Chapter 11

Policy Mix Case Development

Solikin M. Juhro

Abstract This chapter describes the development of case study on the implementation of the policy mix. It describes underlying problems faced by the central bank after the GFC. It specially examines the linkages between monetary and financial stability—including the interaction among variables and different policy objectives—and the source of shocks and its implication on such linkage. It also seeks to analyze the policy strategy in mitigating the risks of macroeconomic imbalances amidst uncertainties.

Keywords Policy mix • Case study • Macro-financial model • Policy simulation

Introduction

Learning Objectives

The case study attempts to examine the existence of linkages between monetary and financial stability, including: (i) the interaction among macro variables (real sector, monetary sector and financial sector) and between two different policy objectives (e.g. monetary stability and financial stability); (ii) the source of pressures (shocks) and its implication on the linkage between monetary stability and financial stability. It also seeks to analyze the policy strategy in mitigating the risks of macroeconomic imbalances, amidst high global economic uncertainties, such as ones which emerge during the episodes of capital inflows and outflows, as well as to understand the integration between monetary and financial system stability frameworks and its possible implication on the change in central bank mandate.

S. M. Juhro (✉)
Bank Indonesia, Jakarta, Indonesia

Target Audience

Central bank or monetary authority officials who have had at least five years' work experience in the field of policy analysis, such as formulating or implementing monetary policy, financial stability policy, macroeconomic analysis, or other related areas.

Key Issues

There are three key issues in this case, namely: the nexus between monetary stability and financial stability; whether they are the two mutually supportive (complementary) or do they work against each other (substitute) in the sense of a trade-off?; source of pressures affecting the linkage between monetary stability and financial stability, as well as the work of monetary policy transmission mechanism; and policy strategy to align the achievement of monetary stability and financial stability objectives or known as policy mix.

Case Description

The case is about the examination of some policy perspectives on the linkages between monetary stability and financial stability, including its dynamic interaction, source of pressures, policy strategy, and institutional implication. Participants are requested to explore the feasibility of utilization of some policy instruments in order to mitigate the risks of macroeconomic imbalances, using the standard macroeconomic model which is operated using Microsoft Excel software. Participants will be given advanced readings, content/scope/structure of the case study, and leverage to accomplish the case exercises within the allowed time. Policy exercises and discussion on the answers will be given by participants during presentations.

Identification of the Case

Case study combines factual and fictional studies.

- (a) Factual experience of Indonesian economic experience: economic developments, challenges, and policy responses. The timeline is 2000 until 2012.
- (b) Factual and fictional narration of some macroeconomic challenges (external shocks), possible policy responses, and possible economic outcomes. The timeline is 2013.

Associated with point (b) above, there are two conditions encountered as the impact of external shocks (e.g. the dynamics of capital flows) on domestic economy.

- (a) First, normal condition (without feedback loops). A condition with a normal surge of capital inflows, which is in accordance with the latest trends. In this condition, it is assumed that there is no change in the risk perception/behavior in the financial markets.
- (b) Second, abnormal condition (with feedback loop), a condition with a fairly massive and tend to be persistent capital inflows, which could potentially disrupt macroeconomic balance. In this condition, it is assumed that the risk perception in financial markets changed or worsened.

There are two scenarios related to policy exercises taking into account the utilization of policy instrument.

- (a) Baseline scenario.
- (b) Scenario with policy options. Under this scenario, several feasible policy instruments can be utilized under policy mix strategy, including interest rate policy, foreign exchange intervention, change in Reserve Requirement ratio (RR), and change in Loan to Value ratio (LTV). These instruments can be used partially (one instrument) or jointly (combination of several instruments).

Possible shocks include declining world economic growth, decreasing global interest rate, and change in domestic macro variables.

Supporting Evidence and Policy Issues

Country Economic Profiles: Indonesian economic profile and challenges amid high global economic uncertainties: maintaining internal and external balances and Chart Packs of Indonesian Economy. These materials are distributed separately.

There are several literatures that participants must read before examining the case.¹ Should the time allocated for the case study session rather limited, participants are suggested to read an article exploring related policy issues on the linkages between monetary stability and financial stability, e.g. “*The Linkages between Monetary and Financial Stability: Some Policy Perspectives*”, Juhro (2014).

¹ See Borio (2011), Committee on the Global Financial System (2010), De Nicolo et al. (2010), Moreno (2011), and Noyer (2010).

