Chapter 4

Exchange Rate Policy and Capital Flow Management

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Abstract This chapter discusses the relationship between exchange rate and foreign capital flow management, as influenced by the increasingly integrated nature of the global economy and finance. From the central bank's perspective, a strategy mix composed of interest rate and exchange rate stabilization policy alongside capital flow management has the potential to provide better results for monetary and financial system stability. Interest rate policy still needs to be directed towards achieving price stability, while exchange rate stabilization policy and capital flow management are aimed at maintaining external and internal stability. This chapter also sheds light on the closeness of the relationship between monetary stability and financial system stability. The magnitude of changes in foreign capital flows not only threatens macroeconomic stability, but also creates pressures on financial system stability, such as liquidity and bank credit growth. In light of this, the integration of monetary policy and macroprudential policy is increasingly important.

Keywords Exchange rate policy · Capital flow management · Monetary policy trilemma

Introduction

In the era of globalization, the increasingly integrated global economy has led to a rapid rise in the turnover of foreign currency exchanges between countries in the context of international transaction payments. Such foreign currency exchanges, which are increasingly non-physical in nature, continue to dominate almost all international trade and finance transactions. In line with these developments, exchange rates are greatly influenced by movements in non-physical currency flows, both for payments for international trade transactions and foreign investments in domestic financial market instruments, better known as foreign capital flows. Given the ever

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more rapid movement and changes in exchange rates, countries that adhere to a fixed exchange rate system, or a variation thereof, leave themselves very vulnerable to sudden reversals of capital flows and speculative activities. This is exactly what has happened during times of exchange rate crisis, such as in Latin America in the early 1990s and Southeast Asia in 1997/98.

Globalization has also resulted in unrestricted flows of capital among countries. This became increasingly apparent after the global financial crisis, with large amounts of liquidity and low global interest rates caused by the monetary easing implemented by developed countries to stimulate their economic recovery. On the one hand, the flow of foreign capital is beneficial for financing to encourage economic growth in Emerging Market Economies (EMEs). The amount of foreign capital flows is greatly influenced by individual economic factors in each EME, in particular the state of its economic fundamentals, its degree of economic openness, the exchange rate regime and foreign exchange regime it adheres to, as well as the macroeconomic policies it pursues. The better the economic condition of the EME and the higher the yields offered, the greater the inflow of foreign capital it will receive. On the other hand, foreign capital flows can also make a country's economy more vulnerable to external shocks that take place in the global economy, a phenomenon known as global spillover. In this case, monetary stability and financial system stability may be disrupted. Therefore, an understanding of foreign capital flows is very important for policy formulation, including monetary policy, in order to be able to maximize the benefits these foreign capital flows offer and minimize the risks that they pose to the national economy.

The flow of foreign capital has made monetary policy in an open economy more complex. The ability of monetary policy to achieve domestic economic objectives, such as those related to inflation and economic growth, will be strongly affected by exchange rate volatility and foreign capital flows from the influence of external factors, as described in the 'policy trilemma' or the 'impossible trinity'.¹ According to this theory, if the desire is for monetary policy to be truly effective in achieving domestic economic objectives, then a fixed exchange rate regime and controlled foreign exchange regime is one of the options. However, this option is not in line with the flow of globalization which offers many benefits to the domestic economy from international trade and investment. As such, it is necessary to formulate an optimal alternative involving monetary policy, exchange rate policy, and capital flow management in order to obtain the benefits of economic openness while also achieving domestic economic objectives. In other words, it is necessary to find an optimal solution to address the policy trilemma in an open economy.

Capital flow and exchange rate management are strengthened according to the following basic principles. First, the coordination or application of a mix of policy instruments is an important part of the strategy to achieve optimal policy objectives.

¹ This term was coined by Mundell (1968: 147) in his book *International Economics* to explain the impossibility of achieving the goals of exchange rate stability, freedom of mobility of foreign capital, and independence of monetary policy at the same time. "Over time, the three goals cannot be attained simultaneously".

Second, while still adhering to a free foreign exchange regime, macroprudential measures in the area of capital flows are a policy option aimed at reducing excessive short-term capital flows, provide room or the possibility for the exchange rate to strengthen, the accumulation of foreign exchange reserves, as well as the use of monetary and fiscal policies, while consistently considering prudential and structural policies to manage capital inflows.

Third, the exchange rate is managed so as to remain flexible and provide room for appreciation, but is maintained so that it does not deviate too far from its fundamental value (become overvalued). Exchange rate management in line with the fundamental conditions is carried out through symmetrical intervention in the forex market, which provides room for appreciation when there is a high flow of foreign capital. The complexity of monetary policy through interest rates on the monetary policy side can be partially overcome by implementing macroprudential policies. Fourth, monetary policy is supported by macroprudential policies aimed at minimizing the impact of capital inflows on asset price bubbles as well as excessive credit growth which can pose risks to monetary stability and financial system stability, including Capital Flow Management (CFM).

This chapter will discuss in-depth issues related to exchange rate and foreign capital flow management in several sections. The next section presents several conceptual dimensions, including basic theories regarding the determination of exchange rates and the concept of the policy trilemma/impossible trinity, as well as exchange rate and foreign exchange regimes. The subsequent two sections look at the practice of foreign capital flow management along with several empirical issues related to the management of the policy trilemma. The last section contains some closing notes.

Conceptual and Empirical Dimensions

Theories of Exchange Rate Determination

Many theories have been developed in the international financial economics literature to explain exchange rates and the relationships between variables in an open economy. Initially, theories of exchange rate determination were more focused on the view of the international trade side of the balance of payments. However, with the development of global financial markets and increasing financial liberalization in many countries, the theories that later emerged placed greater emphasis on the capital account side of the balance of payments. The modern approach views the exchange rate as one of the assets in the international financial market by emphasizing monetary aspects, currency substitution, and the balance of investment portfolios between countries (Warjiyo and Juhro 2019). The analyses presented in these various theories are not only limited to theories of determining the exchange rate, but also focus on the effect of the exchange rate on various economic variables and its implications for the macroeconomic policies adopted. While not all theories are able to explain

the complex phenomenon of exchange rate puzzles and the relationship between variables in an open economy, the various theories described below provide a framework for analyzing the linkages between three important aspects in the international financial economy—exchange rate stability, capital mobility among countries, and macroeconomic policy responses, especially monetary policy in an open economy.

