Chapter 3
Monetary Policy Framework

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Abstract This section discusses monetary policy, covering the basic theories and concepts of monetary policy, monetary policy frameworks, and the evolution of monetary policy from the period before the 1997/98 Asian financial crisis to the period after the 2008/09 global financial crisis (GFC). The ITF can, on the whole, still be relied on as a monetary policy strategy. However, due to a background of problems, especially those that emerged after the 2008/09 global financial crisis, various central banks need to strengthen their monetary policy framework through the application of a non-strict framework, or flexible ITF, with efforts to jointly stabilize inflation and the real economy in the short term.

Keywords Monetary policy · Monetary policy transmission · Inflation targeting framework

Introduction

How monetary policy plays a role in the economy has always been the subject of public debate. Some support monetary policy focus on price stability. Others believe that monetary policy should play a role in stimulating output growth. Some hold this view due to political interests, while many others consider that demand for monetary stimuli during an economic downswing or even recession should support the fiscal stimuli of the Government. However, many country experiences showed that using monetary policy to finance massive projects could lead to hyperinflation, which culminated in an economic crisis and the failure of the economic development program. On a practical level at central banks, the core of the debate has become the essence of how monetary policy should offset the trade-off between price stability, in the form of low and stable inflation, and fostering economic growth.

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To what extent there is a trade-off between inflation and economic growth in the near term depends on the assumptions underlying monetary economics in a country's economy. In an economy with perfect markets (high economic flexibility) and rational economic agents (with complete information), using the assumptions of classical theory, the short-term trade-off between inflation and economic growth tends to be small. Nonetheless, those assumptions are not always present in an economy, as observed by Keynesian economists. Price and wage rigidity, incomplete information and irrational economic behaviour are all present, which means a market is not always in equilibrium and, therefore, has implications on quantity and prices. Total money supply also has distributive and allocative effects through the impact of real interest rates on output, amongst others, due to holdings of government bonds and central bank monetary operations. The various factors explain why monetary policy not only affects prices but also output and other real economic variables.

How money plays a role in the economy is an empirical question. In this case, based on the empirical literature, consensus is generally reached amongst economists that money neutrality only occurs in the long term, while in the near term, monetary disturbances can have a significant impact on real variables, such as output. Ultimately, although consensus was reached amongst economists concerning the role of money and monetary policy shocks in an economy, at least in the near term, no consensus has been reached regarding the transmission mechanism and role of a systematic monetary policy response. Several empirical questions arise, including whether money supply or the interest rate would more relevantly represent monetary policy? How long is the lag? And, how does the monetary policy transmission mechanism affect inflation, output and other real economic variables? This is primarily because of differing views concerning two aspects, namely what is the actual structure? And, to what extent is there interconnectedness between the variables in a policy regime?

The discussion on theory and empirical findings also showed that the real interest rate is a more appropriate monetary policy instrument than money supply in terms of its effect on the economy. The relationship between money supply and output is not stable and difficult to predict due to the innovation of products similar to money that may only be traded in the financial sector and do not relate directly to economic transactions. In fact, reverse causality has been found, meaning that economic growth has more of an impact on demand for money supply. Consequently, central bank monetary operations should be directed more towards influencing interest rates on the money market, which would be expected to affect interest rates in the financial sector and, thus, aggregate demand, inflation and economic growth. Therefore, how effectively the policy rate is transmitted to various interest rates in the financial sector and economic variables becomes significant. In this case, the assumptions debated between Classical and Keynesian economists, including the flexibility of economic sectors, the completeness of information, and the rationality of economic agents, also influence the effectiveness of the interest rate in the economy.

This chapter consists of five parts that provide a general description of monetary policy, and the direction for applying monetary policy with the goal of price stability in mind. After this introduction, the second part looks at some of the general

substance surrounding the implementation of monetary policy, especially as it relates to the business cycle, the existence of other macroeconomic policies, and economic openness. The third part then describes the strategic framework, transmission mechanism, and operational framework of monetary policy. The next part focuses on monetary policy framework oriented towards price stability (inflation targeting) as well as the development of thinking and policy perspectives after the 2008/09 Global Financial Crisis. The chapter concludes by drawing together common threads from the discussions on monetary policy framework that have evolved among various structural developments and financial crises.

Concept of Monetary Policy

Monetary policy is a policy pursued by the monetary authorities, or the central bank, aimed at controlling monetary aggregates in order to achieve the desired development of economic activity.[1] In practice, the desired development of economic activity refers to macroeconomic stability, as reflected, among other things, by price stability (low inflation rate), improvement in real output (economic growth), as well as the ample availability of employment opportunities.

Monetary policy, as outlined above, forms an integral part of macroeconomic policy, which is generally carried out by taking into account the business cycle, the closed or open nature of a country's economy, as well as other fundamental economic factors. Monetary policy strategy is implemented differently from one country to another, in accordance with the objectives to be achieved and the transmission mechanism deemed most suited to the economy concerned. Based on the chosen strategy and transmission, a monetary policy operational framework is then formulated.

Monetary Policy and the Business Cycle

The economic development of a country inevitably experiences ups and downs (cycles). In certain periods the economy grows rapidly and in other periods growth slows down. In order to manage and influence economic development so that it can take place properly and stably, the government or monetary authority usually takes steps known as macroeconomic policies. The essence of these policies is to manage the demand and supply sides of an economy in order to steer it towards a state of balance with a sustainable level of economic growth.

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[1] In this case, monetary aggregates can be in the form of the money supply, reserve money, or bank credit.

