BANK INDONESIA

STRENGTHENING MONETARY POLICY FRAMEWORK IN INDONESIA:

FLEXIBLE INFLATION TARGETING FRAMEWORK

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Strengthening Monetary Policy Framework in Indonesia:

Flexible Inflation Targeting Framework

Directorate of Economic Research and Monetary Policy

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Authors

Juda Agung
Endy Dwi Tjahjono
Solikin M. Juhro
Sahminan
Akhis R. Hutabarat
Rizki E. Wimanda
Diah Esti Handayani
Tevy Chawwa

Foreword

The implementation of Inflation Targeting Framework (ITF) in Indonesia is entering its seventh year. Since its implementation in 2005, ITF has been through a number of arduous challenges. Beginning with the mini crisis in 2005, followed by the global crisis in 2008 and up until the episode of post-crisis massive capital inflow that ended with pressure of capital outflow due to uncertainty in the Euro area in 2011. Looking ahead, monetary policy to control inflation in the Indonesia's economic system, that is increasingly more integrated globally, will continue to face challenges. Externally, global uncertainty will affect domestic economic conditions and taint the flow of capital, which could intensify the risk of financial system stability. Domestically, inflation is still faced with problem of limited supply and high inflationary pressures stemming from the volatile food prices. Institutionally, the separation of banking supervision function by establishing a new Financial Services Authority forced Bank Indonesia to redesign its monetary policy framework in order to remain effective. Confronting these challenges, a study into refining and strengthening the inflation targeting framework in Indonesia is especially pertinent and timely.

The outcome of a review on ITF implementation in Indonesia noted a number of key achievements such as more organised monetary policy management coupled with an improvement in quality pursuant to best practices, theories and empirical conditions in Indonesia. In this context, compared to conditions prior to the implementation of ITF, several positive developments have been recored in terms of setting and announcing inflation target, formulating institutional and operational framework, policy coordination as well as the quality of policy analysis and research. Some substansial improvements of fundamental aspects have been also recorded, which distinguish the benefits of inflation targeting from other policy frameworks, which are institutional maturity, clear policy signals and improved policy credibility.

However, attainment of the inflation target, which constitutes the overriding objective of the central bank, has not been as easy as expected. Various structural shocks on the supply side that have occurred in recent years caused inflation exceeds its target in 2005, 2008 and

2010. Difficulty in achieving the inflation target was attributable to structural constraints on the supply side that cause inflation in Indonesia tends to be persistent and fluctuate. Furthermore, failure to hit the inflation target was also due to complex issues in the monetary and financial sectors faced by Bank Indonesia.

The global financial crisis provided valuable lessons for monetary policy. *First*, in an open economy, monetary and the exchange rate policies face various challenges, necessitating an appropriate instrument mix. *Second*, the global crisis reinforce the belief that price stability should remain the overriding objective of monetary policy. However, the global crisis also taught us that maintaining low inflation is insufficient to achieve the goal of macroeconomic stability. A handful of crises over the past decade have suggested that the majority of macroeconomic instability stems from financial sector.

Against this backdrop, a central bank will effectively maintain macroeconomic stability if it has the capability to control the behaviour of financial sector as a whole.To this end, ITF needs to be enriched by taking into account the dynamics of the financial sector. The basic substance that can be drawn from such exposure relates to the importance of risk management in the monetary and macroprudential policy framework by considering tail risks that could have significant adverse impacts on the economy. *The third* is a need to clearly determine the role of the exchange rate in ITF.

Although fundamentally ITF is still reliable as a monetary policy strategy in Indonesia, motivated by some of the problems outlined above, Bank Indonesia deemed it necessary to strengthen its monetary policy framework by refining the future application strategy of ITF. This also represents an answer to the growing demands of stakeholders for Bank Indonesia to enhance its credibility in terms of achieving the inflation target. For that reason, the review of ITF implementation in Indonesia also provides justification for the introduction of flexible ITF as an ideal format for the Indonesian economy. In this book, a particular analysis on the role of financial system stability and exchange rate policy, not merely strategically but also operationally, is presented.

One of the most fundamental issues that require attention is the formulation of post-crisis monetary policy strategy, for which Bank Indonesia is requested to strengthen financial system stability in order to ensure that the economy and financial system remain under stable conditions from a macroeconomic and financial sector standpoint. Changing or emphasizing the central bank's mandate to preserve financial system stability has consequences on complicating

policy governance. Therefore, the format of Bank Indonesia's mandate to contemporaneously maintain monetary and financial system stability need to be formulated precisely, in particular related to efforts in formulating the optimal integration of monetary and macroprudential policy mix.

In harmony with the issues presented above, this study has formulated and crystallised ideas in order to construct a flexible inflation targeting framework, both from strategic and operational level as well as institutional. The publication of this book is expected to strengthen the references used in the monetary policy making process at Bank Indonesia, and underpinned by good policy governance. Delivering the hard work of the authors, I hope that this book will further open our mind and benefit the wider community at large.

Jakarta, October 2011

Directorate of Economic Research and Monetary Policy

Perry Warjiyo
Director

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Chapter

1

Overview

The Journey of ITF: Successes and Challenges

The implementation of Bank Indonesia Act No. 23/1999 has brought fundamental changes in the formulation and implementation of monetary policy in Indonesia.[1] The Act provides a strong legal foundation for a modern central bank, mainly through clarity of objective and good governance principles in monetary policy making. Act No. 23/1999 Article 7 states a clear objective for Bank Indonesia, namely to achieve and maintain the stability of Rupiah. To achieve the objective, Bank Indonesia is granted three core mandates, i.e. to formulate and implement monetary policy, to regulate and supervise banks, and to manage the payment system. The Act lays down a strong foundation of Bank Indonesia's independence, in terms of instruments and institutional independece, at the same time the act specifies accountability and transparency.[2]

With its objective to achieve stability of currency and independence in achieving the objective, the Act provides a basis for Bank of Indonesia to implement inflation targeting framework (ITF). Prior to 2005, however, Indonesia merely adopted some form of inflation targeting regime, with inflation target annouced to the public but it remain to use base money as the operational target. The monetary base targeting was also required as one of conditionality imposed under the IMF program after the Asian crisis. The so called inflation targeting lite is essentially eclectic and incorporate some, but not all, of the key features of inflation targeting

1 It was then amended twice by Act No. 3/2004 and Act No. 6/2009.

2 This is different from previous central bank act. In Act No. 13/1968 on Central Bank it is stated that the task of Bank Indonesia is to assist the Government in achieving some goals (multiple objectives); (i) manage, maintain, and preserve Rupiah stability , and (ii) encourage smooth production and development and expanding employment opportunities to improve living standards. The task of Bank Indonesia as the "Government servant" has been translated into the existence of the Monetary Board, chaired by the Minister of Finance, with members of the Governor of Bank Indonesia and the Ministers in the economy.

(Stone, 2003). Post IMF program and amendment of central bank act in 2004 gives a clearer framework where Bank Indonesia pursues an inflation target set by Government. Since 2005, Indonesia has adopted full fledge inflation targeting.

So far the adoption of full fledge inflation targeting produce a mix outcome. A review of implementation of ITF in Indonesia have given a conclusion that while the implementation of ITF have strengthened the policy framework and credibility of the central bank, the challenges to improve inflation performance remain (Juhro et al., 2009). With an explicit inflation target, a more transparent decision making process, a better policy coordination, and improve research quality, the framework has recorded some significant outcomes, namely (i) institutional strengthening of the monetary policy decision-making process; (ii) clear monetary policy signals that affect inflation expectations; and (iii) increased policy credibility.

From institutional perspective, ITF implementation has improved decision making process of monetary policy based on good governance principles in public policy making. This has been demonstrated by more transparent policy-making processes, the independence in decision-making process, and public accountability in the achievement of inflation target. Bank Indonesia has changed from inward to outward oriented organization.

In term of clear policy signals, through a gradual learning process supported by intensified public communication, the ITF has worked well in strengthening the transmission of monetary policy through expectation channel. Public understanding to monetary policy has improved significantly since then. Announcement of policy rate is always big news for the market, lead to acceleration of monetary policy transmission. This is in contrast to the condition prior to ITF implementation, Bank Indonesia's policy target of base money could not be understood by the markets. Monetary policy credibility also improved. Regular surveys by BI have shown that a signiciant improvement in public inflation expectation which initially more *backward looking* to become more *forward looking*. This has reduced inflation persistence.

Despite the progress, the challenges in effective implementation of ITF remain. First, supply side shocks such as oil and food price shocks occurred in recent years led to BI miss the target in 2005, 2008, and 2010. In 2005 and 2008, inflation soared to double-digit as a result of fuel hike.[3] Meanwhile, 2010 inflation slightly above the target as the impact of rising global commodity prices and adverse weather condition that created pressures on volatile food prices. Supply constraints in the economy, such as inefficiency, lack of infrastructure and energy constraints led to the economy is easily overheated during the upswing. This is also exacerbated

Table 1.1.
Actual and Target Inflation

Year	Inflation Target (CPI)	Inflation Realization (CPI)	Core Inflation	SBI Rate	Affecting Factors
2005	6 ± 1	17.1	9.7	9.17	Global shocks and fuel price increase in March and October 2005
2006	8 ± 1	6.6	6.03	11.83	
2007	6 ± 1	6.6	6.29	8.56	
2008	5 ± 1	11.06	8.29	8.67	Fuel price hike (May 2008)
2009	4.5 ± 1	2.72	4.09	6.5	
2010	4.5 ± 1	6.39	4.29	6.5	International commodity price increase and adverse weather condition
2011*	5 ± 1	4.1	4.4	6.0	

*) Projection Figure.
Source: Bank Indonesia

by the imperfect market structure of major commodities which result in inflexible supply responses to a change in demand side.

Second, the structural excess liquidity in the financial system has led to complexity in monetary management. Under such excess liquidity, the policy rate is sometimes ineffective in monetary transmission process. This is especially intensified during the period of capital inflows as shown in the recent surge of capital inflows. The FX intervention by Bank Indonesia to avoid excessive appreciation has led to additional liquidity in the system which must be absorbed by Bank Indonesia to avoid asset bubble and future inflationary pressure. Of course, Bank Indonesia's sterilized intervention is not without consequences, given the considerable monetary operating costs incurred which affects Bank Indonesia's balance sheet performance.

Third, the source of macroeconomic instability often comes from the financial system. The financial system is inherently procyclycal that magnify macroeconomic fluctuations. Procylicality in the Indonesian financial sector is even more pronounced in the region (Craig, et all). The procyclical is not only from the interaction result between business cycle and financial cycle, but also influenced by risk-taking cycle; a behavior characterized by overoptimism during upswing and excessive risk averse during the downturn.

The question is then how far the existing monetary policy framework is able to overcome structural problems aforementioned. Basically, the main objective of monetary policy should

3 Fuel hikes occured in 2005, in March by around 30% and in October by around 96%. Meanwhile, another fuel hike occured in May 2008 by around 33%.

remain to focus on achieving price stability or low inflation. The problem is that when it is faced with the above challenges, the standard ITF monetary policy framework is not effective. For instance, in the standard ITF, (policy) interest rate is the only instrument of monetary policy to influence the inflation target though its effect on output gap and inflation expectation. However, in an open economy, the rise of interest rate is often not effective because it will further encourage increased capital inflows which increases liquidity in the economy. Without sterilization, the increase in liquidity will encourage inflation and asset bubbles, affecting the financial system stability. Therefore, other new instruments should be used to avoid the dilemma faced by central bank.

The Need to Strengthen Monetary Policy Framework

Although basically the ITF is still reliable as a monetary policy strategy in Indonesia, Bank Indonesia considers that it is necessary to strengthening the monetary policy framework by improving the application of the ITF strategy in the future. This is also for responding a higher demand of the stakeholders in order to enhance Bank Indonesia's credibility in achieving the inflation target. Efforts to strengthen the monetary policy framework should consider the key challenges aforementioned and lessons from the recent global crisis for the monetary policy framework.

The global financial crisis provides some important lessons for strengthening monetary policy framework. *First*, in an open economy, monetary policy and exchange rate face many challenges, so the instrument to be used should be of instrument mix. Mix of policy instruments allows Bank Indonesia to overcome various dilemmas faced by. In facing the capital flows, exchange rate needs to be managed in a flexible way and also maintained so as not to decline far from the its fundamental value since this could endanger macroeconomic stability. At the same time, foreign reserves accumulation is strongly needed as anticipating strategy, given the short-term capital flow is highly vulnerable to the risk of reversal. On capital flows policy, with the free foreign exchange regime still in tact, some macro prudential policy options can be implemented to overcome procyclical excessive capital flows, especially the very short term and volatile ones. On the monetary policy, the complexity of monetary policy using interest rates can be partially resolved by implementing quantitative monetary policy. Besides, macro prudential policy aimed at maintaining financial system stability can be done to deal with the risk of economic bubbles.

Second, the global financial crisis strengthen a believe that price stability should remain the main objective of central bank's monetary policy. However, the global financial crisis also gives a lesson that maintaining low inflation is not enough to achieve macroeconomic stability objectives. A number of crises occurred in recent decades have suggested that macroeconomic instability mostly resulted from financial system. Financial markets which always inherently characterized with imperfections have created excessive macroeconomic fluctuations. Therefore, the key in managing macroeconomic stability is not only on a good control on the imbalance of goods (inflation) and external (balance of payment), but also on an imbalance in the financial sector, such as excessive credit growth, bubbled asset price, and the cycle of risk taking behavior in the financial sector which is highly vulnerable to changes in perception.

In that context, central bank will maintain the macroeconomic stability in an effective manner, having the ability to control the behavior of the financial sector as a whole. In this regard, ITF needs to be enriched by taking into account the dynamics of the financial sector. A basic substance can be drawn from such exposure is the one related with the importance of *risk management* within monetary policy and macro prudential frameworks by considering tail risks which could cause a detrimental impact on the economy.

In line with this thought, basically ITF is still reliable as a monetary policy strategy in Indonesia. Mishkin (2011) confirms asserts that in theory, the ITF policy framework which is oriented to the achievement of low inflation and implemented with a better transparency is surely relevant to the monetary policy objectives to achieve price stability. Referring to the overall evaluation of 9 (nine) principles of monetary policy, including the ITF, which has become such a consensus before the crisis, Mishkin (2011) concluded that *"none of the lessons from the financial crisis in any way undermines the nine basic principles of science of monetary policy"*.[4]

Third, it is clearly needed to put the role of the exchange rate within ITF. In an ITF-based monetary policy framework, free floating exchange rate system is the optimal choice in a single economy. This policy direction should be taken sisnce this exchange rate system will act as a shock absorber to the economy. However, the exchange rate in the global integrated financial markets moving seems to move differently from the assumption used. In this case, the dynamic of exchange rate changes more dominant influenced by investor's risk perceptions in global

4 The nine principles of monetary policy are: 1) inflation is always and everywhere a monetary phenomenon; 2) price stability has important benefits; 3) there is no long-run tradeoff between unemployment and inflation; 4) expectations play a crucial role in the determination of inflation and in the transmission of monetary policy to the macroeconomy; 5) real interest rates need to rise with higher inflation, i.e., the Taylor Principle; 6) monetary policy is subject to the time-inconsistency problem; 7) central bank independence helps improve the efficiency of monetary policy; 8) commitment to a strong nominal anchor is central to producing good monetary policy outcomes; and 9) financial frictions play an important role in business cycles.

financial markets, which encourage a high intensity of short term foreign capital movement, if compared to the influence of fundamental factors.

A Proposal to Strengthen the Framework: Flexible ITF

In response to the need to strengthen the framework, this study aims to formulate the new framework both at strategic, operational, and institutional levels. The key features of the new framework are as follows.

1. **Inflation Targeting as a basic strategy of monetary policy**

   The policy framework continues to adhere to an inflation target as the overriding objective of monetary policy. The main characteristics of ITF will remain, namely that the inflation target is announced publicly and that monetary policy is forward-looking, transparent and clearly accountable. However, ITF as implemented in a number of countries is flexible. Bank Indonesia must not only look at the inflation target merely in terms of policy formulation but also consider a number of other factors, including financial sector stability and supply factors.

2. **Monetary policy and macro prudential integration to achieve the overall macro economic stability**

   Under a new inflation targeting policy framework, monetary and macroprudential policy would be integrated in order to guarantee macroeconomic stability. According to this paradigm, financial factors play a crucial role in the transmission of monetary policy through the corporate balance sheet channel, bank balance sheets as well as the risk-taking behaviour of banks and firms (Satria and Juhro, 2011; Agung 2010). Macroprudential policy is instituted in order to overcome short-term capital flows, manage liquidity in the domestic economy and mitigate the risk of instability in the financial system.

3. **The role of exchange rate and capital flows management within monetary policy framework to achieve price stability**

   Differing from standard ITF where the exchange rate is exogenous, under this framework the exchange rate is managed to play a role in achieving price stability. In emerging market countries with an open capital account and a free-floating exchange rate regime, shifts in the exchange rate are oftentimes affected by exchange rate volatility, which is not necessarily related to economic fundamentals. Allowing capital flows to move in line with market

mechanisms precipitates exchange rate volatility and misalignment risk, which can undermine macroeconomic stability. Consequently, the exchange rate must be managed in order to support price stability. Determination of the exchange rate path should be made, consistent with the achievement of the inflation target and macroeconomic stability. The optimum "possible trinity" solution should be sought to see the relations between the optimal stabilization of exchange rate policy and capital flows management, and the implications on reserves sufficiency.

4. **Strengthening Bank Indonesia and Government policy coordination to controlling the prices and maintaining monetary and financial system stability**

   Policy coordination is crucial considering that inflation stemming from the supply side creates the majority of inflation volatility. Also, the more limited economic capacity and infrastructure constraints of the implementation of the program requires the implementation of an integrated policy strategy among policy authorities. In addition, policy coordination can be done in a broader perspective to controlling capital flows with considering characteristics of capital inflow which is sensitive to the shock of reversal issue.

5. **Strengthening monetary and macro prudential policy communication as part of policy instruments**

   Monetary policy communication is no longer for the sake of transparency and accountability, but further as a monetary policy instrument which plays an important role. In a

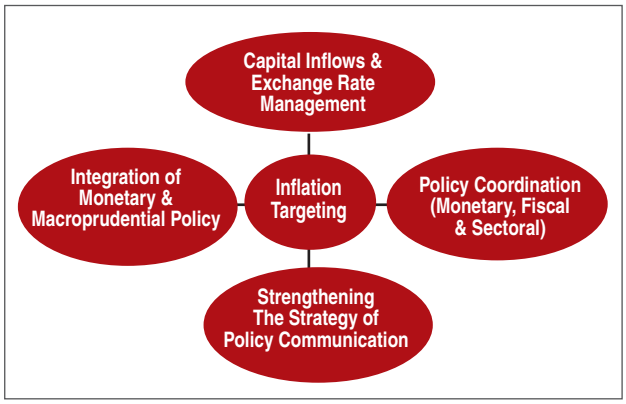

Diagram 1.1.
Basic Elements of *Flexible* ITF

communication, policy is designed to move the public and market player's expectation, reduce uncertainty, absorb the 'noise', and increase the predictability in order to reducing financial markets' volatility, and also providing public insight about the objectives of monetary policy, monetary policy's framework and operational framework, and monetary policy transmission.

By referring to the five elements, the achievement of *overriding objectives of ITF and Flexible ITF* is substantially the same, namely inflation target. The main difference related to the meaning of "flexibility", which is flexible in putting the financial system stability framework with the implementation of monetary policy - macro prudential mix instrument; flexibility in placing the role of exchange rate management strategy; and institutional capacity building to optimizing the role of coordination and communication policies. The differences can be seen in the following Diagram.

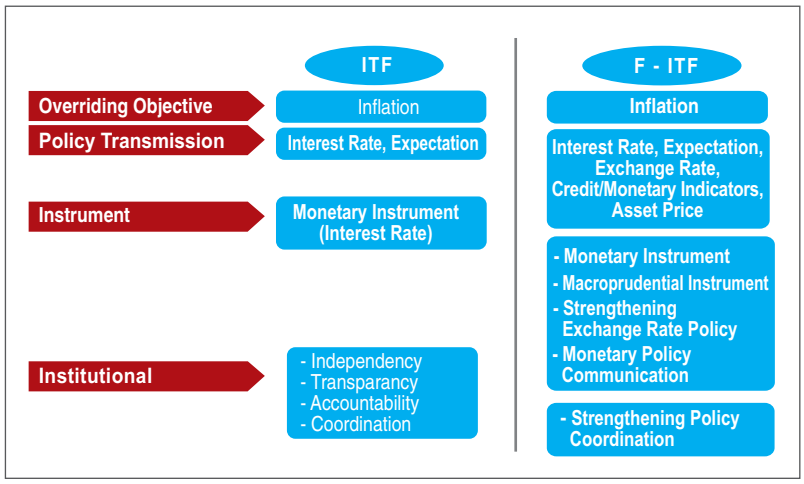

Diagram 1.2.
Difference between ITF and *Flexible* ITF

Related to the above difference, one of the most fundamental substance which needs attention is when formulating monetary policy strategy after the crisis, Bank Indonesia is required to further strengthen the financial system stability to ensure the economy and financial system are in a stable condition both in macro economic and financial sectors. Shifting or emphasizing

of central bank's mandate to maintain financial system stability has consequences on the complications of policy governance.[5] For this, the format of Bank Indonesia's mandate to maintain monetary and financial system stability needs to be synergically formulated, mainly related to efforts to formulate the optimal integration of the monetary macro prudential policies. In this regard, referring to some thoughts and empirical observations, the optimal policy integration format still refer to the main considerations that the policy implemented will not contradictory to the achievement of medium and long term inflation target.

This study consists of six chapters. Chapter 1 contains an overview. In chapter 2 we discuss the characteristics and dynamics of inflation in Indonesia, inflation target design and whether asset prices could be included in the measurement of price stability. Chapter 3 describes strengthening the exchange rate and capital flow management framework, which also talk about the determination of the exchange rate path and how the exchange rate policy would impact on monetary policy operation, capital flows, and international reserves. Chapter 4 discusses on strengthening monetary and financial system stability frameworks, including financial behavior, the integration of monetary and macro prudential policies and policy instrument mix to be used in Flexible ITF. Chapter 5 focuses on coordination framework and communication strategy. This research will be closed by alternative formulation of Flexible ITF design which incorporates strategic and operating policy frameworks, and institutional framework.

5 Unlike the policy governance format on monetary sector which has been commonly understood as the on going application of the ITF, policy governance format on financial system stability is not fully understood.

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Chapter

2

Inflation Control as A Monetary Policy Target

2.1 Characteristics and Dynamics of Inflation in Indonesia

2.1.1 Characteristics of Inflation

Indonesia's inflation has unique characteristics as it remains at a high level for the past two decades. Excluding crisis periods, average inflation was 8.2% accompanied by high volatility (standard deviation). In fact, after eliminating the impact of structural shocks the trend of high inflation does not change as reflected by an average level of 7.6%. However, since the implementation of Inflation Targeting Framework (ITF), core inflation has followed a downward trend with an average of 6.6% (Table 2.1). This implies that in the event of a supply side shock

Table 2.1 Disaggregated Inflation

Periods		CPI			
		Headline	Core	Administered	Volatile Food
Pre-Crisis (1990:04-1997:07)	Average	8.3	8.4	8.2	8.8
	Std. Deviation	*1.9*	*1.9*	*5.5*	*4.0*
Post-Crisis (2000:01-2010:12)	Average	8.2	7.2	12.7	8.7
	Std. Deviation	*4.1*	*2.1*	*11.3*	*7.4*
Pre-ITF (2000:01-2005:06)	Average	7.9	7.7	15.0	4.5
	Std. Deviation	*3.7*	*2.1*	*8.6*	*6.7*
ITF (2005:07-2010:12)	Average	8.5	6.6	10.4	13.0
	Std. Deviation	*4.4*	*1.9*	*13.1*	*5.3*
Total (excl. Exchage Rate Crisis)	Average	8.2	7.6	11.0	8.7
	Std. Deviation	*3.4*	*2.1*	*9.8*	*6.3*

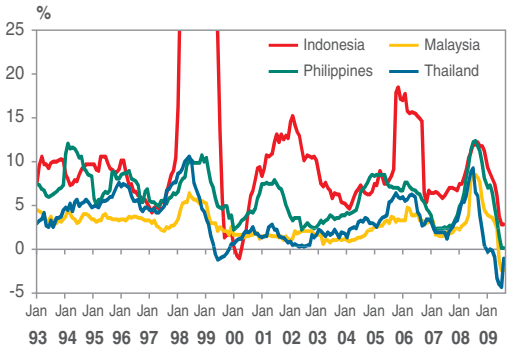


Figure 2.1
Comparison of Regional Inflation

and with no meaningful change on the demand side, CPI headline inflation will tend to move towards core inflation. Meanwhile, when compared to other neighbouring countries (Thailand, Malaysia, Singapore and the Philippines) inflation in Indonesia is considered high (Figure 2.1).

The phenomenon of prolonged high inflation, even after removing shocks from the equation, indicates that Indonesia's inflation has high persistence. A very persistent inflation can be interpreted as a relatively stable percentage changes in price. In other words, prices tend to rise periodically by a relatively similar percentage. High inflation persistence also makes inflation unresponsive in terms of returning to its long-term level after experiencing a shock. Conversely, low persistence allows inflation to quickly return to its long-term equilibrium.

A number of researches at Bank Indonesia have found that core inflation is highly persistent.[6] High inflation persistence in Indonesia is in line with the higher level of inflation recorded in the country compared to the majority of other countries in the region. Indonesia's inflation persistence is affected by a number of factors. *First,* inflation leading up to the festive period of Idul Fitri normally rises by 0.6-0.8 percentage points (yoy). *The second factor* stems from price mark-ups through exchange rate bands in order to anticipate exchange rate

6 Alamsyah (2008) calculated inflation persistence in Indonesia at 0.8-0.9. By adopting a formula from Gujarati (2003) inflation persistence of 0.8-0.9 implies that in the event of a shock then 50% of the shock will be absorbed within 4-9 months with the remainder being absorbed as inflation returns to its average long-term normal level. The timeframe required to absorb 50% of the shock is calculated using a mean lag ?/(1-?), where ? is the degree of persistence.

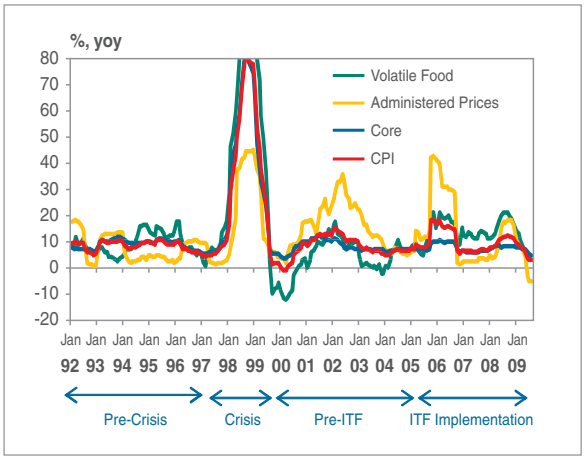


Figure 2.2
Decomposition of Inflation in Indonesia

depreciation and volatility. When exchange rate depreciates, this factor adds an additional 0.05-0.1 percentage points to annual inflation. Furthermore, the annual increase in the minimum wage, which refers more to the minimum living requirement and is generally higher than headline inflation, raises retail prices persistently each year. However, if wage increases are fully passed on to retail prices then the increase is expected to be around just 0.01 percentage points due to the small portion of labour costs in cost and price structure. Other factors also contribute to high inflation persistence stemming from food price volatility, which is followed by asymmetric price setting. In addition, a persistent periodic increase in overhead costs will also contribute to inflation persistence.

Notwithstanding, the degree of inflation persistence has declined since the crisis in 1997.[7] More volatile headline inflation in post-exchange rate crisis of 1997 can explain this decline in inflation persistence. Subsequently, inflation volatility has also escalated during the ITF period compared to the pre-ITF period (2000-2005). Mounting volatility originated from greater volatility on a number of inflation determinants, including rupiah exchange rate, administered price (particularly fuel prices), and volatile foods price. In this context, the decline in inflation persistence stemmed from a decline in extrinsic persistence.

7 Using the NKPC model (New Keynesian Phillips Curve), Alamsyah (2008) found a lower level of inflation persistence after the crisis. This decline in the degree of inflation persistence is in harmony with a research conducted by Yanuarti (2007).

As an example, rupiah exchange rate was more fluctuated after the exchange rate crisis in line with the introduction of a free-floating exchange rate regime. Prior to the crisis exchange rate expectations were always in the form of expectations of depreciation. Conversely, after the crisis economic players occasionally expected the exchange rate to appreciate. The exchange rate during the period from 2005-2010, after ITF was officially implemented, tended to be more stable and stronger except during the global crisis in 2008.

The price of fuel, which is used as a raw material by manufacturing sector, also fluctuated due to fuel subsidies' discontinuation coupled with global oil price that not only soared but also saw prices tumble from time to time. Historically, rising oil prices have always been followed by a decline in energy prices, which affects the volatility of fuel costs incurred by producers and, in turn, is passed on to consumer commodity prices. The frequency with which subsidised fuel prices increased also decreased during the post-crisis period. Similarly, the regularity of periodization also declined, among others due to a delay in realisation. For example, subsidised transportation fuel prices have not increased since October 2005. Prior to the crisis in 1997, fuel prices for industry and transportation were fully subsidised. Consequently, periodic price hikes were more consistent and, thus, easier to predict by economic players.

The volatility of volatile food prices also intensified after the exchange rate crisis. Contributing factors include weather anomalies, which triggered extreme precipitation and shifted the growing season, thereby disrupting food production.

Another contributing factor to the decline in inflation persistence relates to the hypothesis of less dependence on past inflation due to the proclivity of economic players to be backward looking when setting prices (less intrinsic persistence). This adaptive behaviour changes to price setting that refers to future price expectations (forward looking). Furthermore, a decline in this type of persistence is hypothesised to reflect an improvement in Bank Indonesia credibility in terms of guiding inflation expectations towards Bank Indonesia's target corridor set by the government[8] (greater expectations-based persistence).

Besides due to high persistence inability to achieve low and stable inflation was primarily attributable to large shocks in domestic economy. These shocks emerged on the supply side

8 Harmanta (2009) tested this hypothesis using Kalman filter approach. In harmony with the implementation of ITF, Kalman gain parameter experienced an increase from around 0.2 during the period before ITF (July 2005) to 0.4 after the implementation of ITF (Table 2.1). This increase is considered a reflection of improved monetary policy credibility. The results of this research are congruent with the research conducted by Siregar and Goo (2008), which indicated that inflation inertia in Indonesia declined for tradable and non-tradable goods after the implementation of ITF. Economic agents tended towards more forward-looking behaviour in terms of inflation, which is further corroborated by the research findings of Solikin (2004), Yanuarti (2007) and Alamsyah (2008).

and food distribution (adverse supply shock), volatile foods inflation, as well as price policy set by the government that affects administered price inflation.

In addition to non-fundamental type of inflation that is reflected by shocks, controlling fundamental type of inflation also faces a number of constraints. Core inflation is not merely determined by the interaction between demand and supply and inflation expectations. Core inflation is also affected by a) imported inflation through rising prices of imported raw materials and consumption goods, both through inflation in trading partner countries and global commodity inflation; b) exchange rate pass-through to inflation; c) higher production costs for goods and services due to second-round effect of administered inflation; and d) higher production costs for goods and services due to second-round effect of volatile food inflation through food commodities that are included in core inflation basket.

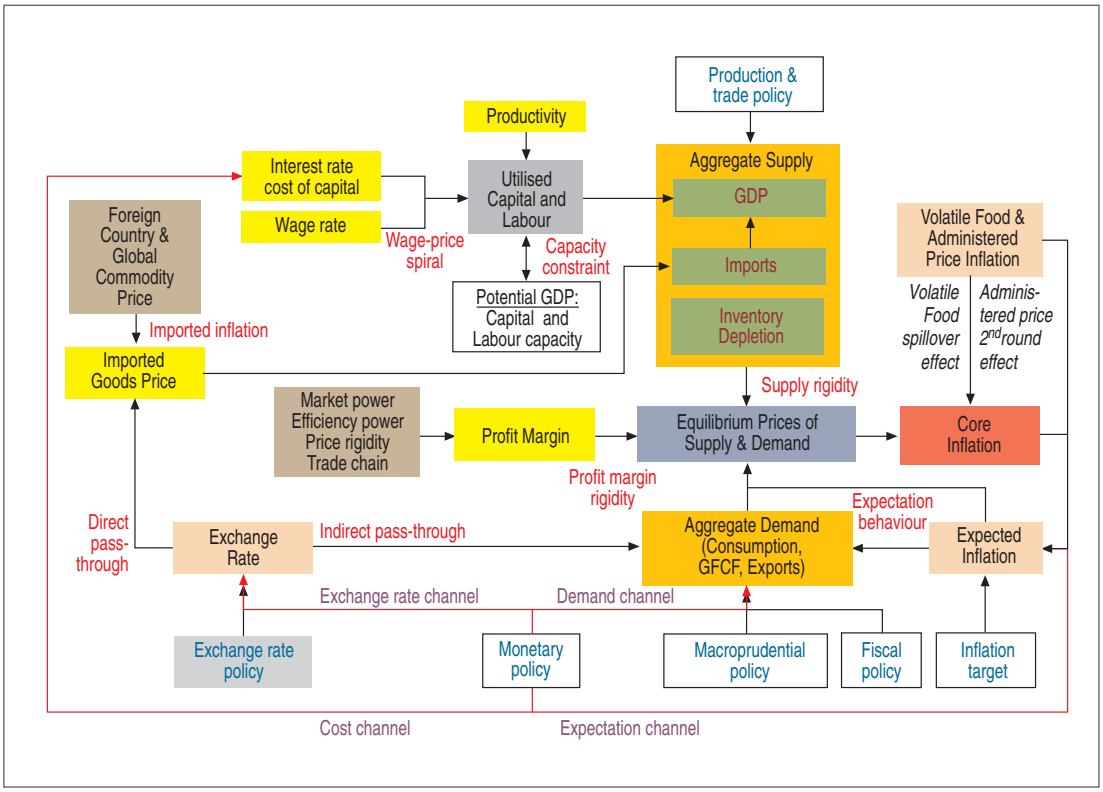


Diagram 2.1
Determinants of Core Inflation

Core inflationary pressures stemming from the interaction between demand and supply of goods and services are determined by several factors. *First* is the growth of consumption of goods and services. *Second* is supply side ability to satisfy increased consumption by boosting domestic economic capacity and availability of imports. *Third* is an increase in average costs incurred to meet additional demand, for example higher labour costs due to additional hours worked or higher unit costs due to investment in fixed-capital goods. *Fourth* is producers' and traders' market power, which affects the pass-through of higher costs to prices. *Fifth* is producers' and traders' market power that affects the response of increasing profit margins on supply constraint to meet additional demand. *Sixth* is the response of producers and traders to changes in price elasticity of demand. *Seventh* is the effect of stronger demand for goods and services on wages through interaction between labour demand and supply. *Eighth* is the effect of macroeconomic policy, for instance interest rate policy, liquidity control, exchange rate, macroprudential policy, banking policy and taxation, on inflation through demand and cost channel.

Meanwhile, core inflationary pressures that stem from inflation expectations are not only affected by the realisation and expectations of core inflation, but also by expectations of rupiah depreciation, the performance and expectations of volatile foods and administered goods inflation as well as government's inflation target. The dominance of shocks on domestic inflation has a second-round effect through inflation expectation channel, which ultimately determines core and headline inflation.