The earliest developed theory of exchange rate determination was the Purchasing Power Parity (PPP) theory, sometimes also called the inflationary theory of exchange rates. Basically, the PPP theory states that the law of one price applies to various products traded internationally.² This theory is based on a concept of flows from international trade activities in determining the exchange rate, when the flow of demand for foreign currency to pay for imports will be equal to the flow of supply of foreign currency generated from exports.³ If there are no barriers to international trade and no arbitrage to gain profit from the trade of foreign currency, then in absolute terms the price of goods for each country will be the same after taking into account the prevailing exchange rate, namely $P = P^* + S$, where S is the nominal exchange rate, while P and P^* are the price levels of domestic and foreign goods. Meanwhile, in relative terms, if the method and scope of goods in the calculation of inflation are not much different, then according to PPP, the change in exchange rates will be the same as the difference in inflation between countries, that is $\Delta S = \pi - \pi^*$, where π and π^* are the rates of domestic and foreign inflation, as laid out by Cassel (1918).⁴

With trade expanding to a number of countries, the PPP theory became the basis for measuring the weighted exchange rate in real terms, known as the Real Effective Exchange Rate (REER), that is: $REER = \sum \omega_j \pi_j^* / \pi$, in which ω is the portion of trade value with each trading partner country. REER calculations are generally expressed in an index with a base year that reflects the normal conditions of the countries concerned. The REER index can be used as a measure of how far the exchange rate has moved out of alignment with fundamental conditions (misalignment). In addition, the REER index is also used to measure levels of competitiveness in terms of the real exchange rate so that its influence on export and import performance can be analyzed.

In contrast to PPP, which is based on the balance of trade transactions, the Interest Rate Parity (IRP) theory emphasizes the concept of flows in the movement of capital flows among countries in the capital account transactions. With the existence of an international asset market, IRP conditions can act as a manifestation of the law of one price for interest rates among countries. This condition can occur with the

² The law of one price states that if calculated in the same currency, freely-traded commodities will cost the same everywhere, assuming perfect market mechanisms (i.e. low transaction costs, no taxes, homogeneous products, and no uncertainties). If the prices for homogeneous products differ from each other, commodity arbitrage will take place to seek profit from these price differences until the prices become the same.

³ PPP is called a flow concept because it is based on the flow of goods and services in the balance of trade for determining exchange rates.

⁴ If speculative behavior is considered, Roll (1979) suggests an alternative PPP formulation in the form of expectations, that is in absolute terms: $E(P) = E(P^*) + E(e)$, or in relative terms: $\pi - \pi^* = E(e + 1 - e)$, where $E(\cdot)$ is the expectation operator.

assumption that the foreign exchange market is efficient enough in transforming information into exchange rate movements and does not face significant transaction barriers for perfect market competition to work. Capital mobility among countries is also very easy (perfect capital mobility) as the types of assets traded in the financial market are relatively homogeneous and can be exchanged perfectly (perfect capital substitutability).⁵ In such a condition, the level of investment returns or interest rates among countries will be the same after taking into account the exchange rate.

The Interest Rate Parity theory can be demonstrated in the form of Covered Interest Rate Parity (CIRP) and Uncovered Interest Rate Parity (UIRP). With UIRP, investment returns or domestic interest rates will be the same as foreign interest rates after taking into account expectations of changes in exchange rates in the market, that is $r = r^* + [E(S) - S]/S$, in which $\{r, r^*\}$ = domestic and foreign interest rates and $\{E(S), S\}$ = expectations and the spot exchange rate. Meanwhile, CIRP shows interest rate parity for investments between countries that have been hedged against exchange rate risk with forward transactions, so that $r = r^* + (F - S)/S$, in which F = the forward exchange rate. Such interest rate parity can occur because the arbitrage process in international financial transactions will prevent any abnormal profits from investment and borrowing transactions in the domestic asset market compared to foreign asset markets. Any differences in interest rates among countries will be eliminated by the freedom of mobility of funds among countries as well as the arbitrage mechanism.

Policy Trilemma: Exchange Rate and Capital Flow Management

The increasing integration of the domestic economy with the global economy, as well as the rapid inflow of foreign capital, is making macroeconomic management ever more complex, particularly when it comes to monetary policy and exchange rates. Obstfeld et al. 2005 examined the monetary policy trilemma for 103 countries over more than 130 years. The autonomy of monetary policy is measured by the relationship between domestic interest rates and the interest rates of countries of comparison. Under various approaches, there exists either a pegged or non-pegged exchange rate system, and a free or controlled foreign exchange regime. The study looks at the following three periods: Gold Standard (1870–1914), Bretton-Woods (1959–1970), and Post Bretton-Woods (1973–2000). Based on the theory of international interest rate parity or Uncovered Interest Rate Parity (UIP), the policy trilemma in this study is proven by estimating the following equation:

$$\Delta R_{it} = \alpha + \beta \Delta R_{it}^* + \varepsilon_{it} \quad (4.1)$$

in which: R = domestic interest rate, R^* = comparative interest rate. The countries of comparison are those in which a peg is applied: The UK for the Gold Standard period,

⁵ Examples of barriers in the capital market include restrictions on the mobility of funds among countries (such as in a controlled foreign exchange regime), transaction costs, taxes, and risk differences in investing in securities.

the USA for the Bretton Woods period, and various countries for the post-Bretton Woods era.

