM) estimation in this study show a long-term relationship and a short-term relationship. In long-term relationships, variables that are known to be significant are countercyclical capital buffer, macroprudential intermediation ratio and macroprudential liquidity buffer. The three research variables that are significant in the long-term estimation of VECM are part of the countercyclical macroprudential policy instrument used in this study. Each of the countercyclical macroprudential policy instruments: countercyclical capital buffer, macroprudential intermediation ratio and macroprudential liquidity buffer has a role in influencing the growth of foreign capital outflows with coefficient values of 8.07855, -6.40776 and 6.44043 respectively. The results of the VECM estimation in this study can be written in table 1.

Table 1. Long-term VECM estimation results

Long-term		
Variable	**Coefficient**	**T-Statistics**
LOG(CAP(-1))	1	
BAC(-1)	1.277370	8.07855*
LOG(RIM(-1))	-18.53856	-6.40776*
LOG(PLM(-1))	17.61887	6.44043*

Description: * means significant in t table > 2.03693
CCB: countercyclical capital buffer, CAP: capital outflow, MIR: macroprudential intermediation ratio, PLM: macroprudential liquidity buffer.

In the short term, each variable of the countercyclical macroprudential policy instrument has a t-statistic value greater than the t-table value, namely -2.79236, 2.29570 and 3.49013, meaning that the countercyclical capital buffer, macroprudential intermediation ratio and

macroprudential liquidity buffer have a significant role and influence in the long run, especially in the relationship model to capital outflows. In table 4.3., in the capital outflow section which is the dependent variable, it is known that only capital outflows in period 1 with a t-statistic value of -2.95376 and macroprudential liquidity buffer in period 1 with a t-statistical value of -2.28902 have an influence on the value of capital outflows, this can be interpreted that the role of countercyclical macroprudential policy instruments in capital The impact on capital outflow growth is still very weak because there is only one significant countercyclical macroprudential instrument.

In the countercyclical capital buffer section as a dependent variable shows the absence of the influence of other variables that contribute significantly to the countercyclical capital buffer which provides an understanding that the value of the countercyclical capital buffer in the short term has a high probability of being influenced by other variables. Meanwhile, in the macroprudential intermediation ratio section which acts as a dependent variable, another variable that affects the value of the macroprudential intermediation ratio is the countercyclical capital buffer in the first period with a t-statistic value of -3.36402 which means, the determination value of the countercyclical capital buffer or the change in the percentage value of the countercyclical capital buffer significantly affects the value of the macroprudential intermediation ratio. Even the response is seen in the short term, namely in the first period.

In the macroprudential liquidity buffer section acting as a dependent variable, there is one variable, namely the countercyclical capital buffer, which affects the value of the macroprudential liquidity buffer intensely successively in the first and second periods. The constant influence of countercyclical capital buffers means that the value of macroprudential liquidity buffers is greater or more sensitive to change from the influence of countercyclical capital buffers than macroprudential intermediation ratios. The results of short-term VECM estimates on each variable can be written in table 2 as follows.

Table 2. VECM Estimation Results in the Short Term

Dependent variables	D(LOG(CAP))	D(CCB)	D(LOG(RIM))	D(LOG(PLM))
Independent variables	T-Statistics			
CointEq1	-0.10170	-2.79236*	2.29580*	3.49013*
D(LOG(CAP(-1)))	-2.95376*	1.83780	-1.26236	-0.74604
D(LOG(CAP(-2)))	-1.38846	1.91184	-1.11694	-1.15803
D(BAC(-1))	0.83438	1.42150	-3.36402*	-3.46720*
D(BAC(-2))	-0.30897	-0.05283	-1.91059	-3.67731*
D(LOG(RIM(-1)))	0.44345	-1.99272	-0.28934	1.56440
D(LOG(RIM(-2)))	-0.11898	0.60343	1.23601	1.88423
D(LOG(PLM(-1)))	-2.28902*	0.94540	-1.29065	-0.65035
D(LOG(PLM(-2)))	0.42338	0.39897	1.60245	-0.35541

Description: * means significant in t table > 2.03693
CCB: countercyclical capital buffer, CAP: capital outflow, MIR: macroprudential intermediation ratio, PLM: macroprudential liquidity buffer.