Table 2.2. City Weighting by Region in the Calculation of National Inflation

Regions	Weights
Sumatera	19.30%
Kalimantan	6.25%
Sulampua	7.11%
Bali-Nustra	3.11%
Jawa (excl. DKI Jkt)	41.74%
DKI Jakarta	22.49%
Total	100.00%

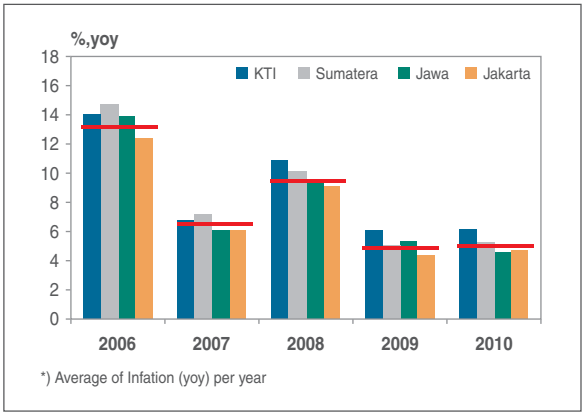


Figure 2.3
Comparison of Intra-Regional Inflation

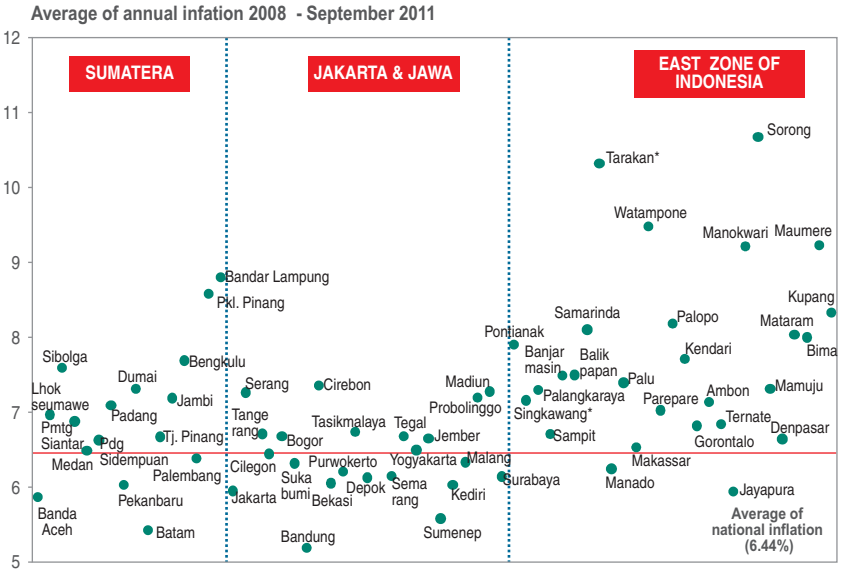


Figure 2.4
Distribution of Inflation

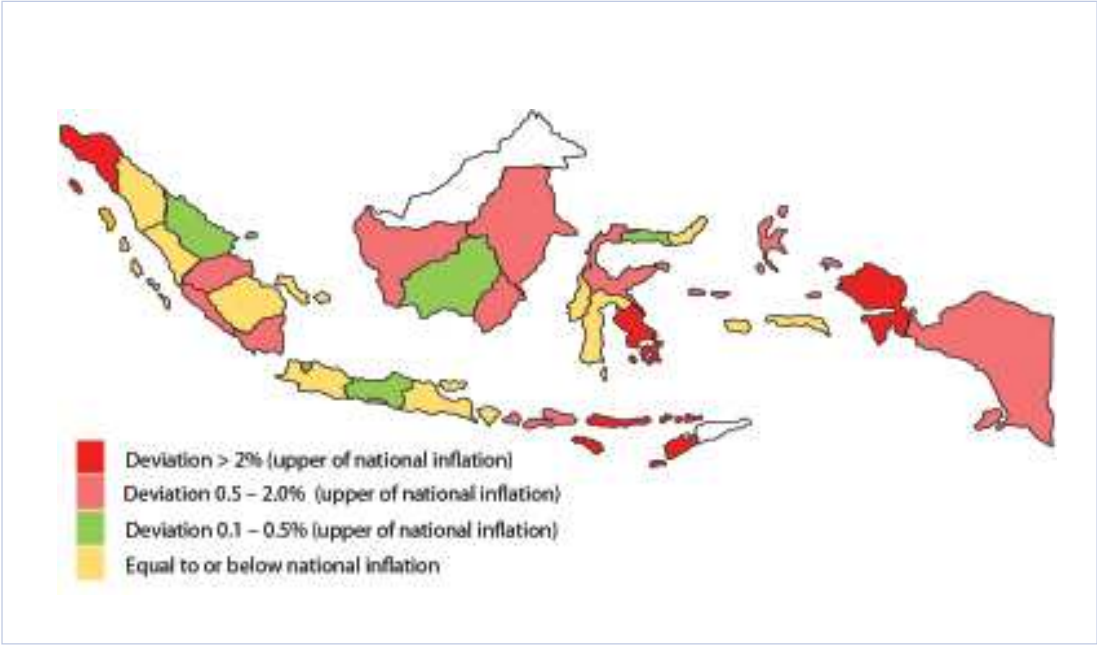


Figure 2.5
Distribution of Headline Inflation by region after the Introduction of ITF

Regarding national inflation control, the portrait of regional inflation is critical. Statistically, national inflation is a weighted average of regional inflation across the country.[9] In fact, regional inflation (excluding Jakarta) accounts for a 77.5% weighting in the total household consumption basket.[10] Issues relating to supply and distribution are often the cause of rising prices in many areas. As a consequence of sub-optimal intra-regional linkages amid an intra-regional supply dependence, regional inflation is particularly vulnerable to supply-side shocks.

Regional economic characteristics coupled with geographic conditions affect inflation behaviour in each region. A decomposition of inflation based on region shows that inflation in Sumatera and most of Eastern Indonesia is often above national inflation. In addition, intra-regional inflation variability remains high at around 2-3%.[11]

9 The number of cities used as a basis for calculating inflation is based on the 2007 Cost of Living Survey and amounts to 66 cities.
10 The weighting of regional inflation based on the 2007 Cost of Living Survey increased compared to the 2002 survey, which totalled 72.3%, in line with the decline in Jakarta's weighting as a result of additional cities surveyed. In general, it can be concluded that regional inflation plays a significant role in the calculation of national inflation.
11 Wimanda (2006) also found that regional inflation, in terms of aggregate and sub groups of goods and services, is not converging towards the national level. This finding is possibly due to a difference in each regional economic structure, which leads to systematic differences in each respective regional inflation.

Based on decomposition of commodities, the condition of high inflation in Sumatera and most of Eastern Indonesia relative to national inflation occurs for all groups of commodities, including food and non-food commodities. In general, intense inflationary pressures in Sumatera are due to local economic growth structure, which relies on consumption. Different conditions are found in Sulawesi, Maluku, and Papua (Sulampua) where inflationary pressures dominantly stem from food commodities, thereby reflecting inflation that originates more from supply side. Conversely, non-food commodity inflation in this region is actually relatively low compared to the national average for the same commodity group.

Table 2.3.
Decomposition of Regional Inflation

Regions	2008	2009	2010
Food Inflation			
Sumatera	15.51	3.74	12.27
DKI	14.15	6.91	11.75
Jawa	13.82	5.53	11.68
KTI	16.46	6.60	12.30
NASIONAL	14.56	5.65	11.69
Non-food Inflation			
Sumatera	8.07	1.52	4.23
DKI	9.82	0.29	3.62
Jawa	8.36	1.10	3.47
KTI	8.87	1.86	4.17
NASIONAL	9.02	1.14	3.84

High inflation on food commodities in a number of regions is primarily caused by high dependence on intra-regional supply, particularly processed food from Java. This is due to the relative concentration of food production in Java**.** In addition, protracted supply chain together with the role played by local distributors and middlemen (collectors) dominate price setting mechanism for food commodities. Likewise, geographic conditions in Indonesia, compounded by low intra-regional connectivity, leave the distribution of goods vulnerable to disruptions.

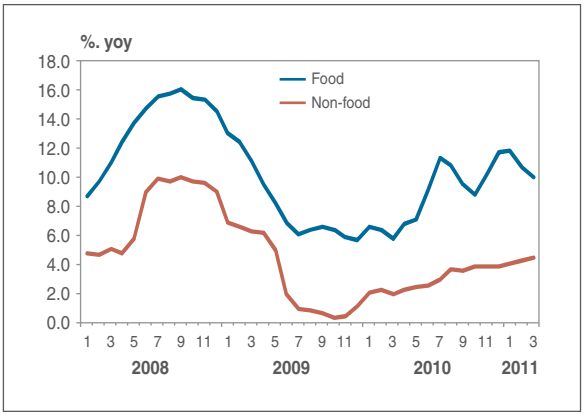


Figure 2.6
National Food and Non-food Inflation

2.1.2 Interaction between Supply and Demand

a. Supply-side response to demand

The hypothesis of a limited supply-side response to a stronger demand (structural rigidity and capacity constraints) has been discussed, among others, in two Bank Indonesia's research papers.[12] These research papers respectively observe the curve of consumer inflation versus GDP gap and the curve of consumer prices against real GDP. Based on the fact that the curve is steepening, these researches concluded that after the 1997 crisis, domestic production (GDP) became more limited in its response to upsurges in demand. However, domestic supply-side rigidity has improved since the crisis. This can be observed from the curve of core inflation against GDP, which is slightly less steep. This improvement in rigidity is due to dominant contribution of service production activities, for instance communications subsector, on GDP growth. Core inflation is following a downward trend due to the contribution of lower inflation on services as well as stable core inflation on tradable non-food goods at a low level.

The hypothesis of limited economic capacity in Indonesia is based on a number of constraints on the supply side, including microstructural constraints. The constraints primarily consist of inefficiencies and high-cost economy, lack of harmonisation between local and central

12 Refer to "Kondisi Sisi Penawaran dan Implikasinya pada Tekanan Inflasi" (Supply-Side Conditions and their Implication on Inflationary Pressures), Economic Report on Indonesia 2009, pages 98-100, and "Tingkat Kekakuan Kurva Penawaran Sebelum and Sesudah Krisis Moneter" (Supply Curve Rigidity before and after the Monetary Crisis), Box A of Indonesian Economic Outlook 2006-2010, July 2006 edition, pages 30-32.

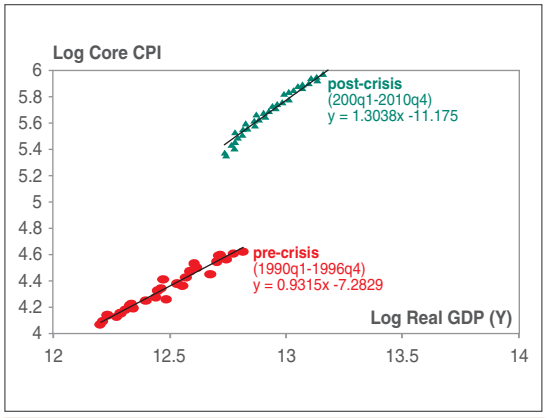


Figure 2.7 Core Inflation vs. Real GDP (pre and post 1997 crisis)

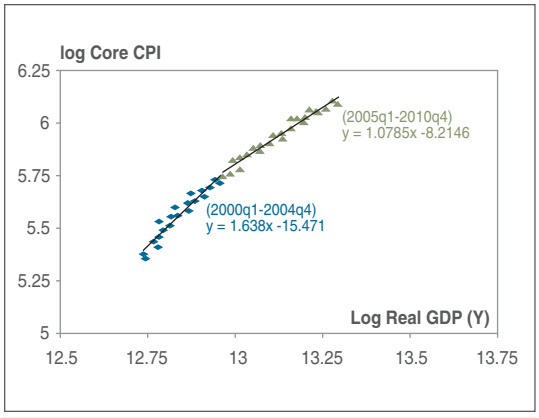


Figure 2.8 Core Inflation vs. Real GDP (post 1997 crisis)

regulations, inadequate infrastructure and energy supply, as well as low-skill level of labour force. These constraints can affect the sustainability of economic outlook and stability of macroeconomic conditions, as well as undermining the relative competitiveness of Indonesia in the region. Such conditions have an impact on policy to stimulate demand. There are concerns that loosening monetary policy under such capacity constraint would trigger higher inflation.

The conclusion of domestic supply-side rigidity in response to demand, based on changes in the steepness of the curve of price vs. output, is based on the assumption that the main determinants of inflation in Indonesia are demand-pull inflation. However, the price vs. GDP curve, which becomes steeper, does not necessarily indicate that supply cannot satisfy offset causing producers raise prices and increase their profit margins. Rising cost-push inflation can also make the price vs. GDP curve steeper. Output price inflation, which rises as a result of higher marginal cost, or due to weaker competition, can reduce demand for production output and input, thereby undermining GDP growth.

Several indicators provide insufficient support for the assumption or hypothesis that demand-pull inflation is a primary determinant of inflation in Indonesia. These indicators constitute a price setting mechanism survey for 2001 and 2009, estimated output gap, the contribution of demand induced inflation determinants on the assessment of realised monthly and annual inflation, manufacturing capacity utilisation rate, and profit margin rigidity to interaction between supply and demand.

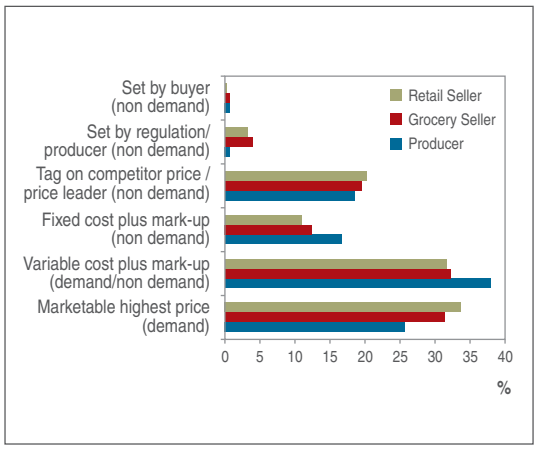
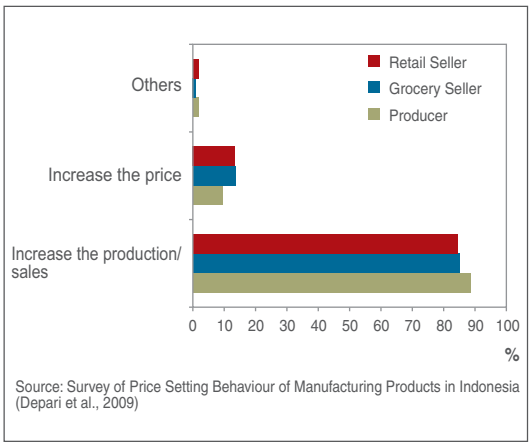


Figure 2.9
Manufactured Product Price Setting at the Producer and Trader Level



Source: Survey of Price Setting Behaviour of Manufacturing Products in Indonesia (Depari et al., 2009)

Figure 2.10.
Response of Producers and Traders in Anticipation of Stronger Demand

Based on a survey of methods to set prices used by producers and traders, demand factors seem to be the main determinants of price setting. The majority of producers, wholesalers and retailers surveyed in 2009 used a method of cost-plus-flexible-margin to determine their prices (Figure 2.9). This method provides room for firms to reduce (increase) their margin when demand wanes (strengthens). However, the largest choice on the price setting method does not necessarily illustrate price flexibility to demand conditions. The survey in 2009 also found that the majority of producers and traders respond to stronger demand by increasing production or sales rather than raising prices (Figure 2.10). Weaker demand is also more commonly responded by reducing production or sales rather than cutting prices. This indicates that stronger demand can still be fulfilled by the supply side, thus factors of limited supply to meet demand are not a main determinant of higher prices.

The most chosen option on price-plus-flexible-margin method makes producers and traders willing to sacrifice a part of their profits when costs rise amid weak demand. However, the majority of producers and traders who responded to the survey proportionally passed on production costs increases to retail prices in accordance with cost structure. This shows the ability of producers and traders to maintain their profit margins, while simultaneously demonstrating lack of a dominant influence demand has on price changes.

Indications of capacity constraints in response to demand were not observed from price setting survey data. Production problems were the largest constraints (52%) faced by

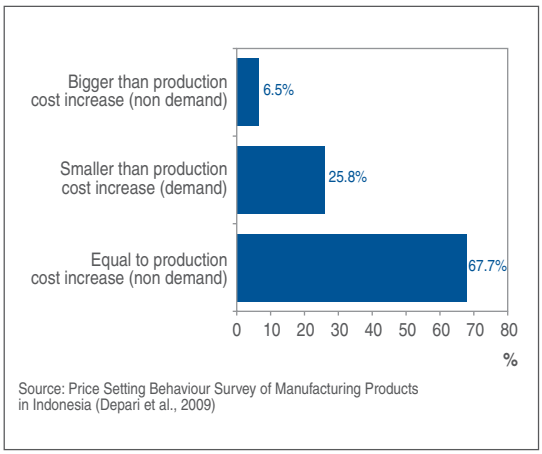
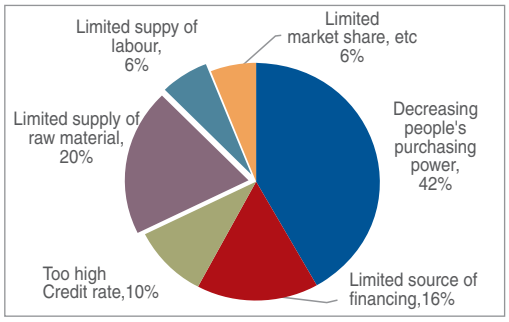


Figure 2.11. Behaviour of Producers and Traders when passing on production costs to Retail Prices

producers when raising production and sales turnover (Figure 2.11). However, of the factors mentioned that restrict production, only half are actually real technical constraints of limited physical production, namely difficulties in obtaining or increasing the supply of raw materials and labour force. The other factors stem from financing issues and excessively high lending rates. Another binding constraint (48%) to increasing sales is demand and limited market share. Constraints to sources of financing, high interest rates and limited demand require a corresponding policy response, for example by expanding credit growth and reducing interest costs.[13]

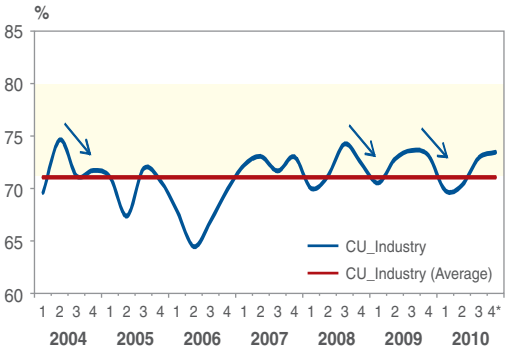
Production capacity indicators from the production survey and business survey do not support the hypothesis of structural rigidity in manufacturing sector. Both surveys reveal that industrial capacity utilisation, which is approaching 75%, is responded to by additional production capacity investment. Consequently, capacity utilisation in main industrial subsectors during 2010 was maintained in the range of 70-80%.[14] In addition, the correlation between capacity utilization rate and inflation at producer level (GDP deflator) is in opposite directions, as observed by negative coefficient correlation.[15]

13 The results of this 2009 survey are in line with the similar survey conducted in 2002.
14 Refer to the materials of Macroeconomic Assessment for Monetary Policy Meeting, October 2010 - March 2011. Survey of manufacturing industry in Indonesia in 2009 revealed an average utilization ratio of 75.8%. Only 29% of firms maintained a ratio in excess of 90% and only processed foods, beverages and cigarettes industries that utilised above 90% of their capacity. Furthermore, correlation between capacity utilization rate and inflation at the producer level (industry GDP deflator) is in opposite directions, as observed by negative coefficient correlation.
15 The correlation between capacity utilization rate and GDP deflator for utilities sector (electricity, gas and clean water) is also negative but positive for mining sector, albeit low.



Source: Price Setting Behaviour Survey of Manufacturing Products in Indonesia (Depari et al., 2009)

Figure 2.12.
Constraints to Boosting Production



*) Preliminary figure
Source: Business Activity Survey, BI

Figure 2.13.
Level of Manufacturing Capacity Utilisation

An assessment of realised monthly inflation over a number of years showed that inflationary pressures from the GDP gap remained limited or minimal in line with satisfactory supply-side response to stronger demand. The effect of interaction between demand and supply, in general, is smaller than other determinants of inflation like disruptions to production and distribution, rising administered prices, global commodity prices, and inflation expectations. An annual evaluation of the contribution of inflation determinant using a post-mortem analysis also drew the same conclusion. Meanwhile, rising inflation during the festive period leading up to Idul Fitri is not considered as the inability of supply to meet demand but the result of profit-taking activity by traders. The Price Setting Mechanism Survey of 2002 (Darsono et al., 2002) found that rising prices during these specific periods was not due to limited supply but the result of weaker elasticity of demand on price changes.

Notwithstanding, limited supply in response to stronger demand can occur in the agricultural sector in line with the decreasing area of productive land as a result of land conversion to non-agricultural uses. The decline in capacity from the conversion of productive land must be offset by greater production from unused land as well as enhanced productivity. How to raise the level of production on increasingly limited land requires the use of superior seeds, more sophisticated crop management as well as more advanced seed research and cropping techniques (Leksono, 2011). The ability of production to meet future demand will be determined by the success of government programs to raise agricultural productivity, consisting of: a) applying new agricultural technology like the System of Rice Intensification (SRI) and

intercropping; b) allocating subsidised fertilizers; and c) introducing new varieties. Inflationary pressures stemming from agricultural production capacity constraints can be offset by imported supply if supported by low inflation on international commodities and low global inflation as well as a strong exchange rate.

Despite potentially limited land capacity, inflation on agricultural commodities is affected more by cropping/harvest cycles and natural factors (weather/season) that affect actual production and stock availability, as well as distribution factors, which tend to be inefficient (Prastowo et al., 2008).[17] Trader's speculative behaviour also contributes to rising domestic food prices, as indicated by widened price difference between producer and consumer price levels.

Capacity constraints in fulfilling demand may stem from the lack of infrastructure capacity that is required to support production and distribution, i.e. road network and electricity. Lack of infrastructure capacity can also create inflationary pressures because additional capacity requires additional time for investment.

In general, inflationary pressures that originate from interaction between demand and supply more commonly stem from limited production in certain sectors rather than stronger demand. However, such interaction can still lead to excess demand condition.

b. Wage spiral inflation

In broad terms, the transmission of wage adjustment to retail prices occurs in industrial sector. This is indicated by the causality of wages increases on manufactured goods and inflation based on a survey of price and wage setting (Cadarajat et al., 2008). The transmission of wage increases to retail prices is also evident in construction sector. Causality from wages to prices was identified in the sector due to the inclusion of several commodities in CPI basket, i.e. house rent that relates to property prices.

However, the survey also indicated that a hike in retail prices is not the main response taken by manufacturing firms in the event of higher wages. Firms prefer to improve efficiency as a preliminary step to maintain their profit level. Higher employee wages that are not fully followed by increased retail prices are affected by producers' price structure, which is influenced more by raw material cost.[17]

16 This differs from manufacturing sector where production declines, hence undermining capacity utilization, in general due to weak demand.
17 Based on the 2005 input-output table, labour costs for manufacturers account for 11% of total sales revenue. A hike in manufacturing wages by as much as headline inflation, for instance 6%, only raises the retail price of manufactured goods by less than 0.01 percentage points.

Two-way causality between inflation and wages was found for the period after the 1997 crisis. The response of higher wages on inflation occurs gradually and requires time to adjust. Inflation will be responded by higher wages through government policy to raise minimum wage or through a negotiation process after higher wages are demanded in order to maintain employee purchasing power. Higher wages, according to the survey, will elicit higher prices set by the firm, thus exacerbating inflationary pressures.[18] The wage spiral is stronger in the case of minimum wage increases because raising provincial minimum wage refers to minimum living requirement index that tends to mirror headline inflation.

A relatively high level of inflation undermines firm's ability to maintain low labour costs per unit of production (unit labour cost or ULC). Rising ULC will subsequently affect inflation in the following period (second-round inflation). High ULC growth is caused by real wage growth that exceeds productivity growth. Rapid wage growth is to some extent attributable to a higher cost of living. Nonetheless, wage growth that is not offset by increased productivity forces firms to raise retail prices, which is reflected by a rise in GDP deflator.

As a policy implication to stop and avoid wage-price spiral, Bank Indonesia and the Government are committed to reduce inflation stemming from factors other than labour costs. Inflation policy requires the support of sectoral policy to boost labour productivity and capital goods.

c. Profit margin rigidity to interaction between demand and supply.

Inflationary pressures from the interaction between demand and supply are also affected by profit margin flexibility to rising costs, which is influenced by the oligopolistic market structure found in Indonesia. Astiyah et al. (2004), in their research regarding the impact of liberalisation on the profit margin of manufacturing industry, found a strong market power of manufacturing producer due to high level of market concentration.[19] In this context, Kurniati et al. (2008) made similar estimations by dividing manufacturing industry into eight subgroups and adding a variable for cyclicality. The findings also showed a high level of manufacturing industry concentration in Indonesia.[20]

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18 The wage spiral does not affect farm labourers, hotels and mining. Wages in these sectors tend to be lower than inflation. In fact, real farmhand wages have declined since the beginning of 2009.

19 The concentration ratio of four firms (CR4) from 10 industry groups was in the range of 76-96%, which implies that the four largest firms control most of market share.

20 Around 60% of the industrial sector (based on 5-digit industry clarification code) had a concentration level in excess of 75% in 2005. High entry barriers to industry in Indonesia are responsible for such conditions.

Indications of a less flexible profit margin in absorbing part of the impact of higher production costs on prices can be observed from a shift in the intensity of using costs-plus-fixed-margin and costs-plus-flexible-margin methods to determine prices.[21] This indicates that producers are more able to fully pass on higher production costs to retail prices in line with production cost structure.

Astiyah et al. (2004) found indications of a less flexible profit margin in absorbing stronger demand or higher costs. They revealed interesting findings that the price-to-cost margin actually increased amid declining inflation on imported raw materials due to lower duties on imports as a result of trade liberalisation. Profit margin rigidity on demand alteration could also be observed by the difference between inflation at the producer level and that at the wholesaler and retailer levels. In this context, inflation on manufactured goods at retail level exceeded that reported at the wholesaler level after the crisis in 1998. Similar behaviour was also noticed in food crop sector. The differences in the price of rice at the farm level, grocer and retail levels were significant and expanding.[22]

2.1.3 Profit Margin, Price and Inflation

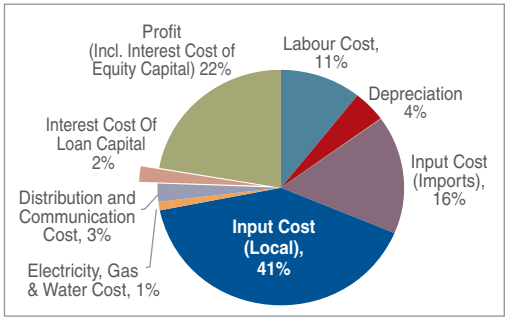
Profit margin is an important factor that affects price setting, which in turn influences inflation. Based on the structure of aggregate sales revenue generated by manufacturers according to the Input-Output table for 2005 (Figure 2.15), the total profit of manufacturers, which includes the interest cost of equity capital, reached 22%. Meanwhile, the interest cost of loan capital and leasing costs amounted to just 2% of total revenue. The small share of the interest cost of loan capital and high share of the interest cost of equity capital is congruent with a survey of businesses, disributors and retailers of manufactured products conducted in 2009, which found a small share of bank loans in production and investment financing.[23]

The profit margin described here does not take into account the margin of producers of intermediate domestic goods and services, which includes distribution and communications

21 By comparing price setting mechanism used in 2001 (Darsono et al., 2001) and 2009 (Depari et al., 2009) it was found that fewer manufacturing respondents used the costs-plus-flexible-margin method, down from 52.1% to 37.9%, opting instead for the costs-plus-fixed-margin method, up from 15.9% to 17.7%. Similar conditions were also found at the wholesaler and retailer levels. The composition of wholesalers using the direct costs-plus-flexible-margin method fell from 75.1% to just 32.2%, and for retailers the decline was from 64.4% to 19.5%.

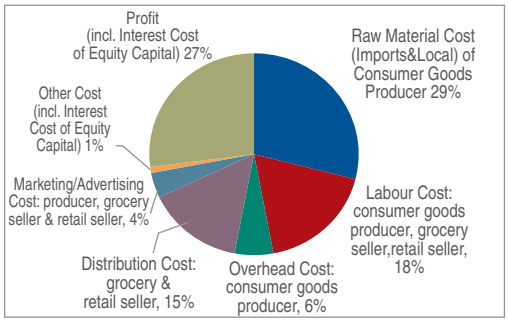
22 Shiroth (2011) conducted research recently and found evidence of profit margin rigidity to changes in demand conditions. The research investigated the degree of competition in food and beverage industry over the past two years (2009-2010), measured using Herfindahl index, which tended to decline followed by an upward trend in profit margin amid relatively stable efficiency.

23 The share of financing from bank loans amounted to 26.7% for producers and manufacturers, 15.3% for distributors and 12.4% for retailers. These findings are in line a number of previous studies, which concluded a growing reliance on internal funds (equity) used for corporate financing. According to the 2009 survey the share of equity (retained earnings and stock) in corporate financing reached 60.9% for producers, 78.4% for distributors and 81.1% for retailers.



Source: Input Output Table 2005, Statistic Indonesia (BPS)

Figure 2.14.
Revenue Structure of Manufacturing



Source: Price Setting Behaviour Survey of Manufacturing Products in Indonesia (Depari et al., 2009), processed

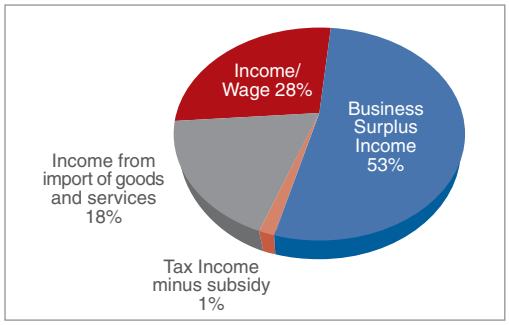
Figure 2.15.
Retail Price Structure of Manufactured Products

costs, the cost of utilities (electricity and gas), the cost of financial services and the cost of other domestic inputs, particularly raw materials. If these aspects are included in the calculation then the structure of consumer goods price will include labour cost, domestic and imported intermediate input cost and the profit margin of producers of domestic goods and services as the largest components.

The share of total profit margin inherent in the price of finished goods paid for by consumers is harmonious with the structure of GDP in Indonesia. According to the input-output table for 2005, gross value added in Indonesia is derived from the business surplus (53%), compensation for labour (28%), sales revenue from imported goods and services (18%) as well as tax revenues minus subsidies (1%). The capital share in developing countries tends to be larger than that in developed countries due to lower capital productivity and higher interest rates in developing countries.

Large profit margin share indicates strong requirement for retained earnings for fixed capital financing and working capital. This also illustrates the effect interest rates have on retail prices through interest cost of equity capital.[24] Transmission of interest rate to prices and inflation through interest costs of loan capital and equity capital is known as the interest

24 Corporate profit can be expresses as a return on equity, for which the ideal value exceeds the cost of equity capital. Given the same value of equity, a higher interest rates, which are used as a reference for capital costs (for example deposit interest rate), will increase return on equity and profit margin hence raises domestically produced goods' price.



Source : Input Output Table 2005, Statistic Indonesia (BPS), processed

Figure 2.16.
Supply Side GDP Structure

cost transmission channel, which its presence and magnitude is indicated in several Bank Indonesia research. The price puzzle phenomenon, coined by Eichenbaum (1992), refers to the finding of positive correlation between rising short-term interest rates and price level in the anomalous empirical findings of Sim (1992), which was also found for the case of Indonesia in Bank Indonesia research on monetary policy transmission through bank lending (Agung, 2001).[25]

2.1.4 The Behaviour of Inflation Expectations Formation

Inflation expectations represent a main transmission channel under the inflation targeting framework. The success of inflation targeting is reflected by actual inflation remaining within the target corridor and the strong relationship between the inflation expected by goods and services market players and its realisation. Some research on inflation expectations show that

25 The first generation small-scale macro-econometric Bank Indonesia projection model has already captured the weak effect of rising SBI rates on disinflation (Majardi, 2004). Likewise, the latest medium-scale macro-econometric models (SOFIE and SSMX) revealed low inflation sensitivity to a rising BI rate. A 100-basis point (bps) hike in BI rate, according to SOFIE and SSMX, will only reduce headline inflation by 2 and 4 bps respectively. The limited ability of policy rate to create disinflation is thought to be linked to the strong effect of interest income on household consumption (limited effect of real interest rate on substitution between household consumption and saving) as well as the effect of capital interest cost transmission channel on prices, which includes the interest costs of equity and loan capital. The effect of interest rate transmission through the interest cost of equity capital is also known as the effect of interest rate transmission through producer profitability channel. The presence of a direct interest cost channel in price setting is also evidenced by a survey of price setting mechanism (Darsono et al., 2002), which investigated producers' and traders' response to higher interest rates. The majority of survey respondents responded to a rise in interest rates by raising prices. Shiroth (2011) in a preliminary study of corporate profit margins found indications that lower interest rates lead to a lower gross profit margin. During the period from 2007-2010, a 50 bps decline in interest rate was followed by a 2.2% decline in gross profit margin.

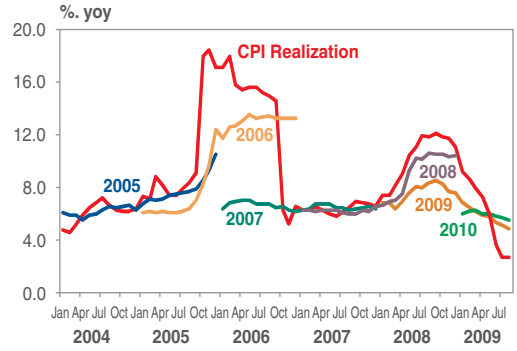


Figure 2.17. Evolution of Inflation Expectations and Realisation (Consensus Forecast)

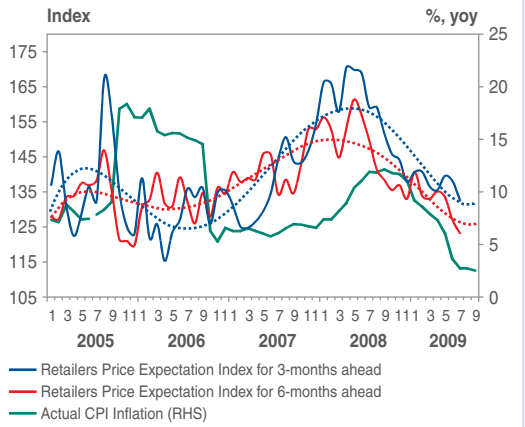


Figure 2.18. Retailers Expectation and Inflation Realisation

the expectations behaviour of the majority of people, particularly goods market players, is adaptive or backward looking, referring to current and past inflation. When forming their expectations the majority of economic players do not refer to information of future inflation (forward looking), in particular Bank Indonesia's inflation target as set by the government.