Overall, the study confirmed that the trilemma remains valid as a guide for a monetary policy framework in an open economy. First, it turned out that pegged exchange rate systems created a closer relationship between domestic interest rates and the interest rates of the countries of comparison than did the non-pegged exchange rate systems. Interest rates of pegged exchange rate countries reacted more strongly and had a stronger long-term relationship with the interest rates of the countries of comparison. Second, with the loosening of controls on foreign capital flows, pegged countries saw a decline in their monetary policy autonomy. At the same time, non-pegged countries had a stronger degree of autonomy, especially in the post-Bretton Woods period, even in conditions of free foreign exchange. Third, pegged countries did not in fact always keep their exchange rates absolutely fixed at a certain level, due to devaluations or maintaining their exchange rate within a range. Conversely, non-pegged countries also did not always allow their exchange rates to float freely, and often followed countries of comparison in determining domestic interest rates.

A number of other studies show how central banks deal with this policy trilemma. Calvo and Reinhart (2002), for example, point out that there is a tendency for the phenomenon of ‘fear of floating’ in the exchange rate policies of many countries. The classifications of exchange rate regimes adhered to by many countries reveal that more and more countries are adopting an intermediate system rather than a hard peg or a pure floating exchange rate system. The ‘fear of floating’ phenomenon is one way to get around the policy trilemma, namely by stabilizing the exchange rate. Even in countries that adhere to a flexible exchange rate system, the central bank also intervenes in foreign exchange to stabilize the exchange rate.

Aizenman et al. (2011), for example, examined a modification of the Taylor rule in determining monetary policy interest rates with panel data for 16 EME countries during the period 1989:Q1-2006:Q4. The results demonstrated that EME countries that adhere to ITF implement strategies in which the central bank responds both to inflation and the real exchange rate in determining policy interest rates. A study by Mohanty and Klau (2004) also showed similar results from an estimation of the Taylor modification for 13 EME countries where the central bank reacted to actual inflation, output gaps and exchange rate changes. Overall, the results illustrated that the central banks reacted to real exchange rate volatility. In all the countries, except Chile, it was evident that the central bank “leans against the wind” by raising interest rates when the exchange rate depreciates. Moreover, there was high persistence in monetary policy responses to exchange rates in South Korea, India, Mexico, Peru, Thailand, and South Africa. The response of monetary policy to the exchange rate was even greater than the corresponding response to inflation and output gaps, a testament to the ‘fear of floating’ phenomenon. Intervention in the foreign exchange market was an instrument generally adopted.

Exchange Rate and Foreign Exchange Regimes

Essentially, the selection of the exchange rate regime and the foreign exchange regime, as well as the independence of monetary policy from the influence of foreign

developments, are the 3 (three) strategic issues when it comes to the formulation and implementation of monetary policy in an open economy.⁶ Generally, when applying a controlled foreign exchange system, the mobility of capital inflows and outflows tends to be controlled, rendering the impact on the money supply in the country concerned relatively minor. Conversely, when applying a free foreign exchange system, the mobility of capital inflows and outflows will increase, both in terms of amount and fluctuations. As a result, developments in the country's money supply will be greatly affected by the flow of foreign funds.

The extent to which monetary policy is able to overcome the influence of foreign fund flows is influenced by the exchange rate regime adopted. If a country applies a fixed exchange rate system, monetary policy is directed to maintain the exchange rate at a predetermined level. As such, it is difficult to implement monetary policy independently because the foreign fund flows will directly affect developments in the money supply, economic growth, and inflation in the country. On the other hand, if a country applies a floating exchange rate system, the flow of foreign funds will directly affect developments in the exchange rate in the market. Therefore, monetary policy can be more independent in focusing on controlling the money supply and its impact on economic growth and inflation in the country.

As outlined above, the policy trilemma refers to the fact that in an open economy, exchange rate stability, freedom of mobility of foreign funds, and independence in the implementation of monetary policy cannot be achieved simultaneously. In the economics literature, this condition is known as the impossible trinity. The central bank can only achieve two of the three conditions above. Thus, if exchange rate stability is desired through the application of a fixed exchange rate system, the independence of monetary policy requires limiting the mobility of foreign funds through the implementation of a controlled foreign exchange regime. Conversely, if freedom of mobility of foreign funds is desired through the application of a free foreign exchange regime, the independence of monetary policy requires the adoption of a floating exchange rate system so that, as described above, the influence of the mobility of foreign funds can be absorbed by changes in the exchange rate (with the consequence that the exchange rate is not always stable) and the money supply in the country remains under control. However, there is an argument that states that the monetary authority should be able to pursue the possible trinity to the maximum extent possible, by using various policy instruments. This involves the central bank maintaining exchange rate stability as well as free capital flow while also remaining an independent institution. This is indeed quite difficult and challenging, especially in the era of an increasingly integrated global financial system. It requires policies other than monetary policy, such as macroprudential policies and government policies, to play a supportive role.

⁶ The term independence here refers to the ability of the central bank to implement monetary policy without disruptions stemming from developments in external factors, such as the mobility of foreign funds and developments in the global economy. The definition of independence here differs from the independence of the central bank as relates to its institutional arrangements and absolute authority to carry out the tasks stipulated in the law, regardless of efforts by the government or other parties to interfere, as discussed in other parts of this chapter as well as in other chapters in this book.

Exchange Rate Regimes

The exchange rate of a currency is defined as the relative price of one currency against another. Meanwhile, the exchange rate regime is a system adopted by the monetary authority of a country in regulating the exchange rate of that country's currency against currencies of other countries. There are various types of exchange rate regimes in the world, especially after the collapse of the Bretton Woods exchange rate system in 1976. In general, however, exchange rate regimes can be classified into the following three groups; (1) absolute fixed exchange rate system, (2) pure floating exchange rate system, and (3) fixed but adjustable rate (FBAR) system which is a combination of a fixed and floating exchange rate system (Corden 2002).