Monetary policy, as one of these macroeconomic policies, is generally applied in line with the business cycle.[2] In this case, the monetary policy applied to conditions where the economy is enjoying a boom is of course different from that applied to conditions where the economy is enduring a depression or slump. In the literature review, there are two types of monetary policy, namely expansionary monetary policy and contractionary monetary policy. Expansionary monetary policy refers to monetary policy aimed at encouraging economic activity, which includes increasing the money supply. In contrast, contractionary monetary policy refers to monetary policy aimed at slowing down economic activity, which includes reducing the money supply.

In practice, the effectiveness of monetary policy depends on the relationship between the money supply and key economic variables such as output and inflation. From the literature, the main interesting finding regarding the relationship between money supply, inflation, and output is that in the long run, the relationship between money supply growth and inflation is perfect, while the relationship between money supply growth or inflation and real output growth may be close to zero. This finding indicates that there is a consensus that in the long run, monetary policy will only have an impact on inflation, and will not have much effect on real economic activity.[3]

Despite the differences in viewpoints above, generally practitioners and academics believe that in the short term, an expansionary monetary policy can encourage economic activity in an economy that is experiencing a prolonged recession. On the other hand, a contractionary monetary policy can bring down high rates of inflation which generally occur when an economy is in a boom. The pattern of implementing a monetary policy which actively "smooths" the development of economic activity that is tending towards an extreme turning point is known as counter-cyclical monetary policy.

At first glance, it seems appropriate enough to apply a counter-cyclical monetary policy pattern so that an economy can avoid structural shocks or fluctuations in the business cycle. However, the basic problem that arises is related to the difficulty of predicting the business cycle, especially regarding the extent to which the development of an economy has reached a certain position in the current cycle. Mistakes that occur in predicting economic cycles can lead to errors in determining monetary policy responses.

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[2] According to the definition put forward by Burns and Mitchell, in Measuring Business Cycles, NBER (1946), the business cycle is a type of fluctuation that occurs regularly in the development of a country's economic activities. The cycle generally consists of an expansion that occurs when the business world increases its activities, which is then followed by a slowdown in economic activity or a recession, until the recovery of economic development in the expansion phase of the next cycle. The sequence of these changes occurs repeatedly, but not periodically. In this case, the duration of one cycle varies from more than one year to ten or twelve years. Further reviews of Business Cycles can be found in Parkin and Bade, Modern Macroeconomics, Philip Alan Publishers Ltd., 1988, pp. 113–138.

[3] The consensus from the empirical literature regarding the short-term effect of money is that a monetary policy shock causes a hump-shaped movement of real economic activity (slightly upward and then down). This means that the easing/tightening of monetary policy can slightly boost/suppress real economic activity in the very short term and then its effect will disappear. For a more comprehensive follow-up analysis, see Walsh (2001, Chap. 1 : Empirical Evidence on Money and Output).

Monetary Policy and Other Macroeconomic Policies

The implementation of monetary policy cannot be carried out separately from the implementation of other macroeconomic policies, such as fiscal policy and real sector policy, among others.[4] This is especially true given the very close relationship between monetary policy and other parts of macroeconomic policy. In addition, the effects of policies that are implemented simultaneously may have opposite directions so that they weaken each other. For example, in an economy experiencing inflationary pressures, the central bank may tighten monetary policy. At the same time, the government is expanding in the fiscal sector in order to prompt economic growth. The disharmony of the two policies can result in the goal of suppressing inflation not being achieved. Meanwhile, a combination of monetary and fiscal policies that are too expansive due to a lack of coordination could lead to a warming of the economy. As such, to meet macroeconomic policy objectives as optimally as possible, a coordinated policy mix is usually applied between one policy and another.

Optimal here means the coordinated achievement of inter-policy objectives so as not to cause an unfavorable impact on the achievement of overall macroeconomic policy objectives. One well-known example of an application of a policy mix is the monetary-fiscal policy mix. Conceptually, the coordination of a monetary-fiscal policy mix can be carried out by means of several scenarios, as follows[5]: (1) expansionary monetary policy/expansionary fiscal policy, (2) contractionary monetary policy/expansionary fiscal policy, (3) expansionary monetary policy/contractionary fiscal policy, and (4) contractionary monetary policy/contractionary fiscal policy.

For example, if the monetary-fiscal policy mix can be carried out in a coordinated manner, then policy scenarios 1 and 4 are the most effective policy scenarios to be applied for the counter-cyclical policy objectives as described previously. Empirical observations show that if an economy experiences a prolonged recession, monetary and fiscal policies that are similarly expansionary and coordinated are very appropriate to stimulate economic activity with a moderate influence on interest rate developments. In line with this, monetary and fiscal policies that are similarly contractionary and coordinated are very beneficial as part of efforts to reduce the pace of expansion of economic activity.

Meanwhile, policy scenarios 2 and 3 will produce mutually exclusive effects, and the final outcome is highly dependent on the relative strength of influence between the monetary and fiscal policies involved. Empirically, the combination of expansionary monetary policy and contractionary fiscal policy has not been widely observed. As for the combination of contractionary monetary policy and expansionary fiscal policy however, empirical evidence indicates that this policy scenario tends to prompt a rise

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[4] Fiscal policy is a policy related to aspects of government budget management. Fiscal policy is considered to be one of the most important policies that can be implemented directly by the government in maintaining economic stability.