The prevalence of backward-looking behaviour in the formulation of inflation expectations is also indicated by a number of metric (stating expected level of inflation) and non-metric (only indicating the direction of expected inflation) surveys. Surveys of inflation expectations cover a variety of respondents from consumers (Bank Indonesia Consumer Survey (SK)), traders (Bank Indonesia Retail Sales Survey) and firms (Bank Indonesia Business Activity Survey) to experts and economists (Bank Indonesia Market Perception Survey and Consensus Forecast (CF)). In general, graphical analysis and simple correlation tests showed that inflation expectations resulted from the surveys correlate to actual inflation with a lag (CF and SK).

Anwar and Chawwa (2008) found a weak correlation between the inflation expectations of producers and traders, representing economic agents who most commonly set prices, and actual inflation. This correlation, specifically 0.59, occurred between the inflation expectations of traders, as a result of the Retailers Survey for three months ahead, and the realisation of inflation as expected. In comparison, the correlation of inflation to the inflation expectations of retailers for the upcoming six months was weaker at 0.28. This indicates the rather weak role

played by traders' inflation expectations as a determinant of inflation.[26] Meanwhile, correlation between the expected retail prices of producer respondents to the Business Activity Survey and the price index was low at just 0.15. In addition, the inflation expectations of the business community tend to be too high, which is evidenced by yearend inflation expectations that always exceed actual inflation with the exception of yearend 2005. The lowest correlation in goods market was between actual inflation and the expected inflation of consumers, namely just 0.09.

The inflation expectations of producers are still based on the price increases felt at the time of a particular survey. This is indicated by the relationship between expected inflation and actual inflation, which has a lag of around one quarter despite improvements in the latest period. Backward-looking behaviour is more pronounced for consumers. As participants in good markets, but playing a smaller role than producers and traders in the determination of prices, their expectation behaviour was indicated to be principally influenced by current economic issues present when the survey is conducted. An example is inflation triggered by disruptions to the supply of food as well as information of planned hikes to administered prices. Furthermore, shocks to volatile foods temporarily affect inflation expectations. However, a stronger and more permanent effect is felt when a shock has impacts on administered prices.[27]

Consumer price inflation expectations by financial market players can normally be predicted from shifts in the yield of long-term securities. For instance, an increase in yield can be an indication of rising inflation expectations of the investors of bond because inflation expectation is a component of yield. However, the yield of treasury bonds' (SUN) has not always reflected an implied expected inflation that has a positive and strong relationship with the actual inflation that should be expected.[28] The findings of Anwar and Chawwa (2008) indicate that bond yield is determined more by other factors like risk and interest rates perception.

Inflation expectations can also be obtained from Consensus Forecast (CF), which contains inflation forecast of research and financial institutions (professional forecasters).[29] There are elements of adaptive inflation expectations, which can be observed from the evolution

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26 Regression tests using other macroeconomic variables also showed evidence for 3-month inflation expectations explaining short-term core inflation of 2-3 months (Bank Indonesia, 2008).

27 The Inflation Team and Policy Review and Recommendation Team indicated such expectation characteristics in April 2007 using the SVAR method.

28 The movement of one and two-year SUN cannot accurately predict actual inflation one and two years ahead. During 2005, inflation and yield actually moved in opposite directions. When actual inflation began to decline in February to November 2005, SUN yield in fact increased. When inflation for the upcoming two years was stable, the two-year SUN yield fluctuated.

29 The forecasters surveyed include 10 research organisations and financial institutions, namely Macquarie Bank, Economic Intelligence Unit, Morgan Stanley Asia, Bahana Securities, Danareksa Securities, CIMB Securities, Citigroup, Global Insight, ING, Nomura, HSBC Economics and Goldman Sachs Asia. The Consensus Forecast is used by a number of large companies as a basis for their own inflation assumptions for upcoming periods, which are required in business decision-making process, for example to determine prices and wages as well as planned investment.

of CF inflation expectations, where expectations move in line with actual inflation in the same period.[30] However, Tjahjono et al. (2010) found that the Consensus Forecast was more accurate to predict inflation over a specific time horizon. Among the measures of expected inflation over a time horizon of two quarters, only Consensus Forecast produced any significant information.[31] Meanwhile, the specific correlation between actual inflation and that expected by economists, observers/economic researchers, money/capital market analysts and academics remains unknown because their expectations are always stated as a range.

2.1.5 Imported Inflation and Exchange Rate Pass-through

The economic structure of Indonesia is noted for a reliance on imported raw materials. The ratio of imports to GDP increases rapidly after a crisis, with the exception of the crisis in 2008. Domestic demand is increasingly met through imports. Furthermore, the role of imports as a source of external supply is also expanding (Figure 2.20). According to the input-output table for 2005, the share of imported inputs in the manufacturing sector is around 24%.

Table 2.4.
Share of Inputs in the Manufacturing Sector

No	Subsector	Input (%)	
		Domestic	Import
1	Food, Beverages and Tobacco	93.5	6.5
2	Textile, Leather Products and Footwear	79.8	20.2
3	Wood and Other Products	88.8	11.2
4	Paper and Printing Products	77.2	22.8
5	Chemical and Rubber Products	65.0	35.0
6	Cement, and Non-Metalic Quarr Products	83.5	16.5
7	Iron and Steel Basic Metal	62.8	37.2
8	Transport Equip., Machinery & Apparatus	60.3	39.7
9	Other Manufacturing Products	85.0	15.0
Total		76.4	23.6

Source : Tabel IO BPS 2005

30 As an example, expected inflation for 2009 was 6.8% in January 2007, which subsequently followed an increase in actual inflation midway through 2008. In line with the ensuing dip in inflation, expected inflation for 2009 also declined, to around 5% in mid 2009. In addition, backward-looking behaviour was further evidenced by empirical observations, which demonstrated that average actual inflation over the previous six months could explain the expected inflation reported in CF (Bank Indonesia, 2008).

31 Utilizing VAR analysis, Tjahjono et al. (2010) tested and compared all surveys that report specific figures for expected inflation (as a percentage change of expected price).

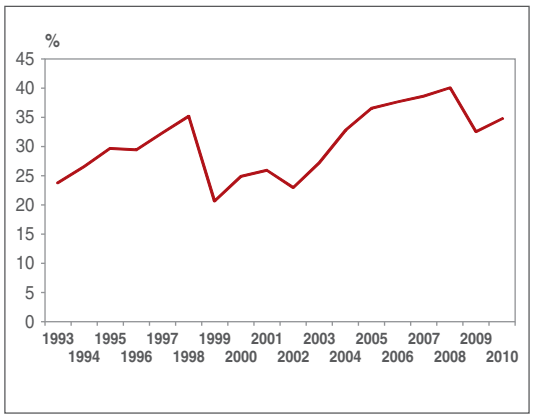

Figure 2.19.
Import Penetration

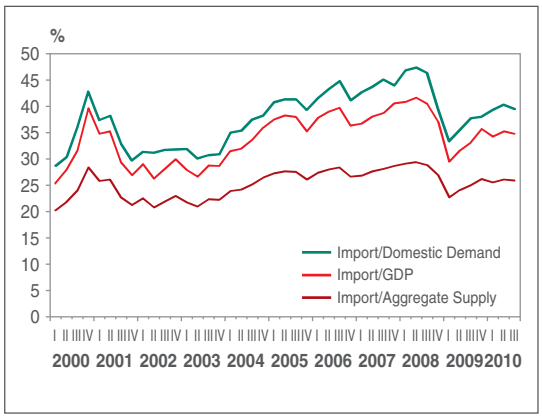

Figure 2.20. Import Penetration after the Exchange Rate Crisis

High and growing imports provide opportunities and risks for headline inflation. When global inflation is low, high imports help mitigate mounting domestic inflationary pressures, for instance because the exchange rate is weak or inflation has spiked on administered prices as a result of government policy. In contrast, however, high imports exacerbate domestic inflationary pressures and headline inflation if inflation abroad rises or international commodity prices rise.

International commodity prices are determined by global demand, impediments to global food production and low real interest rates. The demand and supply of global commodities, among others, is affected by global economic growth, including growth in emerging market countries like China and India triggered by a fledgling middle class, utilisation of biofuels in developed countries, and limited global commodity production capacity growth. Additionally, a low real interest rate also places additional price pressures on storable commodities through the demand channel and inventory cost. According to Frankel (2008), a low real interest rate stimulates demand for storable commodities, or reduces the supply, through three transmission channels. First, a low real interest rate (due to nominal interest rate cut, rising inflation expectations or both) reduces incentives to extract commodities (for example pumping oil, mining gold and logging forests) in the current period compared to future periods. Second, a low real interest rate will pique a firm's desire to hoard inventory as the opportunity cost is lower. Third, a low real interest rate discourages speculators switching from spot contracts to the bond market.[32]

32 The monetary policy response to global commodity price inflation is determined by the causes of inflation. Soaring international commodity prices are more commonly triggered by demand pressures that require a policy response from all countries. The IMF (2011) provided guidelines of an appropriate policy response to food price shocks. For economies with a central bank that has low credibility and a large share of food commodities in its consumption basket, a food price shock will have larger second-round effects that will require a more aggressive policy response if demand is strong and inflation is above its target.

Exchange rate pass-through to domestic prices and consumer prices is affected by price and wage rigidity, dependence on imported goods, and monetary policy (Hutabarat, 2011). Pass-through of changes in the exchange rate is stronger for imported prices in the short term compared to domestic prices because the prices of domestically produced goods are more rigid compared to the prices of imported raw materials. Consequently, the effect of changes in the exchange rate, which is strong on the prices of imported goods, when passed through to domestic prices is suppressed by the percentage cost of imported raw materials in the production cost of domestic goods, which is smaller than the share of imported goods in the cost structure of importers. In addition, wage increases, which are less frequent than price hikes for domestically produced goods and imported prices, dampen exchange rate pass-through to domestic prices. Furthermore, exchange rate pass-through to consumer prices in the short term is smaller than that to domestic price depending on the proportion of imported consumption goods in CPI basket. Consequently, exchange rate depreciation pass-through to consumer price is much smaller than the pass-through to the rupiah price of imported goods.

Appreciation pass-through to headline inflation is less pronounced compared to depreciation pass-through because the rupiah price of imported goods and the price of domestically produced goods are more rigid going down than increasing (downward price rigidity). Marjadi and Hartawan (2003) found an asymmetrical effect phenomenon on changes in imported prices to inflation in Indonesia, which was subsequently corroborated by Kurniati et al. (2009). Asymmetry is indicated in the short term, where rising imported prices amid exchange rate depreciation exceed those during a period of rupiah appreciation. This asymmetrical effect only affects commodities on concentrated markets with little substitution, like cement and wheat. Firms are able to set retail prices and are reluctant to reduce their profit margins during a period of depreciation by raising prices but then enjoy additional profit when appreciation occurs by holding retail prices. Asymmetry also affects the transmission of imported price changes on retail prices (second stage pass-through). The effect of rising imported prices driven by exchange rate depreciation on retail prices at the consumer level is larger then during a period of falling imported prices. In fact, the decline in prices during a period of lower imported prices is not statistically significant.[33]

Exports tend to be less sensitive than imports in response to rupiah exchange rate appreciation. The reason is because manufacturing production, including the production of export goods, uses a lot of imported raw materials. Of the 17 groups of industry listed in the

33 This phenomenon is in line with the findings of Darsono et al. (2002), which were subsequently confirmed by Depari et al. (2009).

input-output table for 2005, seven require imported inputs in excess of 30%. Only four groups import inputs of less than 10% (Hutabarat and Hadiyan, 2010). Consequently, the impact of rupiah appreciation is relatively minimal in terms of slower exports for industries with high imports content. A stronger rupiah is more detrimental to industries that import little. However, this group is generally natural resources related producers. The impact of rupiah appreciation on competitiveness is to some extent amplified when international commodity pries are high. The manufacturers most at risk are those that do not use a lot of imported inputs.

Rupiah appreciation can catalyse economic growth through producer and trader behaviour in response to cheaper imported input costs. Manufacturers tend to only pass on some of their cost savings to prices, they are not as willing, however, as when they raise prices during rupiah depreciation. Based on a Bank Indonesia survey, when the rupiah exchange rate strengthens, a number of producers divert some of their savings in several ways. Some increase other costs like promotional costs, thereby driving growth in the production of services. Others allow their profit margin to increase, for example to raise retained earnings or augment dividends. An increase in retained earnings supports investment growth, while larger dividends boost the consumption power of the business community. These characteristics and structure of production and exports imply that exchange rate appreciation, aside from reducing inflation on the prices of imported goods, is also expansionary, namely it accelerates consumption and output growth.[34]

Exchange rate pass-through to consumer prices has declined since the 1997 crisis period. Kurniati (2008), among others, revealed this phenomenon. According to this research the coefficient of exchange rate pass-through to consumer inflation was less than 0.1 prior to the crisis and 0.06 after the crisis. This reflects a smaller consumer price response to changes in the exchange rate. Accordingly, delays in adjusting consumer prices to exchange rate shocks after the crisis possibly transpired due to the effect of exchange rate volatility, which was escalating. This led importers to possibly believing that the changes were only temporary, thus not adjusting prices too frequently. To this end, importers introduced a shadow band when determining retail prices for their products.

The application of exchange rate bands was discovered through surveys into the price setting mechanisms of manufacturers and traders in 2002 and 2009. The surveys found that

34 The effect of changes in the exchange rate on inflation and output are in line with the results of simulated rupiah depreciation by Hutabarat (2007), which concluded that depreciation is contractionary in terms of economic growth. The simulations used a multi-market dynamic equilibrium model, which is determined, among others, by symmetrical parameters relating to the structure of imports and exports. The parameters included the percentage of raw materials and capital goods in the production and investment structure, the ratio of imported consumption goods to total household consumption and the ratio of exports to GDP.

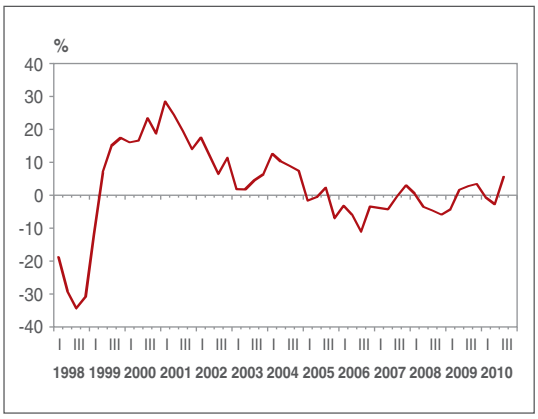

Figure 2.21.
Real Wage of Manufacturing Labor

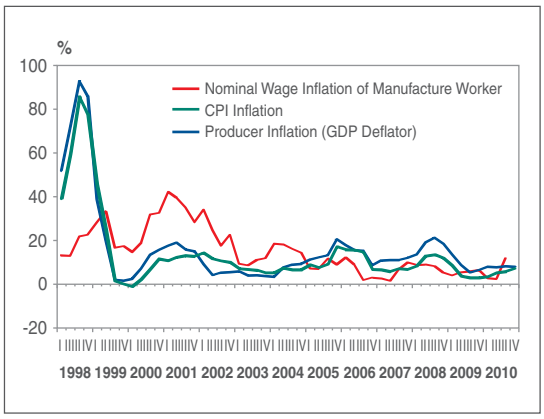

Figure 2.22.
Nominal Wage of Manufacturing Labor

not all changes in the exchange rate are responded to equally by producers, distributors and retailers. Prices are only changed if the exchange rate exceeds specific thresholds. In a 2001 survey, the exchange rate threshold that would trigger price changes was ±Rp500 per US dollar. However, a survey in 2009 found that the threshold was ±Rp1,000 per US dollar, which indicates that producers, distributors and retailers do not respond to exchange rate shocks in the short term. A response is only elicited when a fundamental change appears, which would ordinarily exceed the Rp1,000 threshold. Such behaviour indicates that expectations of a change in the exchange rate are taken into consideration through price mark-ups at the beginning of a price-setting cycle. Consequently, the prices of imported goods are more rigid and less likely to change. This kind of behaviour is not thought to have occurred prior to the crisis. Under a managed free-floating exchange rate regime, depreciation of around 5% would give economic agents more assurance of a shift in the exchange rate, thereby allowing periodic price adjustments to follow changes in the exchange rate.

Weak pass-through is also attributable to exchange rate appreciation after a crisis, while prior to the crisis depreciation was experienced. The inflation response to exchange rate depreciation is reduced by smaller shifts in inflation due to appreciation; hence testing pass-through during this period produces a smaller coefficient of exchange rate pass-through.[35]

35 Weak exchange rate pass-through to inflation on domestic goods also occurs if the share of imported raw material costs declines as a result of other costs increasing, for example overhead costs.

Other contributing factors to weak exchange rate pass-through normally stem from lower inflation coupled with less persistent inflation. This factor can be hypothesised as a positive effect of inflation targeting in terms of anchoring the public's inflation expectations to Bank Indonesia's inflation target.

2.1.6 Government Price Policy

Government policy on the retail prices of goods and services can be categorised according to type (Prastowo et al., 2010). *First*, administered prices, like fuel prices, the basic electricity tariff, as well as telephone and clean water rates affect production costs and the distribution of goods. Of the variety of policies used for administered prices, the impact of fuel price hikes is the most significant as it pervades all economic sectors and occurs more than for just one round. Rising fuel prices also impact the cost of producing electricity, which will ultimately drive up the basic electricity tariff. This is due to the widespread use of diesel power electricity generators. Consequently, rising fuel prices directly raise transportation costs and the cost of distributing goods, hence, pushing up commodity prices. The first-round effect of higher production and distribution costs will subsequently raise the prices of basic necessities. Furthermore, price hikes will be even more conspicuous when each distribution chain attempts to maintain its profit margin by raising prices to cover the rising costs of basic necessities (second-round effect).[36]

Second is the excise tax imposed on a number of domestic goods, like cigarettes and audio-video equipment. Tariffs can also be imposed on imported goods through import duties and import taxes. Producers and importers will pass on these costs, in part or as a whole, to consumers, thus, any increase in customs or excise duties will be reflected in retail prices.

Third is the application of a maximum retail price (MRP) on certain pharmaceutical and medicinal products. The application of a maximum retail price limits the space producers and traders have to raise their prices despite the power to do so given the imperfect market structure.

36 The magnitude of the actual impact of higher fuel prices on inflation is difficult to calculate, particularly the second-round effects. Using the Input-Output (I-O) model approach, Yanuarti (2004) calculated the total impact of changes in fuel prices on inflation. The results indicated that a 1% increase in the price of fuel would raise inflation by 0.07%, made up of the first-round effect (0.02%) and the second-round effect (0.05%). Therefore, the results indicate that the impact of the second-round effect is approximately 2.5 times that of the first round. Meanwhile, estimation results using an econometric model showed that a 1% increase in fuel prices would precipitate a 0.56% rise in inflation. The I-O model approach is considered more representative as it takes into account the interactions between all economic sectors that use fuel, while the econometric model still contains weaknesses in predicting the indirect impacts.

2.2 The Design of Inflation Target

Since inflation becomes an overriding objective of monetary policy, formulating the inflation target is essential. When designing inflation target, a number of considerations should be bore in mind. They are:

- *First,* inflation target should be an anchor of public's expectations. Therefore, the target must be easily understood by economic agents and must provide a signal of commitment from the central bank to achieve low inflation in the medium term.
- *Second,* the inflation target should provide a benchmark of central bank accountability. The target must be based on an index that is available on time, published relatively quickly with no much revision. The use of index that can be easily manipulated by the central bank should be avoided.
- *Third,* the inflation target must reflect the central bank's objective that is to achieve and to maintain price stability without creating excess output volatility.

There are a number of aspects relating to formulation of inflation target. They are: (i) the price index, (ii) the level, (iii) the timeframe for calculating inflation, (iv) the horizon, (v) the form of the target, and (vi) the target adjustment. Each of these aspects will be discussed in detail in the following section.

2.2.1 The Price Index

There are many forms of price indices that can be used as an inflation target, namely GDP deflator, Producer Price Index (PPI), Wholesale Price Index (WPI), Consumer Price Index (CPI), and Core Inflation Index. Each index has its own advantages and disadvantages.

The GDP deflator has the most extensive scope. However, it contains some weaknesses. If the value of exports is different by large amount from the value of domestic demand, the terms of trade will lead to movements in the GDP deflator that diverge from the corresponding price hikes felt by households. This is the main reason why public do not accept the GDP deflator as a general measure of prices. In addition, publication of the deflator is undermined by a relatively long lag, infrequent publication and numerous revisions.

Compared to the GDP deflator, PPI and WPI data is more readily available. Nonetheless, their scope is more limited considering that neither index takes into account prices in the services sector.

CPI inflation, known as headline inflation, has an array of advantages compared to the other indices mentioned. This index is the most relevant due to its direct relationship with goods consumed by public as well as its widespread acceptance as a measure of prices. In addition to its rapid availability, headline inflation is also rarely revised.

Core inflation is often used by a central bank to observe the more persistent prices. In broad terms, central bank uses core inflation in order to eliminate the impact of price changes in a number of commodities which is irrelevant to general price trends. For example, the price fluctuation of the group of volatile foods and the government policy on price of the group of administered prices can evoke misleading information about the general price.

There are a number of methods in calculating core inflation, for instance exclusion, trim-mean, trim-median, moving average, and exponentially smoothed versions of aggregate inflation. Compared to the others, exclusion is the preferred method due to its simplicity in calculation and ease of understanding by the public.

Although core inflation is routinely calculated, reported and used as a basis for policymaking and communication, this type of inflation is less frequently used as an official target by the central bank. Credibility is the primary consideration why a central bank will opt for headline inflation instead of core inflation as its goal of monetary policy. The calculation of core inflation by a central bank, *not* an official statistical agency, can lower the level of public confidence.

A shift in the inflation target from core inflation to headline inflation has already occurred in a variety of countries like Australia, New Zealand, South Africa and UK, where the initial target of inflation is CPI excluding mortgage interest costs was changed to headline inflation. In 2003 Czech Republic changed its target from net inflation which is CPI minus administered prices to headline inflation.

For the case of Indonesia, the use of headline inflation as a target is still relevant since it reflects the increment of public's cost of living. Therefore, credibility of central bank can be maintained. In addition, entrepreneurs and the general public use CPI inflation as their nominal anchor, *not* core inflation. Nevertheless, the setting of inflation target needs to be detailed into core inflation, volatile foods and administered prices. This detail is essential for accountability in order to explain to public how far Bank Indonesia is controlling core inflation. Therefore, the key performance indicator (KPI) of achieving the inflation target should be based on the achievement of core inflation.

2.2.2 The Level

Although by the definition, the target of a central bank is price stability, which implies a stable price level or 0% inflation, however, in its implementation central bank rarely target inflation at 0%. In average, inflation targets in developed countries are slightly above zero, more specifically at around 1-3%, while this figure varies in emerging market countries but generally remains in single digits.

There are a number of considerations that underlie the decision to apply an inflation target slightly above 0%, namely:

- *First,* the method used to measure the price index, that is Laspeyer index, is prone to overestimation. In addition, bias exists due to the substitution of goods, new goods, new outlets and new qualities in existing goods such as mobile phones, computers and other electronic goods. Boskin et al. (1996) reported that there is a CPI bias in the US amounting to 1.1% annually. Meanwhile, the bias calculated in Canada and the UK is around 1% (Crawford, 1994; Cunningham, 1996). For the case of Indonesia, Trisnanto et al. (2003) calculated the inflation bias to be between 0.47% and 1.26%.
- *Second,* if a central bank targets inflation at 0%, then the central bank is actually targeting deflation. Consequently, if the public expect that future prices are going to decline then there is no incentive for anyone to produce. Therefore, as an aggregate the economy will experience a depression. Clearly, this is not what the central bank expects considering the presence of nominal wage and price rigidity. Arkelof, Dickens and Perry (1996) demonstrated that a shift in inflation from 3% to 0% (price stability) would raise unemployment by around 2.1%. In fact, inflation is actually required as an economic lubricant.
- *Third,* by targeting inflation above zero percent, relative changes in prices and wages can be accommodated considering the presence of nominal rigidity. In addition, this will alleviate the risk of deflation and allow the nominal interest rate to approach zero, which can lead to ineffective monetary policy transmission.

On the other hand, the inflation target should not be set too high, as this would undermine the central bank's credibility in combating inflation. Moreover, a high inflation target leads to high inflation expectations and brings the commitment of the central bank and government into question.

Setting an appropriate level of inflation as target is important. On one hand, public expectations of inflation are kept low and, on the other hand, central bank credibility is

maintained. Setting an inflation target deemed too ambitious will trigger the risk of not achieving the target, thereby eroding central bank credibility. When setting a disinflation path, the central bank must consider the sacrifice ratio that is the magnitude of output loss due to reducing inflation 1%.

Referring to a level of inflation that does not endanger the economy, a number of studies found that inflation between 1% and 8% is safe for an economy.[37] Barro (1995) conducted a cross-sectional study of more than 100 countries and found that the relationship between inflation and output is not strong when inflation is below 10%. Similarly, Sarel (1996) argued that inflation below 8% does not disrupt the economy. Above this threshold, however, the correlation between inflation and output is negative.

In Indonesia, the inflation target has been set to decline gradually in order to avoid large social costs considering the short-term trade-off between inflation and economic growth. The path to lower inflation was set in compliance with the sacrifice ratio.[38]

2.2.3 Timeframe used to Calculate Inflation

There are several alternatives to calculate inflation based on timeframe. Inflation data published monthly can be presented in terms of month-to-month (mtom) or year-on-year (yoy).[39] Month-to-month inflation tends to be volatile and, accordingly, is unable to capture price trends nor can it fully record major turning points from data. Meanwhile, year-on-year inflation is smoother, which can thus reflect price trends for one year.

Another alternative is to measure inflation based on the average of current inflation and inflation at some periods before. However, this measurement is not fully understood as it is calculated by the central bank, *not* by official statistical agencies. Besides that, current price development could be longer to be monitored so that it may delay policy response and undermine accountability.

As there are some benefits of year-on-year inflation over month-to-month inflation, the majority of central banks tend to opt for year-on-year inflation as an inflation target. Bank Indonesia also chooses year-on-year inflation - at the end of the calendar year - as an inflation target.

37 To review the theory and empirical evidence regarding the relationship between the level of inflation and its associated costs, refer to Brook, Karedgedikli and Scrimgeour (2002).
38 The sacrifice ratio is the amount output declines for each 1% drop in inflation.
39 Month-to-month inflation is calculated by comparing the price index this month with that of the previous month. Year-on-year inflation is calculated by comparing the price index this month with that 12 months ago.

2.2.4 The Horizon

Basically, monetary policy contains an inherent lag. The magnitude of the lag depends heavily on how quickly the central bank responds to changes in policymaking (internal lag) and how rapidly policy can achieve its desired results, namely GDP and inflation (external lag). This impact is not only long, but also full of uncertainty. Actually, these concerns have long been echoed by Keynes (1923) "*…if we wait until a price movement is actually afoot before applying remedial measures, we may be too late.*" Therefore, monetary policy taken today should be done in order to anticipate future development in inflation (and GDP). Most ITF countries have policy lag in the range of 1 to 2 years.

There is a difference of opinion regarding the effect of inflation on the length of the monetary policy lag. Ball, Mankiw and Romer (1988) argued that low inflation could increase nominal rigidity in the economy, thereby extending monetary policy lag. Meanwhile, another argument is that low inflation together with high credibility would expedite adjustments in inflation expectations, thus shortening monetary policy transmission. Haldane (1997) observed the correlation between the policy rate and inflation. He found that (i) there is a negative correlation between interest and inflation rates; (ii) the effect of this correlation is more pronounced in countries with high inflation; and (iii) monetary policy response is longer in countries with low inflation. For instance, in countries with high inflation, the impact of a higher policy rate will be felt through lower inflation, commencing in the first quarter and peaking in the fourth. Conversely, in countries where inflation is low, the impact will peak in the eighth quarter. This finding tends to back up the first opinion (nominal rigidity) more than the second one (credibility).

The horizon chosen for the inflation target should be adjusted according to the length of monetary policy lag. Nonetheless, it is also important to consider the central bank desire to bring inflation towards the target. A faster disinflation process – marked by a shorter horizon – will reduce the amount of welfare loss due to inflation deviating from its target but will exacerbate output loss in the short term. The opposite is also true. A gradual disinflation process is consistent with gentler short-term output fluctuations. A longer horizon provides the central bank more flexibility in terms of achieving other short-term targets, such as output or exchange rate stabilization. Therefore, the choice of an inflation target horizon reflects the preference of a central bank concerning the trade-off between attaining the target and short-term output stabilization.

The target horizon differs from central bank to central bank. For example, Brazil, Columbia, the Czech Republic and Israel apply a horizon of 1 year, whereas the horizon in

Australia is over the business cycle. From 1991 until 2000, Chile applied a horizon of 1 year, but subsequently changed this in 2001 to indefinite. This is also the case in South Korea. Implementation of the inflation targeting framework in 19 countries is summarized by Schaechter et al. (2000), as presented in Table 2.5.

A central bank committed to achieving its inflation target in the medium term or even indefinitely is not inconsistent with efforts towards accountability. As an example, the Reserve Bank of New Zealand (RBNZ) is bound to a target of 1-3% in the medium term, but will provide an explanation whenever actual or projected inflation deviate from their target corridor. Although a central bank is tethered to a medium-term or even indefinite target, the central bank still requires a shorter horizon with which to take decisions and make short-term projections internally as well as for accountability and communications.

In the case of countries with low inflation and established credibility prior to the introduction of ITF, although the central bank's inflation target is in the medium-long term, the public can still confidently anchor their expectations. Public expectations will be improved whenever central bank maintains its target without any revision from year to year.

When current inflation exceeds the long-term target of the central bank, the central bank can announce a short-term target adjusted for the path of disinflation. This is possible on a multi-year basis.

In the case of Indonesia, Anglingkusomo et al. (2000) investigated the optimal level of inflation to be used as the target for Bank Indonesia. Utilising an array of models and simulations it was concluded that the ideal inflation target is 4-6%, the "target" output gap is 0-1% and monetary policy lag is 1-2 years. Other research conducted by Darsono et al. (2002) argued that the total loss function would be minimised if the inflation target were achieved within 4 or 5 years.

The current horizon used by Bank Indonesia of 3 years is considered adequate in order to guide economic agents to plan activities in the medium term. However, a horizon in excess of 3 years, for example 5 years, would be preferable considering that public expectations are formed in the medium term and the central bank would thus have more flexibility in terms of stabilising output and the exchange rate. Additionally, experience gleaned from the global economic crisis demonstrated the need to take into account the financial crisis recovery cycle, which is indeed longer than the normal business cycle. Moreover, a 5-year horizon falls directly in line with the incumbency of the Governor of Bank Indonesia and, consequently, governor performance would be simpler to assess.

Table 2.5. Implementation and Design of ITF in 19 Countries

Implementation and Design of Inflation Targeting in 19 Countries

Country	Date Introduced	Target Price Index	Target Width	Target Horizon	Espace Clauses	Accountabilty of Target Misses	Target Set By	Publication and Accountability
Australia	Sep 1994	Core CPI	2-3%	Over one business cycle	None	None	Jointly by Gov and CB	Pub of inflation report; Pub of inflation projections (2-year point estimate)
Brazil	Jun 1999	Headline CPI	1999: 8% (±2%) 2000: 6% (±2%) 2001: 4% (±2%)	1 year	None	Issuance of open letter to Minister of Finance explaining target breach and measure taken (and the time required) to bring inflation within the target	Gov in consultation with CB	Pub of inflation report; Pub of inflation projections (2-year fan chart); Pub of extract of Board meetings; Pub of models used for inflation outlook;
Canada	Feb 1991	Core CPI (excl. food, energy, and indirect taxes)	1991: 3-5% 1992: 2-4% Jun. 94: 1.5-3.5% 1995-2001: 1-3%	1991: 22 months Since 1992: multi-year	Revision of target path under exceptional circumstances (ex. major oil price shock, natural disaster)	Public explanation	Jointly by Gov and CB	Pub of monetary policy report; Pub of inflation projections (1-year point estimate);
Chile	Jan 1991	Headline CPI	1991: 15-20% 1992: 13-16% 1993: 10-12% 1994: 9-11% 1995: ± 8% 1996: ± 6.5% 1997: ± 5.5% 1998: ± 4.5% 1999: ± 4.3% 2000: ± 3.5% 2001 onwards: 2-4%	1991-2000: 1 year 2001 onwards: indefinite	None	None	CB in consultation with Gov	Pub of inflation report (2000); Pub of minutes of monetary policy meetings; Pub of inflation projections (2-year fan chart);
Colombia	Sep 1999	Headline CPI	1999: 15% 2000: 10% 2001: 8% 2002: 6%	1 year	None	None	Jointly by Gov and CB	Pub of inflation report

Implementation and Design of Inflation Targeting in 19 Countries

Country	Date Introduced	Target Price Index	Target Width	Target Horizon	Espace Clauses	Accountabilty of Target Misses	Target Set By	Publication and Accountability
Czech Republic	Jan 1998	Core CPI (excl. regulated prices and indirect taxes)	1998: 5.5-6.5% 1999: 4-5% 2000: 3.5-5.5% 2001: 2-4%	1 year	Natural disasters, global raw material price shocks, exchange rate shocks unrelated to domestic econominc fundamentals and monetary policy, and agricultural production shocks	None	CB	Pub of inflation report (1998); Pub of minutes of monetary policy meetings; Pub of inflation projections (1-year range);
Finland	Feb 1993 to Jun 1998	Core CPI (excl. indirect taxes, subsidies, housing prices, and mortgage interest)	Anual avearage of 2% by 1995	Until 1995: multi-year Since 1996: indefinite	None	None	CB	None
Israel	Jan 1992	Headline CPI	1992: 14-15% 1993: 10% 1994: 8% 1995: 8-11% 1996: 8-10% 1997: 7-10% 1998: 7-10% 1999: 4% 2000: 3-4%	1 year	None	Public explanations of deviaton of inflation forecast from target on excess of 1%	Gov in consultation with CB	Pub of inflation report (1998);
Korea, Rep	Jan 1998	-	2001: 3-4% 1998: 9% (±1%) 1999: 3% (±1%) 2000: 2.5% (±1%) 2001 onwards: 2.5%	1998-2000: 1 year 2001 onward: indefinite	None (before 2000: changes cause by major forces)	None	Gov in consultation with CB	Pub of inflation report and submission to Parliament; Monthly announcement of monetary policy direction; Pub of minutes of monetary policy meetings;

Implementation and Design of Inflation Targeting in 19 Countries

Country	Date Introduced	Target Price Index	Target Width	Target Horizon	Espace Clauses	Accountabilty of Target Misses	Target Set By	Publication and Accountability
Mexico	Jan 1999	Headline CPI	1999: 13% 2000: <10% 2001: 6.5% 2002: 4.5% 2003: similiar to trade partners inflation (3%)	1998-2002: 1 year 2002 onwards: indefinite	None	None	CB	Pub of inflation report (2000)
New Zealand	Mar 1990	Headline CPI (since 1999, headline CPI exclude interest charges; prior to then targets where defined in terms of the headline CPI less interest charges and other first round effec prices)	1990: 3-5% 1991: 2.5-4.5% 1992: 1.5-3.5% 1993 - 1996: 0-2% Since 1997: 0-3%	1990-1992: 1 year 1993-1996: multi-year Since 1997: indefinite	Unusual events provided they do not cause general inflationary pressures	Public explanation of target breach and measures taken (and time required) to bring inflation within the target.Minister of Finance may ask for resignation of RBNZ Governor.	Jointly by Gov and CB	Pub of inflation report (1990); Pub of inflation projections;
Peru	Jan 1994	Headline CPI	1994: 15-20% 1995: 9-11% 1996: 9.5-11.5% 1997: 8-10% 1998: 7.5-9% 1999: 5-6% 2000: 3.5-4% 2001: 2.5-3.5% 2002: 1.5-2.5% 2003: 1.5-2.5%	1 year	None	None	CB in consultation with Gov	None
Poland	Oct 1998	Headline CPI	1998: <9.5% 1999: 6.6-7.8% 2000:5.4 – 6.8% 2003:< 4%	1998-2000: 1 year 2000-2003: multi-year 2003 onwards: indefinite	None	None	CB	Pub of inflation report; Pub of inflation guideline Pub of Report of Monetary Policy Implementatation

Implementation and Design of Inflation Targeting in 19 Countries

Country	Date Introduced	Target Price Index	Target Width	Target Horizon	Espace Clauses	Accountabilty of Target Misses	Target Set By	Publication and Accountability
South Africa	Feb 2000	Core CPI (excl. interest costs)	2003: 3-6%	Multi-year	Major unforseen events outside CB control	None	CB	Pub of inflation report;
Spain	Nov 1994 to Jun 1998	Headline CPI	Jun 1996: 3.5-4% 1997: 2.5% 1998: 2%	Until 1996: multi-year 1997-1998: 1 year	None	None	CB	Governor reports regularly to Parliament; Pub of inflation report (1995);
Sweden	Jan 1993	Headline CPI	Since 1995: 2% (±1%)	Until 1995: multi-year Since 1996: indefinite	None	None	CB	Pub of inflation report (1997); Pub of minutes of monetary policy meetings; Pub of inflation projections (2-year fan chart); Submission of monetary policy report to Parliament
Switzerland	Jan 2000	Headline CPI	< 2%	3 years	Unusual events provided they do not cause general inflationary pressures	None	CB	Pub of inflation report; Pub of inflation projections (3 years);
Thailand	Arp 2000	Core CPI (excl. raw food and energy prices)	2000: 0-3.5%	Indefinite	None	Public explanation of target breach and measures taken (and time required) to bring inflation within the target.	Gov in consultation with CB	Pub of inflation report (2000) Pub of inflation projections (2-year fan chart); Pub of minutes of monetary policy meetings;
United Kingdom	Oct 1992	RPIX (excl. mortgage interest)	1992-1995: 1-4% Since 1996: 2.5%	Until 1995: multi-year Since 1996: indefinite	None	Issuance of open letter to Minister of Finance explaining target breach and measure taken (and the time required) to bring inflation within the target	Gov	Pub of inflation report. Pub of inflation projections (2-year fan chart); Pub of models used for inflation outlook

Sources: JP Morgan CB Watch, Country Sources, CB Web Page, Scaechter et al.