The exchange rate or the value of one currency against another currency is set at a certain value in a fixed exchange rate system. For example, if the exchange rate of the Rupiah against the United States Dollar is set at Rp. 8,000 per Dollar. The central bank, at this exchange rate, will be ready to sell or buy foreign exchange needs in order to maintain the fixed exchange rate. If the exchange rate can no longer be maintained, the central bank can carry out a devaluation or revaluation of the specified exchange rate.⁷

In a floating exchange rate system, the exchange rate is allowed to move according to the forces of supply and demand that occur in the market. Thus, the exchange rate will strengthen if there is an excess supply of foreign currency and, conversely, the domestic currency will weaken if there is an excess demand for foreign currency.⁸ The central bank may intervene in the foreign exchange market, either by selling foreign exchange when there is a shortage of supply or buying foreign exchange if there is an excess supply, to avoid excessive exchange rate fluctuations in the market. However, these interventions are not directed at achieving a specific exchange rate target or target range. A managed float regime is a system that lies in between the two exchange rate systems outlined above. The central bank sets a limit on the range within which the exchange rate may move, called the intervention band, in the exchange rate system. The exchange rate will be determined according to market mechanisms as long as it remains within the range of the intervention band. If the exchange rate penetrates the upper or lower limit of the range, the central bank will

⁷ Devaluation is a policy taken by the government of a country to unilaterally determine the exchange rate of that country's currency against other currencies. For example, the Rupiah exchange rate which was originally set at Rp 800 per US Dollar gets lowered to Rp 9000 per US Dollar. On the other hand, revaluation is a policy of increasing the exchange rate of the country's currency against other currencies. Devaluation or revaluation policies are usually carried out in order to maintain a country's foreign trade performance. For example, a policy of devaluation in the short term can increase competitiveness so as to stimulate export activities, assuming other countries do not retaliate by taking devaluation measures and exporters can enhance production efficiency to meet export demand.

⁸ The exchange rate is said to have weakened if a greater value of money is needed to buy the same amount of foreign currency; for example, the Rupiah exchange rate weakened from originally being able to purchase a Dollar with Rp 8000 to being able to with Rp 9000.

automatically intervene in the foreign exchange market so that the exchange rate moves back into the intervention band.⁹

Each exchange rate regime has its own advantages and disadvantages. The choice of the system to be applied will depend on the economic situation and conditions of the country concerned, in particular the amount of foreign exchange reserves it has, the openness of its economy, the foreign exchange regime it adheres to (free, semi-controlled, or controlled), and the volume of its domestic foreign exchange market. One of the advantages of a fixed exchange rate system is the certainty it offers to the market in terms of the exchange rate. However, this type of system requires large foreign exchange reserves due to the necessity for the central bank to maintain the exchange rate at a specified level. In addition, this type of system may persuade the business community not to hedge its foreign currencies against the risk of changes in exchange rates. Such a system is generally applied in countries that have large foreign exchange reserves, with a somewhat controlled foreign exchange system in place. In contrast, one of the advantages of a floating exchange rate system is that large foreign exchange reserves are not required because the central bank does not have to maintain the exchange rate at a specific level. However, excessively fluctuating exchange rates can exacerbate uncertainties for the business world. Such a system is generally applied in countries that have relatively small foreign exchange reserves while the foreign exchange system adopted tends to be free.¹⁰

Exchange rate movements in the market are influenced by both fundamental and non-fundamental factors. Fundamental factors are reflected in macroeconomic variables, such as economic growth, inflation rates, and export and import developments.¹¹ Meanwhile, non-fundamental factors include market sentiments concerning socio-political developments, the psychology of market participants in digesting information, rumors that are circulating, or other developments in determining daily exchange rates.

Foreign Exchange Regimes

Foreign exchange is a financial asset used in international transactions. The establishment of a foreign exchange regime in a country is intended to regulate the movement

⁹ If the exchange rate penetrates the upper or lower limits of the intervention band, the central bank will automatically sell or buy the exchange required by the market for the exchange rate to move back within the range of the intervention band. Determining the width of the intervention band depends on the size of the foreign exchange reserves held by the central bank along with possible needs that arise in the market. Generally, the range will be adjusted from time to time in accordance with developments in foreign exchange reserves and the volume of transactions in the foreign exchange market.

¹⁰ For a managed float exchange rate system, the advantages and disadvantages lie between those associated with a fixed and floating exchange rate system.

¹¹ There are various approaches in international financial theory to determine exchange rates in a fundamental manner; for more details, read Darsono, R. Eki Rahman (2018), *Teori Nilai Tukar, Buku Pasar Valuta Asing: Teori dan Praktik, Rajawali Pers, Depok*/Exchange Rate Theory, Foreign Exchange Market Book: Theory and Practice, Rajawali Press, Depok.

of foreign exchange traffic between residents and non-residents from one country to another. Basically, there are three types of foreign exchange regimes, as follows: (i) controlled foreign exchange system, (ii) semi-controlled foreign exchange system, and (iii) free foreign exchange system. The choice of which foreign exchange regime to adopt will depend on the conditions of the country concerned, particularly its economic openness—or more specifically how far the country in question wants to integrate its economy with the global economy.

In a controlled foreign exchange system, foreign exchange is basically owned by the state. Therefore, any foreign exchange acquired by the public must be turned over to the state and any use of foreign exchange requires permission from the state. In a semi-controlled foreign exchange system, the obligations mentioned above only apply to the acquisition and use of certain foreign exchanges, while other types of foreign exchange can be freely acquired and used. In a free foreign exchange system, people are allowed to freely acquire and use foreign exchange.¹²

As of now, all these systems are still used in numerous countries with various other policy combinations. Essentially, every country shares the goals of not allowing either the inflow or outflow of foreign exchange to interfere with domestic economic performance, and ensuring that the impact of foreign exchange flows on the exchange rate is directed at making the economy internationally competitive. The application of a particular foreign exchange regime has implications for other economic/monetary policies. The choice of foreign exchange regime must take into account the characteristics of the domestic economy while seeking to achieve price stability and sustain domestic economic growth.