Of the four variables used in this study, the research model that places capital outflow as the dependent variable in this study found no short-term relationship between capital outflows and the three countercyclical macroprudential policy instruments. Each countercyclical macroprudential policy instrument is known to have a role and influence that mutually supports and influences one instrument with another instrument in a countercyclical macroprudential policy package. This concludes hypothetically that the possibility of countercyclical

macroprudential policy instruments influencing capital outflows is very small, especially since there is only one variable, namely macroprudential liquidity buffers that affect the value of capital outflows represented as a buffer when fluctuations in capital outflows are too high or too low.

Various forms of macroeconomic policy contraction and expansion have been strictly implemented in recent years. Two forms of stability, namely price stability and financial system stability, emerged from the monetary side to restore the economy after the 2008/2009 global financial crisis. The emphasis on macroprudential policy in order to work optimally and in tandem with monetary policy has higher needs after the COVID-19 pandemic recession. And, economic turmoil events in financial markets such as the imposition of a tighter interest rate policy and a reduction in the number of securities sold in the market by being replaced by bond sales enthusiasm provide room for tapering policy to appear for two periods in the last ten years, namely in 2013 to coincide with the potential for an asset bubble bubble in financial markets in Indonesia and in 2021 to coincide after the end of the era new normal after the COVID-19 pandemic. The Fed is in the spirit of recovering the country's economy faster, namely by imposing tapering policies in the form of rising bond yields that make investing in financial markets more attractive in the United States than investing in developing Indonesia. The depreciation of the rupiah exchange rate and the potential for a large percentage of capital flows to increase in Indonesia, so that when reflecting on the increasing capital outflows in 2013, the implementation of tapering in 2021 must also be mitigated.

The debate on the form of macroeconomic policy that is suitable for controlling the flow of capital in a country's economy can be called quite difficult. Each macroeconomic policy authority is said to have ideas and solutions in the form of policies that are in accordance with economic conditions both in terms of annual report developments and esternal turmoil influenced by global and geopolitical uncertainties. Among the various forms of macroeconomic policy and the package of policy points, there is one form of macroeconomic policy that is interesting to be examined further, namely macroprudential policy. Based on Smets Theory (2014), macroprudential policy has the aim of maintaining and controlling financial system stability in a country, while monetary policy has the aim of maintaining price stability. The forms of macroprudential policy also vary from LTV/FTV, macroprudential intermediation ratio to macroprudential liquidity buffer, and each instrument has its own role in creating financial system stability, especially closely related to buffers.

The role of macroprudential policy in controlling capital outflows in the economy is weak. The results of the vector error correction model (VECM) test show a minimal number of variables that influence, contribute and respond to capital outflows. In the capital outflow research model that acts as a dependent variable, it is known that there are only one or two of the macroprudential policy instruments that affect capital outflows. The lack of significant influence from macroprudential policy instruments indicates that in the volatility of capital outflows in the period 2013-2021, macroprudential policy instruments have a small role in influencing capital flow volatility. The role of macroprudential policy instruments only acts as a cushion if the trend of capital outflows is too large or exceeds the safe limit rules set by the central bank and other relevant authorities in maintaining macroeconomic stability. Thus, the hypothesis that macroprudential policy instruments influence the volatility of capital outflows is weak. The results of testing and empirical estimation analysis from this study show that the

role of macroprudential policy instruments on capital outflow growth in the post-taper tantrum economic recovery period is as a support system policy, which can be interpreted as a driver or helper when capital outflows and forecasts in the next few years show the potential to disrupt economic stability and growth momentum.

CONCLUSION

Macroprudential policy has a significant impact on capital flows. Macroprudential policy variables serve as policy cushions and do not affect capital outflows directly. But it must be combined with other policies. Therefore, the right policy for the second period of tapering is the triple intervention policy in the spot market, domestic non-deliverable forward (DNDF) market and SBN purchases from the secondary market.

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