2.2.5 The Form

The inflation target may take the form of point, midpoint or band (range). The majority of ITF countries specify their inflation target in terms of a band. Only the UK and Norway apply a point target, while Israel, New Zealand, Australia, South Korea, Slovakia, Thailand, the Philippines and South Africa use a band target and the remainder (the majority) use a midpoint target. In the case of Norway, the inflation target of 2.5% is an approximation and is effective for 1-3 years. This makes the point target not clear. Meanwhile, in the UK, if the target is missed by more than one percentage point on either side, the Governor of the Bank of England (BOE) will write an open letter to the Chancellor of the Exchequer explaining the reasons why inflation has increased or fallen to such an extent and what the central bank proposes to do to ensure inflation returns to its target. Therefore, there is a range of 1-3% where the BOE can operate without any additional accountability procedures.

Fundamentally, midpoint and band targets are the same in that they constitute a range in order to accommodate uncertainty. The difference is that for the midpoint target, the value in the middle of the range is expressed explicitly together with the level of deviation, generally ±1%. In contrast, for the band target, the middle of the range is not explicitly expressed, for example 1-3% (as is the case in NZ). The weakness of the band target is that the central bank cannot clearly guide public expectations to a predetermined value. It is possible that public inflation expectations will follow the upper limit of the band. Meanwhile, a midpoint target allows the central bank to steer public inflation expectations to a specific level. Therefore, although fundamentally midpoint and band targets are the same, the impact on forming expectations can be quite different.

There are a number of reasons why many central banks tend to specify their target as a range instead of a point as follows:

1. A band target is more realistic in its portrayal of accurate inflation projections. No central bank can accurately project inflation amid uncertainty regarding the transmission mechanism and future shocks. Despite using point targets, the UK and Norway use a fan chart when presenting their projections.
2. Inflation persistence and uncertainty are always present in an economy.
3. A band provides flexibility to central bank to accommodate unforeseen shocks as well as to smooth short-term output fluctuations. In this context, a target corridor acts in the same way as extending the horizon.

4. All price indices contain measurement errors and sampling errors. Therefore, aiming for a point target can result in the central bank reacting unnecessarily to noise when measuring inflation.

The width of the target band used by countries implementing inflation targeting varies, but in general the band is 2 percentage points. Although a narrower range would evidence the seriousness of the central bank in terms of steering inflation within its target corridor, there is also a risk of missing the range completely, hence, placing central bank credibility at stake. Example countries that maintain a range of just 1% are Australia, South Korea, Columbia and the Philippines. Meanwhile, a range more than 2% would indeed alleviate the risk of missing the target as a consequence of unexpected shocks or inaccurate inflation projections, but it would undermine central bank credibility. Examples of countries that apply a range exceeding 2% include Brazil with 4%, Turkey 4%, Thailand 3.5% and South Africa 3%. The use of a wide target band is more difficult to justify when a central bank employs core inflation as its target.

In the case of Indonesia, a midpoint inflation target with a range of 1% either way is considered the most relevant. Numerous unpredicted shocks, like weather anomalies that disrupt supply, distribution constraints and unplanned administered price hikes, make it difficult to forecast inflation accurately and guide inflation within its target corridor. Therefore, having a wider range (more than 2%) would be one option. Notwithstanding, if Bank Indonesia had a broader target range, but it was still unable to bring inflation within its target band, accountability would suffer. A range of 2% coupled with escape clause is not only harmonious with best practices, but also accountability in terms of achieving the inflation target is easier to maintain.

2.2.6 Adjustments of The Target

The inflation target set by the central bank could become irrelevant in the event of shocks that are beyond the control of the central bank. Such shocks, among others, including global financial crises and devastating natural disasters. One strategy is to revise the target, but this is not recommended because of its negative connotations concerning central bank credibility. According to Bernanke (1999) all countries that apply ITF have changed their target from time to time, both upwards like in Germany in 1979 after the oil price shocks and in New Zealand after the general election in 1996, and downwards due to disinflation process. Furthermore, Bernanke explains that for as long as the inflation target is announced in advance, the target cannot merely be seen as the rationalization of actual inflation. Revision of the inflation target

is seen as a reasonable way in accommodating changes in economic conditions. Therefore, reviewing the inflation target is something permitted and possible legally.

Nonetheless, there are pros and cons whether to revise the inflation target or not. Once the target has been changed, it may be precedence to revise it again in the event of future shock. In contrast, an inflation target that is too low and unachievable also raises the public's requirement for credible inflation projections. A credible disinflation policy would rapidly bring the inflation down without drastic economic slowdown. The more credible the disinflation policy, the least output lost occurs.

Reflecting on the experience of the Bundesbank in achieving a high perception of credibility, attaining the inflation target should be the highest priority. If a central bank successfully meets its inflation target and the public's perception of credibility increases as a result and when the target is not met during a certain period due to an unanticipated shock, then this will not jeopardize central bank's credibility.

Adjustments to the inflation target must be made well in advance and need to align with the previous revision to avoid dual perception in which inflation target will be referred by the central bank. For example, a press release of Bank Indonesia stating that the 2010 inflation target would be adjusted to 5% due to the crisis, however, the 4% inflation target applied by the government had not been revised. In this case, good coordination between Bank Indonesia and the Government in terms of setting and publishing the inflation target is essential.

2.3 Asset Price Inflation

The global economic crisis provided a number of valuable lessons for central banks, including that efforts to maintain price stability alone are insufficient to maintain macroeconomic stability. Merely achieving price stability does not guarantee financial stability.[40] A number of economists are of the opinion that the financial crisis in 2008/2009 was caused by low policy rate set by central banks over a long period of time in response to low and stable inflation.

When real interest rates fall, asset prices tend to rise and it triggers price bubbles when they exceeded their fundamental values. These price bubbles affect the quality of corporate balance sheet, which reduced lending costs and boosted investment. Aggregate demand and potential output subsequently increased. However, when the bubbles burst, corporate ability to borrow is weakened, investment is declined and, ultimately, output is decreased.

40 One way in which financial instability is indicated is through asset price volatility.

Financial imbalances and misalignment on asset prices can cause problems for policymakers. Monetary policy alone is insufficient to dampen the adverse effects of asset price booms and busts. A well-designed and transparent judicial and accounting system is required along with sound regulations to reduce the impact of risk from banks and firms (Bernanke and Gertler, 2000).

2.3.1 The Impact of Asset Prices on the Real Sector

Asset prices influence the real sector through the balance sheet channel. Firms and households use their assets as collateral to secure bank loans. When the value of these assets decreases (for instance house prices fall), the value of the collateral also decreases, thus reducing the amount of credit obtainable.

The impact of asset prices on the real sector can be explained through (i) the wealth effect; (ii) the Tobin's Q effect; and (iii) the financial accelerator.

- Through the wealth effect, as an individual becomes wealthier he/she consumes more. Poterba (2000) conducted a survey on the impact of share prices on consumption. The majority of the estimations demonstrated that a $1 increase in the price of financial assets would raise consumption by $0.3. This value is similar to that proffered by Freidman in his permanent income hypothesis.
- In his Q effect, Tobin argued that the ratio of share price to the replacement cost of capital represents a good indicator for firms to invest. If the ratio exceeds 1, then it would be considered advantageous for a firm to invest.
- Regarding the financial accelerator, higher share prices increase the wealth of the company's owners and credit worthiness of the business, reduce the financial premium and lead to more credit and investment. Bernanke and Gertler (1989) argue that the level of individual net worth could play an important role in increasing shocks in the economy. Successful investment in the current period will raise net worth in upcoming periods, thereby reducing the cost of capital and boosting future investment. In this context, shocks on the return in the current period will be greater in the future. Meanwhile, Kiyotaki and Moore (1997) argued that the value of assets owned by an individual will rise 'in the good times', thus increasing the impact on net worth and investment.

2.3.2 Several opinions on the need to respond to Asset Prices

Existing literature discusses whether monetary policy needs to respond to assets price movement, among others, Batini and Nelson (2000), Bernanke and Gertler (1999, 2001), Cecchetti, Genberg, Lipsky and Wadhwani (2000), Cecchetti, Genberg and Wadhwani (2003), and Taylor (2001). There are basically two schools of thought on whether asset prices should elicit a response from the central bank or not.

a. The first opinion: A response is required

The first opinion states that central bank should respond asset prices proactively. The main reason is that asset price bubbles distort investment and consumption, thereby, triggering excessive demand followed by sharp declines in real output and inflation.

Goodhart (2000) suggested that the central bank should respond to shifts in asset prices. This opinion is based on the argument by Alchian and Klein (1973) where price indicators like CPI and the GDP deflator are incomplete because they only portray the prices of goods consumed in the present. A more complete measure of the cost of living would also include the prices of future goods.[41] If consumers anticipate future prices, then house prices and share prices would rise immediately.

Inflation reducing purchasing power can also be illustrated through the increases in asset prices, such as house prices. When house prices climb, while rental prices remain the same, the purchasing power of money actually weakens despite CPI inflation being unaffected.

Another supported opinion is that movements in asset prices can predict future shifts in inflation. However, this school of thought is not supported by sufficient empirical evidence. Stock and Watson (1999) tested the ability of 168 economic indicators in projecting inflation in the United States with a horizon of 1 year. They concluded that the best indicator was GDP (real economic activity), while share prices and the exchange rate performed badly.

Goodhart and Hufmann (2000) found that house prices are significant in the CPI equation in 12 countries. This was further corroborated by Cecchetti et al. (2000) and Filardo (2000) who revealed that house prices correlate with future inflation, but added that house prices are not significant in the CPI equation in terms of forecasting inflation.

41 Shibuya (1992) demonstrated that inflation ala Alchian-Klein can be formed through the weighted sum of CPI inflation and asset price inflation.

Cecchetti, Genberg, Lipsky and Wadhwani (2000) also concurred with these findings demonstrating that the central bank will perform best if the central bank adjusts its policy instruments not only to inflation and output gap, but also asset price misalignment for a horizon of two years or more. By reacting to asset prices, the possibility of asset price bubbles is reduced, hence the risk of boom-bust in the investment cycle also eases. They stressed that should be able to identify the misalignment and to respond, not to target. Likewise, Bordo and Jeanne (2002) found that monetary policy that responds just to inflation and output is insufficient, it should also respond to (non-linearly) to asset prices.

b. The second opinion: No response necessary

The second opinion argues that movements in asset prices do not require any response from the central bank because, by nature, asset prices fluctuate a lot. There are numerous triggers, such as economic conditions, business conditions, supply-demand, issues/news, etc. Fluctuations in share prices, however, are not often associated with economic conditions. Another reason is that the central bank does not have more complete information regarding asset price equilibrium than the private sector. The prices of assets are only a concern to central bank as long as they reflect the state of the economy.

Asset prices fluctuate a lot because of non-fundamental factors due to: (i) weak regulation; and (ii) irrational responds by investor, like herding behaviour, excessive optimism, and short-term transactions motive. Gilchrist and Leahy (2002) argued that asset prices do not contain any valuable information for forecasting purposes. They also found no good reason to include asset prices in policy rule.

Different from Goodhart, John Vickers from the Bank of England suggested that it is best *not* to include asset prices in the calculation of inflation used as the central bank's target. This is because the high volatility of asset prices will be transmitted to inflation and subsequently make calculations and accountability more complex. This is the basis upon which house prices were removed from the inflation calculation used as a target by the Bank of England.

Goodfriend, in Gertler et al. (2000), argued that asset prices are too volatile and do not correlate with economic activity. Cogley (1999) also opined that misaligned asset prices are difficult to detect; therefore, mistakes in the response could increase output variability.

If the central bank uses a wider measure of inflation, which includes asset prices, then the response to asset price hikes is to tighten monetary policy despite low and stable inflation.

This could result in erroneous policy signals. Why?

- *First,* house prices and share prices are not reliable indicators considering that both represent a small portion of consumer assets. Consumers also have wealth in the form of durable goods (like automobiles and household equipment), collectability, offshore assets and human capital.
- *Second,* the relationship between asset price inflation and headline inflation is ambiguous. Movement in house prices and share prices has no correlation to inflation expectations. As an example, share prices could rally due to expectations of larger corporate revenues or because of more risk-taking behaviour by investors *not* because of a general expectation of higher prices.

Bernanke and Gertler (2000) argued that inflation targeting dictates a central bank to adjust its monetary policy actively and pre-emptively in order to anticipate future inflationary and deflationary pressures. This implies that monetary policy does not have to respond to changes in asset prices, except if inflation expectations are affected. With a focus on inflationary and deflationary pressures that emerge from shifts in asset prices, the central bank can respond to the adverse effects of boom-bust asset prices without having to know whether the specific change was caused by fundamental factors or not. They concluded that the application of policy rule that directly targets asset prices would actually spur a suboptimal impact.

The impact of an asset price shock is 'similar' to the impact of demand shocks on the economy. If asset price hikes stimulate aggregate demand, then the central bank will stabilise it by raising its policy rate, and vice versa. But if changes in asset prices do not affect inflation expectations or aggregate demand, then it is better for the central bank does not respond.

This automatic response not only stabilises the economy, but also the financial markets. If financial market players expect the central bank to be countercyclical, namely that the central bank would raise its benchmark rate in the event of asset prices hikes will heat the economy, then the excessive reaction by market players – due to market psychology and other non-fundamental factors - can be moderated.

According to Bean (2003), the application of flexible inflation targeting does not require an additional asset price equations or explicit financial imbalances in the model. In harmony with Clarida, Gali and Gertler (2001), Chadha, Sarno and Valente (2003) suggest that a central bank should not target asset prices, but instead use them as a good information variable. Filardo (2000) found that counting asset prices in the calculation of headline inflation does not improve economic performance in America. In other study, Filardo (2001) concluded that if the monetary

authority is unsure of the role asset prices play in the macro economy, then monetary policy would gain no benefit from responding to asset prices and vice versa.

The opinion against using asset prices as a central bank target is further supported by Trichet (2005). In his speech he mentioned six reasons why asset prices should not be targeted by central bank, as follows:

1. Asset prices in fact represent a poor proxy of future headline inflation because changes in asset prices are determined by fundamental and not only inflation expectations.
2. Targeting asset prices would increase risk-taking behaviour by economic agents in anticipation of central bank efforts to stabilise asset prices (moral hazard).
3. Rational forward-looking behaviour allows the possibility of a circular relationship between the central bank and asset prices, where asset prices would guide monetary policy while future monetary policy expectations would also affect asset prices in the current period. Consequently, inflation can only be determined by market expectations which is very fluctuating (inflation indeterminacy).
4. If a central bank targets inflation that includes asset prices, then targeting asset prices directly would lead to double counting of inflationary pressures.
5. Calculating weight of asset prices in a composite price index can be confusing. If it is based on the contribution to expenditure, then the weight would be large. If it is based on the contribution to projected inflation, then the weight would be relatively small. Consequently, the method for calculating the weight would become more complex.
6. A central bank has only a small amount of control over asset prices because in the long run asset prices are determined by economic fundamentals *not* by monetary policy.

In line with this opinion, Southerland et al. (2010) stated that including asset prices in the objective of monetary policy has a number of problems and could have an adverse impact on output and inflation. Central bank reaction to inaccurate signals of a turning point in asset prices could have a large implication on the welfare cost.

2.3.3 Asset Prices in Indonesia

Asset prices development in Indonesia are presented in the graphs below. Figure 2.23 Figure 2.24 shows asset price inflation and headline inflation (year-on-year). It is clear that the two are not convergent, they are very different, commencing in 2006 : 1 until 2010 : 2. Meanwhile,

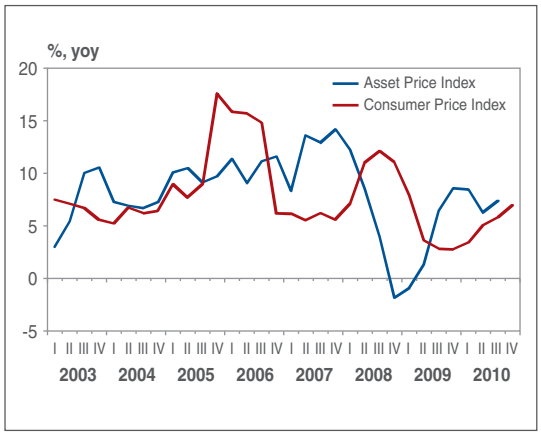

Figure 2.23.
Asset Prices and Inflation

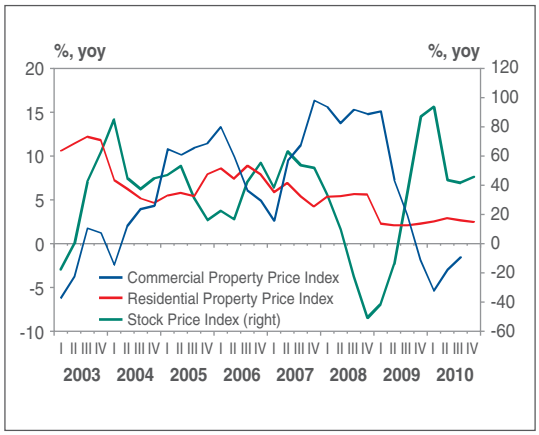

Figure 2.24.
Property Price Index and JCI

Figure 2.24 shows the volatility of share prices compared to house prices (residential and commercial). Changes in the three prices mentioned above can be observed to be independent, meaning that there is no strong correlation between one and the others.

If asset prices are included as a component of inflation, a number of constraints appear to undermine its implementation as follows:

- Assets on the financial market are not consumable goods, therefore incongruous with the other components of inflation.
- There are difficulties in determining which asset prices should be included in the calculation of inflation considering that there are many types of asset and each with their own respective characteristics.
- There are difficulties determining the weight in the calculation of inflation.
- Excessive asset price hikes due to speculation will affect the level of inflation.

Considering the arguments presented above, in its formulation of monetary policy Bank Indonesia tends to favour the second opinion, namely not to respond to shifts in asset prices. It is sufficient to treat asset prices as a good information variable, *not* a determinant of raising/lowering the policy rate since the interest rate could fluctuate as much as asset prices. Bank Indonesia should continue to monitor asset prices and identify the possible bubbles. In the event of a bubble, the central bank could take no response, respond by raising interest rates,

or respond by introducing prudential regulations (macro prudential policy), for instance a loan-to-value ratio (LTV) or countercyclical CAR.

Monitoring asset prices is crucial for a central bank; therefore, measures of asset price indictors must be enhanced. For example, currently used property price indicators, residential and commercial, need to be refined to better represent actual conditions. In addition, a thorough study to formulate composite asset price indicators is needed.[42]

Looking ahead, further research is required about whether current house prices and share prices correlate to future headline inflation or core inflation. Therefore, the benefit of including asset prices will depend on the reliability of asset prices in terms of predicting headline or core inflation.

2.4 Monetary Policy Response to the Characteristics and Dynamics of Inflation

In general, the application of a monetary policy response to control inflation first requires looking at the characteristics and dynamics of CPI inflation in Indonesia.

1. Core inflationary pressures can stem from excess demand, which occurs because of production capacity constraints in meeting demand (capacity constraints). This factor more commonly affects agricultural land capacity and the capacity of supporting production and distribution infrastructure, like the road network and supply of electricity. Meanwhile, demand conditions in the manufacturing sector, in general, can be offset by domestic production capacity.
2. Core inflation does not fully represent demand-induced inflation, as reflected, for example, by higher wages, overtime costs per unit, or a wider profit margin as a result of stronger demand for output.
3. Core inflation can occur due to cost-push factors that are not triggered by stronger domestic demand but by more expensive imported raw materials (imported inflation), rupiah depreciation, intermediate input price inflation classified as administered commodities, the minimum wage increases, and higher interest cost of capital goods. Core inflation also covers imported finished goods, the prices of which are determined by price hikes abroad, international commodity prices and rupiah depreciation that are not subject to domestic

42 Currently, asset price indices are based on residential property prices, commercial property prices and the Jakarta Composite Index (JCI) with respective weightings of 60%, 35% and 5%.

demand. Core inflation can even result from the spillover effect of volatile food inflation and second-round administered inflation. Furthermore, core inflation is also affected by profit margin flexibility in response to changes in demand or costs. In turn, market forces and the level of efficiency influence the flexibility. Finally, core inflation can be influenced by changes in demand elasticity to seasonal prices.

4. Disruptions to the production of agricultural food produce, for instance seasonal factors, can raise the prices of some food commodities. A part of commodity inflation spills over to core inflation through food derivatives that use volatile foods as their raw materials.
5. Imported inflation from prices abroad and international commodity prices that, among others, is triggered by imbalances between the demand for and supply of commodities on the international market. Most imported inflation is passed on to core inflation and is affected by the exchange rate.
6. Administered price policy sparks second-round effects on other commodities in the core inflation basket.
7. Shocks affecting volatile foods and administered prices precipitate a spillover effect on inflation expectations. Inflation expectations are still dominated by adaptive behaviour, however, forward-looking behaviour is on the rise.

Based on these specific inflation characteristics, formulating a monetary policy response must pay due regard to the following principles:

1. Monetary policy responds to projected core inflation in line with the achievement of the CPI inflation target. This monetary policy response considers the relative strength of all monetary policy transmission channels as well as the production and revenue structure of the economy in Indonesia. The interest rate is transmitted to inflation through the substitution effect channel and income effect channel from changes in the real interest rate, interest cost of capital to investment channel, direct interest cost of capital to inflation channel, bank credit channel, producers' balance sheet channel, asset price channel, exchange rate channel and expectation inflation channel. The interest rate policy response cannot only refer to a policy rule in macroeconomic model because this monetary policy model, in general, is limited in terms of interest rate transmission channel to inflation.
2. The demand and supply of goods and services, which are normally represented, in terms of monetary policy, by the variable output gap can elicit a direct and indirect monetary policy response through their affect on core inflation.

a. Determining an appropriate monetary response to demand conditions needs to take into account components of core inflation that are triggered more by stronger demand that cannot be offset by supply.

b. Determining an appropriate monetary policy response must consider the limitations of output gap indicators.[43]

3. The response to changes in inflation expectations, as a determinant of core inflation, is taken indirectly through the response to core inflation forecast. Inflation expectations and changes therein are treated as an information variable in the formulation of monetary policy.

   a. Considering that core inflation is a reflection of changes in price determined by good and labour market players, inflation expectations included in core inflation forecast are the expectations of producers, traders and consumers. The expectations of traders and producers have greater influence than consumer expectations because the goods market has a structure of imperfect competition, hence, the majority of producers and traders are price setters while consumers are price takers.

   b. The impact of inflation expectations of financial market players on the core inflation is not considered as part of inflation expectations channel but that of exchange rate pass-through to inflation channel. In this case, financial market players' inflation expectation is treated as an exchange rate determinant through its impact on capital inflows and outflows.

   c. Monetary policy response to changes in inflation expectations due to non-core inflationary shocks, for instance because of volatile foods or administered prices shock, needs to consider the shocks effect on worsened inflation expectations, whether it is short- or long-lived. It also needs to assess the shock effect on triggering wage-price spiral.

4. The response to exchange rate changes is not taken directly but rather through its influence on the forecast of core inflation and output gap. The direct response to the exchange rate is through foreign exchange intervention policy that aims to maintain or reduce exchange rate volatility.

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43 The output gap (GDP gap) is actually not an indicator that illustrates the ability of supply (domestic or external) to meet domestic demand for goods and services in the CPI basket, which is subsequently a determinant of core inflation. The output gap is an indicator that reflects the ability of GDP as a form of domestic supply to meet domestic and external demand. In addition, the output gap is not obtained from surveys or censuses (unobservable), it is estimated from other observable indicators through a number of alternative mathematical and statistical techniques. Consequently, estimations of the output gap contain high uncertainty, which affects the accuracy of core inflation forecast.

5. Interest rate policy does not respond directly to shifts in asset price. Asset price is treated as information variable, which its performance should be monitored and its potential price bubbles identified. Asset price bubbles can be responded to by raising interest rates or through macroprudential policy such as prudential regulations like the loan-to-value ratio and countercyclical CAR.

Chapter

3

Strengthening Exchange Rate and Capital Flows Management Framework

3.1 Role of Exchange Rate in ITF

Exchange rate is one of the macroeconomic variables that plays an important role in emerging market countries, including Indonesia. For decades most developing countries adopted a fixed exchange rate or managed exchange rate system. However, exchange rate system underwent a drastic change, mainly afer Asian currency crisis in 1997. The fact that many developing countries abandoned a rigid exchange rate system is also in line with the widespread implementation of the ITF in developing countries.

In the ITF, the free floating exchange rate system is the optimal choice based on the assumption that if uncovered interest parity (UIP) holds, exchange rate acts as a shock absorber over the economic turmoil. In this condition, changes in interest rate policy are expected to affect exchange rate movements, both through domestic demand as well as financial channels, which in turn affect inflation. Although it is believed that free-floating exchange rate is one of the preconditions for the ITF implementation, there are some major questions on the appropriate exchange rate policy within monetary policy framework in ITF countries with different levels of economic openness.

Economic openness of a country has consequences on the implementation of monetary policy. In this regard, there are three strategic issues that need to be considered in implementing monetary policy, that is, exchange rate system, foreign exchange system, and the independence

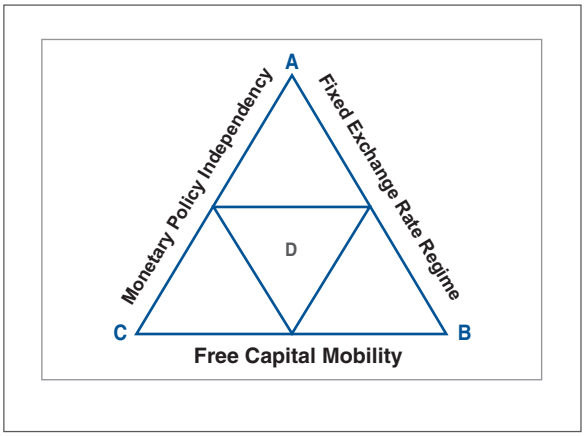

Figure 3.1
The Triangle of Policy Trilemma

of monetary policy implementation (from external influences). Generally, those three strategies cannot be implemented simultaneously, and this condition is known as policy trilemma (impossible trinity), as coined by Mundel (1968). In line with this proposition, some empirical studies conclude that only two out of the three conditions can be implemented simultaneously. These choices can be illustrated in every corner of the "triangle trilemma", that is, A, B, or C (Figure 3.1).

For example, to implement an independent monetary policy in a highly open economy (C), exchange rate movements should be flexible. If fixed exchange rate system is chosen, monetary policy can be implemented independently, but it should be supported by capital control such that capital flows do not interfere with the implementation of monetary policy (A).

In practice, in line with the increase in global financial markets integration, and large capital flows that give pressures and complication on the implementation of monetary policy, particularly in developing countries, there is a tendency of preference shifting from 'corner solution' to 'middle solution', area around point D. In this condition, there is a more accomodative solution that takes into account certain measures to manage exchange rate movements within a certain range (not fully flexible) and restrict the movements of foreign capital.

3.2 A Shifting Role of Exchange Rate in ITF

3.2.1. The Shifting Role of Exchange Rate and Foreign Exchange Intervention

With a more integrated global financial market, the role of exchange rate tends to move differently from the basic assumption used in the ITF. In this case, exchange rate tends to move exogenously and in some cases even become a shock amplifier in the economy. This is in line with the dynamics of exchange rate that is more influenced by the changes in risk perception of investors in global financial markets compared with the influence of fundamental factors. Meanwhile, with regard to monetary policy, changes in interest rate policy is not strong enough to influence exchange rate, as postulated by the UIP.

Considering current global economic conditions in which there is an increase in economic integration that is accompanied by large flow of capital to developing countries, there is a tendency to choose 'middle solution' of the policy trilemma. If so, to some extent exchange rate can be directed to a level deemed conducive to the macroeconomic development. In line with this, although many emerging market countries formally adopt Inflation Targeting and a floating exchange rate system, in practice these countries continue to intervene in foreign exchange markets. This is mainly undertaken to reduce exchange rate fluctuations and financial markets instability.

Economic theory predicts that non-sterilized intervention can influence exchange rates. With non-sterilized intervention, the purchase (sale) of foreign exchange by a central bank may weaken (strengthen) domestic currency exchange rate through an increase (decrease) of liquidity in money markets. In contrast, sterilized intervention can affect exchange rate through portfolio balance or through signalling. Portfolio balance assumes that investors conducted diversification based on mean variance analysis. As long as domestic bonds and foreign bonds are not perfectly substituted, sterilized intervention will always lead to a change in investors' portfolio. Investors need return - measured with risk premium - to absorb the increase (decrease) in their holding of instruments, which in turn causes depreciation (appreciation) of domestic currency.

Given the amount of intervention is much less than the amount of foreign exchange trading, many economists are skeptical on the ability of intervention to affect exchange rate through portfolio balance. This is supported by a number of studies that find the weakness of portfolio balance channel (e.g. Evans and Lyons, 2001). The refore, it is also believed that the influence of intervention runs through signalling. If Central bank implements a credible foreign exchange intervention to indicate the desired changes in monetary policy, the change in exchange

rate occurs through signalling. The direction of policy and the belief monetary authorities on foreign exchange market is expressed explicitly to stabilize and direct the markets. As shown by Dominguez and Frankel (1993), the impact of intervention through signalling is often larger than through portfolio balance.

Some studies try to examine the effectiveness of foreign exchange intervention by ITF central banks. Domac and Mendoza (2004) have shown that foreign exchange market intervention in Mexico and Turkey can effectively reduce exchange rate volatility. Kamil (2008) found that foreign exchange intervention in Columbia was quite effective in influencing exchange rate level in 2004-2006. But in 2007, the Columbian central banks intervention was not effective in reducing/decelerating its currency appreciation. Empirical evidence has shown that foreign exchange intervention can affect exchange rates credibly even in a country that implements ITF. Yet, the evidence also indicates the limitations of the intervention. Intervention in turn can trigger exchange rate instability if market players see any inconsistency between the achievement of inflation goals and the objectives of exchange rate intervention. Evidence by Kamil (2008) in Columbia has shown that the interventions taken when a country's economy is in overheating would actually result in a higher volume of speculative trading.

3.2.2. Exchange Rate Management to Achieve Inflation Target

The inclination of developing countries in general to direct their exchange rates to the optmal level from macroeconomic point of view has already been a common phenomenon. Some studies have highlighted the reluctance of developing countries to let their currencies move freely, or 'fear of floating' (Calvo and Reinhart 2000). This is due to the fact that a sharp fluctuation in exchange rate potentially worsen inflationary pressures and financial sector vulnerabilities. This condition is also takes place in Indonesia that since 1997's crisis has adopted floating exchange rate regime, but up to some extent Rupiah is determined by factors beyond market forces. This is due to Bank Indonesia' needs to prevent a sharp exchange rate fluctuation and is always in stand to smooth exchange rate movements.

There are a number of reasons for monetary authority to keep some control over exchange rate movements, even when the authority implements ITF framework. *First*, the level of exchange rate affects domestic prices (exchange rate pass through). In this case, high level of exchange rate pass through on domestic good prices implies that exchange rate movement plays an important role in monetary policy. Thus, managing exchange rate aiming to achieve inlation target is not completely conflicting with ITF.

Second, large amount of foreign debt also worsens the situation if foregin exchange depreciation takes place. A special measure should be taken if there is fiscal dominance, in which a large amount of govermnet's debt is denominated in foreign currencies. This in turn causes a political pressure on cenral banks to limit domestic currency depreciation. *Third*, less developed financial market needs 'dollar peg' as an informal hedging for both exporters and importers. *Fourth*, concerns over fluctuating capital flows which lead to higher exchange rate volatility may worsen economic condition.

In order to maintain exchange rate stability, the intervention of foreign currency's supply and demand in markets is commoly done by central bank. However, in many countries interest rate policy has been used as a tool to maintain exchange rate stability. This happens mainly in countries with credibility issue or countries adopting inflation targeting where exchange rate pass-through to inflation is quite high (Calvo & Reinhart, 2002). The fact that emerging market countries tend to have relatively high exchange rate pass-through and low credibility, the use of interest rate to maintain exchange rates - besides as a response to inflation pressure - can also explain why interest rate volatility in emerging markets is relatively higher. Based on Bank Indonesia's research (2008), Bank Indonesia needs to maintain Rupiah's stability so that exchange rate depreciation is not too large because the pass-through effect of exchange rate to inflation. The dynamics of inflation have shown that inflation in Indonesia is still vulnerable to external shocks in which exchange rate pass-through coefficient is still quite high and the world commodity prices fluctuation contributes a significant impact on inflation (Kurniati, 2007).