Practice of Capital Flow Management

The theoretical and empirical reviews of various countries, as outlined above, prove that foreign capital flows, notwithstanding their ability to stimulate economic growth, can also pose risks to macroeconomic stability and the financial system. Therefore, a mix of macroeconomic (fiscal and monetary), financial system stability, and structural reform policies is urgently needed at the national level. The policy mix combination will depend on the conditions of the country concerned. Structural reform policies are very important in enabling the benefits of foreign capital flows to boost productivity and economic growth. Macroeconomic policy adjustments are also necessary, particularly in the event of macroeconomic stability pressures such as inflation and a large current account deficit. As such, prudent and consistent monetary and fiscal policies play a vital role as the first line of defence against foreign capital inflows. In the event of excessively high volatility, macroeconomic policies also need to be supported by

¹² Actually, in practice, most countries that apply a free foreign exchange system retain an obligation for the public to report the acquisition and use of foreign exchange.

exchange rate stabilization policies. Adequate foreign exchange reserves and bilateral and multilateral swap arrangements also play an important role as the second line of defence. Strengthening and deepening the financial sector, as well as enhancing institutional capacity, have proved effective at increasing the ability to deal with foreign capital flows.

Principles, Goals and Instruments

In the context of the central bank, a combination of monetary policy mix, exchange rate stabilization, and capital flow management is needed to achieve an optimal balance in responding to the policy trilemma as described above. Experience since the 2007/2008 Global Financial Crisis has shown that volatility and the volume of capital flows into EMEs cannot always be responded to with interest rates as the main instrument, or even with foreign exchange interventions as a secondary instrument. In the face of very large capital flows, for example, foreign exchange interventions will increase the accumulation of large foreign exchange reserves as well. Although it can strengthen the external resilience of EMEs, the costs of the accumulation of foreign exchange reserves are also large due to the central bank's need to sterilize liquidity for the foreign exchange interventions. In such conditions, foreign capital flow management (CFM) is an instrument that can be considered by the central bank. CFM is also needed in the event of a very large capital outflow, because the interest rate response is not always effective while foreign exchange interventions can be limited by the adequacy of the foreign exchange reserves held by the central bank.

Principles of Formulation and Application

In general, the following conditions can serve as a reference for when CFM can be put into practice (IMF 2013). First, CFM is needed when the room for further macroeconomic policy adjustments is increasingly limited. For example, despite having undergone monetary or fiscal tightening, there remains an inability to control foreign capital inflows. This condition is generally encountered when the economy is overheating or showing signs of asset price bubbles, there is an accumulation of external debt, the exchange rate is overvalued, and the accumulation of foreign exchange reserves is too large and ever more expensive.

Second, CFM is needed if the implementation of macroeconomic adjustment policies is taking time, both in the formulation process and in their impact on the economy. For example, budget changes as part of fiscal policy generally take a while to be approved by parliament. The effectiveness of monetary policy may also be delayed due to the transmission mechanism in influencing inflation expectations and domestic demand.

Third, CFM is necessary in the event that a surge in foreign capital inflows adds to the risks posed to financial system stability. Systemic risks that do not come from foreign capital flows are better addressed with macroprudential policies. However, a surge in capital flows could lead to an excessive rise in credit disbursement, due to both liquidity expansion and increased risky behavior. Under these conditions, restrictions on capital inflows by means of CFM can support the effectiveness of

macroeconomic policy, monetary policy, and macroprudential policy in maintaining macroeconomic stability, monetary stability, and financial system stability.

When applying CFM, there is a need to consider its effectiveness and efficiency (International Monetary Fund 2013). Likewise, the design and implementation of CFM have to be transparent, targeted, temporary, and non-discriminatory towards residents and non-residents alike.

- **Transparent and targeted:** Clear communication of the CFM's goals and instruments is essential for avoiding market distortions and incorrect public expectations. CFM targeted at certain aspects that pose risks, such as short-term and speculative foreign portfolio investment flows and debt, will be more effective. The balance between the scope, effectiveness and side-effects of CFM needs to be evaluated according to country-specific conditions. Targeted CFM will be easy to monitor and not cause unwanted side-effects.
- **Temporary:** Once implemented, CFM can be tightened if capital inflows are large or, conversely, relaxed in the event that capital inflows have decreased or capital reversal occurs. CFM can be continued if it is still needed to support financial system stability, rather than for balance of payments purposes.
- **Non-discriminatory:** In general, CFM that does not differentiate between residents and non-residents is preferred. However, if this causes the CFM to be less effective, instruments that discriminate against non-residents (otherwise known as capital controls) can be applied. The preference for non-discriminatory CFM is based more on considerations of fairness and equality of treatment, as expected of each member of the IMF.

Goals: Macroeconomic Stability and/or Financial System Stability

In implementing CFM, it is necessary to have a clear goal in mind to be achieved, be it macroeconomic stability, financial system stability, or both. The answer will depend on the type and level of volatility of the capital flows, as well as the fundamental conditions of the economy and the financial sector of the country concerned. As already explained, the volatility of portfolio investment flows has an impact on the volatility of the exchange rate, stock prices, and bond yields. If there are no problems with inflation and the current account in the country, monetary policy can be pursued either through interest rates or interventions in the foreign exchange market to mitigate asset price volatility, as mentioned above. In this regard, CFM for the purpose of macroeconomic stability can be applied to support monetary policy, especially when inflation is relatively low and foreign exchange reserves are insufficient to stabilize the exchange rate. However, if inflation and the current account are high, CFM needs to be used as a complement to the required macroeconomic policies, either through monetary or fiscal policy, or policies in the real sector.