[5] Assuming that the fiscal authority's source of funds comes from sources outside the money supply.

in market equilibrium interest rates, thereby hampering investment activities by the public.[6]

Monetary Policy in an Open Economy

Before discussing the topic of monetary policy in an open economy, we will briefly mention monetary policy in a closed economy. In a simple and closed economy—when the economy of a country does not interact with the economy of other countries—monetary policy can be formulated and implemented more simply. This is due to various international economic variables such as trade, capital flows, exchange rates, and interest rates which have no effect on such an economy. However, in this era of globalization, no country can be said to have a closed economic system, so the next discussion will focus on monetary policy in an open economy.

In the era of the global economy that has come into being over the past several decades, economic interactions between countries are an inseparable aspect of the economic development of a country that is increasingly open. Moreover, the swift development of information technology, communication and transportation, as well as trade policies in the last decade, has prompted rapid economic openness and interdependence between countries. For example, trade relations between Indonesia and Japan today are much closer than those in place during the early days of independence.

The greater the interconnectedness between countries, the more open the economies of the countries concerned will be. This economic openness leads to a rise in trade transactions between countries. A country that is unable to meet the need for certain goods and services can buy (import) these goods and services from other countries. On the other hand, a country can trade (export) the goods and services it produces to other countries that need them. Developments in international trade are generally followed by developments in the international financial sector.

The economic openness of a country will have consequences on the planning and implementation of macroeconomic policies, including monetary policy. This is because the greater the volume of international trade and financial transactions carried out by a country, the greater the foreign capital flows. These foreign capital flows will in turn affect the amount of money circulating in the economy. In the event of capital inflows, there will be an increase in the money supply. On the other hand, in the event of capital outflows, there will be a reduction in the money supply. As such, monetary policy needs to be directed so that the money supply is in accordance with the needs of the economy.[7]

In the event of large capital inflows, the central bank can implement contractionary monetary policy in order to reduce the money supply. In contrast, if there are large capital outflows, the central bank can implement expansionary monetary policy in order to increase the money supply. Monetary contraction or expansion will increase

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[6] In economics literature, the phenomenon of when public investment activity decreases as a result of the expansion of government activities is known as the crowding-out phenomenon.

[7] For more details, read *Buku Seri Kebanksentralan No. 2, Penyusunan Statistik Uang Beredar*/Book Series on Central Banking No. 2, Compilation of Money Supply Statistics, by Juhro and Suseno, PPSK Bank Indonesia (2002a).

or decrease domestic interest rates. Furthermore, these changes will either increase or decrease the interest rate differential, which in turn will encourage both inflows and outflows of foreign capital. This condition can reduce the effectiveness of monetary policy. The high mobility of capital inflows and outflows will render the central bank unable to independently implement monetary policy.[8] Meanwhile, the mobility of capital inflows and outflows is influenced by the exchange rate regime and the foreign exchange regime adhered to by a country. Thus, the extent to which the implementation of monetary policy can be carried out independently depends on the exchange rate regime and the foreign exchange regime chosen.

As such, the selection of the exchange rate regime and the foreign exchange regime, as well as the independence of monetary policy implementation, are the three strategic issues focused on by studies in the monetary sector. Generally, it is agreed that if a country applies a fixed exchange rate system and there is an inflow/outflow of foreign capital, then monetary policy must still be directed at maintaining the exchange rate at a predetermined level. Given this, it is difficult to implement monetary policy independently because monetary policy will be directed to absorb or increase the money supply originating from capital inflows and outflows. On the other hand, if a country applies a floating exchange rate system, its monetary policy is not aimed at maintaining the exchange rate, such that monetary policy can be implemented more independently.

In the event that a controlled foreign exchange regime is applied, the mobility of capital inflows and outflows tends to decrease, thereby boosting the independent implementation of monetary policy. This is because the central bank does not need to expand or contract the amount of money supply stemming from capital inflows and outflows. Meanwhile, if a free foreign exchange system is applied, the mobility of capital inflows and outflows will be enhanced. As a result, the central bank has to expand or contract the amount of money supply originating from capital inflows and outflows. This, thus, can compromise the independence of monetary policy implementation.

As described above, the independent implementation of monetary policy, a fixed exchange rate system, and a free foreign exchange system cannot be achieved simultaneously. This condition is known as the policy trilemma or impossible trinity.[9] In fact, several empirical studies conclude that only two of the above three conditions

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[8] Independence here refers to the independence of a central bank in implementing monetary policy without interferences arising from developments in external factors. This independence differs from the independence of a central bank in terms of its institutional framework, as discussed in other chapters of this book.

[9] According to the theoretical assumptions put forward by Robert Mundell in his book International Economics (1968), a mismatch arises in trying to achieve the three trinities simultaneously (the impossible trinity). This refers to exchange rate stability, mobility of foreign capital flows, and independence of monetary policy. "Overtime, the three goals cannot be attained simultaneously" (p. 147). Empirical observations generally also prove that only two of these three factors can be attained simultaneously. This indicates that, with an international trend/consensus that encourages the mobility of foreign capital flows, there is a trade-off between realizing exchange rate stability and monetary policy independence.

can be applied together..[10] A description of the implementation of monetary policy in an open economy, particularly in relation to the policy trilemma, will be presented in Chapter 4 of this book, focusing on exchange rate policy and the management of foreign capital flows.

Monetary Policy Framework

The monetary authority develops a monetary policy framework that can be divided into two parts, namely a strategic framework and an operational framework. The monetary authority is duly guided by this framework to ensure effectiveness in the implementation of monetary policy.