If exchange rate is used as an instrument to help achieving inflation target then factors underlying exchange rate movements need to be understood well. In general, factors affecting exchange rate can be divided into two major categories, namely non-fundamental factors (e.g. market sentiment and risk aversion), and fundamental factors such as terms of trade (TOT), interest rate differential (IRD), productivity (TNT), and Net Foreign assets (NFA).

Edwards and Sahminan (2008) show that, a fundamental factor that significantly affects exchange rate movements is changes in NFA. This suggests that foreign capital inflows would lead to Rupiah's appreciation (and vice versa). The model used in their research highlights a fact that although persistent current account surplus is one factor triggering appreciation pressures, yet the role of fluctuations in capital flows over the short term remains dominant. Meanwhile, the rise of TOT level, reflecting the rise in Indonesia's export prices relative to Indonesia's import prices, also affects Rupiah's appreciation. This in turn may lead to increased supply of foreign exchange which finally can put appreciation pressure on the rupiah.

Other factors considered having an impact on capital flows, and then exchange rate, is IRD. The difference in interest rates will trigger a large capital flows into (or from) the economy that in turn affects exchange rates. Yet, a research by Edwards and Sahminan (2008) also highlights endogeneity between interest rates and exchange rates makes it difficult to determine which factor precedes the others.[44]

In general, Edwards and Sahminan's (2008) study concludes that the main factors affecting exchange rates in Indonesia are market sentiment and capital flows. While the effects of other factors, such as IRD and TOT are not as large as predicted. This could be due to tight exchange rate management. It was admitted that the central bank seeks to manage the exchange rate, especially in times of turmoil. Of course, the management of exchange rate is conducted to achieve Bank Indonesia's main objective, that is a low and stable inflation. Bank Indonesia will keep monitor closely the developments in inflation and strengthen exchange rate policy that is in line with efforts to reduce inflationary pressures.

3.2.3. The Role of Exchange Rate in Monetary Policy Reaction Function

One of the main questions on the role of exchange rate in ITF monetary policy is whether exchange rate needs to be explicitly included into the central bank's policy reaction function. For many emerging market countries adopting ITF, the appropriate role of exchange rate in monetary policy is a sensitive and difficult issue. In many countries, there is a reluctance to let exchange rate to move freely although the ITF has been adopted (Roger et al 2009). This becomes obvious, mainly in countries where exchange rate has a major role as policy anchor. Roger et.al. (2009) show that, overall, although the include of exchange rate in the policy response function is beneficial in terms of output volatility and inflation, the the weight of exchange rate should small.

Taylor (2001) says that no compelling evidence that supports the need of exchange rate to be inlcuded in a monetary policy response function. The argument is based on the fact that the exchange rate has been indirectly accounted in the standard ITF, and the appropriate response to the exchange rate depends on the nature of the shock. More recent research on policy rules in inflation targeting provides mixed evidence on whether exchange rate should be included into policy response. For example, Cavoli and Rajan (2006) say that there is a possible benefit

44 In theory, high IRD will attract capital inflows, resulting in appreciation pressure of exchange rate. Yet, the decision to adjust interest rates cannot be apart from exchange rate movement. For example, in April and May 2003, Bank Indonesia had explicitly stated that because exchange rate appreciated substantially, there was a room for central bank to lower the interest rate. This shows that the concern that the exchange rate affects interest rates to change.

of including the exchange rate into policy response in an economy with vulnerable financial condition. However, their study found that the optimal weight of the exchange rate is quite small.

In contrast, a study by Batini et al (2007) for an economy that highly depends on dollar concludes that it is not necessary to include exchange rate in monetary policy rule in countries with vulnerable financial condition. They argue that in order to reach inflation target, the exchange rate flexibility does not need to be restricted. This is because dollarization weakens output gap transmission relative to exchange rate channel.

Edwards (2006) gives an evaluation on whether ITF central banks need to include exchange rate explicitly into their monetary policy. This question is, of course, related to some important policy issues, including economic costs incurred by exchange rate misalignment and 'fear of floating.' Edwards found that most analysis on the ITF does not include exchange rate response into policy reaction function. In fact, discussions in the ITF literature tend to ignore open economy issues.

There are some reasons for the scepticism on the need to include exchange rate in monetary policy reaction function. *First*, in a model with a correct specification, exchange rate has had an indirect role through its effects on inflation and output. *Second,* by putting exchange rate (or other asset prices) into Taylor's rule, the volatility in monetary policy increases. Edwards's conclusion is quite consistent with the argument of Mishkin and Schmidt-Hebbel (2001) who said that, in implementing monetary policy, central bank should consider the effects of exchange rate on inflation and output gap, but not the effect of exchange rate in a separate way. Mishkin and Schmidt-Hebbel said that targeting exchange rate may worsen monetary policy's performance.

The description above shows the issue on monetary policy needs to respond exchange rate has not been addressed conclusively. As noted by Edwards (2006), whether exchange rate needs to be explicitly included in monetary policy response is not a one size fit all issue. Instead, this is an empirical question specifically to each country and entirely depends on structural characteristics and loss function of the authority in each country. In practice, ITF central banks in general consider that exchange rate plays a role in monetary policy mainly because of exchange rate effects on inflation.Yet, central banks generally are quite reluctant to acknowledge that exchange rate has been directly included into monetary policy rules. Regardless central banks' acknowledgmenet, Mohanty and Klau (2005) found an indication that most ITF central banks take exchange rate into account when deciding monetary policy stance.

Besides the argument on the exchange rate's role in monetary policy rules, another issue raised is whether exchange rate need to be managed at certain path. Ravenna dan Natalucci (2008) found that smoothing exchange rate significantly has a negative macroeconomic consequences when there is a substantial Balassa-Samuelson effect due to the difference between productivity growth of tradeable sectors and non-tradeable sector. Nevertheless, as pointed out by McCallum (2006), the approach based on exchange rate in the ITF can be beneficial to a quite open economy such as Singapore.

3.3 Managing Capital Flows in ITF

3.3.1 Policy Framework in Dealing wih Capital Flows

As mentioned before, the impossible trinity states that out of three strategy options (implementation of an independent monetary policy, fixed exchange rate system, and free foreign exchange system) only two that can be implemented simultaneously. Thus, when an economy decides to choose an independent monetary policy implementation in order to achieve the inflation target (ITF), then other policy choices are limited to the free foreign exchange system so that exchange rate system is left floating, or using fixed exchange rate with foreign exchange control system.

In Indonesia, that adopt free foreign capital flows, ITF policy should be accompanied by free floating floating exchange rate system in which exchange rate functions acts as a shock absorber. Nevertheless, now this option is facing a challenge in which there is excess liquidity in global economy. This condition causes large capital inflows to emerging markets, including Indonesia, and results in a policy complication. This complication occurs when solid macroeconomic fundamentals and high economic growth lead to inflationary pressures. To overcome this issue, one traditional way to respond inflationary pressures is by raising interest rate. Nevertheless, amid large capital inflows, increasing reference interest rates potentially attracts more foreign capital inflows, resulting in Rupiah appreciation. This in turn can disturb export competitiveness. Therefore, this condition becomes a dilemma for decision makers in which judgements on the priority objectives is needed so that an exchange rate policy that in line with the economic needs can be determined.

In managing the trilemma amidst large foreign capital inflows, some policy stages and the right mix are needed. In general, the policy stages can be divided into three parts.[45] In the first stage, central bank seeks to implement macroeconomic policy consistently with some ceonventional policies; this is crucial to maintain a positive perception on economic condition in general. More specifically, policy response in this stage includes allowing exchange rates to strengthen, foreign reserves accumulation and the use of other monetary and fiscal policies. Besides applying conventional policies, central bank can also begin to implement prudential and structural policies to deal with capital flows such as limiting Net Open Position (NOP) of foreign exchange and others (See Table 3.1. Stages in Policy Mix to Deal with Foreign Capital Flows).

Table 3.1.
Stages in Policy Mix to Deal with Capital Flows

Step of Policy		Example	Timeline
First	Consistent macroeconomic policies coupled with prudential and structural measures.	Conventional policies (incl. ER Flexibility, Foreign Exchange Intervention, International reserves accumulation, liquidity management) followed by prudential dan structural measures (Limiting forex NOP, Limiting bank loan ratio in forex, Capital Requirements for forex loan, RR for short dollar position,etc.).	When needed
Second	Capital Flow Management (CFM) without discrimination based on Residency Capital Flow Management	RR on FX deposits, Minimum Holding Period, tax for non-deposit forex loan, withholding tax for state bonds.	*Second line of defense*
Third	CFM with residential based discrimination	Fee on foreign purchase of commercial papers issued by central bank, RR on NR deposits, tax on stocks and bonds for foreign buyers.	When other steps proven to be not efficacious

Source: IMF, Recent Experiences in Managing Capital Inflows: Cross-Cutting Themes and Possible Guidelines (Februari 14,2011), processed

In the second stage, when the economy is faced with a tougher challenge in terms of larger foreign capital flows amid increasing domestic inflationary pressure, central bank can implement Capital Flow Management (CFM) policies. According to IMF guidelines, CFM policy should be applied when an economy meets three conditions: (i) exchange rate is undervalued multilaterally; (ii) foreign exchange reserves is more than sufficient amount such that incur cost, (iii) the economy is overheating in which inflation outlook increases and there's a risk of credit boom or asset price boom (See Figure 3.2).

45 Possible Guidelines for Managing Capital Inflows (IMF, Recent Experiences in Managing Capital Inflows: Cross-Cutting Themes and Possible Guidelines (February 14, 2011)).

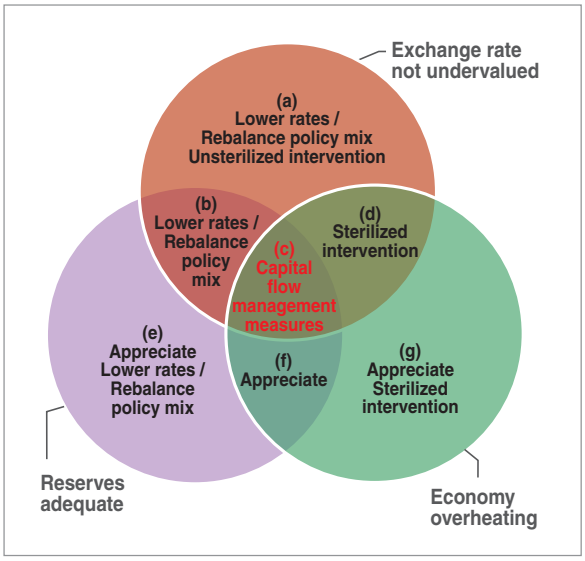

Figure 3.2.
Policy Options to Deal with Capital Inflows

These three conditions that needed before implementing CFM can be illustrated in Figure 3.2, in which each circle represents the case where one of the conditions mentioned above has occured, that is (i) exchange rate is not undervalued; (ii) excess international reserves; and (iii) the economy is overheating. For instance, a circle at the top illustrates exchange rate position is consistent with economic fundamentals or even overvalued. Meanwhile, the intersections marked with letters B to F describe various type of condition. Section C describes the area where the CFM considered an appropriate policy. Section B illustrates the area in which exchange rate is not undervalued and foreign exchange reserves is adequate that one optional policies is to lower interest rate.

Non-shaded areas A, C and G illustrate that only one of the three conditions met. For instance, section G describes the condition in which the economy is overheating (condition (iii)), while exchange rate is still undervalued and foreign exchange reserves is insufficient. Thus, the appropriate policy should let appreciation to reduce inflation, and then accompanied by sterilized intervention to foster foreign exchange reserves.

When various measures undertaken in the second stage of the policy mix is considered insufficient, the third stage of policy mix needed is CFM with discrimination based on residence.

The type of policy mix in general is classified as capital controls. Various policies such as Tobin tax and URR belong to this category. Sequence of policy stages to address capital inflows is very important, particularly for a very open economy such as Indonesia (in line with the free foreign exchange system). Stages move from the measures that are in line with free foreign exchange system towards a more closed system.

(a) Intervention and Accumulation of Foreign Exchange Reserves (First Policy Stage)

The first policy stage in facing capital inflows covers various conventional policies, including intervention. In general, intervention can be accepted as a valid policy tool, as described by Warjiyo (2005), in which intervention is a tool that can help monetary policy in stabilizing market expectations, calming down volatile markets and limiting short-term non fundamental exchange rate movements.

Thus, with the implementation of flexible ITF, the intervention should be directed to find a more accomodative solution on impossible trinity, in which exchange rate is not allowed to freely float following market mechanism. In this regard, through a measurable foreign exchange market intervention, exchange rate movement remains need to be directed in such a way that it is in line with economic fundamentals .

Based on empirical experiences, some key lessons learned in the implementation of foreign exchange intervention are: (i) intervention is not a separate instrument and it is ineffective if permanently contradicts with macroeconomic objectives; (ii) can be used to cope with temporary exchange rate shocks, while in the long run the efficiency and forex market deepening is more effective stabilize the exchange rate; and (iii) can help a credible and effective implementation of macroeconomic policy, while on the other hand credibility of policies and institutions will determine the effectiveness of intervention.

As described in Figure 3.2, when exchange rate condition is in line with fundamental (not undervalued) and foreign exchange reserves is considered insufficient then intervention can be implemented to contain a sharp appreciation of the exchange rate along with accumulating foreign exchange reserves for self insurance. (See 3.2: Rationale and Criteria for Foeign Reserves Adequacy).

Efforts to accumulate foreign exchange reserves for self insurance have been done through measurable interventions. These efforts are also in line with Indonesian condition that is relatively exposed to global risk aversion that a sufficient foreign exchange reserve is necessary

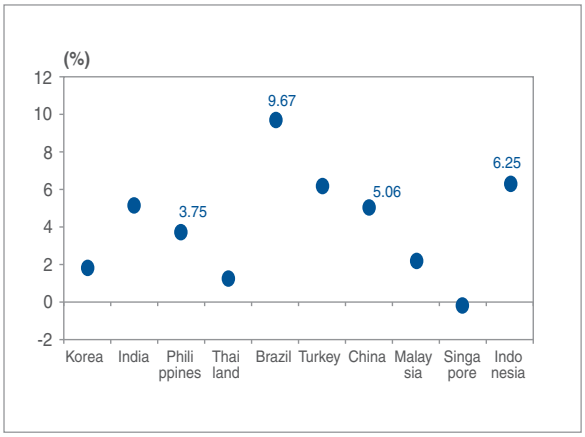

Figure 3.3.
Emerging Markets and US Interest Rate Differential

to anticipate the possibility of capital reversal. In addition, an optimal foreign exchange reserves and considered sufficient by international community will help Indonesia's efforts to reach investment grade that in turn can lower cost of fund for development.

However, from macroeconomic stability point of view, the accumulation of foreign reserves to keep exchange rate from excessive appreciation, will result in a loose monetary condition (excess liquidity). Excess liquidity amid looming economic overheating should be sterilized through an open market operation (OMO). This poliy creates a new problem, that is, a high cost of sterilization. The difference between interest rate incomes from the accumulation of foreign reserves and incurred interest expenses for sterilization will undermine central bank's balance sheet. This condition has been experienced by many central banks in emerging markets.

(b) Capital Flows Management (Stage 2 and 3)

As described above, when conventional policies can no longer deal with capital inflows and when the economy meet the following conditions: (i) the exchange rate is not undervalued, (ii) foreign exchange reserve is more than adequate, and (iii) the economy is overheating, then the CFM is likely to be implemented. CFM policy is generally temporary and is used to address specific risks related to some types of capital flows, particularly affect a particular asset or because the inflow is short term. Thus, generally CFM does not preclude a more stable, long term and productive capital flows.

There are two types of Capital Flow Management (CFM), as described in Table 3.1. The first type is non-discriminating CFM on non-residents, oftenly called as *macroprudentials*. And the second type is the discriminating CFM on non-residents. The second type of CFM is generally classified as capital controls.

The condition of Indonesian economy with the threat of inflation pressures, sufficient foreign exchange reserves and exchange rate that is not undervalued has met the three prerequisites to apply CFM. Therefore, since 2010 Indonesia has started to implement some complementary policies to address large amount of foreign capital inflows, such as *One Month Holding Period* (OMHP) for SBI.

With this policy, the buyers of SBI in primary and secondary markets, both domestic as well as non-residents, are required to hold SBI for a month. Moreover, BI also reduces the frequency of auctions and stops issuing 1 month and 3 month tenure of SBI, and replaces them by term deposit with 6 and 9 month tenure. All these steps are taken to reduce the availability of the most attractive instruments for short-term funds (arbitrage and carry trade).

Besides as a tool to prevent short-term foreign capital inflows by reducing the most attractive instruments to foreign investors ('putting sands on the wheel'), a policy such as OMHP also serves as a preventive action for 'large and sudden capital outflow'. OMHP regulation clearly states that investors cannot suddenly sell their SBIs.

Other than OMHP, BI also implements different types of CFM policies, including the increase of Statutory Reserves Requirement for Foreign Exchange (FX RR) and the re-enactment of short-term foreign loan restriction by 30% of bank capital (vostro accounts). Various measures undertaken by BI are still non-discriminatory or macroprudentials policy and are not included as capital control because of their non-discriminatory nature.

In general, Indonesia and some emerging market countries are not only facing trilemma at a strategic level but also at tactical level (Agung, 2010). Tactical trilemma occurs when foreign exchange intervention policy is implemented along with accumulation of foreign exchange reserves to reduce exchange rate appreciation pressures and then is followed by sterilization policy to manage liquidity. This policy is in turn increase the cost borne by the central bank and then deteriorate central bank's balance sheet (Chart 3.4). In this context, macroprudential measures or CFM are very helpful to adress such a problem becuase with the presence of macroprudential measures, the amount of interventions for dealing with exchange rate appreciation decreases. This in turn also reduces the pressures on the central bank's balance sheet.

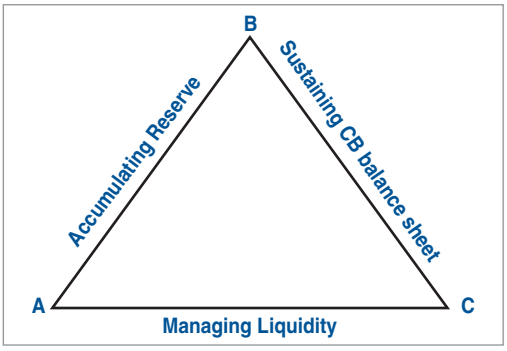

Figure 3.4.
Tactical Trilemma

With macroprudential policy that uses a wide range of instruments to manage capital inflows, the use of interest rates to direct inflation expectations becoming more independent, and give more room for the central bank to achieve its main goal, that is, controlling inflation.

3.3.2 BI policies for Capital Flows and Exchange Rates Management

In maintaining exchange rate stability, Indonesian economy in the post-2008 global crisis experienced a strong pressure of Rupiah's appreciation. The appreciation due to large capital inflows amid strong domestic demand in turn put pressure on current account. A fast appreciation potentially weakens export competitiveness that in turn lowers foreign demand on exports and increases imports when domestic economy is at an expansion stage. A combination of weakening exports and increasing imports undermine external balance, in which the appreciation reduce net export that may lead to current account deficit. Acceleration of the Rupiah's appreciation may lead current account to become defisit faster and larger (large and sudden current account adjustment). This potentially triggers macroeconomic instability since the exchange rate will in turn depreciate sharply as a correction mechanism of deficit current account.

A persistent and fast appreciation that is mainly due to a big role of portfolio investment in capital inflows will also have some implications on unsustainable current-account condition if the current account turns into a deficit. This occurs considering that the current account

deficit can be sustainable as long as supported by the continuing and a long run capital inflow. Therefore, if the current account deficit cannot be avoided, a structural policy in the real sector is needed to encourage long-term capital flows (sustainable capital inflows), particularly direct investment. From the historical analysis of the current account, strong domestic demand and continuing Rupiah appreciation of the Rupiah will further accelerate imports and has a potential to disturb external balance.

Based on recent developments, non-oil imports is indicated to rise sharply, while non-oil exports are relatively stable in increasing trend that non-oil trade balance surplus is declining. This may indicate that the surplus reversal period of the current account is often characterized by the decreasing of non-oil trade balance.

On the other hand, Bank Indonesia has taken some policies to manage Rupiah exchange rate by intervening foreign exchange markets (purchase of U.S. dollars). Furthermore, foreign exchange intervention also contributes to the accumulated amount of foreign exchange reserves. To prevent excess balance of money supply that is inflationary, additional Rupiah liquidity in the domestic market due to Bank Indonesia's intervention should be absorbed by Bank Indonesia through an increase in the operation of monetary instruments , and therefore the increase in reserves can be followed by an increase in monetary operations instruments position. The increase in the amount of monetary liabilities will further increase the burden of bank Indonesia's monetary operations.

Given the complexity faced by relying only on the intervention, then the exchange rate stabilization policy need to be complemented with the implementation of macroprudential policy for capital flows management. During 2010, one of the implemented policies was one month holding period (OMHP) for SBI. In addition, Bank Indonesia also issued term deposit as an effort to manage the movement of foreign portfolio investors in monetary instruments. So far, the policy has been able to minimize exchange rate volatility and foreign portfolio movements in monetary instruments. Moreover, Bank Indonesia has issued several other macroprudensial policies in 2011, that is the restriction on daily outstanding balance of foreign short-term loan, gradual increase reserve requirement for foreign currency, and *six month holding period* (6MHP) policy.

(a) Exchange Rate Policy

Exchange rate stabilization policy and capital flow management are aimed at maintaining internal and external stabilities. Amid massive foreign capital inflows and appreciation pressures,

exchange rate stabilization policy is directed to minimize exchange rate volatility so that it is consistent with growth and macroeconomic developments, particularly in controlling and stabilizing prices. Exchange rate stabilization policy also acts as a tool to anticipate capital reversal by maintaining foreign reserves at appropriate level to meet imports, foreign currency liabilities as well as self insurance.

To contain excessive Rupiah's appreciation, Bank Indonesia undertook measurable intervention in foreign exchange markets. Efforts to stabilize exchange rate have been done in symmetrically by accommodating a more flexible exchange rate, yet continues to monitor exchange rate trends of other countries in the region such that Rupiah's competitiveness remained secured. Thus, Rupiah's movements have been managed in such a way that it will not overshoot, is not too volatile, and does not cause excessive impacts on the supply of domestic liquidity.

Besides, Bank Indonesia also improves monitoring of foreign exchange transactions and non-bank companies' foreign debt to support the formulation of more anticipative and responsive exchange rate policy responses.[46],[47] The implementation of this policy is based on considerations that the consistency between exchange rate movements and macroeconomic targets and monetary operation impacts of excess liquidity due stabilizing exchange rate.

(b) Month Holding Period (OMHP) of Certificate of Bank Indonesia

Although financing of Indonesian economy still needs foreign capital, most foreign capital inflows are still in short-term. The appetite of foreign investors on SBI is quite large due to its very liquid markets. The increase of foreign investors holding on SBI instruments is in line with global excess liquidity amidst limited intermediation to the real sector and the limited financial instruments that can be used as an instrument for bank's liquidity management. Meanwhile, high portion of foreign funds as well as fluctuations in foreign capital flows into SBI potentialy increase exchange rate volatility that may disturb the achievement of economic balance (internal and external balance) and inhibit medium term economic sustainability.

To overcome this problem, Bank Indonesia equips current foreign capital management policy with a macroprudential policy called OMHP. The movements of portfolio investment in the short-term monetary instruments potentially increase exchange rates volatility. To mitigate

46 BI act No.12/16/PBI/2010 on Foreign Foreign Exchange Transactions Monitoring System against Rupiah.
47 BI act No.12/1/PBI/ 2010 on Overseas Loan for Non Bank Institution.

this risk, Bank Indonesia has implemented the OMHP that requires SBI buyers both in primary or secondary markets to hold SBI for at least 1 month (28 days). During that period, owners of SBI are not allowed to transfer their SBI either in outright or repo to another party, unless repo to Bank Indonesia. This policy is applied for resident or non-resident and intended to make the SBI ownership and transaction in the secondary market can shift to a longer term instruments, and thus supporting the deepening of domestic financial markets and the effectiveness of monetary management. To meet short-term liquidity needs, SBI buyers can do repo transaction with Bank Indonesia. This policy came into effect on July 7, 2010.

OMHP policy on the purchase of SBI has sucessfully reduced exchange rate volatility. During the second quarter of 2010 (before OMHP), rupiah volatility reached 7.52% (annualized), while in the second and third quarters (after the implementation of OMHP) rupiah volatility decreased to 3.48% and 2.88% (annualized).

Along with the large capital inflows to SBI, OMHP has been increased to 6MHP. Thus, both the buyers in primary or secondary market must hold the SBI for at least 6 months. With the 6MHP, SBI for 3 and 6 months must be held to maturity (Hold To Maturity), and for the 9-month, the buyers should hold the SBI for 6 months and then non-banks institutions can hold them for the remaining 3 months (up to the maturity).

The 6MHP policy has been implemented for 'putting sands in the wheel', an effort to reduce reversal volatility (large and sudden outflow) that can occur when negative sentiment on Indonesia or emerging market countries in general arises.

(c) Rupiah Term Deposit

In July 2010, Bank Indonesia introduced Rupiah term deposit instrument that is intended to manage liquidity in a more permanent way as well as to manage investment portfolio movements in monetary instruments. One of the sources of excess liquidity is large foreign capital inflows on the short-term instruments. Therefore, monetary instrument in the form of non-marketable security is required to absorb liquidity more permanently. This monetary instrument is term deposit, with more than 6 months tenor. This instrument has been widely used in other countries, such as Malaysia and Korea, to manage investment portfolio movements in monetary instruments. In addition, with the increase of term deposit portion in the open market operation, exchange rate becomes less fluctuated due to the high activity of portfolio investment in marketable monetary instruments such as SBI.

The supply of term deposit is provided gradually to facilitate banking system in adapting their liquidity management. During 2010, the volume of term deposit tends to fluctuate and was influenced by bank preference in reponding to BI's policy and economic cycles that affects money market interest rate movements. In September 2010, the term deposit with maturity less than a month increased. This was due to bank's anticipation on BI's plan to change primary banking reserve requirement in November. Since October, Bank Indonesia began to reduce its SBI auction target simultaneously with the opening of term deposits auction with 1 and 2 month's tenure. In the subsequent period, target to reduce the SBI auction has been followed by term deposits auctions with 2 and 3 month tenure.

(d) Limiting Bank's Daily Balance of Short-Term Foreign Debt

Along with the increase in foreign capital inflows, banking's foreign currency liquidity increased substantially, partly due to the increase in short-term foreign debt, including vostro account and short-term global financial instruments. In addition, improving economic and financial systems led banking liquidity condition returned to normal. This is along side with rapid growth of foreign debt that are mostly in the short-term. This condition may increase vulnerability of monetary stability and financial system.

To mitigate the risk, Bank Indonesia has considered to implement again the limitation on bank's daily balance of short-term foreign debt. In 2008, Bank Indonesia has abolished restrictions on bank's daily balance of short-term foreign debt. Along with an increase in risk of foreign capital reversal, Bank Indonesia considered to implement the normalization of restrictions on bank's daily balance of short-term foreign debt. This policy is intended to implement prudential principles in managing short-term foreign debt and to encourage banks' foreign debt towards long term. With this policy, bank's daily balance on short term foreign debt is limited to a maximum of 30% of bank capital. The policy started to be in effect no later than the end of January 2011 with a 3 months transitional period.

Bank Indonesia has also revoked the provision for supplying foreign exchange for domestic companies. In line with the recovered public confidence and improved investor perception on the risk of Indoneian economy, foreign exchange market condition had returned to normal condition. This is marked by an increase in foreign exchange markets' activity as well as a balance between supply and demand of foreign exchange. Thus, company's liquidity need can be provided by domestic foreign exchange markets. With this consideration, Bank Indonesia

viewed that the provision requiring banks to provide foreign exchange for domestic companies was no longer needed. The implementation of these provisions was effective at the end of January 2011.

(e) Minimum Reserves Requirement on Foreign Exchange

The increase in liquidity of banking system emanating from short-term capital flows led to the risk of foreign currency withdrawal for transaction and other needs. Large amount of capital inflows caused a very liquid banking system both in Rupiah and in foreign currencies. Nevertheless, foreign capital inflows tend to fluctuate and potentially increase foreign exchange volatility. This condition in turn increases the risk in banking, particularly if there is large withdrawal of foreign exchange liquidity.. Thus, banks need to strengthen their foreign exchange liquidity management.

Bank Indonesia encourages the improvement of bank liquidity management through adjustment of minimum reserve requirement of foreign exchange. The policy is intended to strengthen banks liquidity management to anticipate an increase in foreign exchange, particularly related to characteristics of portofolio capital that tends to fluctuate. The implementation of minimum reserve requirement on foreign exchange is expected to minimize exchange rate volatility. The adjustment of this policy is also based on the fact that foreign exchange market conditions have returned to normal while the RR level was still 1%, which was the lowest level in the region and is considered insufficient to respond to economic shocks.[48]

The increase in reserve requirement on foreign exchange has been carried out gradually, that was to 5% in March 2011 and to 8% in June 2011. The implementation of gradual increase in reserves requirement on foreign exchange was intended to give enough time for banks to adjust their foreign exchange liquidity management. Under the condition of abundant foreign currency liquidity, the rise in reserves requirement on foreign exchange is estimated to be fulfilled either by using excess rupiah and foreign exchange liquidity. In addition, this policy is expected to have a minimal impact on the cost of funds that it will not disturb banking intermediation.

48 One of Bank Indonesia's policy during the 2008 global financial crisis is the lowering of foreign exchange reserve requirement from 3% to 1%, to reduce the foreign currency liquidity crunch at that time.

(f) Cross-Border Central Banks Cooperation

Bank Indonesia also enhances cooperation with other central banks to strengthen the position of foreign currency liquidity. This cooperation is intended, among others, to address balance of payments and short-term liquidity issues in the region and complement the existing international financial cooperation. One of the cooperation forms is the implementation of the Chiang Mai Initiative on Multilaterization (CMIM) between ASEAN member countries +China, Korea and Japan that was in effect on March 24, 2010. The CMIM Agreement - around 120 billion US Dollars - is a multilateral swap agreements.

With this agreement each member of the CMIM is allowed to do local currency swap with U.S. dollar maximum to the amount of the country can contribute multiplied by a certain multiplier. Along with the implementation of CMIM agreement and to increase safety against global economic risks and challenges, ASEAN+3 countries members are committed to set up a joint and independent regional surveillance unit. In addition, as a continuation of the implementation of Bilateral Currency Swap Arrangement (BCSA) with People's Bank of China that was agreed in 2009, Bank Indonesia issued rules related to the implementation of the agreement. With the implementation of BCSA, the availability of foreign currency is mainly to support securing economic transaction in real sector. This in turn will positively contribute to efforts in preserving and maintaining Rupiah stability.

Box

3.1

Benchmark of Exchange Rate Path

It can be concluded that the role of exchange rates in flexible ITF has shifted from a shock absorber to helping the achievement of central bank main objective, that is, the inflation target. Thus, to maximize such a role, a certain benchmark of exchange rate path, which is considered in line with the fundamental economic conditions, is needed. In determining benchmark of exchange rate path, Bank Indonesia uses various models and methodologies. Besides the model, of course, the role of professional judgment in determining exchange rate path is also important.

Model and Methodology

In determining exchange rate path, Bank Indonesia considers the results of various models. Some models used are based on Purchasing Power Parity (PPP) theroy and real exchange rates. In traditional purchasing power parity (PPP) theory, exchange rate is determined by international trade (current account side of the NPI). Therefore, when domestic prices are higher than international prices (or P = e P *), there will be an adjustment mechanism through an arbitrage for large economy, while for small economy domestic prices will fall if exchange rate is pegged, or if exchange rate is flexible, exchange rate will depreciate so that the prices of foreign products also become more expensive.

Based on more recent version of purchasing power parity (PPP), exchange rate is also detesmined by international capital flows (capital mobility) as reflected in the capital and financial transactions of balance of payments. In this perspective, foreign exchange is an asset and then the determination of exchange rate does not

only depend on general prices (such as CPI inflation) but also depends on interest rate (Uncovered Interest Rate Parity).

PPP theory and the equilibrium real exchange rate are long-term phenomenon that is useful to provide a 'benchmark' for long-term equilibrium exchange rate, that in turn can be used to measure misalignment and competitiveness. This is also used as a basis for other exchange rate theories. Based on basic exchange rate theories, there are some methods to determine medium-long term trend of the exchange rate:

PPP and REER Approaches

Based on PPP theory, there is a concept of real exchange rate (REER), that is a real effective exchange rate that affects economic relation (trade) between a country and its main trading partners. REER equation[49] can be illustrated as:

$$REER = \Sigma\, Wj\, [\Delta Sj\, (\Pi j^* - \Pi j)]$$

Where W is the weight of bilateral trade, S is nominal bilateral exchange rate and Π is inflation. With this concept, a simple index of REER = 100 can be assumed as fundamental exchange rate. Thus the deviation from REER = 100 is considered indicating the occurrence of exchange rate misalignment. Nevertheless, in practice REER is only one simple method to determine misalignment. In fact, misalignment cannot be based on solely from whether REER does not equal to 100, but should also consider the trend and movements of REER in other countries.

Basically, REER reflects a long-term trend of exchange rates towards the PPP level, while in the short-term the real exchange rate equation becomes:

$$qt = \alpha + \rho\, qt\text{-}1 + \varepsilon \quad \text{dengan } 0<\rho<1$$

Since $0<\rho<1$, then the short-term shocks in ε will be followed by real exchange rate adjustment (q) so that the exchange rate return to PPP level.

49 May also describe as:

$$REER = \Pi_i^N \left[\left(\frac{S_t}{S_0} \right) \left(\frac{\pi_t / \pi_t^*}{\pi_0 / \pi_0^*} \right) \right]^{W_i}$$

Macroeconomic Structural Approach (FEER)

Macroeconomic structural approach, also known as Fundamental Equilibrium Exchange Rate (FEER) is used to measure the level of exchange rates on the internal balance (full employment or near zero output gap, low inflation) and external balance (savings-investment gap in normal condition). In other words, as described by Cline and Williamson (2010), FEER is defined as the expected exchange rate that is sustainable based on implented policy. Thus, the FEER model should produce a rate that results in the current account (CA) surplus or deficit that is in line with the capital inflow to a country at a certain cycle. FEER is formulated by by Wren-Lewis (1992) as follows:

$$CA = f(Y, Y^*, I, FEER)$$

Reduced Form Approach

Reduced-form approach measures fundamental exchange rate based on medium-long term equations that reflect main factors affecting exchange rates such as (a) Country's trading position in the world markets (terms of trade, economic ipenness, tariffs, etc.); (b) productivity of tradable and non-tradable; and (c) capital flows (NFA). Examples of such models are Behavioural Effective Exchange Rate (BEER), proposed by Clark and MacDonald (1999), and the Natural Real Exchange Rate (NATREX) as described by Stein (1999).

$$BEER = f(TOT, TNT, NFA)$$

The Approach Chosen to Determine Exchange Rate Path

To determine the choice of exchange rate path, various approaches to exchange rate path are then integrated with a more complete macroeconomic model to see how the resulted inflation projections after including all interactions with other variables. In determining exchange rate path, besides considering the main objective, that is the inflation target, other macroeconomic objectives, mainly economic growth, are also taken into account.