Under other conditions, the volatility of capital flows not only threatens macroeconomic stability but also puts pressure on financial system stability. Excessive asset price volatility increases market risks. Similarly, pressures on financial system stability may arise from the expansion of bank liquidity and credit due to excessive inflows of foreign capital. The external debt of the banking system also has

an impact not only on macroeconomic stability but likewise on the stability of the financial system. The extent of this impact will depend on the resilience of the financial sector as well as the effectiveness of the macroprudential and microprudential policies implemented. In this regard, CFM to control capital flows with the aim of macroeconomic stability can support the effectiveness of macroprudential policies in maintaining financial system stability.

There is occasionally a perception that CFM is a type of macroprudential policy, even though the two have different goals. CFM is a regulation aimed at restricting capital flows, while macroprudential policies are intended to limit systemic risks and maintain financial system stability. CFM is directed at controlling the amount and composition of capital flows, while macroprudential policies are aimed at mitigating the accumulation of systemic risks regardless of whether they arise externally or domestically. For example, taxes applied to certain types of foreign capital flows constitute CFM and only indirectly affect financial system stability. On the other hand, capital surcharge provisions and counter-cyclical buffers against systemic financial institutions are macroprudential policies and only indirectly affect capital flows.

However, there are a number of situations in which CFM and macroprudential policy can complement each other (IMF 2015a). When capital flows pose systemic risks in the financial sector, instruments in the form of CFM and macroprudential policies can be used. For example, capital flows to the banking sector from both external debt and portfolio investments can lead to a boom in credit and domestic asset prices. Provisions that limit external debt in the banking system, such as through Statutory Reserves (SR), maximum loans to capital, the Net Open Position (NOP), or even different risk weights in the calculation of capital requirements, can limit capital flows and exchange rate volatility, while simultaneously controlling excess banking liquidity, credit growth, and rising domestic asset prices. Given this, it can be concluded that both CFM and macroprudential policies can be directed towards limiting capital flows while, at the same time, reducing systemic risks in the financial sector.

Another important consideration is how and when these two instruments (CFM and macroprudential policy) need to be reduced or exited. When capital flows are no longer large and highly volatile, CFM can create an unwanted burden on the economy or become so ineffective as to warrant discontinuation. However, a number of macroprudential policies can still continue to be applied to manage systemic risks in the financial sector which may remain prevalent after a period of large capital flows and high volatility. Formulating macroprudential policies that are indeed aimed at financial system stability, not to control capital flows, is very important and will be discussed separately in Chap. 5. Moreover, while capital flows are still ongoing and permanent, further policy reforms need to be carried out for deepening the financial sector, boosting investment and productivity in the real sector, as well as strengthening institutions.

Choice of Instruments: Prudential Provisions or Capital Controls?

What instruments can be used to mitigate the risks posed by foreign capital flows? In general, the policy options will depend on the specific conditions of the country in question. A number of tools are available to control the flow of capital in the form of administrative instruments, including capital controls, as well as prudential provisions. Administrative instruments are aimed directly at certain types of capital flows, while prudential provisions are aimed at increasing the ability of the financial sector or corporations to mitigate risks that may arise from capital flows.

CFM administrative instruments take the form of certain obligations placed on residents or non-residents with regard to the capital transactions they perform. These may include the taxation of capital flows from non-residents, adding to the statutory reserve without interest remuneration, special licensing obligations, and even absolute restrictions or prohibitions. These provisions can be applied to all types of capital flows, or can be applied selectively according to the type or time period concerned (debt, stocks, Foreign-Owned Company/PMA; short-term vs. long-term). They can apply to the entire economy, to a specific sector (usually the financial sector) or to a specific industry (e.g., strategic industries). The term CFM generally applies to non-discriminatory instruments, in the sense that the arrangements concerned are mandatory for both residents and non-residents. When the arrangements differentiate between residents and non-residents, they are called capital controls. For example, if the minimum statutory reserve for non-residents is higher than that for residents, this is a form of capital control. In contrast, a regulation that distinguishes statutory reserves on the basis of currency and applies to residents and non-residents alike is still considered a CFM instrument.

Meanwhile, the prudential provisions of CFM are generally directed at foreign exchange transactions based on the currencies involved, instead of the residency of the parties conducting the transactions. Regulations apply to domestic financial institutions, particularly banks. The instruments can be in the form of a limit on the NOP in accordance with capital capacity, or a limit on banking investments in foreign currency assets. Other provisions can be in the form of limits on bank credit in foreign currencies, especially for customers who do not carry out hedging, or differences in the statutory reserve for obligations in domestic currency and foreign currencies. In addition to financial institutions, CFM prudential provisions can be applied to the corporate sector, in particular to mitigate the risks resulting from the external debt it receives. Other instruments can be in the form of hedging obligations to mitigate exchange rate risks, liquidity obligations to mitigate the ability to pay principal and interest, as well as provisions on the maximum or minimum debt-equity ratio to mitigate corporate default risks.

The various CFM instruments described above are generally applied to control foreign capital inflows. However, some of them can be used to mitigate the negative impact of capital outflows on macroeconomic stability (IMF 2015b). For example, taxes or statutory reserves can be relaxed or revoked altogether in order to address the risk of capital reversal, depending on the intensity of the problems encountered. A number of other CFM instruments, particularly prudential provisions such as the

NOP and foreign borrowing limits, may still be maintained as they can strengthen risk management against volatility in capital flows. There are also other CFM instruments available to deal with capital outflows, such as the following: (1) limiting residents' investments in financial instruments abroad (Iceland); (2) establishing a minimum holding period for non-residents to sell their investments (Chile in the 1990s), establishing a waiting period to transfer the proceeds from sales of investments (Ukraine); imposing taxes on the transfer of investment returns (Malaysia); (3) prohibiting the conversion and transfer of domestic currency assets (Iceland) and restricting withdrawals of deposits (Argentina, Greece). Restrictions on non-residents' access to local currency may also make speculation more difficult.