Activities

Participants are strongly recommended to read through some related materials/articles before the course. Since the time allotted for the workshop sessions is rather limited, advance reading will give Group participants extra leverage to accomplish the case exercises within the allowed time. During the workshop, participants will be divided into several Groups. Each Group should pick a Group leader. The assigned case facilitators will re-brief each Group on the content, scope and structure of the case study. During case study, there will be case study briefing, exercise (group work), group presentation, and wrap-up (takeaways).

Case Questions and Policy Exercises

Discuss with your Group to answers the following questions. You should use information provided.

- (a) How close are monetary stability and financial stability interlinked?
- (b) How do you compare the linkage between monetary stability and financial stability in pre and post Global Financial Crisis of 2008/09 (GFC) period?
- (c) What are the source of pressures (shocks) on the economy that could affect the linkage between monetary stability and financial stability?
- (d) What are the policy strategy for mitigating the risks of macroeconomic imbalances (internal and external) amidst high global economic uncertainties, e.g. during episodes of capital inflows and outflows?
- (e) What are the implication of monetary stability and financial stability linkage on the central bank mandate?

Base Line Policy Exercises

Background

During the recent annual banking dinner in December 2012, the Governor of Bank Indonesia (BI) explained some progress of Indonesian economy in the last few years. He indicated that Indonesian economic growth remains strong with an average of 6.0% in the last five years, showing resilience amidst sharp fall in export as a result of pressures from the global economic slowdown. Business climate is improving, while consistent fiscal discipline has led to a downward trend of external debt. One thing that is interesting is the fact that this episode of robust growth did not occur with rising inflation. This was evidently reflected from the declining trend of inflation. Meanwhile, financial sector in particular domestic bank remains in a good shape.

However, he stressed the importance of increasing awareness of the potential risks stemming from global economic uncertainty.

- (a) Moderating global demand, paired with rebalancing source of growth toward domestic demand has led to a widening current account (CA) deficit (since the last quarter of 2011 the CA balance recorded a deficit), but also posed potential risk emerged from the increasing inflation expectation.
- (b) On the financing side, reliance on external financing such as FDI and portfolio investment would be required. Although the surge in capital inflows during 2011–2012 has reflected positive sentiments of the global economy and the solid outlook of domestic economy prospect, this in turn would give pressure to rupiah exchange rate and financial system stability, in particular during periods of heightened risk aversion.

During the annual Board Meeting scheduled for the second week of the following month (January 2013), all Board members put a clear policy direction that the central bank's policy formulation should evaluate the strategic role of monetary policy and financial system at the same time. In this case, monetary policy formulation needs to be further directed to anticipate macroeconomic instability risk stemmed from financial system. Therefore, the Board is planning to explore various policy options for managing internal and external balance and to deliberate on an optimal policy mix for 2013.

As a group of independent advisors recently appointed by BI, your group has been invited to share views and insights on the appropriate policy stance for 2013.

Baseline Exercise 1: No Feedback Loop—No Shocks

Consider that Indonesian economy is facing a normal surge of capital inflows, which is in line with the latest trends. In this condition, it is assumed there is no significant change in the risk perception in the financial markets.

Your Group is equipped with:

- (a) Information on economic profile of the Republic of Indonesia 2008–2012;
- (b) A small economic model summarizing the transmission mechanism of monetary policy in Indonesia;
- (c) Assumptions on key exogenous variables; and
- (d) A case guide for policy exercise exploring the framework and related technical aspects in addressing the case, including the impact of various policy measures.

Based on the above information:

- (a) Is it a correct decision for BI to keep the level of benchmark interest rate (BI Rate) constant at 5.75%, given the expected increase in financial inflows and rapid growth in financial indicators (credit, stock price, bond price) in 2013?
- (b) Propose a policy recommendation on the appropriate interest rate policy stance that BI should implement to control inflation rate in 2013.
- (c) Should the effectiveness of interest rate policy be constrained by the persistent of capital inflows to the country, you may also consider another monetary instrument on the table, namely foreign exchange intervention (a sell or purchase). In this case, a sale (purchase) of foreign exchange will induce the Rupiah appreciation (depreciation) and have impact in reducing (increasing) banking sector's liquidity. It should be informed that, in normal circumstances (pressures on the exchange rate tend to be small), to meet the demand for the dollar in the market, BI intervened the market by selling foreign exchange of around USD 1–300 million per month. In the case of moderate pressures, the amount of intervention increased by approximately 300–600 million per month. Keep in mind that the size of intervention will depend on the availability of foreign exchange reserves. Many central banks are eager to have a sufficient stock of foreign exchange reserves to be a cushion in the event of external shocks.