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Chapter

4

Strengthening The Integration of Monetary and Financial System Stability Framework

4.1 Financial Sector Behavior and Monetary Policy Effectiveness

4.1.1 Procyclicality Behavior of the Financial Sector

The financial sector plays an extremely crucial role in macroeconomic stability because of its behavior which triggers excessive procyclicality. Procyclicality is defined as a character of financial sector which pushes an economy to grow faster when in a cycle of expansion and weaken during a period of contraction. Due to its procyclical nature, financial sector can potentially raise macroeconomic instability by developing output fluctuation.

The procyclical character of the financial sector is inherently attributable to a number of factors. *Firstly*, asymmetric information in financial market which trigger financial accelerator. With this kind of market characteristic, when the economy is in a period of contraction and collateral values are low, even a good quality corporation with a profitable project will find it difficult to get access to credit. On the contrary, when economic condition improves and collateral values increase, the same corporation will regain its access to banks and thus adds to economic stimulus. Although financial accelerator is the main mechanism behind the occurrence of procyclicality, the unproportional response of market players in perceiving risks also contributes to the worsening of procyclicality (Borio et al., 2002).

Therefore, procyclicality is not just the result of interactions between business cycle and financial cycle; it is also affected by risk-taking cycle, which is a characteristic marked by over-optimism during economic boom and over-pessimism in times of economic bust cycle (Nijathaworn, 2009). Business cycle is characterized by expansion phase when the economy is in a period of growth and contraction phase when the economy weakens. Financial cycle is characterized by banks' over-expansionary move by increasing leverage in line with expansion phase in business cycle. Contradictorily, banks' behavior will turn to be more conservative through a deleveraging move in line with contraction phase in business cycle. This interaction between business and financial cycle is determined by the response of economic agents against risk besides being influenced by the expectation over future economic conditions, risk perceptions, regulations, and incentives. The behavior alteration against this risk helps explaining why investors' behavior can change from over optimism when facing low risk to over pessimism by avoiding risk. The alteration of this risk taking behavior is the fundamental of a sudden change occurring within the activities in financial system and economy.

The interaction of the three cycles, moving in the same direction while heightening each other, eventually shapes the procyclicality of the financial sector (Table 4.1). The interaction of the three can be typically described in the context of boom-bust cycle. Initially, when the economy moves at an expansion phase characterized by macroeconomy stability and escalating growth, investor confidence raises optimism when assessing the economy. This will lead to the risk-taking behavior, which will eventually push up credit demand and asset prices.

Table 4.1.
Interaction between Business Cycle, Risk Behavior and Financial Cycle

	Business Cycle	Risk-Taking Cycle	Financial Cycle
Expansion Phase	- Macroeconomic stability - Increased economic growth	- Increased confidence and optimism - Increased risk-taking behavior - Increased credit demand	- Decreased isk value and interests rate spread - Increased asset prices, pushing up collateral value - Increased leverage - Increased foreign capital inflows - Increased credit expansion
Contraction Phase	- Increased macro volatility - Decreased economic activity	- Decreased market confidence - Increased risk averse - Decresed demand for credit	- Increased deleveraging - Increased loan loss provision - Increased interest rate spread - Decreased credit expansion - Decreased capital inflows

Source: Nijathaworn (2010), edited.

In this optimistic period, the risk in financial sector goes down, lending rate spread decreases, and risky asset allocation is reduced as banks prefer to apply a short-term perspective to a longer-term one. Surging asset prices push collateral values up thereby boosting credit expansion. This will further improve market confidence and encourage the risk taking behavior as reflected in soaring leverage. The higher credit expansion drives corporations to boost investment and households to raise their consumptions thereby further lifting economic growth. On the contrary, when confidence toward the economy decreases, investor behavior turns into risk aversion mode. As a result, asset prices go down, causing collateral values to fall. Banks respond by deleveraging move, shifting their portfolio from high-risk credit to low-risk asset, such as central bank certificate (SBI) and government bond (SBN), in a bid to maintain their capital adequacy. Reserve allocation is also lifted to anticipate worsening credit quality. This condition slashes credit expansion which, in turn, will be deteriorating the economy.

Secondly, procyclicality may also emerge in line with the characteristic of the regulation in the financial sector which is inherently procyclical. For instance, the rule on capital and provision determines a softer requirement to banks during a period of economic boom or expansion phase. One of the rules in the banking sector which is deemed procyclical is Basel II. Basel II is especially aimed at strengthening banks' risk management. However, it also poses a procyclical impact as Basel II Framework indirectly encourages banks not to accumulate additional capital when banking and economic condition is prospective, and to raise their capital when such condition deteriorates. Consequently, in the event of a crisis banks are required to increase their capital ratio, but they are forced to seek funding in a limited capacity. This may further worsen the banks' condition. In addition, the Internal Rating Based (IRB) approach under Basel II demands that capital requirement be based on banks' estimation on the possibility of default of their loans and related losses, as both of them tend to increase during a crisis period. This may substantially exacerbate the impact of crisis on credit supplies and the whole economy.

Furthermore, accounting standards are suspected of contributing to the triggering of procyclicality. Under accounting standards that assess banks' balance sheet components on the basis of market value approach, if the economic situation is improving, the value of the assets or the performance of banks will also be considered improving so that banks do not need to have high capital requirement and provision. In such a situation, banks are inclined to make expansive moves. However, in the event of a crisis or during a contraction period, their asset values would fall but they would not be able to use their capital or risk provisions immediately

to maintain their balance sheet condition. This will subsequently lead to the worsening of their condition and potentially pose a systemic risk in the banking sector.

In the case of Indonesia, procyclicality phenomenon can be observed through the development of banking credit during both expansion and contraction periods.[50] Observable correlations between average credit growth and economic growth indicate that the higher the economic growth is, the higher the average credit growth would be. Moreover, credit was seen to grow faster than GDP growth during an expansion period and grow slower during economic downturn. For instance, during an expansion period, the country's GDP grew by over 6% and the credit at an average of 25.5%. However, when the economy of the country was in a contraction period, the GDP grew by 3-4% while the credit grew by an average 14.3%. In extreme condition, when the GDP grew below 3%, the credit grew at the average of -12.3%.

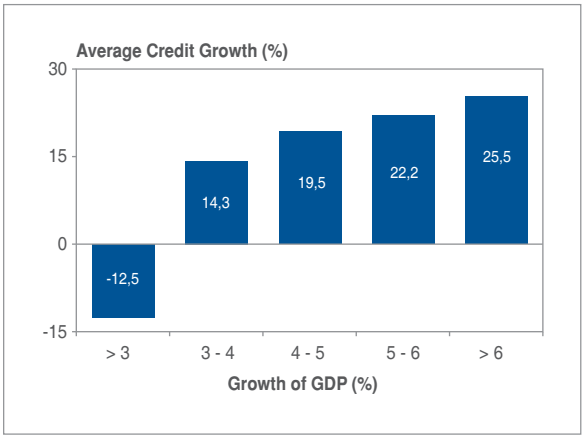

Figure 4.1.
Correlation between Credit and GDP (1990-2010)

Meanwhile, compared to several countries in Asian region, procyclicality in Indonesia is relatively higher than the rest of the countries. Table 4.2 shows procyclicality from several Asian countries measured by correlation coefficient of GDP and real credit.[51]

50 Observation using the post 1997/1998 crisis data, as data from 1997/1998 crisis until 2000 were distorted by credits handed over to BPPN.
51 See Craig, et al (2005).

Table 4.2. Procyclicality of Real Credit and GDP in some Asian countries

Country	Correlation Coefficient *
Indonesia	0.82
Malaysia	0.51
Phillipines	0.33
Thailand	0.32
Australia	0.26
Jepang	0.48
China	0.31
Hongkong SAR	0.30

Source: Craig, et al (2005).
* koefisien korelasi kredit dan PDB riil.

There are some financial system characteristics that can exacerbate the procyclicality in Indonesia. *The first characteristic is* the limited alternatives of non-bank funding sources. Indonesia's financial system highly relies on banks for external funding sources. The limitation of stock market is one of the characteristics of financial systems in Asia (Roldos et al, 2004). Compared to other countries in the region, funding from non-bank sources is still relatively low in Indonesia. Under this system, when credit supplies are in trouble, corporations find it hard to access alternative funding, thereby worsening procyclicality. *The second characteristic* is the significantly growing role of foreign banks in the Indonesian economy which may raise procyclicality, especially when they operate in this country through their branch offices. The branch offices of foreign banks whose credit exposures are decided by their headquarters tend to reduce their credit portfolio in Indonesia during a downswing period (rising country risk), but to add their credit portfolio when country risk falls, hence raising procyclicality of the economy. *The third characteristic* is overreliance on collateral in mitigating credit risk. Surging collateral values during an expansion period encourage banks to provide credit expansion to high risk borrowers. However, when the economy contracts and collateral values go down, banks are forced to withhold credit expansion. *The fourth characteristic is* capital flows which are mostly procyclical or appearing as capital inflows when economic prospects are better or appearing as capital outflows when economic prospects turn worse, thus exacerbating the procyclicality of the Indonesian economy.

4.1.2 The Influence of the Financial Sector on the Effectiveness of Monetary Policy

The complexity of problems accompanied procyclicality behavior in financial sector takes its toll on the works of monetary policy transmission mechanism. Mishkin (2009) says that monetary policies potentially tend to be more efficient during economic crises rather than during normal times, thereby providing a base to carry out macroeconomic risk management to deal with problems related to economic contraction in times of crisis. This statement tells that there is a link between monetary stability and financial sector stability. "*There is no macrostability without financial stability*".[52]

In case of Indonesia, observation results show that there is asymmetrical influence of monetary policy in relation to the influence of financial system behavior which tends to be procyclical (Bank Indonesia, 2010). Feasibility study on the work of "terms structure of interest rate"[53] hypotheses since the start of ITF implementation in July 2005 shows that in normal condition when the economy was in expansion cycle, the sensitivity of monetary policy against macroeconomic aggregate variables appears to work in accordance with a general concept. Any policy interest rate cuts would be followed by decreases in lending rates and increases in credit expansion. This was in line with the presence of risk taking behavior as financial institutions tend to lower its risk perception while at the same time raising risk standard tolerance in extending credit.

Empirically, this development could be seen in the period between July 2006 until July 2007, where the lending rate elasticity against the BI rate cut was quite high, about 0.5. This means that the lending rate declined by 210 bps in response to the BI Rate cut which amounted to 425 bps during that period. However, a different picture was seen during the global economic crisis, when the elasticity of lending rate to BI Rate descended. At that time, bank lending rate during the November 2008 – August 2009 period only dropped by 72 bps, in contrast to BI Rate which nosedived to 300 bps. Meanwhile, during the post crisis period between September 2009 until January 2011, monetary policy stance which was considered

52 Some empirical observations support the facts on the close corelations between finnacial sector behaviour and monetary policy transmission mechanism. Nier and Zicchino (2008) discovers that banking credit supply is affected by monetary policy stance which interacted with balance sheet stress and then transmitted through bank's losses. It concludes that the repurcussions of the interaction between monetary policy stance and the bank's losses grow stronger during a crisis period, with an asumption that financial sector risk magnitude will grow higher in case of economic crisis. Meanwhile, Borio and Zhou (2008) says about the importance of risk taking channel within monetary policy transmission mechanism. Risk taking channel, in contrast to the financial accelerator concept disclosed by Bernanke and Gertler (1999), affects banking credit supply through banks's decision to extend credit in accordance with banks' behaviour changes against credit risks. In connection with this, empirical studies have provided sufficient eveidence over the existence of risk taking channel within monetary policy transmission mechanism.

53 Saying that a long term interest rate is a weighted average of future short term interest rates.

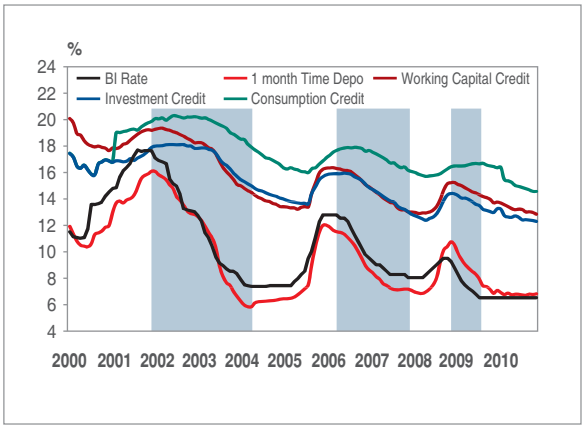

Figure 4.2.
Interest Rates and Economic Cycle

accommodative enough as reflected in the stable BI Rate level, was surprisingly met with the fall in the lending rate. This was due to the fact that as a result of the widening of the spread between the lending rate and the BI Rate ('implied risk premium') prior to the global financial crisis period, there is room for the spread to slip down during economic recovery in the aftermath of the crisis.

Table 4.3.
Elasticity of Lending Rate to Changes in BI Rate

Policy Response		Σ Month	Elasticity (1-3 months lag)
Cyclical Phase	Period		
Expansion			**0.37**
Period 1 (pre crisis)	Jul 2006 - Jul 2007	13	0.49
Period 2 (crisis)	Nov 2008 - Aug 2009	10	0.24
Neutral			**0.85**
Period 1	Jan 2006 - Jun 2006	6	-0.24
Period 2	Aug 2007 - Apr 2008	9	2.88
Period 3	Sep 2009 - Jan 2011	17	-0.09
Contraction			**0.73**
Period 1	Jun 2005 - Dec 2005	6	0.42
Period 2	May 2008 - Oct 2008	6	1.04
All Periods	Jul 2005 - Jan 2011	67	**0.86**

Meanwhile, the latest observation on the risk behavior of the financial sector in Indonesia indicated that the risk perception of economic agents and the risk level in banking sector played a significant role in transmitting monetary policy through credit channel in Indonesia (Satria and Juhro, 2011). In this context, when economic agents' risk perception variables and risk level in the banking sector interacted with the monetary policy stance, it reversed the impact direction of a loose monetary policy. Amid a high risk perception, the current monetary policy stance can be interpreted by economic agents in banking sector as a signal that the economy is leading up to an unfavorable development. This will in turn force banks to retain their credit expansion.

4.1.3 The Need to Strengthen Monetary and Financial System Stability Framework

The achievement of macroeconomic stability is not only tied with monetary stability, but it is also interacted with the stability in financial system. Empirical facts show that the achievements in the period of great moderation between 1987 until 2007 would not automatically isolate global economy from the impact of crisis which was generated by the susceptibility of financial sector.[54] Such facts are contradicted to a conventional wisdom that says monetary policy will support financial stability, at least in the long term period. Even though, the main proponents of this school of thought consider monetary or price stability as a sufficient condition of financial stability (Schwartz, 1995).

The view that says monetary stability will not automatically guarantee financial stability is in line with the preposition of 'new environment' hypothesis, which says that the success of a central bank in controlling inflation may incite too optimistic perception and expectation of the market players over future economic conditions. This inappropriate perception triggers '*false sense of security*' and eventually leads to asset value miscalculation which poses a negative impact in the future. Borio et al. (2001) shows that a combination of asset price bubbles, a high economic growth and low inflation rate - including in the context to compliment the stabilization program, can trigger excessive expectation over future economic development. Furthermore, this too optimistic expectation can drastically foster the activity in asset and credit market, exceeding the potential level based on increase in productivity, thereby leading to significantly rising asset price and economic boom and inflationary pressure.

54 Generally, the great moderation period is related with a minimal economic volatility period. Clarida (2010) describes a great moderation period as a period with "predictable policy, low inflation, and modest business cycles".

The above facts and thoughs provide an implication stating that "*There is no macrostability without financial stability*", as previously mentioned. In this regard, the central bank's policy formulation should evaluate the strategic role of monetary policy and financial system at the same time. The dynamics during financial crisis showed that monetary policy need to be further directed to anticipate macroeconomic instability risk stemmed from financial system. This lead to an implication that shows a healthy macroeconomy management should also consider financial system stability as the foundation to realize a sustainable macroeconomic environment.

Within this policy perspective, in order to strengthen the framework of monetary and financial system stability, central bank is demanded to be more flexible and creative in responding to emerging uncertainties within the economy and to think beyond public perception. Such a flexibility is not only linked to the adjustment preference to control inflation and manage macroeconomy on the one hand, and to put the role of financial system stability on the other hand, but it is also crucial to overcome the conflict potential or '*trade-off*" between targeting monetary stability and financial system stability itself.[55] In this connection, the flexibility in policy implementation can be done through, among others, additional instruments (in this case macroprudential instruments) in addition to establishing a longer time horizon to reach inflation target in order to accommodate output stabilization in a short term period. In connection with the measures to overcome the potential of policy conflict, it is no less important to prioritize the policy goal, for example by setting a price stability achievement as the main policy goal.

4.2 Integration of Monetary and Macroprudential Policy

4.2.1 The Role of Macroprudential Policy

The urgency to strengthen monetary and financial system stability framework requires a strong financial infrastructure along with adequate examination and supervision function to support the integration of domestic market into a financial system with a growing complexity. In relation with this, Borio (2003) emphasizes the need to strengthen regulatory framework or macroprudential policy thereby enabling to limit the risk when financial market comes under heavy pressure for a long period of time, which may force real output within the economy to tumble.

55 The occurence of trade off between reaching stability in monetary and financial system depends on the types of the shocks (Geraats, 2010). If the shocks come from demand side, then the efforts to stablize price and financial system will generally move in a simultanous way. Central banks may adjust the interest rate to cope with the shocks in aggregate demand side in a bid to stabilize not only output gap, but also prices of goods and assets. Meanwhile, shocks stemmed from supply side tend to have a reversal effect against price and financial system stability. For instance, this happens when shocks in supply side move positively by suppressing inflation but lifting output. In such a condition, an expansive monetary policy will likely incite asset prices bubbles.

Conceptually, macroprudential policy is a prudential regulation instrument aiming at enforcing financial system stability as a whole, instead of the individual wellbeing of financial institutions. Analogically, microprudential policy is a prudential regulation instrument intended to maintain the individual health of financial institutions. "*Macroprudential policy seeks to develop, oversee, and deliver appropriate policy response to the financial system as a whole. It aims to enhance the resilience of the financial system and to dampen systemic risks that spread through the financial system*" (The G-30). Therefore, macroprudential policy is used to prevent *boom-bust cycle* of credit supply and liquidity from happening, which may lead to economic instability. With its role in maintaining the stability of financial intermediation supply, a macroprudential policy plays a role in backing monetary policy goal to maintain price and output stability.

There are two important dimensions of macroprudential policy. *Firstly*, cr*oss-section* dimension, which shifts the focus of prudential regulation applied on financial institution individually to regulation system as a whole. The history of financial crisis tells that most of the financial crises occurring in the world were not caused by individual bank's trouble and then infected to the system as a whole. On the contrary, major crises in the past were caused by exposure to macro-financial instability which was conducted simultaneously by most of actors within the financial system. Therefore, a more holistic view on financial system and its correlation with macroeconomy through various sides is urgently needed.

The second dimension is the *time-series* one, namely macroprudential policy which aims to restrain the risk of excessive procyclicality within the financial system.[56] In this context, macroprudential policy should be specially designed to make it capable of eliminating, or at least mitigating procyclicality. Principally, it is about how to encourage financial system to prepare a sufficient buffer when economic conditions improve, or when the instability in financial system generally occurs, and how to use this buffer during economic slump.

In a latter development, in line with the change in financial sector arrangement, especially in the post 2008/09 crisis period, many central banks have applied macroprudential policy instruments in a wider scope. In this connection, several instruments previously better known as microprudential instruments (such as *loan-loss provisioning requirements*, or *loan-to-value*) or monetary instruments (such as *reserve requirements*) were also used to prevent systemic risk and to maintain financial system stability in economic activity cycle. Such policy instruments were not focused on the efforts to deal with the risk within individual bank. Therefore, these policy instruments

56 Borio and Shim (2007)

Table 4.4.
Implementation of Macroprudential Policy in some Countries

Problems	Instrument	Countries
Leverage (procyclicality potential)	Risk weight adjustments in capital regulation Application of capital to risk-weighted assets ratio	India, Indonesia, Malaysia, Estonia, Ireland, Portugal, Norway India, Bulgaria, Croatia, Estonia, Australia
Credit (relationship and charateristics of borrowers, pressure over macrostability)	Application of countercyclical provisioning (provision for certain credit) Limitation of loan to value ratio on certain sectors (with potential bubble) Credit limitation to certain sectors (such as property, credit card) Change in reserve requirement across the board or with certain target	China, India China, Hongkong, Korea, Singapore, Malaysia, Thailand, Bulgaria, Norway, Portugal, Rumania Korea, Malaysia, Philippines, Singapore, Thailand, Rumania China, India, Indonesia, Korea, Malaysia, Finland, Estonia India, Korea, Phillipina, Singapore China, Korea, Indonesia
Liquidity (risk potential on certain aspects)	Buffer application to minimize reliance on risky funding sources Application of loan to deposit ratio	India, Korea, Philippine, Singapore China, Korea, Indonesia

Source : Borio and Shim (2007), Hannoun (2010), G-30 (2010)

can be categorized as policy instruments in a wider macroprudential perspective. Some macroprudential policy instruments used in several countries can be seen in Table 4.4.

4.2.2 Integration of Monetary and Macroprudential Policies

The improvement of monetary and financial system stability framework requires a right monetary and macroprudential policy integration. As it has been known, the main goal of monetary policy is to maintain price stability. To reach this goal, central banks traditionally use interest rate as their main instrument. However, keeping price stability is still not sufficient to guarantee a macroeconomy stability achievement, as financial system with its procyclical behavior triggers excessive economic fluctuation. Meanwhile, the goal of macroprudential policy is to guarantee the financial system resilience as a whole in a bid to support financial intermediation service for the economy as a whole. With its countercyclical role, macroprudential policy contributes to supporting the goal of monetary policy in keeping price and output stability.

The objectives achieved through monetary and macroprudential policies should reinforce each other. Steps to empower financial system resilience will also improve monetary policy, including the protection of the economy from sharp fluctuations within financial system. On the other hand, macroeconomy stability will lessen the vulnerability of financial system with its procyclical characteristics. Therefore, overall, interest rate may not need to move in a magnitude

usually needed in times of no policy integration or coordination. Meanwhile, macroprudential policy affects credit supply condition, consequently monetary policy transmission. The effectiveness of this policy coordination definitely relies on macroeconomic environment, financial condition, intermediation process, and the level of capital and asset in the banking system. Hence, it is not realistic to expect the combination of monetary and macroprudential policy to be fully capable of eliminating economic cycles. The main goal of this policy integration is to moderate cycles and bolsters financial system resilience in a macro scale.

The improvement of monetary and financial system stability framework, through monetary and macroprudential policy integration, can be described in the Diagram 4.1.

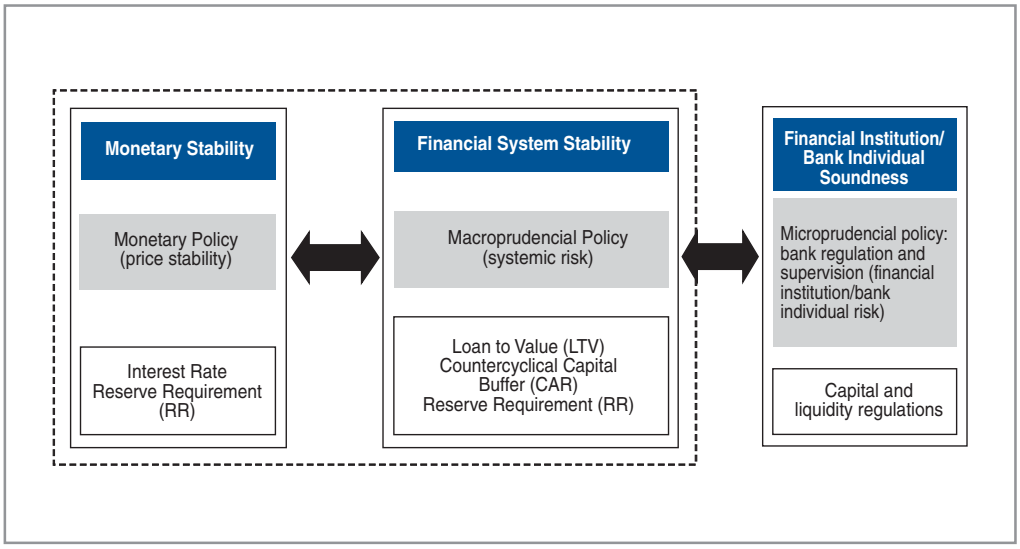

Diagram 4.1.
Integration of Monetary-Macroprudential Policy

This monetary and macroprudential policy can be described as follow. For instance, macroprudential policy aims at tightening capital and liquidity requirement during economic upswing, thus driving banks to cut its credit growth in an effort to build up banks' resilience to anticipate a future economic slump. In this condition, the efforts to keep up banking sector's resilience will simultaneously back up monetary policy goal to stabilize credit supply. Therefore, the objective of this macroprudential policy with its countercyclical characteristic will synergize with the goal of the monetary policy in reducing excessive economic fluctuations.

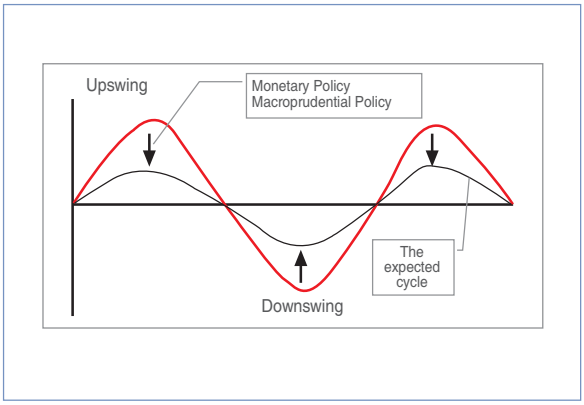

Figure 4.3. Monetary and Macroprudential Policy in Dampening Procyclicality

There are some conditions required to make the integration of monetary and macroprudential policy run well. *Firstly*, there is a need to understand about the framework of the linkages among monetary policy, macroprudential and microprudential policies. This is to take into account the conflict potential to reach the objective of the policy. That is why the use of instrument mix or adding new instruments can be considered as the right alternative move. *Secondly*, there is a need to understand about the work of monetary and macroprudential policy transmission in affecting economic activity. This requires a more integrated analytical framework, especially when evaluating the important role of financial sector. *Thirdly*, there is a need to measure the right risk behavior indicator in supporting the risk system monitoring. By measuring the risk indicator in addition to supporting the right monitoring system, it will also strengthen the analysis on the work of transmission mechanism through risk taking channel.

4.3 Policy Instrument Mix

4.3.1 The Objective of Policy Mix

In an ideal financial market, central bank normally relies on a single instrument to reach monetary policy goal. However, in reality, market imperfection always happens, such as matters related with banking structure and soundness, distribution gap in market liquidity, and excessive market fluctuation. This imperfection forces the preference to employ instrument mix and wider operational procedure to support the effectiveness and efficiency of monetary policy implementation.

Empirically, the variation in employing instrument mix is based on several considerations as follows (Balino and Zamalloa, 1997). *Firstly*, to secure the achievement of monetary management in weathering the turbulence distorting the supply and demand of banking reserves. *Secondly*, to adapt to instrument and operational procedures in line with institutional constraints affecting the work of an instrument. *Thirdly*, to gain the objectives of other policies deemed crucial and supportive to the work of monetary policy transmission mechanism. *Fourthly*, to adjust to macroeconomic policy environment, especially to the type of monetary and exchange rate regime. Referring to *Timbergen rule*, it is said that an instrument should not be used to target more than one objective, therefore the application of instrument mix is deemed substantial in case of a change in economic condition along with its challenge also contributes to supporting the policy objective enlargement targeted by policy makers.

In this connection, beside the availability of several policy instruments, the most significant thing is on how to make the effort to mix or to coordinate the application of the instruments able to raise policy effectiveness in supporting the economic development in general. This is to consider that each instrument has its own unique timing and magnitude characteristic. In a latter development, the application of instrument mix has become a trending practice in a lot of central banks. In this regard, the type of the mix is not only limited to among monetary policy instruments, but it also tends to include the mixture between monetary policy instruments and other policy instruments, such as those of macroprudential policy. With a different policy umbrella, it is not easy to formulate a right kind of mix.

4.3.2 Policy Mix Variation

As previously mentioned, the complexity of problems generated by the 2008/09 global financial crisis has increased consciousness that the role financial system should be taken into account in monetary policy formulation. For instance, decision has to be made as to whether or not a monetary policy is needed to respond to asset price developments which potentially lead to imbalances in the financial market. Apart from the growing arguments over such an issue, even though monetary policy is crucial in controlling financial sector imbalances, this does not mean that asset price stability, for instance, should be an explicit target of the monetary policy. This is to consider that the monetary policy itself is not capable of controlling asset price, especially when asset price speculations contribute to surging asset prices, which makes return on assets become extremely high. In such condition, any changes in interest rate will not affect investors' portfolio, especially against those investments within the financial market. An across-the-board interest rate hike will 'overkill' the economy as a whole.

Therefore, monetary policy needs additional instruments to support it in controlling the surge in asset price within the financial market. In this case, macroprudential policy instruments which are designed to do countercyclical action can be utilized to overcome procyclicality and back up monetary policy in order to reach macroeconomy stability. One of the examples of macroprudential instruments which are applicable in complementing interest rate in managing asset price development is Loan-to-Value (LTV), namely the ratio of money borrowed on a property to the property's fair market value, which is substantially aimed at fending off asset bubble in housing sector. In this connection, LTV is set on a certain limit (for instance at the maximum of 80%) which is generally considered as a norm or a reference in credit expansion for real estate development, which is safe enough in accordance with macroprudential point of view.

Instrument mix is also applicable in quelling the complexity of the problems accompanied by the slowdown in the economic recovery of advanced countries, which propels rapid foreign capital inflow into emerging countries. In certain countries, such as China, India, and Indonesia, the foreign capital inflow phenomenon complicates the efforts to oversee domestic financial market's soaring liquidity excess. A higher liquidity excess will potentially propel the acceleration of credit growth and inflationary pressure on the monetary side. Under this complexity, in the form of distortion on both external and internal imbalances, the role of interest rate instrument turns to be extremely limited.

Interest rate hike as a measure to control economic liquidity done by central bank will eventually be offseted by a significant force driven by foreign capital inflow, which turns the efforts to oversee macroeconomic stability to be ineffective. This offsetting phenomenon repeats itself as a vicious circle of capital inflows. In such a condition, monetary policy transmission taken through interest rate channel will face constraints, especially over the work of the term structure interest rate hypotheses. In this case, the development of monetary aggregates, including credit, tends to be inelastic to interest rate development. For that reason, if interest rate is used as a monetary instrument, the complexity of the problems requires the use of other instruments (non-interest rate) as a back up to optimally reach the goal of monetary policy.[57]

In connection with this, there are some examples of instrument mix applicable to supporting the role of interest rate, for instance reserve requirement (RR). The modification

57 In connection with the drive to optimizing OMO, since June 2008 BI has changed the operational target of 1 month SBI rate into O/N interbank money market (PUAB) interest rate, by maintaining the fluctuation of O/N rate around the BI Rate. The use of O/N interest rate as an operational target of the monetary policy is considered optimum in accordance with the theory, facts, and best practice. However, as the interest rate policy transmission faces constraints due to liquidity excess, Bank Indonesia considers it necessary to assess and strengthen further monetary policy operational framework, especially to explore any alternatives of opreational interest rate and corridor management system suitable with current financial market.

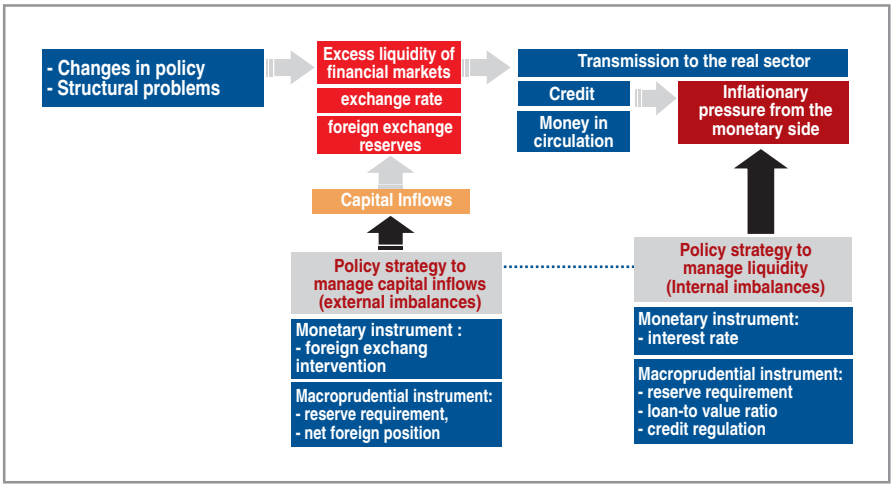

Diagram 4.2.
Problems and Policy Mix Variation

of RR in domestic exchange is often seen as a part of those instruments to implement monetary and exchange rate policy. Evaluating the phenomenon on how developing countries responded to rapid inflows of foreign capital, the attention has been focused more on the use of RR to moderate financial cycle. The changes in RR can be used to supplement or to replace the use of interest rate instrument to control the credit's impact in the economy. In a latter development, a number of countries have also applied RR on their foreign exchange based financing provided by financial institutions. In this case, macroprudential issues are closely related with currency mismatch and vulnerability of foreign exchange liquidity within banking system, which may also be caused by the financing scheme itself. Additionally, RR variation has been applied based on a certain consideration. In general, the application of RR variation is for macroprudential purposes in a condition where the credit market is segmented and dominated by intermediation institutions, which is tightly regulated. Although the same impact may be generated from the application of interest rate instrument, the use of RR can be classified as a more direct way to influence banks' funding cost and capacity in triggering financial market imbalances.

The forms of instrument policy mix applied by a lot of central banks are also varied. One of them is through reliance on foreign exchange market intervention, which is generally connected with foreign exchange reserves accumulation in a bid to manage an external balance. In a flexible exchange rate system, central banks intervene foreign exchange market to dampen

exchange rate volatility, and/or to accumulate foreign exchange reserves. This can be seen on the fast growing foreign exchange reserves over the latest decade. Yet, foreign exchange reserve accumulation bears its own cost. In one hand, foreign exchange reserves can be seen as a kind of macroprudential instrument in enhancing resilience during an episode of financial market pressure. On the other hand, persistently large foreign capital inflows along with a surge in central bank's foreign asset almost always enlarge banking system balance. This will eventually lead to credit and price asset booming and then end up with a crisis.ListenRead phonetically

The use of macroprudential instrument thus raises a question over how this instrument connects with interest rate policy; whether as a complement or a substitute. As understood, the use of both instruments is a tactical way to influence financial sector condition. Macroprudential instruments do its work by affecting the financial sector incentives and resilience and directly act upon monetary policy transmission mechanism. Such instruments work by either strengthening or weakening policy repercussions which will ultimately be reflected on the accessibility and the cost of borrowings faced by debtors (private and public). From this point of view, such macroprudential instruments fall into a category of a complement. For instance, in weathering high inflationary pressure, fast growing credit and soaring asset price, central banks intend to tighten monetary policy and employ additional instruments with a countercyclical role. In this case, both of policy interest rate and macroprudential policy will strengthen each other to tighten financial sector condition.