Monetary Policy Strategic Framework

As previously explained, the policy objective to be achieved, both by monetary policy and macro policy, is generally macroeconomic stability, including price stability (low inflation rate), economic growth, and the availability of employment opportunities. It is difficult to attain all of the above targets simultaneously because efforts to achieve these ultimate goals often conflict with each other. For example, efforts to boost the rate of economic growth and expand employment opportunities may, to some extent, drive price increases, thus undermining the optimal achievement of macroeconomic stability.

Recognizing the contradictions involved in achieving these targets, central banks are faced with two alternatives. The first option is to choose one target to be achieved optimally by ignoring the other targets—for example, opting for a high economic growth rate by ignoring the inflation rate. The second option is to attempt to achieve all the targets, but to accept that none of them will be achieved optimally—for example, aiming for economic growth that is not overly high in order to maintain a predetermined inflation rate. Acknowledging these weaknesses, several countries have gradually shifted the implementation of monetary policy to focus more on the single goal of price stability.

In principle, several strategies exist for achieving monetary policy objectives. Each strategy has characteristics in line with the nominal anchor that is used as the basis of reference, or a kind of "intermediate target" on the path to achieving the ultimate goals. Strategies for implementing monetary policy include: (i) exchange

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[10] Theoretically, if a fixed exchange rate system is applied when the economy of a country is very open and the mobility of foreign capital is very high, monetary policy cannot be carried out independently, as previously explained. In other words, to be able to implement monetary policy independently in conditions of a very high degree of economic openness, exchange rate developments must be fairly flexible. If a fixed exchange rate system is preferred, monetary policy can be implemented independently; however, this must be supported by efforts to control the flow of foreign capital that are tight enough to restrict the mobility of this foreign capital so as not to interfere with the implementation of monetary policy.

rate targeting, (ii) monetary targeting, (iii) inflation targeting, (iv) monetary policy with an implicit but not an explicit nominal anchor.[11]

Monetary Policy Transmission Mechanism

The explanation of the strategic framework of monetary policy in the previous section does not include a discussion of how monetary policy can affect nominal income and real economic activity as a whole. In light of this, it is necessary to first understand the process or mechanism for transmitting the influence of monetary policy on real economic activity, known in short as the monetary transmission mechanism. Specifically, Taylor (1995) states that the monetary transmission mechanism is "the process through which monetary policy decisions are transmitted into changes in real GDP and inflation".

In the monetary economics literature, the study of the monetary policy transmission mechanism generally refers to the role of money in the economy, as first outlined in the Quantity Theory of Money. This theory basically describes a clear framework for analyzing the systematic direct relationship between money supply growth and inflation, expressed as a mathematical identity known as "The Equation of Exchange":

$$MV \equiv PT$$

in which the money supply (M) multiplied by income velocity (V) is equal to the amount of real output or economic transactions (T) multiplied by the price level (P). In other words, in balance, the money supply used in all economic transaction activities (MV) is equal to the amount of output transacted, as calculated at prevailing prices (PT).[12]

Based on this transmission mechanism, in the short term the growth in the money supply only affects the development of real output. Furthermore, in the medium term growth in the money supply will push prices up (inflation), which in turn will lead to a decline in the development of real output to its original position. Meanwhile, in the long-term balance, the growth in the money supply has no effect on the development of real output, but encourages a proportional increase in the inflation rate. This direct monetary channel is considered unable to explain the influence of factors other than money on inflation, such as interest rates, exchange rates, asset prices, credit, and expectations. As a subsequent development, in addition to the direct monetary channel, the transmission mechanism can also generally occur through

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[11] A full description of the results of empirical observations of the application of several strategies for implementing monetary policy in various countries can be found in Mishkin (1999).

[12] To see the relationship between the growth of the money supply and inflation, two assumptions are used. First, the velocity of money/income velocity (V) remains quite stable, or at least predictable. The veracity of this assumption is an empirical question. Second, in the long run, real output or economic transactions (T) can generally be considered constant and not influenced by developments in the money supply (long-run money neutrality); however, it is influenced by supply-side developments in the economy, such as the amount and productivity of labor, availability of capital, and technological advances.

five other channels, namely the interest rate channel, exchange rate channel, asset price channel, credit channel and expectations channel.[13] The period before and after the 2008/09 global financial crisis demonstrated that risk-taking behavior (risk-taking channel) is included as a separate monetary policy transmission channel—a point that is important to understand for managing financial system stability. In practice, monetary policy transmission varies from one country to another, depending on differences in economic structure, developments in financial markets, and the exchange rate regime adopted.

Risk Taking Channel

The period prior to and following the 2008/09 global financial crisis showed that the risk-taking channel in the financial system contributed to vulnerability, contagion as well as asset price bubbles. Increased risk in the financial system can arise for various reasons, including financial product innovation, valuation methods in capital and accounting, ease of funding, risk tolerance, or the ever closer integration of global finance. The financial turmoil leading up to and after the global financial crisis demonstrates that the financial system tends not to act as a shock absorber but instead becomes a source and driver of turmoil, or a shock amplifier (Allen and Carletti 2008).

In many aspects, increased risk in the financial system is inseparable from monetary policy. Monetary stability and ease of liquidity in boom periods can encourage widespread financial product innovation, risky behavior and elevated financial vulnerability. On the other hand, in downward economic cycles, or bursts, such a rise in financial vulnerability from risky behavior accelerates the worsening and contagion of a financial crisis, thereby complicating the required monetary policy response. As such, in contrast to the standard monetary transmission analysis, Borio and Zhu (2008) express the view that risky behavior is a separate monetary transmission channel. Specifically, the risk-taking channel is defined as "the impact of changes in policy rates on either risk perceptions or risk-tolerance and hence on the degree of risk in the portfolio, on the pricing of assets, and on the price and non-price terms of the extension of funding".