It should be noted that, in accordance with the Rupiah stability mandate of the BI, your target is to maintain inflation target in the range of 4.5% - 6.5% ($4.5\% \pm 1\%$), so as to boost market confidence on monetary authority's commitment to achieving the internal balance. On the financial stability front, there is a growing thought that BI should consider conducive financial sector environment – reflecting the manageable pressures in the banking sector, stock market and bond market - measured by a composite index of Financial Pressure Index (FPI) that empirically stands at around 105 – 110. Moreover, you should consider real GDP growth could be maintained at around 5.5%-6.0% and current account deficit not to exceed 3.0%.

- (a) Discuss the viability of achieving those targets, using only interest rate policy and/or foreign exchange intervention, given the transmission mechanism of monetary policy in Indonesia.
- (b) What sort of monetary and financial stability linkage and policy implication has your Group observed from this baseline exercise?

Baseline Exercise 2: With Feedback Loop—With Shocks

In the midst of lingering global uncertainties, it is feasible to consider that Indonesian economy is facing a condition with a fairly massive and (tend to be) persistent capital inflows, which could potentially disrupt macroeconomic balance, such as excess liquidity in domestic markets, less competitive exchange rate, and increasing inflation pressures. This condition will potentially change (worsen) risk perception in financial markets. Worsening risk perceptions in financial markets will reduce capital inflows and aggravate pressures in the financial sector. This mechanism shows us that even excessive capital inflows can induce macro-instability (imbalance) and thus give a negative feedback loop on the prospect of capital inflows.

During their deliberation in January 2013, the Board of Governor decides to adopt your Group's interest rate policy (plus exchange rate intervention) recommendation. However, before the subsequent Board Meeting scheduled for April 2013, the global economy is hit by a major unfavorable news during the third week of May 2013.

As reported, in a prepared speech to Congress in Washington, Fed Chairman Ben Bernanke initiated a dovish tone. He said that a highly accommodative stance will remain appropriate. However, he did hint that a scaling back of quantitative easing (QE) measures could happen "in the next few meetings" if the Fed sees a sustained improvement in the economy.

Immediately after the announcement, some emerging market countries (including Indonesia) subsequently experienced sharp reversals of capital inflows, resulting in sizable currency depreciation. Capital inflows to emerging economies peaked in January 2013, slowed in the first half of 2013, and sharply reversed in the months immediately following Chairman Bernanke's May comments. Thailand, Malaysia and Indonesia were particularly hard hit by capital outflows after Bernanke's comments, as investors bet on higher rates in the United States, as the Fed to begin reversing its low interest rate policies. This could lead to the increase in global interest rate. The global consensus forecasts released by a credible international organization projects that in the short-term world interest rate will rise by 0.25–0.5% p.a. This increase may lead world economic growth to decline by 0.25–0.5% p.a.

With this scenario:

- (a) First consider that the impacts of global interest rate shock and global growth shock can be transmitted through financial channel and trade channel, respectively or simultaneously.
- (b) Re-answer the questions as in the previous regime (Baseline Exercise 1). Are these answers different from the previous "no-feedback loop—no shock" regime, especially in terms of the impact on monetary and financial stability linkages and "the magnitude" policy response needed?

Exercises with a Menu of Monetary and Macroprudential Policy Mix

Policy Mix Exercise with Feedback Loop—With Shocks

It is realized that considering the complexity of the problems encountered, the use of monetary instruments is not enough to cope with a variety of issues, especially in the financial sector. The use of monetary instrument alone will increase the cost of the policy.

During the tranquil time before the global shocks, the Board of Governor members, asked your Group to recommend a policy mix, in addition to monetary policy instruments (the interest rate policy and foreign exchange intervention).

The design of policy mix should optimally integrate monetary and macroprudential policy instruments. Of particular interest is the feasibility of implementing a mix of policies containing interest rate adjustment, foreign exchange rate intervention, the reserve requirement (RR) and the loan to value ratio (LTV).

Although the existing law limits BI's mandate to maintaining price stability, the Board is of the opinion that financial stability is very important in order to preserve macroeconomic stability, so as pre-empting excessing risk taking in the financial system is an important complementary goal for the BI. The Board members are confident that for such risk taking behavior, if left unregulated, may prompt endogenously driven shocks in the domestic financial system that may in turn affect monetary stability. The consequence of this is that the BI policy strategy should be based on the use of monetary and macroprudential policy instrument mix.