As in the case of capital inflows, CFM instruments for controlling capital outflows will be more effective if they are part of a comprehensive policy package and are supported by sound institutions and a strong legal system. In other words, the management of capital outflows should not be a substitute for sound macroeconomic policies, especially if the outflows of capital are also caused by the vulnerability of the domestic economy. More specifically, management of outward flows is more effective if it is formulated properly and can be implemented consistently. To avoid being futile and to remain effective, CFM also needs to be comprehensive and able to adapt to problems as they develop.

Possible Trinity: Managing the Policy Trilemma in Indonesia

In the case of Indonesia, the application of CFM is an integral part of the strategy for managing the monetary policy trilemma (Warjiyo and Juhro 2019). This policy trilemma is managed through a monetary policy mix consisting of an interest rate response complemented by exchange rate flexibility, capital flow management, and macroprudential policy support. Interest rate policy, in line with the inflation targeting framework implemented by Indonesia since 2005, serves as the main instrument for anchoring inflation expectations and forecasts within the targeted range. Exchange rate policy is directed at maintaining exchange rate stability in accordance with its fundamental path. Capital flow management is also implemented with the aim of reducing short-term excess volatility and stabilizing the exchange rate. At the same time, macroprudential policies are intended to manage procyclicality and excessive borrowing in certain sectors. Overall, the objective of this policy mix is to boost the effectiveness of all monetary transmission channels. This policy mix strategy tactically shifts the paradigm of "impossible trinity" to "possible trinity".

The steps involved in managing the policy trilemma for the Indonesian economy are illustrated in Fig. 4.1.

From the perspective of a small open economy like Indonesia, fluctuating capital flows, especially short-term and speculative ones, drive up the risk of monetary and financial system stability (Prabheesh et al. 2021; Juhro and Anglingkusumo 2020). Carry-trade flows often cause excessive volatility in exchange rate movements beyond fundamental values. There will also be market liquidity risks. In certain periods, large capital inflows often lead to excessive domestic borrowing and asset bubbles, while at other times large capital reversals pose serious risks to illiquid markets and also risk the overcorrection of asset prices. Dual intervention in the

Fig. 4.1 Policy trilemma. *Source* Juhro and Goeltom (2015), Warjiyo and Juhro (2019)

forex and rupiah markets is one strategy to smooth out the impact of erratic capital flows on asset prices and market liquidity. In many cases, however, direct capital flow management measures are still required.

In Indonesia, capital flow management policies are guided by 3 (three) principles. First, their objective is to help reduce the negative impact of short-term volatility in capital flows on exchange rate stability and the overall monetary and financial system. Second, specific measures targeting short-term and speculative capital flows are welcomed, both for the medium and long term, as they benefit the economy. Third, these measures are consistent with the broad principle of maintaining a free foreign exchange regime. The measures are also temporary—meaning that they can be tightened in the case of excessive capital inflows and relaxed in the event of excessive capital outflows—and do not discriminate between domestic and international actors or investors.

Several Empirical Issues on Monetary Policy Trilemma

The decade after the Global Financial Crisis (GFC), a period roughly from 2009 until 2019, highlights a global economy that is marked by elevated risk and uncertainties in the global financial markets. Post GFC uneven recovery in AEs, prolonged consolidation in the Euro area, growth rebalancing in China, the United Kingdom (UK) exit from the European Union (EU), and rising trade tensions between the United States (US) and China, are among the notable features of the period.¹³ However, for central banks, particularly in emerging market economies (EMEs), including in

¹³ See various issues of the International Monetary Fund (IMF) World Economic Outlook since the GFC.

Asia, an essential facet of this period has been the resumption of large and very often volatile capital flows, which can be attributed to the implementation of UMP, i.e. QE policy by AEs, particularly the US.

Azis and Shin (2015) discuss three phases of global liquidity expansion (and retrenchment) and its spill-over effects to emerging Asian economies. The first phase (the period leading up to the GFC in 2008/2009), was marked by banking led capital flows, intermediated by the global banking system. The second phase (began in 2010, after the QE in AEs), was precipitated by the global search for yield on the back of ample USD liquidity, and rapid growth of local currency (LCY) bond markets in Asia. The third phase started after the Fed announcement of US monetary policy normalization, which propelled capital flow reversals. This last phase accentuated the interconnectedness and high international integration of financial sector in Asia.

Recently, Rey (2016, 2018) argues that global financial cycles, i.e. the recurring episodes of increasing/declining risk tolerance and appetite for leverage, which is born by the rising financial globalization, has transformed the challenges about trilemma management in EMEs. Specifically, financial shocks originating from the core AEs, i.e. the US, may spill across borders, making it harder for EMEs' central banks to maintain monetary policy sovereignty (MPS). As also shown in Azis and Shin (2015) the episodes of large and volatile capital flows before, during and after the GFC demonstrate potent adverse implications of the global financial cycles on EMEs through the financial and welfare (real) channels.

A corollary to the above, in growingly interconnected and integrated financial markets, lax (tight) financial condition in the core AEs, may prompt lax (tight) global financial condition. It may further trigger an increase (a decrease) in risk tolerance in the global financial markets and induce large capital inflows (outflows) into (out of) EMEs and relax (tighten) borrowing constraints in the capital flow recipient countries. Hence, global financial cycles will determine domestic financial conditions regardless the degree of exchange rate stability (ERS), and may reduce monetary policy effectiveness in economies with a high degree of financial openness (FO), leading into "*an irreconcilable duo*" where the trilemma morphs into a dilemma, such that MPS is possible if and only if capital mobility is restricted or a low degree of FO is preferred (Rey 2016, 2018). Yet, Nelson (2020) shows that in a financially open economy with the floating exchange rate, MPS can still be achieved because authorities will have stronger control over domestic policy objectives. On this, a recent study by Eichengreen et al. (2020) concludes that, contrary to Obstfeld et al. (2005), a flexible exchange rate has insulating properties against external shocks in EMEs. Additionally, if large exchange rate fluctuations remain of a concern for financial stability, maintaining a large international reserves buffers ("*a war chest*" in the sense of Calvo and Reinhart (2002)) may not always be sufficient, and additional tools, such as macroprudential policies, are needed, provided the country has initially low financial fragility (Aizenman 2019).