The transmission process in the risk taking channel is asymmetric. When economic activity is in an upward cycle (upward phase/bubble/falling interest rates), the transmission process through the risk-taking channel operates slowly and persistently, and financial system risks are usually not apparent. When economic activity is in a downward cycle (burst bubble), the transmission process will change rapidly and suddenly. Maturity mismatches will exacerbate shortages of liquidity funds. Sharp declines in asset prices will cause losses, capital shortfall, and market liquidity drought. This will further exacerbate liquidity shortage conditions as a result of declining collateral values and margin calls, or situations in which investors must add funds to their accounts to meet the minimum margin.

According to Borio and Zhu (2008), there are three ways the risk taking channel works in the financial system, as follows:

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[13] For more details, see Mihaljek and Klau (2008) and Kakes (2000).

(1) Effect of interest rates on valuations, incomes and cash flows from investments

When interest rates decrease, valuations of asset prices and collateral, cash flows and profits will increase. This prompts the emergence of risky behavior and boosts the acceleration of finance in banking credit and other financial transactions. Likewise, risk perceptions of non-performing loans will decline during an economic boom such that external finance premiums also decline and tolerance of credit standards becomes looser.

(2) Relationship between interest rates and target rates of return commonly used as benchmarks for financial investment performance appraisals

The higher the rate of return compared to the benchmark, the bigger the bonus for the investment manager. As such, a decrease in monetary policy interest rates will cause a large difference to the investment rate-of-return target, thus encouraging investors to look for investment alternatives with higher rates of return (search for yield). Investors' perceptions tend to value asset prices far above their fundamental values during an economic boom, a phenomenon known as irrational exuberance.

(3) Positive impact of central bank monetary policy transparency

Many central banks are becoming increasingly transparent in communicating interest rate policy decisions and inflation forecasts. This has a positive impact by increasing investment and various economic activities, as well as compressing risk premia in financial markets. Nevertheless, monetary stability also drives risky behavior from speculative investors, such as seeking higher returns from financial product innovations and speculative investment activities.

Monetary Policy Operational Framework

The previous section discussed the strategic framework and transmission mechanism of monetary policy with respect to the achievement of the ultimate goals which include price stability, economic growth, and the expansion of employment opportunities. To gain more clarity about monetary policy, an understanding of the operational framework of monetary policy is needed. In general, the monetary policy framework consists of instruments, operational targets, intermediate targets, and ultimate goals.

To achieve the established ultimate goals, intermediate targets are required as there is a time lag between the implementation of monetary policy and the realization of these goals.[14] Therefore, it is necessary to have indicators that are more immediately apparent—commonly known as intermediate targets—in order to discern the policy indications. The selected intermediate targets must have a stable relationship with the ultimate goals. Intermediate target options that can be used include monetary aggregates (such as M1 and M2) or credit and interest rates.

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[14] In monetary economics literature, a time lag consists of several parts, including an inside lag and outside lag. An inside lag consists of a recognition lag, decision lag, and action lag.

Furthermore, to achieve the intermediate targets, the central bank requires operational targets so that the transmission process can run according to plan. The selected operational targets must have a stable relationship with the intermediate targets and can be controlled by the monetary authority. In addition, information on the operational targets becomes available earlier than that on the intermediate targets. Operational target options that can be used include reserve money (M0) and short-term interest rates.

Meanwhile, monetary instruments are instruments belonging to the central bank that can be used either directly or indirectly to influence the established operational targets. Among the instruments used are open market operations, reserve requirements, discount facilities, and moral suasion.[15]

The series of central bank steps, from determining and forecasting the ultimate goals, to monitoring the economic-financial variables to be used as the basis for formulating monetary policy, and implementing monetary control in the money market to achieve the ultimate goals, is referred to as the monetary policy operational framework. It should be pointed out that in practice, the use of intermediate targets depends on what operational approach is used by the central bank, that is whether the approach is based on the quantity of monetary aggregates (quantity-based approach) or based on the price of monetary aggregates/interest rates (price-based approach). Generally, the quantity-based approach uses explicit intermediate targets, while the price-based approach does not use explicit intermediate targets. However, the effects of changes in operational targets are transmitted to changes in the ultimate goals through the development of various information variables that serve as leading indicators of developments in economic activity and inflationary pressures, such as inflation expectations and long-term interest rates.

Determination of Monetary Policy Response: Rules versus Discretion

In essence, monetary policy response can be determined using either rules or discretion. Analytically, Barro and Gordon (1983) describe how the determination of monetary policy instruments based on a pattern of rules (rule-based policy) is carried out by responding to the prevailing conditions, while taking into account previous formulations of policy instrument determination. In contrast, the determination of monetary policy instruments based on a pattern of discretion (discretion-based policy) is based more on evaluations over time that take into account prevailing conditions, while regarding past developments and policies as irrelevant. Meanwhile, Taylor (1993) explains that, in contrast to discretion-based policy, the behavior involved in determining rule-based policy is systematic, in the sense of being "methodical and according to a plan", and not casual or random. One example of a commonly-known rule, as proposed by Friedman (1960), is constant money growth. By definition, any deviation from this pattern is classified as discretionary.