As the global shocks unfold, BI contacts your Group, requesting for immediate policy advice. One of the Board member specifically asks your Group to provide a recommendation on the appropriate policy mix to ensure that in 2013, internal and external balances will be well manageable. This means that:

- (a) Inflation rate will not reach 6.5%;
- (b) The Financial Pressure Index (FPI) should stand at around 105–110;
- (c) GDP growth will be maintained at around 5.5–6%;
- (d) Current Account deficit will not go above 3% of GDP.

Responding to this request:

- (a) Can your Group arrive at a combination of policy instruments to achieve monetary and financial stability targets? In formulating your Group's policy mix recommendation, carefully consider results of your exercises or policy perspectives, as indicated in the case guide

- (b) Does your Group observe policy trade-offs (conflicts in achieving policy objectives)? Can you arrive at a satisfying policy mix for those multiple wishes?
- (c) What would be your “first-best” advice to the Board? In this case, your Group may consider other policy aspects/tools beyond the scope of this exercises (given policy instruments available), such as communication strategy, policy coordination, etc.

Guide for Policy Exercise

The Model Structure and Feedback-Loop Mechanism

To help the participants answer the questions, we provide a tool for understanding the relationship among economic variables in the system, i.e. a small macroeconomic model of Indonesia. The model consists of six blocks, i.e. Aggregate Demand, Aggregate Supply, Price, Monetary, Financial, and External (Fig. 11.1). In the model, variables are classified into endogenous and exogenous. Here policy variables (blue-colored) are assumed to be exogenous. The policy variables are policy rate (BI rate), foreign exchange intervention, reserve requirement (RR), and loan-to-value (LTV). Other exogenous variables, including the shocks, are yellow-colored. Meanwhile there are two types of endogenous variables, i.e. one that is represented by behavioral equation (green-colored) and one that is represented by identity equation (light blue-colored). Detail explanation on the model can be read at Appendix (distributed separately).

In a more complete picture, the model structure describing relationship among economic variables in these blocks can be depicted below (Fig. 11.2).

In this case study, feedback loop refers to loop from disrupted macroeconomic balance (as implication of massive and persistent capital inflows) to reduced capital inflows and pressures in the financial sector, that works through worsening macro risk perception. Meanwhile there are two shocks, those are increase in world interest rate and decline in world economic growth. Linkages between variables in both “no feedback loop” and “with feedback loop” are shown in Figs. 11.3 and 11.4.

The impacts of central bank policy using a variety of instruments available are as follows (Figs. 11.5, 11.6, 11.7 and 11.8).

Fig. 11.1 Model block. *Source* Bank Indonesia

The Exercises

In this policy exercise, the participants are requested to explore feasibility to implement some policies, using either (only) monetary policy instruments (interest rate policy and/or foreign exchange intervention) or policy mix of monetary policy and macroprudential policy [interest rate policy, foreign exchange intervention, the reserve requirement ratio (RR), and the loan to value ratio (LTV)].

Fig. 11.2 Model structure. *Source* Bank Indonesia

Fig. 11.3 No feedback loop. *Source* Bank Indonesia

Fig. 11.4 With feedback loop. *Source* Bank Indonesia

No Feedback Loop

With Feedback Loop

Fig. 11.5 Policy rate. *Source* Bank Indonesia

Fig. 11.6 Foreign exchange intervention. *Source* Bank Indonesia

Fig. 11.7 Reserve requirement. *Source* Bank Indonesia

Fig. 11.8 Loan to value. *Source* Bank Indonesia

(a) Baseline policy exercises

This exercises are intended to explore various policy options for managing internal and external balance. The participants are requested to:

propose a policy recommendation on the appropriate interest rate policy to control inflation rate, given the expected increase in capital inflows and rapid growth in financial indicators, and (ii) should the effectiveness of interest rate policy be constrained by the persistent of capital inflows, consider foreign exchange intervention.

The participants are also requested to discuss the viability of achieving BI's targets, i.e. to maintain inflation target in the range of 4.5–6.5% and Financial Pressure Index (FPI) that stands around 105–110, using only interest rate policy and/or foreign exchange intervention.

There are two cases, namely:

- Baseline exercise 1—no feedback loop—no shocks
- Baseline exercise 2—with feedback loop—with shocks.

(b) Exercises with a menu of monetary and macroprudential policy mix

In addition to monetary policy instruments, i.e. interest rate policy and foreign exchange intervention, the participants are also requested to consider a policy mix. It is integration of monetary and macroprudential policy instruments, consisting of interest rate policy, foreign exchange rate intervention, the reserve requirement (RR) and the loan to value ratio (LTV).