This is more evident in emerging economies, where domestic financial conditions react faster and stronger to global financial shocks than to the changes in domestic monetary policy rates. Therefore, conducting a timely and quick monetary policy becomes a serious challenge (Bruno and Shin 2015; Georgiadis and Mehl 2016). It

is argued that the monetary policy has a limited impact during the period of global financial shocks. While introducing capital flow management may also support stabilizing the economy in the presence of global financial shock in a flexible exchange rate regime, the increased importance of macroprudential policies in recent years helps to mitigate the risks associated with global financial shocks and thus continue to adhere to an open capital account regime (Warjiyo and Juhro 2019; Korinek and Sandri (2016); Juhro and Goeltom 2015; Farhi and Werning 2014).¹⁴ In other words, managing financial stability using macroprudential policies may help the central bank to optimize its benefits from choosing policy options from the trilemma combinations. Thus, macroeconomic stability can be maintained by achieving monetary stability along with financial system stability (Smets 2018). Therefore, the present study tries to examine the effectiveness of the trilemma policies in the presence of macroprudential policies¹⁵ in emerging market economies.

The emerging economies' policymakers face many challenges to maintain the macroeconomic stability as the asset price movements in the countries are sensitive to international capital flows, especially to portfolio flows; these economies' financial cycle often deviates from the economic cycle due to excessive credit boom/bust, subsequently affect financial stability. This was more prevalent during the global financial crisis and its aftermath, these economies experienced an unprecedented change in the magnitude of capital flows. Subsequently, the many emerging economies adopted macroprudential policies to curb the pro-cyclicality of credit growth, to minimize the systemic risk and thereby increase the financial sector's resilience (Jung and Lee 2017; Lubis et al. 2019; Warjiyo and Juhro 2019; Galati and Moessner 2018). Since many of the emerging economies follow inflation targeting (IT) framework, the global financial crisis reignited the view that central banks' focus on inflation targeting may be insufficient to bring about macroeconomic stability and may need to be complemented with targets for financial measures such as credit, leverage, or various asset prices (Leduc and Natal 2018). Thus understanding the effectiveness of macroprudential policies in the case of IT economies is also crucial for choosing the optimum mix of the policies to maintain macroeconomic stability.

The available literature in this context may be classified into three strands. The first strand of studies assesses categorical trilemma configurations and found the countries that follow fixed exchange rate attain higher monetary policy as compared to floating exchange rate countries (Frenkel 2004; Herwartz and Roestel 2017; Miniane

¹⁴ In order to provide a clear definition, Korinek and Sandri (2016) present the difference between capital control and macroprudential measures. Capital control applies exclusively to financial transactions between residents and non-residents whereas macroprudential regulation limits the domestic agents to borrow either from domestic or foreign lenders.

¹⁵ The macroprudential policy has been defined as "the use of primarily prudential tools to limit the systemic risk-the risk of disruptions to the provision of financial services that is caused by an impairment of all or parts of the financial system and can cause serious negative consequences for the real economy" (IMF 2013). It includes a range of instruments, such as measures to address sector-specific risks (e.g., loan-to-value (LTV) and debt-to-income (DTI) ratios), counter-cyclical capital requirements, dynamic provisions, reserve requirements, liquidity tools, and measures to affect foreign-currency based or residency-based financial transactions.

and Rogers 2007; Rodriguez 2017) and capital control fosters the independence (Obstfeld et al. 2005; Shambaugh 2004). The second strand of literature analyses the evaluation of country-specific trilemma configurations over time and testing their binding nature (Aizenman et al. 2008, 2010, 2011a, b; Aizenman and Ito 2012; Hsing 2012). Similarly, some studies looked into the role of international reserves on trilemma configuration and found that high reserve holding economies are able to relax to the trilemma constraint as compared to the low level of reserve holding economies (Akcelik et al. 2014; Juhro and Goeltom 2015; Steiner 2017) and helps to improve the monetary policy independence (Taguchi 2011).

The recent strand of studies emphasized the role of global financial cycles on trilemma constraints. They argued that a flexible exchange rate might not absorb external shocks during the global financial cycle. Thus, independent monetary policy is possible only if the capital account is managed directly or indirectly through macroprudential policies. If the global financial cycle causes financial instability, macroprudential instruments can be used to stabilize the financial sector by limiting its exposure to foreign currency (Cho and Hahm 2014). Hence countries face a dilemma instead of the trilemma, between independent monetary policy and free capital mobility (Caputo and Herrera 2017; Edwards 2015; Rey 2015; Taylor 2016).

Closing Notes

This chapter focused on the relationship between exchange rate and foreign capital flow management, as influenced by the increasingly integrated nature of the global economy and finance. Depending on the country, foreign capital flows have varying risks and affect changes in economic growth differently. The magnitude of these risks or benefits depends on several factors, such as the country's degree of openness and the foreign exchange system it applies, as well as its macroeconomic policies.

From the central bank's perspective, a strategy mix composed of interest rate and exchange rate stabilization policy alongside capital flow management has the potential to provide better results for monetary and financial system stability. Interest rate policy still needs to be directed towards achieving price stability, while exchange rate stabilization policy and capital flow management are aimed at maintaining external and internal stability. In the midst of high foreign capital inflows and appreciation pressures, the objective of exchange rate stabilization policy is to minimize exchange rate volatility to stay consistent with macroeconomic growth and developments, particularly as part of efforts to control and stabilize prices.

This chapter also revealed the closeness of the relationship between monetary stability and financial system stability. The magnitude of changes in foreign capital flows not only threatens macroeconomic stability, but also creates pressures on financial system stability, such as liquidity and bank credit growth. In light of this, the integration of monetary policy and macroprudential policy is increasingly important for strengthening monetary and financial system resilience. Macroprudential measures

are seen as regulations that play an essential role in managing both external flows and risks.

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