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[15] A more comprehensive description of available monetary control instruments can be found in *Buku Seri Kebanksentralan No. 3: Instrumen-instrumen Pengendalian Moneter*/Central Banking Book Series Volume No. 3: Instruments of Monetary Control, by Ascarya (2002).

The consensus arrived at after a long debate among economists regarding the choice between the two determination patterns is that the central bank cannot implement monetary policy entirely based on a discretionary pattern. On the other hand, some patterns of rules are considered to be a prerequisite for the implementation of good monetary policy, such that the implementation of policy without using certain rules may have the opposite consequence.

In a traditional sense, economists are currently more focused on observing the following two types of rules.

(1)   Money growth rules, as pioneered by McCallum (1988). These rules expand on the rule proposed by Friedman by including a feedback mechanism in making gradual corrections to errors that have occurred in the past.
(2)   Interest rate rules, as pioneered by Taylor (1993). These rules also include a feedback mechanism, namely that the central bank changes interest rates based on deviations of inflation and output from the target level.

Which type of rules should be selected is still an unanswered problem.[16] However, it is generally agreed that rule-based policy can be applied with certain discretions in mind. On the other hand, even in ideal circumstances, it is still recommended that the application of discretion-based policy take into account the rules component.[17]

Inflation Targeting as a Framework for Monetary Policy

Inflation Targeting is a monetary policy framework whose main characteristics include an official statement from the central bank that the ultimate goal of its monetary policy is to bring about and maintain a low inflation rate, as well as a public announcement of the inflation target. Such an announcement implies that the central bank is providing a commitment and guarantee to the public that each of its policies will be consistently oriented towards achieving the target in question, and that the central bank can be held accountable for its policies if this target is not met.

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[16] A comprehensive study on the existence of policy rules in the implementation of monetary policy is presented in Monetary Policy Rules, NBER Conference Report, J.B. Taylor (Ed.) The University of Chicago Press, 1998.

[17] As it has developed since the early 1980s, the "rules versus discretion" debate has focused on a new argument that raises the issue of inconsistency ("time inconsistency" problem) in the implementation of policy strategies. The time-inconsistency problem refers to the differences between the (optimal) policy steps announced by the central bank to the public—if the central bank has good credibility— and the policy steps actually undertaken by the central bank after people have made a decision based on their expectations. For example, the central bank announces a promise to achieve a certain inflation target, and people enter into a work contract or agreement based on that announcement. Under these conditions, the central bank has an incentive to not fulfill its promise by looking for the possibility to achieve greater output growth, with the consequence of higher inflationary pressure. However, in the end, people will find out about this and duly adjust or set their expectations to a higher inflation rate, thereby obstructing the development of real output. If this series of events is repeated, an inflationary bias will arise whereby increases in real output do not occur while inflationary pressures are mounting.

Table 3.1 Characteristics of Inflation Targeting

No.	Criteria	Bernanke et al. (1999)	Svensson (2000)	King (1994)
1	Price stability as the main objective of monetary policy	Yes	Yes	Yes
2	Announcement of inflation target	Yes	Yes	Yes
3	Medium-term inflation target	Unclear	Yes	Yes
4	Intensive communication with the public	Yes	Yes	Yes
5	Use of specific monetary policy rules	Unclear	Inflation forecast targeting	Inflation targeting + supply-side response
6	Publication of inflation and output forecasts	Unnecessary	Yes	Unclear
7	Target set by the government (goal dependence)	Yes	Unnecessary	Unnecessary
8	Independent use of instruments (instrument independence)	Yes	Yes, but not explicitly stated	Yes

Source Bofinger (2001)

The characteristics of Inflation Targeting, as put forward by Bernanke et al. (1999), Svensson (2000) and King (1994), are summarized in greater detail in Table 3.1.

The underlying principles of the Inflation Targeting framework espouse that the ultimate goal of monetary policy is simply to achieve and maintain a low and stable inflation rate. In this context, it is assumed that: (i) a high inflation rate is a type of cost incurred by the economy in the form of low economic growth and a decrease in the real value of national income, (ii) monetary policy, through controlling the money supply, cannot affect real output growth in the long term, but can in the short term, while (iii) inflation control through monetary policy is aimed at stabilizing and reducing inflation in the long term and not in the short term. In addition, the success of the inflation achievement policy as a single objective within the Inflation Targeting framework requires the following, among others: (a) independence of the central bank, particularly in implementing monetary policy, (b) application of a floating exchange rate policy, (c) the existence of a price indicator that is relevant to the policy target, (d) good inflation projection methodology, and (e) absence of dominance of the fiscal sector. Meanwhile, the following are among the basic concepts of monetary policy in the Inflation Targeting framework.

(1)   Inflation target

As already stated, the Inflation Targeting Framework begins with the determination and announcement of the inflation target to be achieved by the central bank. The inflation target is of course determined by taking into account various factors and macroeconomic developments, especially social loss as a result of the trade-off between inflation and economic growth.[18] Among the other important factors also considered is that the inflation target must be able to be used as an anchor for the implementation of the central bank's monetary policy, and that inflation targeting is not only determined in the short term (annually), but also in the medium and long term.

(2)   Forward-looking monetary policy

With the inflation target as the anchor, the formulation of monetary policy is directed at achieving the established inflation target. Bearing in mind the time lag for monetary policy to have an effect on inflation, the monetary policy undertaken constitutes an anticipatory measure, not a reactive one, against the occurrence of inflationary pressures in the future compared to the inflation target set. Thus, the time horizon for how long the inflation target is to be set will depend on this time lag. Finally, the determination of a forward-looking mechanism is the most important aspect in establishing the direction of monetary policy at the central bank.