However, as both of them will eventually affect the accessibility and cost of borrowings, they could also be classified as a substitute. Specially, it can be seen that interest rate and macroprudential instruments may be adjusted to tackle shocks in macro economy and financial sector at the same time. For instance, central banks can either raise interest rate or RR. The level of interest rate magnitude and the RR ratio to be set will depend on the consideration of how close the position of the macroeconomy and financial stability is, and the relative effectiveness of the use of such instruments. For example, a dilemma emerges when inflationary pressure is low, while credit and asset price grow fast. One of the possible scenarios of using instrument mix is through the use of policy interest rate to fight inflation, while the RR policy is employed to confront financial system stability risks. Based on such interpretation, interest rate may not change due to a low inflationary pressure, while RR may be raised to smother fast credit growth and the potential of asset price hike. The advantage which may be taken through this measure is that the increase in RR may not attract capital inflow significantly, unlike the impact of interest rate hike. However, whether the application of this scenario is optimum enough, it needs to be further analyzed.

4.3.3 Technical Aspect during Implementation

When implementing the policy instrument mix, there are several aspects that need to be considered to make them work optimally, these include: (i) signals necessary to be responded, (ii) response characteristic, (iii) timing of implementation and procyclicality, (iv) effectiveness and calibration of policy measures, (v) policy communication.[58]

a. Signals necessary to be responded

Within the forward looking policy perspective, policy response should be directed to anticipate signals related to distortion on future macroeconomic balance. In this case, policy response may not be necessary in case of temporary shocks. The lessons from the past crises show that a number of indicators and analysis can be used as guidance for policy response through their advantage to detect resilience, imbalances and systemic risks. Some of the examples of such indicators include financial system resilience indicator, macroeconomic resilience indicator, and systemic risk indicator. Generally, those indicators are substantially set within an early warning system framework.

Therefore, the accuracy of policy response will highly depend on the performance of those indicators in predicting the possibility of imbalances. Although theoretically such indicators may be easily constructed, the performance of empirical model and analysis in predicting imbalances, or through early warning system framework, is still not convincing enough. For instance, it is difficult to notice the exact timing of credit growth level which can be sensitive to economic vulnerability, bearing in mind that fast credit growth is also needed within the fast changing economy due to profit-taking chances which lead to financial deepening, as experienced by various Latin America countries. Thereby, there is urgency to have a more systematic research and better understanding over systemic risk characteristics and their correlations to the benefits raised in a macro scale.

b. Response characteristic

In formulating response of macroprudential policy, one of the crucial issues is whether the response will apply a rule or a discretion (*rule vs. discretion*). Like in the monetary policy, the

58 For further discussion on such issues, see Moreno (2011), Committee on the Global Financial System - BIS (2010), British Banker Association (2010), Barell et al. (2010) and Born et al. (2010).

trade-off between rule versus discretion always happens. A rule provides a certainty for market players and credibility to central banks. However, a rule which is too rigid undermines the flexibility to respond to both structural changes and uncertainties often occurring in the financial market.

On the other hand, a discretion provides room for central banks to assess the macroprudential impact against financial system and the economy and then to apply some adjustments toward the use of such approaches in addition to setting a judgment over the possibility of future policies to be taken. Discretion definitely triggers uncertainties over possible policies to be taken in the future. These uncertainties will drive market players to be highly prudential by maintaining liquidity and capital ratio in a higher than required level. Consequently, banks become less efficient and charge the cost of the capital to borrowers, creating a high cost of credit in the economy. Discretion may also lead to forbearance, especially when confronted with a difficult or unpopular decision to be taken. Even so, such a discretion policy bears a legal consequence to central bank. Considering the strengths and weaknesses of both rule and discretion, the model of decision can be made through a rule-constrained discretion.

c. Timing of implementation and procyclicality

It is important to take into account the timing of the application of a policy during an economic cycle. This is partly because a macroprudential regulation is often procyclical.[59] A number of other issues pertaining to the application of macroprudential framework are countercyclical as they are.

- *Firstly*, related to how much weight is given to measures to stabilize an economic cycle (e.g. GDP) as compared to measures to manage the cycle of the financial sector (e.g. credit and asset prices). One fundamental issue is whether with the rapid innovation in the financial sector, the policy-making authorities are able, in a timely fashion, to conduct extraction on the cycles of the financial sector (e.g. "excessive" credit growth, "inflated" asset price, "abundant" liquidity) from the variations of the normal cycle and long-term trends.

59 For example, the provision on the removal of allocation for productive assets (the loan-loss provison) tends to decrease when the NPL ratio also tends to fall during the period of expansion. Financial market itself is procyclical as risk distribution tends to narrow during the expansion phase and dilate, sometimes drastically, during the contraction phase. From the perspective of risk management, policy instruments should ideally be applied as early as possible by taking into account the risks that may appear in the event of deteriorating economic condition (based on observations of economic cycles). Some opinion suggests that measures should be countercyclical, i.e., tightening during periods of expansion and loosening during periods of contraction.
In response to the crisis, the Basel Committee on Banking Supervision took a number of measures (in the context of Basel III) to reduce procyclicality. These measures include (i) assessing and mitigating the effect of cyclicality of minimum capital requirements, (ii) encouraging forward-looking provisioning, (iii) adopting a regulatory framework for capital conservation and countercyclical buffer, (iv) introducing a minimum leverage ratio.

- *Secondly*, related to who should assess the cycle (the public sector or the private sector)? As is known, economic cycles are unobservable, and methods to estimate them are fraught with many uncertainties. Therefore, a diversity of opinions is likely to occur. One of the solutions for policy-making authorities is by relying on a group of independent experts like the approach they use in Chile (to determine the long-term trend of the country's GDP and copper prices) in implementing the fiscal rule.
- *Thirdly*, related to the timeliness of action taken. Lateness in taking action may have implications on actions that are more procyclical than countercyclical.
- *Fourthly*, related to whether the prudential ratio should remain constant or move with the cycle. A solution would be to set a wide enough range of stability for, say, the targeted GDP. Thus, the change of a provision to manage the cycle is done only when the target is outside the corridor. In this regard, judicious decision is very much needed to complement the existing formal rule or to calibrate policy measures.

d. Effectiveness and calibration of policy measures

The effectiveness of how a policy instrument works will affect the calibration of the selection of policy measures that are deemed appropriate. In contrast to the analysis of monetary policy transmission, there has been no theoretical framework of macroprudential policy that has been well developed or robust empirical results to guide the calibration. With the uncertainty of the impact of a macroprudential policy instrument, the policy-making authorities need to be pragmatic in the use of the instrument. This is certainly not easy in the absence of no theoretical foundation and empirical research that describes how policy measures must be adjusted in calculating potential risks that may arise.

The study on the results of the calibration of macroprudential policies in OECD countries (Barrell, 2010) indicates that in general, macroprudential policies can be used to address macroeconomic risks faced by banks, and simultaneously reduce the probability of the occurrence of a crisis. Antipa et al. (2010) in the UK and U.S. case studies also concluded that macroprudential policies are very effective for smoothing the credit cycle and prevent the global financial crisis from bringing about deeper ramifications. Beyond these findings, one particular thing that is important to note is the need for a compromise to enable a country to make adjustments to the application of macroprudential instruments considering that adjustments to instruments or regulations may also lead to the incurrence of costs including

the increase in funding costs and margins, thus negatively impacting on the increase in economic activities. Thus, policy application needs to be performed in a proper dosage in order to align the costs and benefits thereof with the risk control expected.

e. Policy communication

Communication in the context of monetary policy and macroprudential integration is very crucial and by no means an easy challenge. *Firstly*, conveying a message to the market about the dangers of the growing imbalance in the financial sector during economic boom is difficult because such message would be very unpopular in the midst of optimism of market actors. Monetary policy response in the form of higher interest rates when there is no inflationary pressure is politically and economically hard to accept because the central bank can be considered jeopardizing the growth and interests of the people. Therefore, persuasive communication to the public on the importance of long-term stability is very much needed. Communication strategy for normal condition will not be able to be used under conditions of excessive optimism. Communication of monetary policy needs to adjust to the ongoing dynamics of the financial system. Here, the role of macroprudential policy that is rule-based in supporting monetary policy makes the central bank's task easier. With such support, monetary policy only plays the role of giving signals rather than directly controlling the growing risks in the financial sector. *Secondly*, economic uncertainties in the future, which are very high especially during periods of turning points in economic cycles, pose a challenge for policy communication.

4.4 Adjustment of the Mandate for Policy Implementation

4.4.1 Adjustment of Mandate and its Consequences on Policy Governance

Learning from the crisis, in formulating a post-crisis monetary policy strategy the central bank should increasingly strengthen its function in stabilizing the financial system to ensure that the macroeconomy in stable condition. The shifting or the emphasizing of the central bank's mandate to maintain financial system stability has consequences on policy governance. Unlike the format of the monetary policy governance that is generally understood, as in the application of the ITF, the format of the policy governance of financial system stability is not yet fully understood. Adoption of financial system stability as a major or additional aspect in the implementation of the responsibilities of the central bank may give rise to complications in

the format of the central bank's policy governance. Hence, it is by no means easy to design the central bank's mandate to maintain the stability of both prices and the financial system at the same time.

There are several underlying reasons for complications in the central bank policy governance (Crockett, 2010). *Firstly*, there is no firm and quantified understanding of the objectives of financial stability as understood in the objectives of price stability. Thus, there has been no benchmark on how to assess the central bank's success in fulfilling the responsibility to maintain financial stability. *Secondly*, the responsibility for maintaining financial system stability is essentially multidimensional. The scope of such responsibility starts from prudential supervision, the establishment of policies to prevent systemic risks to liquidity support in the financial market and individual financial institutions. In this regard, there is no clear governance model that accommodates differences in the characteristics of each of these steps. *Thirdly*, decisions related to financial system stability tend to be politically sensitive, as compared to monetary stability. This makes it difficult to align the interest to maintain the independence with the response to the existing political environment. In this case, the toughest challenge faced by central bank in an effort to maintain independence is how action taken by the central bank, especially in areas outside the central bank's mandate, could finally be officially accepted and legitimized by the government or the parliament.

In relation to this thinking, one of the issues raised is related to how to place a mandate to maintain financial system stability in the monetary policy framework. One of the alternative monetary policy formats that can be drawn up is to continue making price stability as the main element that affects monetary policy response. However, the substance of price stability has expanded to accommodate financial stability indicators and has a broader forward-looking horizon.

Another alternative policy format is to establish the strengthening of financial system stability as one of the mandates on monetary policy, in addition to maintaining price stability. In respect of this, Svensson (2010) asserts that there is a close linkage between the achievement of monetary stability and financial system stability. Financial system stability directly affects the financial market, and financial market condition will affect the effectiveness of monetary policy transmission mechanism. If the financial market is in trouble, it may affect real economic activities drastically, as indicated by the occurrence of financial crises. Meanwhile, monetary policy affects bank balance sheets and asset prices, which in turn affects the stability of the financial system. However, in spite of being interrelated, both have conceptual differences, both in terms of the objectives, instruments used and the responsible authorities. Thus, it is

rather unreasonable to refer to the achievement of monetary stability as part of monetary policy mandate.[60]

Hence, some views (such as Svensson (2010), Hannoun (2010), and Jordan (2010)) suggest that price stability should be the main objective of monetary policy. Meanwhile, the substance of financial system stability, particularly in its relation to macroprudential policies, should be calculated carefully and efforts should be made to prevent the achievement of policy goals that are too ambitious, for example through over-regulations on the development of asset prices and credit growth. One initial step to address this situation is through the use of macroprudential instruments to address the apparent imbalance in credit and asset markets. In the future, in line with the policy practice of the use of various macroprudential instruments along with monetary instruments, a more appropriate policy mandate can be formulated on the basis of past experiences.

4.4.2 Mandate for the Implementation of Macroprudential and Microprudential Policies

In carrying out its functions to achieve and maintain financial system stability, central banks will require supporting instruments in the form of macroprudential and microprudensial supervision. Macroprudential supervision refers to the process of managing the overall soundness of the financial system which is carried out through a series of analysis of behavior in the financial sector and financial market conditions. This management process is implemented by designing policy architecture and response to the ongoing condition of the financial system. Meanwhile, microprudential supervision is the process of individually managing the soundness of financial institutions which is carried out through the application of supervision and regulation that is expected, in aggregate, to be able to create continuity and stability in the financial system and to provide protection to consumers.

The crisis has also provided a lesson that close coordination between microprudential supervision and macroprudential supervision in formulating appropriate and expeditious policies at crucial times is required. Macroprudential supervision is directed to the activities of financial institutions, both banks and non-banks, which have a significant influence on both the financial market and the financial system. In macroprudential supervision, monitoring of macro indicators

60 Beyond that, as argued by Blinder (2010) and Nyberg (2010), such conceptual difference does not negate the possibility of gains from the implementation of responsibility, which is very great, for maintaining financial system stability by the central bank.

is conducted as a means to monitor, anticipate and mitigate various anticipated risks that may threaten the stability of the financial system and the real economy as a whole. In addition, the monitoring of macroprudential condition may also provide information on systemic risks and mitigate the spreading effects of disturbances occurring in financial institutions that may interfere with the business cycle. Information obtained from this macroprudential supervision will assist policy makers with whether or not it is necessary to rescue a financial institution that is experiencing a lack of liquidity. In practice, the authority carrying out the monitoring of macroprudential condition requires a fast and easy access to information, micro data and unimpeded official authority to acquire any additional data if needed.

Given the linkages between microprudential policy and macroprudential policy, does this also mean that the central bank also needs to be given the responsibility to implement microprudential policies? Those arguing for and against the need for central banks to implement microprudential policies are still continuing their debates until today. Substantively, it can be understood that the most important thing for the effectiveness of central banks in maintaining financial system stability is the continuity of the flow of exchanges and the quality of information between microprudential and macroprudential supervisory agencies, given that the functions of both agencies are complementary. In light of this, the feasibility of information exchanged depends on the institutional framework of the agencies, their habits and human factors.

Thus, if the central bank is not mandated to implement microprudential policies, then close coordination between the central bank and the competent authorities in the microprudential supervision sector is absolutely necessary. In other words, coordination is as necessary as maintaining consistency and harmony among the achievement of the goals of monetary, macroprudential and microprudential policies. In this case, macroprudential policy has an extremely vital role both in supporting monetary policy in maintaining macroeconomic stability and microprudential policy. Macroprudential policy in a narrower dimension requires consistency in the use of microprudential instruments while macroprudential policy in a narrower dimension requires consistency with monetary policy.

The above mentioned view has very significant implications on the institutional mandate of Bank Indonesia. The paradigm that monetary policy needs to be supported by macroprudential policy brings the consequences that the two policies cannot be separated in order for both to operate effectively. The mandate currently had by Bank Indonesia to maintain monetary stability and banking supervision is sufficient to implement macroprudential policy because macroprudential policy lies within the two ends of a spectrum, with the one dealing with

macro functions (monetary policy) and the other with micro functions (micro-banking supervision). However, this issue will arise when the banking supervision function is separated from Bank Indonesia and turned over to a new institution, that is, the Financial Services Authority (OJK) whose establishment is mandated under the Act on Bank Indonesia, Article 34.

If the function of banking supervision is separated from Bank Indonesia, macroprudential policy implementation would be more complicated. In this case, macroprudential policy framework shall inevitably involve two institutions, that is, Bank Indonesia and the Financial Services Authority which is authorized to regulate and supervise microfinance institutions. Bank Indonesia has the ability to assess macroeconomic risks and global financial market developments. Meanwhile, the Financial Services Authority has information about individual financial institutions. Therefore, in order for the system to function properly, there must be a mutual exchange of information between Bank Indonesia and the Financial Services Authority.[61] The Financial Services Authority must provide all information related to the monitoring of individual risks whereas Bank Indonesia has macroprudential assessment that must be submitted to the Financial Services Authority to be implemented at an individual level.

4.4.3 Clarity of Mandate in Crisis Management

A number of crises that occurred over the last two decades have provided many valuable lessons about how crisis management process should be dealt with by central banks. Experience shows that a crisis may arise unexpectedly amidst the continuing global imbalances as well as the rapid flow of capital which is potentially experiencing a large and sudden reversal. In addition, the incidence of the 1997/98 financial crisis also shows that any measures taken to handle a crisis without a clear authority and decision making structure would only protract the process, potentially incur very high economic and social costs and take longer time for recovery. The morale of this incidence is that the strengthening of the framework for the maintenance of monetary and financial system stability is indeed necessary but this must be underpinned by a crisis management framework that is clear, expeditious, and able to provide legal certainty.

One of the interesting things in the process of handling a crisis is that the extension of roles played, and initiatives taken, by different central banks in trying to resolve the crisis or

61 Arguments for and against the need for central banks to implement microprudential policies are still continuing to develop until today. Substantively, it can be understood that the most important thing for the effectiveness of central banks in maintaining financial system stability is the continuity of the flow of exchanges and the quality of information between microprudential and macroprudential supervision, given that the two have complementary functions. Pertaining to this, information that is feasible depends very much on institutional form, habits and the human factor. Thus, if a central bank is not mandated to implement microprudential policies, close coordination between the central bank and the competent authorities in the microprudential supervision sector is absolutely necessary.

rescue their domestic financial systems has given rise to political dimension which is by no means less interesting to debate. In essence, the issue that emerges out of this is that any attempt to make a crisis resolution on the country's financial system would always require funding from the government's budget or public funds in a significant amount. The practice of politics in any democracy requires the obtaining of approval from the parliament or an equal institution representing legislative function. And there is a great probability that the parliament, which, in general, is a collection of various political factions with different perceptions and interests, would see a banking crisis resolution proposal from different standpoints. Thus, it is very likely that the process thereof, from the presentation of such government proposal before the parliament until the obtainment of a parliamentary decision on it, would take a relatively long time.

On the other hand, in the process of resolving crises befalling one or several financial institutions, the time factor or speed is the key factor which determines the success or the failure of the policy option being pursued ('time is of the essence'). Therefore, it is conceivable that the tremendous challenge for a central bank or the government which propose and will implement a program in the name of the rescuing of the country's financial system is how to communicate it quickly, effectively and in an easily understandable manner to the parliament so that the legislature is convinced that the benefits to be gained from the program in the 'future' (as the results of such resolution might only be visible in a few months' or a few years' time) outweigh the costs that have to be incurred 'immediately and at this time'.

Another dimension that is also important in the course of crisis resolution is regulatory forbearance or the easing of provisions made by the authorities for the purpose of slowly recovering the banking system or carrying out a step-by-step transition towards the implementation of stricter provisions. However, at this point, where the policy taken by the central bank or the government has stepped outside of, or has gone beyond, the authority stipulated under the guidelines of the existing provisions, political and legal risks come to the surface and if not addressed properly, such risks may cause a very serious impact. Observations made by Laeven and Valencia (2008) based on a database owned by the IMF indicate that prolonged forbearance appeared in 67% of the banking crisis that occurred in various countries. In 35% of cases, forbearance appeared in the form of no immediate intervention even though it was apparent that the bank had already been in insolvent condition, and in 73% of cases, the application of prudent banking regulations is delayed or not implemented in full.

Indonesia's experience involving 'tripartite' constituents (Bank Indonesia, Ministry of Finance, and the House of Representatives) in the process of decision making for the handling of crisis has raised a type of complexity of its own, especially when considering the experience of the 1997/1998 financial crisis that had tarnished the reputation of the country's central bank officials and bankers as they were considered guilty and not prudent in giving or receiving an emergency loan assistance in the name of the prevailing crisis. Past experience shows that in the process of identification and sharing of information between Bank Indonesia and Ministry of Finance, many obstacles are still encountered because of differences in perceptions or priorities in assessing a problem. Awareness of the importance of and the need for coordination and the mutual awareness that it takes courage, speed and high accuracy in handling the crisis, finally lead to a collective awareness of the need for a crisis management protocol which is able to show in detail 'who shall do what'.

To that end, measures to strengthen the country's monetary and financial system stability need to be supported by the readiness of a national crisis management protocol to prevent and address crises. This is especially true due to the fact that at present, no crisis management protocol that is in national scope (Act concerning Financial System Safety Net) has been materialized. Therefore, crisis management protocol is expected to provide clear, integrated and sustainable guidelines to prevent and address crises. In addition, the protocol also needs to guarantee that decision will be made to prevent and manage a crisis in a timely and effective manner, which shall be based on legal certainty. In respect of this, because Bank Indonesia is the most knowledgeable authority on the financial condition of the banks or financial institutions that it supervises, as well as the most competent authority in assessing whether a bank's collapse would generate a systemic impact or not, any judgment and discretion exercised by Bank Indonesia with all its professionalism would be a very great bet for the development of its credibility amidst global economic challenges that are increasingly harder in the future.

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Chapter

5

Strengthening Policy Coordination and Communication

5.1 Coordination with the Government

Inflation, as the ultimate goal of monetary policy, represents a complex economic phenomenon and occurs as a result of supply and demand factors. Efforts to overcome inflationary pressure deriving from the supply side may not possibly be handled directly by BI. Therefore, strong coordination and cooperation between Bank Indonesia, as the monetary authority, with the government, as the fiscal authority and sectoral policymaker, is required in order to effectively achieve the desired inflationary target. In the future, equal emphasis on sources for the inflationary pressure from the demand side should be made on those from the supply side. In addition, following an increasing foreign ownership in Government Securities (SBN), the level of risk associated with falling Government Bond prices and a weakening rupiah due to a large and sudden reversals has intensified. Based on previous experience, this condition can result in a huge fiscal losses, pressure to the financial system stability, and the implementation of monetary policy.

In regards to this attention, strengthened policy coordination between BI and the government is focused on three strategic areas, which are:

(i) Policy coordination to control inflation. This is because sources of inflationary pressure could come from supply side as well as movements in strategic commodity prices. A number of steps that can be applied includes:

a. Provide recommendations pertaining to food price stability policy (volatile foods)

b. Provide recommendations pertaining to policies aimed at minimizing the impact of the government's price policies towards inflation (adm. prices)

c. Optimizing the role of National Inflation Task Force (TPI) and Regional Inflation Task Force (TPID)

(ii) Policy coordination to enhance the supply-side. This is made on the basis that the economy's increasingly limited capacity and challenges pertaining to the implementation of the government's infrastructure program can delay the supply side's response towards increasing demand. The steps that can be implemented include enhanced coordination with the government to boost investment in infrastructure and increase production capacity.

(iii)Policy coordination to manage capital flows. This takes into consideration that the flow of foreign capital into domestic financial market, particularly the Government Bond market (SUN), can affect the value of the rupiah. Steps that can be applied to address this includes enhanced coordination with the Ministry of Finance to control capital inflows for Government Securities (SUN), such as:

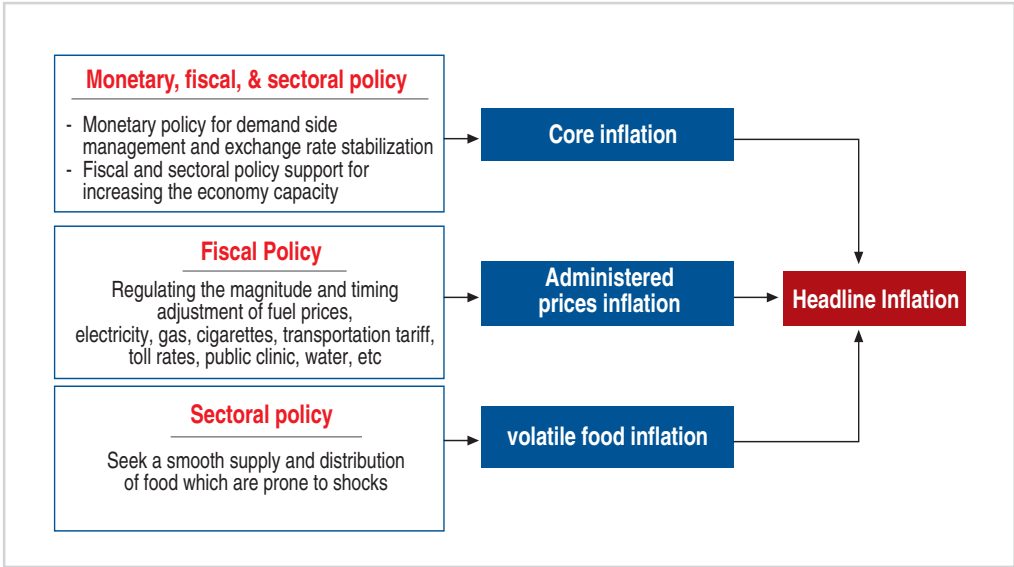

Diagram 5.1.
Coordination of Policies to Control Inflation

a. "putting sand in the wheel" efforts

b. financial market deepening,

c. Mitigate risks associated with sudden reversals

Overall, the line of thought associated with Bank Indonesia's and the Government's policy coordination, as well as its impact on inflation control measures is illustrated below.

5.1.1. Coordination to Control Inflation

Policy coordination efforts carried out to date consist of Coordination Meetings between Bank Indonesia and the Government that are routinely held to discuss the recent economic developments as well as the participation of Bank Indonesia in the Cabinet Meetings chaired by the President of the Republic of Indonesia to share BI's views towards macro-economic and monetary developments specifically pertaining to achieving the inflation target must continuously be carried out. In addition to this, enhanced coordination with the government is needed that is duly authorized to decide on specific matters pertaining to inflationary issues encountered on the field through the National Inflation Task Force (TPI).[62]

TPI members consist of BI and other related institutions derived from the Central Government, which includes: the Ministry of Finance, Coordinating Ministry for the Economy, National Development Planning Agency, Ministry of Trade, Ministry of Agriculture, Ministry of Transportation, Ministry of Energy, Mining and Natural Resources, and Ministry of Labor and Transmigration.[63] The TPI membership composition is dynamic, and receptive to change in line with the demands and complexity of the issues encountered.

The main task of the TPI is to coordinate within the context of setting inflation targets for the next three years, monitoring and evaluating factors which affect inflation (including policies needed to be implemented) as well as policy recommendation to the Minister of Finance that supports the achievement of the national inflation targets. In conducting its tasks, TPI holds a monthly meeting to discuss ongoing issues or inflationary matters encountered as well as to seek ways to resolve them.

62 TPI was formed in 2005 on the basis of the Joint Decree of the Minister of Finance No.88/KMK.02/2005 and the Governor of Bank Indonesia No.7/9/KEP.GBI/2005. While the legal basis for the establishment of TPI is the "Memorandum of Understanding between the Government and BI regarding, "the Mechanism for Inflationary Targeting, Monitoring, and Control in Indonesia", on 1 July 2004, specifically article 13 (1) that states, "To coordinate and facitate inflationary targeting, monitoring, and control activities, a secretariat is formed that is based in BI".

63 TPI's membership composition is updated every year on the basis of the Minister of Finance's Decree.

TPI's role is to guide inflationary expectations by periodically submitting to the government the inflation's formulas and targets that would subsequently be formally determined as the national inflationary target for the next three years. Under specific circumstances, The TPI will review the target. In regards to inflation control, TPI advise the government or related institution on the magnitude and timing of the strategic commodity tariff/price adjustments that can significantly affect inflation such as fuel, electricity and natural gas prices. Other efforts carried out by TPI include coordination with BULOG (Govt Agency in charge of rice price control) and Pertamina (State's own company in charge of fuel energy) to monitor the supply and distribution of rice and fuel, as well as educate the public regarding inflation in a number of regions. On a regional level, coordination between Bank Indonesia and the regional government officials is carried out through the Regional Inflation Task Force (TPID).[64]

5.1.2. Policy Coordination to Enhance Supply-side Response

Coordination between Bank Indonesia and the government (both on the Central as well as the regional levels) is not merely aimed at stabilizing price, but is also aimed at efforts to expand economic capacity (from the supply side) both nationally and regionally. This task relates to the fact that inflationary pressures are often caused by supply-side or economic capacity, due to limited infrastructure and constrains on supply and distribution.

Finally, as part of efforts to expand the economic capacity, Bank Indonesia coordinates with the government by virtue of, among others, a MoU or participation in economic development coordination forums. Examples of the type of coordination that is carried out, particularly in regards to Small and Medium Enterprices (SMEs), is in the form of training of trainer, research on the types of financing for specific commodities, enhanced loan programs for People Business Loans (KUR) and others.

64 TPID was initially formed in 2008 in Semarang, and other TPID's were subsequently formed in other cities whereby there are currently 51 TPID's throughout Indonesia.

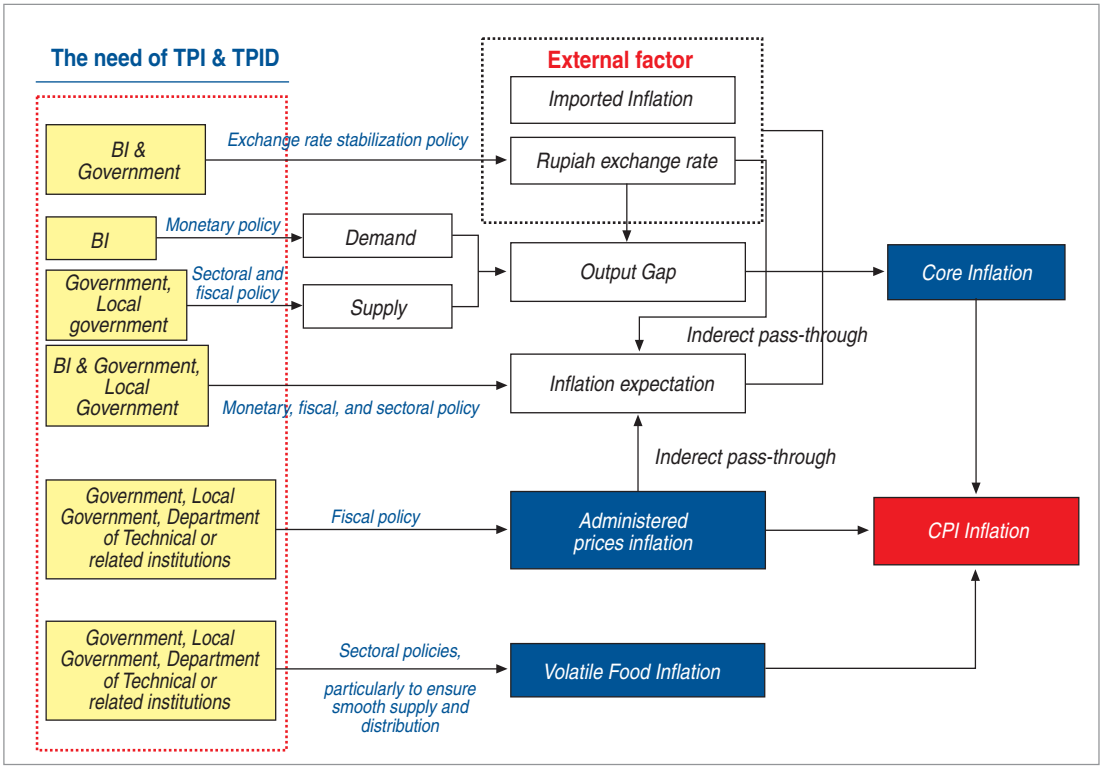

Diagram 5.2.
Policy Coordination to Control Inflation

Table 5.1.
TPI 's and TPID's Tasks

TPI's Task	TPID's Task
1. Evaluate the source and potential of inflationary pressure & its impact towards the inflationary target 2. Clarify each agency's plans and policies 3. Recommend policy options to the TPI Steering Team 4. Monitor implementation of policies within the context of inflationary control 5. Disseminate information pertaining to its targets and achievements to the public 6. Provide recommendations regarding inflationary targets to the TPI Steering Team 7. Perform other tasks related to inflationary control 8. Provide advice to TPID	1. Evaluate the source and potential of inflationary pressure in the respective regions 2. Carry out preventive and curative steps to control regional inflation by: - ensuring availability of supplies, particularly food - minimize the impact of administered prices in the region 3. Recommend policies to the TPID Steering Team that is consistent with the inflationary targets 4. Disseminate information pertaining to its target and achievements to the public within the respective regions. 5. Provide feedback and or advice to the TPI

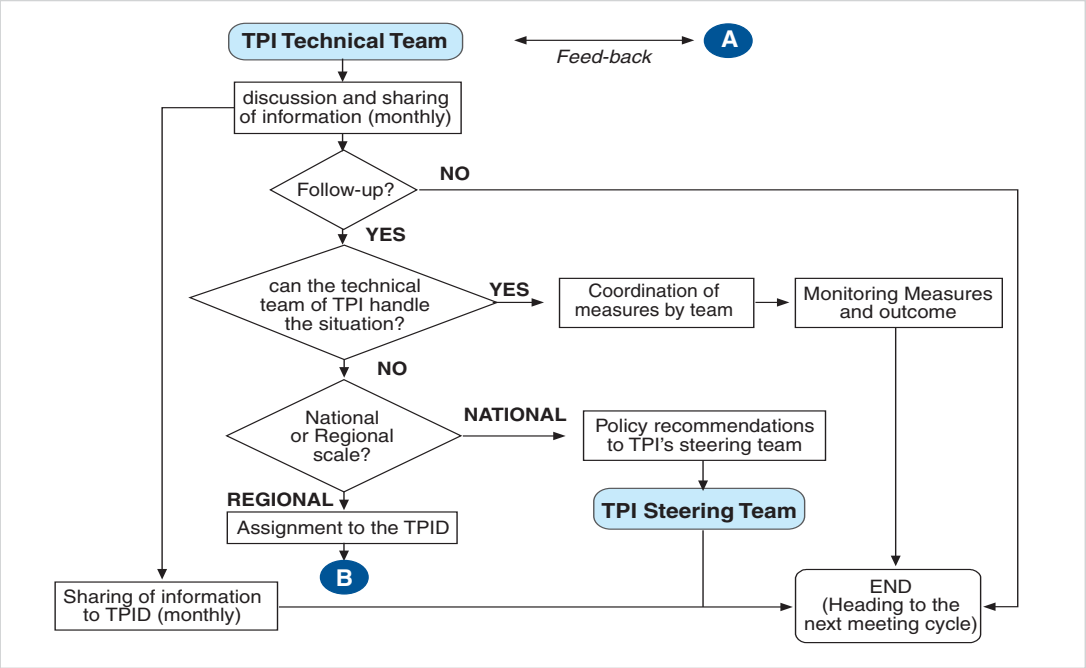

Diagram 5.3. TPI's Technical Coordination and Consolidation Flow

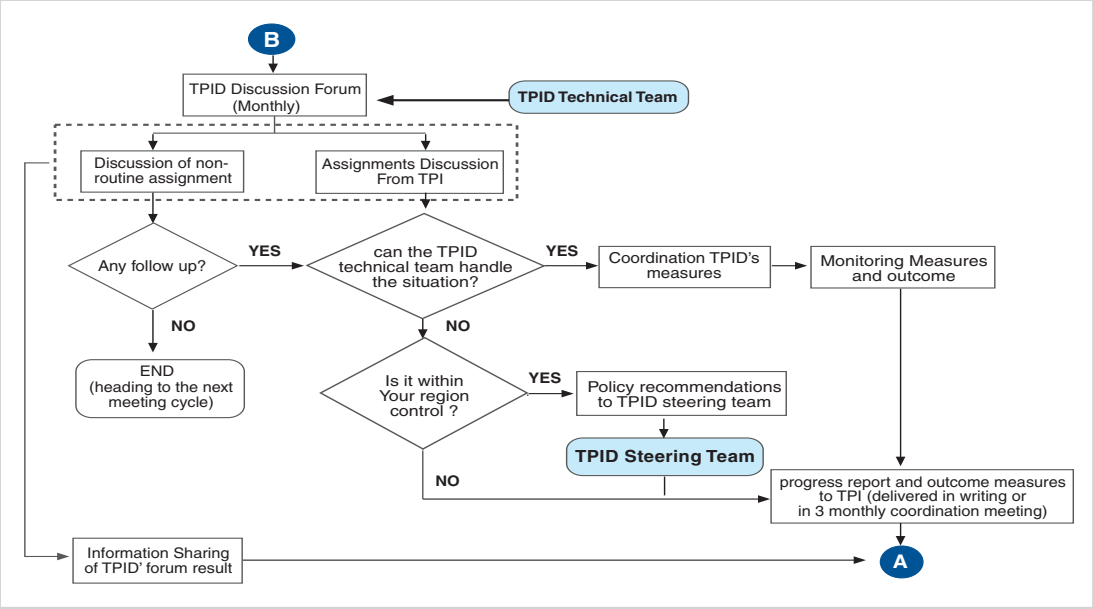

Diagram 5.4. Flow of Coordination and Consolidation within the Technical Context of TPID

Table 5.2.
Cooperation Aimed at Controlling Inflation

OBJECTIVE	IMPACT	TYPE OF POLICY
LONG-TERM STRUCTURAL POLICIES		
Increase TFP and HR productivity	Enhance competitiveness and production efficiency	Accelerate transfer of technology, encourage foreign investment, and a wage system that is based on enhanced productivity
Gradual and selective liberalization of the domestic market, and eliminate market distortion	Enhance efficiency and competitiveness within the domestic market	Open up the domestic market, eliminate non-tariff barriers, and gradually and selectively reduce tariff barriers
Enhance the Economy's Capacity	Increase investment --> production --> reduce output gaps	Infrastructure, investment climate, tax incentives, business certainty
Strengthening National Food Sustainability System	Increase national food reserves, market operations, and production planning and import strategic food supplies	Ministry of Agriculture, Coordinating Ministry for the Economy, Ministry of Trade, and Regional Government
SHORT-TERM POLICY		
Import Strategic Commodities as required	For national food reserves in case of disruption to distribution and supply	State Logistics Agency (BULOG), Ministry of Agriculture, Ministry of Trade
Encourage Production of Food Crops	Fulfill self sufficiency and reduce pressure on Volatile food	Ministry of Agriculture, Regional Government
Controlling inflation in the regions	Eliminate persistent sources of inflation, disruption to supplies, and distribution in the regions	TPID (KBI, Regional Governments, other regional agencies)

5.1.3. Policy Coordination to Manage Capital Flows

Apart from coordination on inflation, Bank Indonesia also needs to cooperate on managing capital flows, particularly to address the impact of foreign capital inflows. This effort is important, because the level of foreign capital inflows into Indonesia's financial market, particularly for government securities (SUN), can provide appreciative pressure on the rupiah's exchange rate. On the other hand, should there be a substantial and sudden reversal, therefore the risk of a decline in the price of Government Securities (SBN) will increase while weakening the rupiah's exchange rate, which subsequently result in fiscal losses, pressure to the financial system's stability, and burden monetary operations.