There is one case, namely:

- Policy mix with feedback loop—with shocks

In this exercise, the policy mix is intended to achieve internal and external balances, i.e. inflation rate will not reach 6.5%, Financial Pressure Index (FPI) should be around 105–110, the GDP growth can be maintained at around 5.5–6%, and the CA deficit will not go above 3% of GDP.

How to Do the Exercises

To do the exercises, the participants should do several steps as follows.

Firstly, do the baseline (No Policy) scenario for 2013. In doing this, participants can simply put (or change) values of policy variables and some exogenous macroeconomic variables (e.g. potential output, world economic growth, and world interest rate) in the Dashboard. A ‘feasible’ value of variable can be calculated using standard statistical approaches, such as averaging and trending (of its past values). For possible values of policy variables participants may also assume a “status quo”, whereby there is no change in policy stance.

Secondly, participants can simulate the model by putting different values of shocks originating from exogeneous variables and then adjust initial policy variables to response the shocks.

Thirdly, participants can further simulate a policy mix (changes in some policy variables)

Participants should pay close attention that by putting new values of these variables, the model will recalculate its equilibrium. Macroeconomic variables and financial indicators are linked to other parts of the model. Therefore, please do not change the cells as they consist of formulas.

The dashboard

Variables	Sequence of transmission	2010	2011	2012	2013										Actual
					No Feedback Loop			With Feedback Loop							
					No Policy	With Policy		No Policy	With Policy						
						Bi Rate	Bi Rate + Fx Intv.		Bi Rate	Bi Rate + Fx Intv.	RR	Bi Rate + RR	Bi Rate + RR + Fx Intv.	Bi Rate + RR + LTV	
Policy Variables															
Policy Rate (Bi Rate, %)	9														
Reserve Requirement (RR, %)	9														
Loan To Value (LTV, %)	9														
Forex Intervention (in millions USD)	9														
Macroeconomic Variables															
GDP (%)	4a														
Domestic Demand	4a														
Export of goods and services	3a														
Import of goods and services (-/+)	3a, 4b														
Potential Output															
CPI Inflation (%)	5b														
Exchange Rate (%)															
Nominal Exchange Rate (appr.-/)(depr.+)															
Real Exchange Rate (appr.-/)(depr.+)	2a														
Balance of Payment															
CA to GDP (%)	3b														
Capital & Financial Account (CF, in mills USD)	1, 8														
Monetary Aggregates															
Broad Money (M2, in trillions Rp)	2b														
Net Foreign Assets (in trillions Rp)	2b														
Financial Indicators															
Credit Growth (%)	3b, 6a														
Bond Yield (10 y, %)	6a														
Stock Price (index)	6a														
Financial Pressure Index (FPI)	6b														
Macro Risk Perception	7														
External Variables (Shocks)															
World GDP (%)															
LIBOR (3 months, %)															

Notes Macroeconomic variables and financial indicators are linked to other sheets. Please do not change the cells as they consist of formulas. We can change values of policy variables and other exogenous variable (potential output). We can simulate the model and exercise some policies, either monetary, macroprudential, or policy mix. By putting new value of policy variables, the model will recalculate its equilibrium and the results will be shown in other parts of the Dashboard. We can also simulate the model by putting different values of shocks (world economic growth and world interest rate)

References

- Borio, C., 2011. Rediscovering the Macroeconomic Roots of Financial Stability Policy: Journey, Challenges and A Way Forward. *BIS Working Paper*, Volume 354.
- Committee on the Global Financial System, 2010. Macroprudential Instruments and Frameworks: A Stocktaking of Issues and Experiences. *CGFS Papers*, Volume 38.
- De Nicola, G., Dell’Ariccia, G., Laeven, L. & Valencia, F., 2010. Monetary Policy and Bank Risk Taking. *IMF Staff Position Note*, Volume SPN/10/09.

- Juhro, S. M., 2014. The Linkages between Monetary and Financial Stability: Policy Perspectives and Case Study. *BI Occasional Paper*.
- Moreno, R., 2011. Policymaking from a “Macroprudential” Perspective in Emerging Market Economies. *BIS Working Papers*, Volume 336.
- Noyer, C., 2010. *Monetary Policy and Macroprudential Policy*. Rome, BIS.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits any noncommercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if you modified the licensed material. You do not have permission under this license to share adapted material derived from this chapter or parts of it.

The images or other third party material in this chapter are included in the chapter’s Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter’s Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.