(3)   Transparency

The implementation of Inflation Targeting demands a high level of transparency, or openness, from the central bank, as one of the keys to the successful implementation of Inflation Targeting lies in the transparency of the central bank in making monetary policy. Such transparency is needed so that the public's inflation expectations that are formed match the wishes of the central bank. Transparency can be achieved by means of periodic explanations by the central bank to the public regarding the latest economic developments, inflation projections, and policies taken to keep the inflation rate on track. Such transparency is a way of demonstrating the central bank's commitment to fighting inflation.

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[18] The Phillips Curve first emerged on the back of the results of a study by the British economist A.W. Phillips, who in 1958 concluded that there is an inverse relationship, or trade-off, between rates of unemployment and rates of changes in wages. Initially, economists considered the above finding as one of the missing parts in the structure of the income-expenditure model. After applying a slight modification (changing wage level to price level), this curve became one of the most widely known curves in economics, thereafter known as the Phillips Curve.

   Subsequently, by considering the general characteristics of the business cycle, a close inverse relationship was identified between patterns of unemployment and real output growth (negative comovement). This is known as Okun's Law. The Phillips Curve can generally be derived from the pattern of the "trade-off" relationship between the inflation rate and real output growth. In this version, the trend of the relationship is upward sloping, such that rises in inflation occur in line with increases in real economic activity.

(4)   Accountability and Credibility

The central bank makes itself inherently accountable by announcing the inflation target explicitly to the public. Meanwhile, the credibility of the central bank will largely depend on its commitment to achieving the established inflation target. As such, the implementation of Inflation Targeting requires the establishment of a decision-making mechanism in the central bank concerned which is more reliant on the results of evaluations and the preparation of future projection scenarios based on the development of research-based economic models.

Conceptually, the use of Inflation Targeting requires fundamental changes in monetary policy in response to economic conditions. For example, Inflation Targeting requires a completely forward-looking monetary policy. However, central banks that do not explicitly implement inflation targeting may also be forward-looking and simultaneously focused on the ultimate goal of achieving price stability. Therefore, in practice, Inflation Targeting is more of a formal strategy of an existing policy, such that it is expected to improve the accountability, transparency, and credibility associated with monetary policy.

Monetary Policy in the Post 2008/09 Global Financial Crisis Period

In an economic environment that has yet to fully recover from the problems that emerged as a result of the 2008/09 global financial crisis, the challenges related to institutional aspects for the application of a monetary policy paradigm based on the ITF also tend to be increasingly complex. This mainly concerns behavioral changes in the financial sector on the one hand, as well as demands for the ITF to play a role in supporting the process of domestic economic recovery in the wake of the 2008/09 global financial crisis. This situation requires Bank Indonesia to be more flexible in responding to uncertainties which arise in the economy and are beyond conventional wisdom.

With reference to the results of evaluations that have been conducted, it can be concluded that, essentially, the ITF can still be relied upon as a monetary policy strategy in Indonesia. Nevertheless, Bank Indonesia needs to reinforce the monetary policy framework by improving the ITF implementation strategy going forward. In this regard, the results of evaluations of the implementation of the ITF in Indonesia also justify the need for a non-strict ITF implementation, or flexible ITF (FITF), as the format most suited to the Indonesian economy (Juhro et al. 2009).[19]

An ITF and FITF have the same main objective of controlling inflation. However, the difference between the two lies in the meaning of "flexibility", which refers to flexibility in placing the role of the exchange rate management strategy framework

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[19] The term flexible ITF was first popularized by Svensson (1999) who contrasted flexible IT with strict IT. With flexible IT, the central bank not only pays attention to the inflation gap, but also focuses on the output gap and/or interest rate smoothing. In contrast, with strict IT, as practiced by inflation nutters, the central bank focuses solely on the inflation gap (the deviation between the inflation rate and its target) (King 1997). However, not a single country adheres to strict IT (see Walsh 2008; Svensson 2000).

and the financial system stability framework with the application of a mix of monetary and macroprudential policy instruments. Monetary policy is used to maintain monetary stability as reflected in price stability using interest rate instruments, statutory reserves, and others. On the other hand, macroprudential policy is a policy that focuses on interactions between financial institutions, markets, infrastructures and the wider economy, including measuring potential future risks. This policy aims to prevent systemic risks that have the potential to cause a financial system crisis as a result of macroeconomic conditions.

The flexible ITF in Indonesia is built on the following 5 basic elements (Juhro 2015; Juhro and Goeltom 2015; Warjiyo and Juhro 2019):

1. Inflation to remain the main target of monetary policy

    In the formulation of monetary policy, trade-offs emerge between economic growth, exchange rate stability, and financial system stability. However, in the event of a conflict, achieving the inflation target takes priority. In addition, ITF institutional elements will be strengthened, such as independence, accountability, and transparency of monetary policy.

2. Integration of monetary policy and macroprudential policy to strengthen policy transmission and support macroeconomic stability

    Linkages between the monetary stability and financial system stability frameworks are bolstered through the integration of monetary policy with macroprudential policy. The global financial crisis provided some important lessons about the role of financial accelerators.[20] Financial system stability determines the effectiveness of monetary policy transmission. Likewise, the monetary policy response has an effect on financial system stability. As such, it is essential to implement a mix of policy instruments. In this regard, the interest rate policy response, as the main policy stance, needs to be supported by exchange rate policy and macroprudential policy for managing foreign capital flows and domestic liquidity.

3. Management of exchange rates and capital flows to support macroeconomic stability.

    In this context, the exchange rate needs to be managed consistently with the achievement of inflation targets and macroeconomic stability. The optimal solution to the problem of the impossible trinity is to look at the link between exchange rate stability policies and the management of foreign capital flows, and its implications for macroeconomic stability.

4. Strengthening policy coordination between Bank Indonesia and the government for both inflation control and financial system stability

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[20] The term first appeared in an article by Bernanke et al. (1996). It is the idea that large fluctuations in aggregate economic activity sometimes stem from seemingly minor shocks. This is what underlies the existence of an accelerator mechanism, or a factor that expedites the occurrence of a crisis. The authors argue that financial accelerators arise from changes in the credit market, which affect intrinsic borrowing and lending costs due to information asymmetry. Turbulence that harms the economy can be exacerbated by deteriorating financial market conditions. Worse still, adverse conditions in the real economy and in financial markets reinforce one another, leading to a vicious circle that tends to depress macroeconomic and financial conditions.

Strengthening the policy coordination framework is vital considering that apart from the demand side, sources of inflationary pressure also come from the supply side and strategic commodities. In addition, obstacles in implementing infrastructure programs and increasingly limited economic capacity have prompted the implementation of an integrated policy strategy among policy authorities. Moreover, policy coordination can be carried out in managing foreign capital flows because the characteristics of foreign capital inflows are sensitive to turmoil or short-term issues that can trigger a reversal.

5. Boosting policy communication as part of policy instrument use

The role of communication in monetary policy is not only designed to achieve transparency and accountability, but also as a medium to reduce uncertainty. In addition, communication also plays a role in mobilizing public expectations and market participants, as well as in enhancing predictability, thereby reducing volatility in financial markets. Finally, communication plays an important role in providing the public with an understanding of the objectives, framework, and transmission of monetary policy.

A flexible ITF uses monetary and macroprudential policy instruments together and in a complementary manner, such that it is useful in managing the influence of policy. Policy communication is used to convey to the public the policies pursued by Bank Indonesia. Policy operational targets are the links between policy instruments and policy indicators. Operational targets indirectly represent the existence of monetary policy transmission mechanism channels, such as interest rates, exchange rates, credit/liquidity, expectations, and risk perceptions.

Closing Notes

This chapter discussed monetary policy, including theories related to an overview of monetary policy and the monetary policy framework, as well as the evolution of monetary policy from the period before the 1997/98 Asian financial crisis to the aftermath of the 2008/09 global financial crisis. In theory, there are several important lessons to be learned here. First, the policy goal to be achieved by monetary policy and macro policy is macroeconomic stability, as reflected by price stability (inflation) and output (economic growth), among other things. To realize the ultimate goal of a policy, there are several strategies carried out by the central bank, targeting the exchange rate, monetary aggregates, and inflation, as well as targeting without a firm anchor.

Second, in the era of the global economy, the greater the linkages between countries, the more open the economy of the countries concerned. The economic openness of a country will have consequences on the planning and implementation of its monetary policy. High mobility of foreign capital inflows and outflows can affect the effectiveness of an independent monetary policy. Meanwhile, the mobility of capital inflows and outflows is influenced by the exchange rate regime and the foreign

exchange regime. However, it is impossible to apply an independent monetary policy, a fixed exchange rate system, and a free foreign exchange system simultaneously, a quandary known as the impossible trinity.

Third, the increasingly integrated global financial system affects the effectiveness of monetary policy transmission in almost all channels, including from a money view perspective (interest rates, exchange rates, asset prices, expectations) and credit view perspective (credit channel and balance sheet). Moreover, the spillover impact of global crises affects policy transmission through the risk-taking channel.

The 2008/09 global financial crisis exacerbated the process of economic recovery from the Asian financial crisis, clearly demonstrating that low inflation from the credibility of monetary policy is unable to guarantee macroeconomic and financial stability. The global financial crisis of 2008/09 gave rise to a number of problems, both globally and nationally. At the global level, problems have arisen related to the high mobility of short-term fund flows which greatly affect exchange rate developments. Coupled with behavioral changes in the financial system related to the strengthening of the roles of risk perception and procyclicality, this also potentially makes monetary control more complex and decision making more difficult. At the national level, challenges have arisen mainly related to structural rigidity on the supply side, which fundamentally disrupts the operation of policy transmission mechanisms and puts pressure on monetary stability.

The ITF can, on the whole, still be relied on as a monetary policy strategy. However, due to a background of problems, especially those that emerged after the 2008/09 global financial crisis, Bank Indonesia needs to strengthen its monetary policy framework through the application of a non-strict framework, or flexible ITF, with efforts to jointly stabilize inflation and the real economy in the short term. In line with the post-crisis economic dynamics, Bank Indonesia needs to further reinforce price stability and financial system stability by implementing a policy mix, utilizing interest rate, exchange rate, macroprudential, and foreign capital flow management policies that focus on systemic risk.

Going forward, a new paradigm is needed for the central bank in which it takes into account indicators of financial system stability in the formulation of monetary and macroprudential policies through an integrated inflation targeting framework regime. This is driven by the effect of monetary policy on risky behavior in the financial sector, and the impact of vulnerabilities in the financial sector on the effectiveness of the transmission process and the attainment of price stability, such that financial system stability has to be the second target of central bank policy.

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