As a result, Bank Indonesia needs to work together with the government with the following objectives:

Table 5.3.
Cooperation for Handling *Capital Inflows*

OBJECTIVE	IMPACT	TYPE OF POLICY
Maintain a sound macro-economic policy	Maintain macro stability to maintain market expectation/perception	Coordination of monetary and fiscal policy
Financial Deepening	Maintain the Stability of the Financial System from fluctuations in capital flows	Strengthening the financial, stock, and bond markets Strengthening both bank and non-bank financial institutions Strengthening infrastructure of banks as well as financial, stock, and bond markets
Encourage financing infrastructure through capital inflows	Shifting from short term to long term thereby reducing chances of a reversal	Issuing infrastructure bonds

To support these steps, Bank Indonesia can cooperate with the government in managing domestic liquidity with, among others, the following objectives:

Table 5.4.
Cooperation to Manage Liquidity

OBJECTIVE	IMPACT	TYPE OF POLICY
Treasury Single Account (TSA)	- Effective in permanently reducing excess liquidity in banks - Reduce burden to liquidity absorbed by BI	Coordinate with Ministry of Finance as the state treasurers and KPKN
Converting Government Securities (SUN) at BI into tradable (ALM)	- Possible as instruments to absorb liquidity - Reduce the burden to absorb liquidity by BI	Coordinate with the Ministry of Finance as the state treasurers
Strengthening Government Securities (SUN) market	Enhance Government Securities' (SUN) ability to absorb excess liquidity	Coordinate with the Ministry of Finance

5.2 Communication Policy

5.2.1 The Role of Communication

Communication has a vital role in implementing Flexible ITF (FITF). There are at least three reasons underlining the importance of communication in monetary policy (Amato et al, 2003). *Firstly,* the central bank's independency requires accountability to the public through transparency in terms of policies. An effort to enhance transparency is through effective communication. *Secondly,* there are numerous empirical results show that central banks can influence economic activities through expectations. Through effective communication, Central Banks can enhance public understanding of monetary policies that are implemented to achieve the inflation target. *Thirdly*, in advanced financial markets, asset prices are largely determined by investor expectations regarding the economy, including expectations on inflation and interest rates. In this regard, central bank's communication plays a vital role in forming and directing investor expectations.

BI's independency along with transparency and accountability will synergistically enhance BI's credibility/reputation. Communication in the FITF is not only a means for central banks to enhance transparency and accountability but also serves as one of the instruments for monetary policy. Public's economic behavior, which is formed by expectations in accordance with the

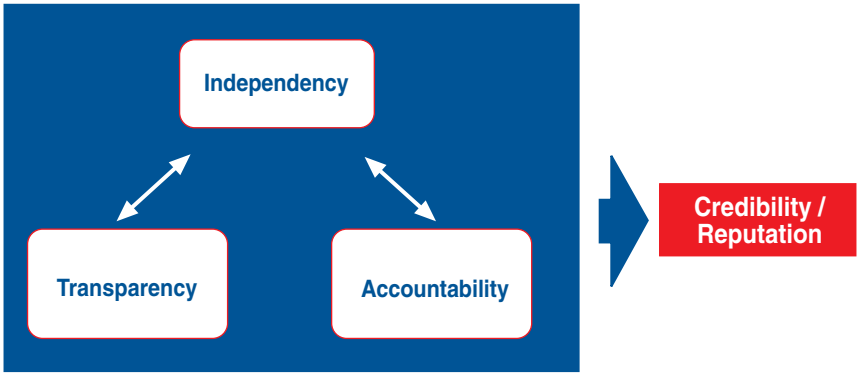

Diagram 5.5.
Correlation of Transparency, Accountability and Credibility

projection of the central bank, will enhance the effectiveness of BI's monetary policy transmission mechanism as well as enhance market efficiency.

Various studies have shown that transparency through central bank's communication can reduce public uncertainty as well asymmetrical information between the central bank and private sector. Undirected public expectations, particularly during times of turbulence to the financial system, can have a negative impact that threatens macro-economic stability. Experience derived from the global crisis has provided lessons that the central bank's policy stance is vital for reducing the escalation of a risk of crisis as a result of undirected market expectations.

Effective transparency and communications can also educate the public to become *forward-looking* to the economy. The public can enhance their ability to predict BI's monetary policy; thereby they will be able to act rationally and not panic during short-term *shocks*. Research results also show that transparency can reduce inflation expectations and reduce *sacrifice ratio* (costs that arise as a result of declining inflation).

5.2.2 BI's Communication Strategy

In the FITF, whereby there are various policy instruments (mix) carried out by BI, communication needs to be well designed to ensure that the policy stance taken continues to be clear and understood by the public. Implementation of the FITF needs to be communicated effectively to the public at the initial stage since the public's understanding regarding the FITF framework will affect their support towards BI's monetary stance going forward. Therefore, monetary policy communication should be well designed and integrated in the FITF. The objective, strategy, target audience, material as well as medium to be used needs to be formulated in a clear and integrated manner by virtue of a monetary policy communication framework (Diagram 5.6).

Communication Objective

The main objective of BI's communication in the FITF is to enhance the effectiveness of monetary policies by developing understanding, forming expectations, and reducing uncertainty.

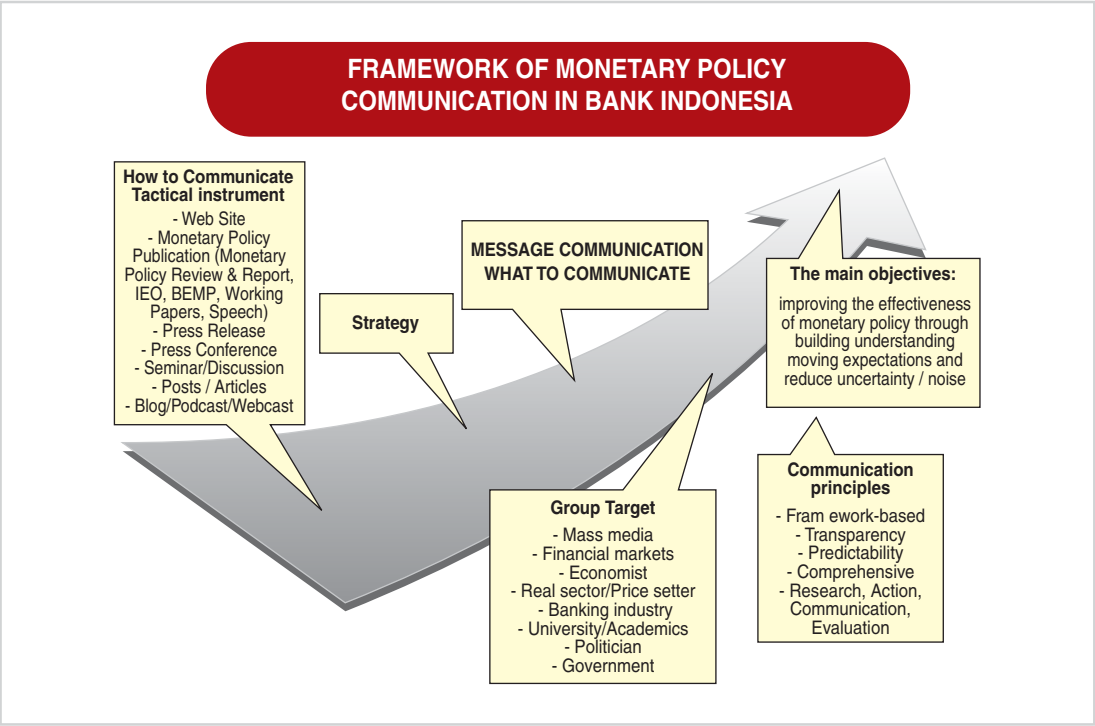

Diagram 5.6.
Monetary Policy Communications Framework

This main objective can be broken down to a number of objectives as follows:

i. Enhance public understanding (public education) about monetary policy's objectives, strategic and operational framework, monetary policy transmission mechanism, as well as monetary policy stance.

ii. Direct public and investor expectations. In this regard, communication must be able to influence public expectations, which is based on economic activities, thereby accelerating and strengthening the effectiveness of the monetary policy transmission mechanism.

iii. Reducing uncertainty, '*noise*', and enhance certainty in terms of direction going forward (*predictability*) thereby reducing the financial market's volatility.

Proactive Strategy

BI's communication must be proactive. This implies that BI must have the initiative to effectively communicate to all of its stakeholders through various channels and communication medium. BI's communication material must also be dynamic and in accordance with the economic conditions as well as the desired target audience.

Communication Principle

Monetary policy must be communicated by virtue of the basic principles specified below:

i. Framework-based approach

In line with changes in BI's monetary policy to that of FITF, therefore communications must be carried out based on the FITF.

ii. Transparency

Bank Indonesia must, in its communication, sincerely provide information that is both vital and required by the public. All information accorded to the public must be based on facts/truths, but not all facts/truths need to be conveyed to the public.

iii. Predictability

BI's communication must be able to provide a clear picture to the public regarding BI's policy stance as well as outlook to the future. As a result, communication is expected to influence public expectations and BI's ability to anticipate public's behavior without distabilizing financial market. In addition to this, the ability to predict monetary policy stance can dissipate the public's loss of confidence and reduce asymmetric information between the central bank and the private sector.

iv. Comprehensive

Communication must be adequately and fully articulated in order to avoid biases and public misperception. An overview of the policy's background and consistency with other policies must be clearly explained to the public. Moreover, information communicated must be both relevant and clearly and timely delivered.

v. Research, Action, Communication, Evaluation

Research or studies on public perception, effective communication, as well as materials communicated must be carried out before the communication program can be conducted. Communication is consistently and continuously carried out, and afterwards it is evaluated to get feedback as well as to assess effectiveness of the programs.

Target Audience

External stakeholders that serve as the target of BI's communications can be distinguished from various groups in accordance with their role/profession within the economy. The target groups consist of the media, financial market analysts, banking industry, economists, businessmen, academic, politicians, the government, NGO's and the general public.

The main target audience of BI's communication is stakeholders that are profoundly influential and interested in monetary policies. In accordance with the graph below, the main target of BI's communication is the banking industry, the government, economists, mass media, as well as market analysts.

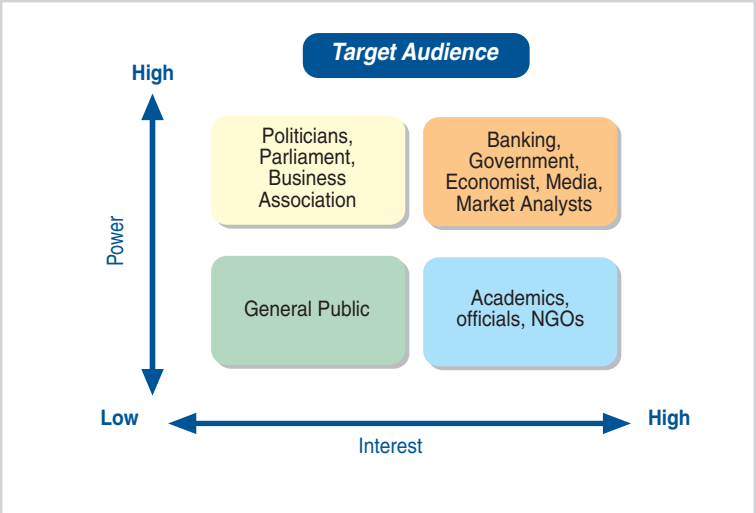

Diagram 5.7.
Target Audience

BI's internal communication is also critically vital to ensure equitable levels of understanding and synergy of policy conducted by unit of organization in Bank Indonesia. Aside from this, since there are a range of communication issues at BI, therefore coordination is needed in the monetary sector as well as between sectors within Bank Indonesia to ensure the message is effectively delivered and does not confuse the public.

Communication Message/Material

The public requires complete and comprehensive information regarding various aspects of Bank Indonesia's monetary policy. For that purpose, the scope of the communication includes:

i. Bank Indonesia Objectives and Monetary Policy Objectives

BI needs to clearly communicate Bank Indonesia objectives that have been broadened to beyond securing and maintaining the stability of the Rupiah, but also maintaining financial system stability.

In line with monetary policy objectives, it is vital to emphasize that the ultimate objective of FITF is to achieve inflation target as the overriding objective of monetary policy. However, in formulating monetary policy to achieve price stability, BI takes into consideration the stability of the financial system. It is important to communicate that the substance of price is not merely related with the prices of goods and services as an indicator, but also the financial sector's price indicators, which consist of changes to the exchange rate, stocks, and bonds.

To avoid the potential for public confusion regarding the main objective of monetary policy, prioritize price stability, exchange rate or financial stability, therefore, the right objective must be clearly written within BI's website and its various publications.

ii. Monetary Policy Framework and Strategy

BI's needs to effectively communicate to the public its efforts in strengthening monetary policy framework by implementing FITF. The vital points that needs to be communicated includes:

- Reasons for choosing FITF as the framework for monetary policy in Indonesia.
- Main differences between FITF's framework and ITF that was previously implemented.
- Explanation regarding various policies that integrates monetary policy, macroprudential,

exchange rate as well as communication to achieve monetary and financial stability (and subsequently price stability)

- Explanation regarding various instruments that is used by BI in addition to interest rate and maintaining liquidity, such as the combination of RR, currency intervention/ sterilization, counter cyclical CAR, Loan to Value, asset risk weighting.

In communicating monetary policy's framework and strategy, BI needs to stress its commitment to systematically implementing the policy, by using a decisionmaking process for monetary policy that is clear, forward looking, and independent.

iii. Monetary Policy Decision and Stance

In order to reduce asymmetric information between the public and BI as well as form expectations, therefore, communications related to monetary policy direction and stance is required. The inflation target within a 3-year horizon needs to be clearly and continuously communicated so that public's inflation expectations can be directed to this target. In every monetary policy announcement, public needs to be informed of the background to the policy decided upon, the desired objectives as well as the consequences that may potentially arise. Recent economic conditions, unachieveble the inflation target (if any) and actions taken to resolve also needs to be clarified clearly.

One of the alternatives that need to be considered to enhance clarity concerning a monetary policy stance is to create a classification. However, this requires a higher degree of consistency in accordance with the ITF concept that is synonymous with, "say what you do and do what you say".

The steps that needs to be applied through BI's monetary policy stance can be effectively communicated both externally as well as internally as follows:

a. At every Board of Governors Meeting, the Board of Governors needs to clearly approve the monetary policy stance in addition to determining the BI rate levels.

b. The Monetary Policy Stance as well as the BI rate level becomes the topic sentence within the press release.

c. The Monetary Policy Stance needs to be widely communicated to all of Bank Indonesia's employees, both at the Central or regional level as well as the entire public through various existing communications channels such as the website.

d. At every opportunity of the monetary policy's communication program with external (such as the mass media, Board of Governor's speech materials, journalists workshops, seminars with expert staff of Commission XI, seminars with the CEO, economists, market practitioners, and others), monetary policy stance needs to be clearly communicated in addition to other issues that serve as the main topics of discussion.

iv. Economic Projection/*Outlook*

As part of its efforts to guide public expectations, BI needs to regularly communicate its projections for a range of macro-economic indicators and financial system indicators with a horizon of 1-3 years ahead. Communication regarding projection/outlook can be delivered as part of BI's published reports, through various information dissemination activities (such as seminars and others) as well as written in the BI's website. The assumption and model used as well as risks that may likely affect the results of the projection are factors that need to be taken into consideration in communicating projections.

As part of efforts to improve transparency on macroeconomic projections, BI should publish economic models used through various research publications. This method, apart from enhancing transparency and accountability, provides academics with the opportunity to share their input to improve the model used by BI.

Communication Media

Various communication media that are currently used needs to be optimized to ensure the effectiveness of BI's communication strategy. In addition to this, other communication media such as Blog / Podcast / Webcast should also be used. Communication media that is selected needs to be formulated in accordance with the various target audience.

Table 5.5.
BI's Communications Medium and Target Audience

	Mass media	Financial Market analyst	Banking Industry	Ekonomist	Business actors in the real	Academics	Politician	Government	NGO	Public	Internal BI
1. Website	√	√	√	√	√	√	√	√	√	√	√
2. Monetary Policy Publication (Monetary Policy Review & Report, IEO, BEMP, Working Papers)		√	√	√	√	√					
3. Governor Speeches	√	√	√	√	√	√	√	√			
4. Press Release	√	√	√	√	√				√		
5. Press Conference	√	√	√	√	√		√			√	
6. Seminar/Discussion		√	√	√	√	√			√		
7. Posts/Articles	√				√	√			√	√	
8. Blog / Podcast / Webcast	√									√	
9. Informal activities				√	√					√	
10. BI's internal communication media											√

Communication during Times of Crisis

During times of crisis, communication serves as a vital instrument for central banks to curb economic turbulence or uncertainty. This is carried out by enhancing public trust and confidence in the central bank's ability to solve the crisis. This trust will prevent the public to carry out acts that can deteriorate the crisis further such as a bank rush, and simultaneous buying of goods in substantial quantities.

Communication in times of crisis are based on a number of principles, which are: i) proactive and responsive in giving an explanation/statement; and ii) communicate the message comprehensively to avoid asymmetric information and market misperception. There are a number of effective communication channels to be used in times of crisis such as statements from the Governor/Board of Governors of BI as well as a Press Conference.

Limits of Communication

Inspite of the need for BI to enhance transparency in terms of its monetary policy, however, limits are required to ensure that the method of communication employed does not hamper BI's flexibility in terms of its policy decisions. Those that need to be applied includes enforcing a "black out period" that limits statements to the public prior to the Board of Governors Meeting (such as 1 week or 3 days prior) to avoid leakage to interest rate decisions. In addition to this, BI needs to avoid too often communication, especially if there is no vital message so as to avoid the news may subsequently be "directed" by the press.

Chapter

6

Flexible ITF Design

"In fulfilling the overriding objectives, ITF and Flexible ITF are substantively similar as they are both focus to control inflation. The ultimate difference relates to "flexibility", specifically flexibility in terms of integrating the framework of the financial system stability with the policy mix of monetary - macro-prudential instruments; flexible in positioning the role of the exchange rate strategy; as well as strengthening the institutional aspects to optimize policy coordination and communication."

6.1. Approach for Strengthening Monetary Policy Framework

There are 5 aspects used as the basis for formulating a new monetary policy's framework that is known as *Flexible* ITF or F-ITF. The five aspects are:

1) **The current ITF framework**. This meaning that Bank Indonesia continues to use *inflation targeting* regime with the ultimate target of achieving the inflation target as the *overriding objective*. This ITF is still considered relevant with the current economic conditions. However, the use of the ITF is accompanied by strengthening in many aspects to be more effective in achieving the inflation target in accordance with the latest economic developments, both domestically and internationally.

2) **Structural challenges in the future**. In line with dynamic of Indonesian Economy, the design of the new monetary policy framework is expected to meet various challenges in the future, particularly structural/fundamental challenges.

3) **Lessons from the global crisis**. Learning from the previous 2008-2009 global crisis, there are many important lessons learnt to improve the ITF framework. By accommodating those lessons, the new monetary policy framework is expected to be more effective to control inflation by continuing giving attention to potential pressures from behavioral changes in the financial sector, as well as an economic crisis.

4) **Basic principles of monetary policy**. The design of the new *Flexible* ITF is still based on the basic principles of monetary policy. Some basic principles of monetary policy, resulted from the latest research by monetary experts, are still relevant when combined with ITF.

5) **Evaluation of ITF's performance**. The result of Bank Indonesia assessment on ITF implementation to date can serve as the starting point to improve *Flexible* ITF's design.

In the meantime, five basic elements of *Flexible* ITF are formulated. There are :

1. Inflation Targeting as a basic strategy of monetary policy

The policy framework continues to adhere to an inflation target as the overriding objective of monetary policy. The main characteristics of ITF will remain, namely that the inflation target is announced publicly and that monetary policy is forward-looking, transparent and clearly accountable. However, ITF as implemented in a number of countries is flexible. Bank Indonesia must not only look at the inflation target merely in terms of policy formulation but also consider a number of other factors, including financial sector stability and supply factors.

2. Monetary policy and macro prudential integration to achieve the overall macro economic stability

Under a new inflation targeting policy framework, monetary and macroprudential policy would be integrated in order to guarantee macroeconomic stability. According to this paradigm, financial factors play a crucial role in the transmission of monetary policy through the corporate balance sheet channel, bank balance sheets as well as the risk-taking behaviour of banks and firms (Satria and Juhro, 2011; Agung 2010). Macroprudential policy is instituted in order to overcome short-term capital flows, manage liquidity in the domestic economy and mitigate the risk of instability in the financial system.

3. The role of exchange rate and capital flows management within monetary policy framework to achieve price stability

Differing from standard ITF where the exchange rate is exogenous, under this framework the exchange rate is managed to play a role in achieving price stability. In emerging market countries with an open capital account and a free-floating exchange rate regime, shifts in the exchange rate are oftentimes affected by exchange rate volatility, which is not necessarily related to economic fundamentals. Allowing capital flows to move in line with market mechanisms precipitates exchange rate volatility and misalignment risk, which can undermine macroeconomic stability. Consequently, the exchange rate must be managed in order to support price stability. Determination of the exchange rate path should be made, consistent with the achievement of the inflation target and macroeconomic stability. The optimum "possible trinity" solution should be sought to see the relations between the optimal stabilization of exchange rate policy and capital flows management, and the implications on reserves sufficiency.

4. **Strengthening Bank Indonesia and Government policy coordination to controlling the prices and maintaining monetary and financial system stability**

   Policy coordination is crucial considering that inflation stemming from the supply side creates the majority of inflation volatility. Also, the more limited economic capacity and infrastructure constraints of the implementation of the program requires the implementation of an integrated policy strategy among policy authorities. In addition, policy coordination can be done in a broader perspective to controlling capital flows with considering characteristics of capital inflow which is sensitive to the shock of reversal issue.

5. **Strengthening monetary and macro prudential policy communication as part of policy instruments**

   Monetary policy communication is no longer for the sake of transparency and accountability, but further as a monetary policy instrument which plays an important role. In a communication, policy is designed to move the public and market player's expectation, reduce uncertainty, absorb the 'noise', and increase the predictability in order to reducing financial markets' volatility, and also providing public insight about the objectives of monetary policy, monetary policy's framework and operational framework, and monetary policy transmission.

On the basis of these 5 basic elements, *Flexible* ITF's policy framework is specified below.

6.2. Monetary Policy Strategic Framework

6.2.1. Components of Strategic Framework

a. Policy's Ultimate Objective

- The ultimate objective of monetary policy is to achieve and maintain price stability, which is reflected by low and stable of inflation.
- In regards to implementation, this low and stable inflation is reflected through the achievement of the 3-year ahead of inflation targets.

b. Policy Indicators

- Policy indicators refer to a number of variables used as an indicator or information regarding the extent whether price stability has been achieved. Variable indicators comprise of inflation expectation, output gap, and financial system stability indicator, which comprise of 3 components: financial market stability; sound, solid and prudent financial system; and intermediary function that operates efficiently in accordance with its capacity.
- These policy indicators have a close correlation with the objective of achieving price stability. In other words, price stability can be achieved if inflation expectations have been close to the inflation target, an output gap close to zero that indicates economic activity has fully utilized its economic potential, and stability of the financial system can be maintained.

c. Operational Target/Transmission Mechanism

- Operational target consists of several variables affected by Bank Indonesia's policy instruments that are used in order to direct changes to the policy indicator. This operational target serves as a link between policy instrument and policy indicator.
- This operational target indirectly represents the existence of a monetary policy transmission mechanism to achieve the inflation target. Therefore, the operational target includes banking rate, exchange rate, loan growth and it's quality, asset prices, and the banking risk taking channel.
- The banking rate consists of rates for Interbank market (PUAB), deposit rates, and loan interest rates. The exchange rate consists of both the nominal as well as real exchange rate.

The risk taking channel is one of the transmission mechanism channel representing the bank's behavior in providing loans through changes to perception and the risk assessment of an asset.

d. Policy Instrument

- There are 3 categories of policy instruments, i.e. monetary, macro-prudential, and monetary policy communications.
- Monetary policy instruments include the BI rate and instruments for managing liquidity, such as Open Market Operation (OMO) and foreign exchange intervention. Macro-prudential instrument consists of instruments used to control liquidity, bank loan, and foreign capital flow. Monetary policy communication serves as the medium used by Bank Indonesia to announce monetary policy to the public.

Based on the above-mentioned line of thought, the Flexible ITF could be illustrated below.

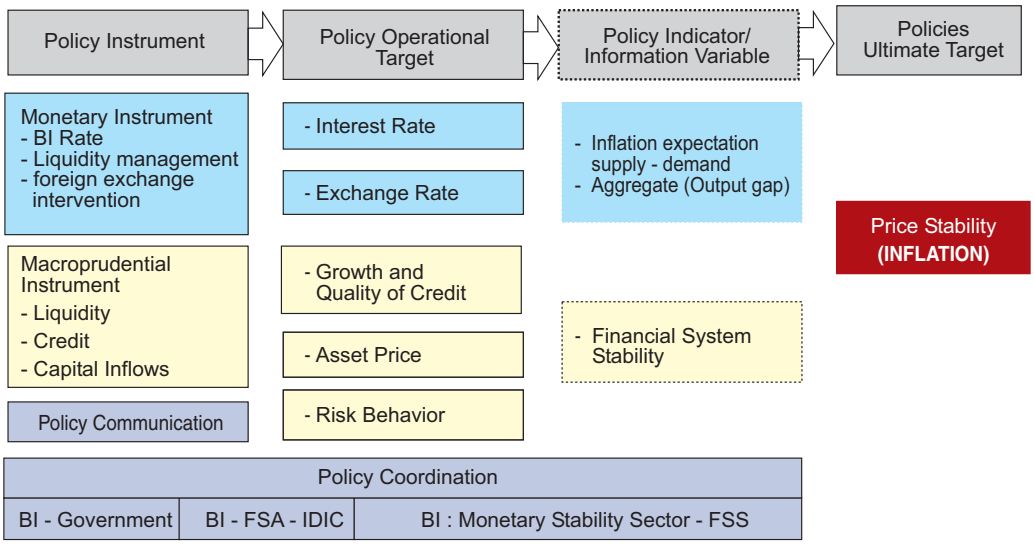

Diagram 6.1.
***Flexible* ITF Policy Framework**

6.2.2. Inflation Target

- Bank Indonesia's inflation target uses CPI as an indicator of inflation. CPI measures price index of goods consumed by the consumers.
- Bank Indonesia's Inflation target uses *headline inflation* published by Statistics Indonesia (BPS), and not *core inflation*. This is due to a number of considerations as follows:
  - To maintain the inflation target's credibility as the public directly affected by the impact of headline inflation, including *volatile food* and *administered prices*.
  - Businesses and the public use headline inflation as a *nominal anchor* and not core inflation.
- Inflation target is calculated based on the *year-to-date*, specifically growth of CPI at the end of the previous year to that of the current year.
- In the medium-term, the inflation target is directed to achieve inflation levels of the regional/ trading partner countries at a level of 3 – 4 percent. In the short term, in order to avoid substantial social costs, inflation target is determined to be decline gradually or constant for the next 3 years. This takes into consideration that there will be a *trade-off* between inflation and economic growth in the short term. The declining trend takes into account the size of the *sacrifice ratio,* i.e. percentage changes of decline in output for every 1 percent drop in inflation.
- Inflation target has a *time horizon* of 3 years forward. This serves as a guidance for economic agents in planning their economic activities in the medium-term, as well as to cover financial cycle that is longer than business cycle.
- To set the inflation target, the estimated core inflation, volatile food, and administered prices must be specified and accountably announce to the public. This is needed to measure Bank Indonesia performance in controlling core inflation. The performance key indicator in achieving inflation target is calculated on the basis of achievement in terms of core inflation.
- Inflation target is determined by the government, in this case Ministry of Finance, by virtue of a Minister of Finance's Decree and upon consideration of Bank Indonesia's recommendations. The inflation target is determined once every 3 years for a period of 5 years ahead. This is to ensure that anytime always available inflation targets for 3 years ahead. Before submitting to the Ministry of Finance, Bank Indonesia presents its recommendation of inflation target to the Inflation Control Team (TPI) to get approval.

- Inflation target uses a midpoint with a respective range of 1 % for upper and lower limits. This serves as the tolerable limits because of the sizeable economic shocks randomly.

6.2.3. Policy Indicator: Expectation, *Output Gap* and Financial System Stability (FSS) Indicator

- Monetary policy's operational target aims to anchor medium-term inflation expectation to the medium-term inflation target. By anchoring medium-term expectation, dynamic of short term inflationary pressure – mostly temporary in nature - will not affected medium-term inflation expectations.
- Inflation expectation indicators need to cover 4 agents, i.e. expectation of consumers, producers, market participants, and economists. Consumer and producer expectations are obtained from monthly surveys carried out by Bank Indonesia. Money market participant expectations are obtained from the bond market's short-term and long-term *yield curve*. The relatively steep yield curve reflects the market practitioner's increasingly high inflation expectation.
- Inflation expectation is largely influenced by the central bank's credibility. If the central bank is highly credible, as reflected in its ability to achieve its inflation target, the public will believe that the inflation target will indeed be achieved; thereby the public's inflation expectations will be anchored to this inflation target. On the other hand, if the central bank is not credible, the public's expectations will tend to look at the previous inflation level or 'backward looking'. The higher the central bank's credibility gets the more 'forward looking' the expectations will tend to be.
- *Output gap* represents one of the vital indicators that measures inflationary pressure from the demand side. *Output gap* represents the difference (gap) between actual GDP and potential GDP. Therefore, a positive *output gap* implies the existence of demand pressure. Since *output gap* is an *unobserved variable*, therefore Bank Indonesia needs to formulate a robust methodology to estimate and publish this *output gap*.
- There are a number of key indicators from FSS needs to be monitored and analyzed, i.e. volume of bank loans, third party funds, Non Performing Loan (NPL), and Bank Capital. On the other hand, every policy option also needs to consider its impact on these FSS indicators.

6.3. Operational Framework

6.3.1. Strengthening Policy Mix of Monetary and Macro-prudential

The complexity of challenges need all instruments within the policy mix to be applied in a balanced and measured manner. In this regard, the policy mix should consider a number of aspects as follows :

1. Bank Indonesia will optimize the use of macro-prudential instruments along with monetary policy as a counter-cyclical instruments to maintain the stability of the monetary and financial system.
2. Macro-prudential instrument is meant to complement/supportive monetary policy instruments to achieve macro stability and not as a *substitute*.
3. The objectives of monetary and macro-prudential policy must be achieved to strengthen one another. The instrument's selection depends on the source of the pressure whether it originates from the financial sector or real/monetary sector.
4. Therefore, policy coordination is substantially needed to ensure integration of monetary and macro prudential policies in manage the cycle and enhance the resilience of the financial system.

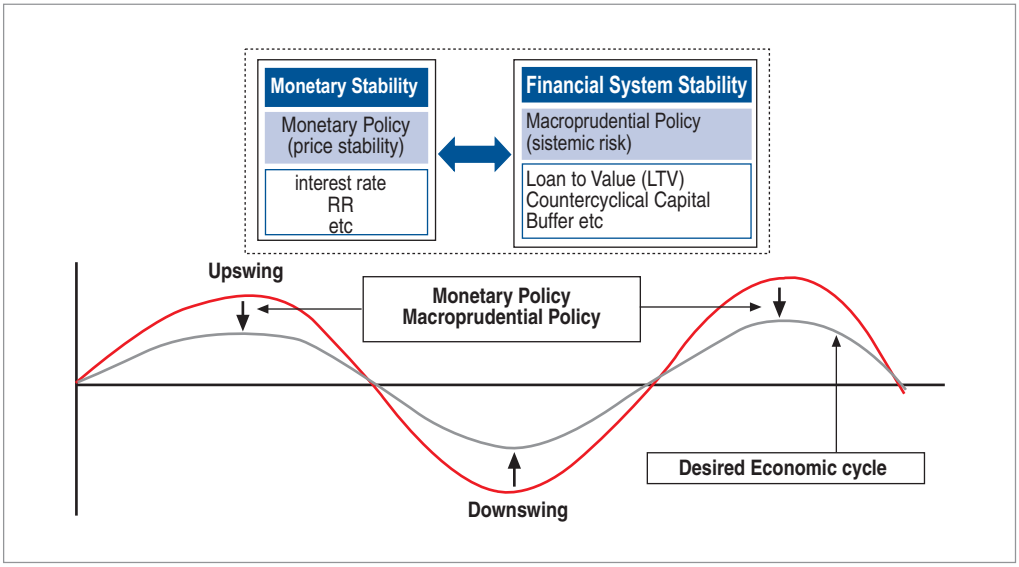

Diagram 6.2.
Range of Monetary and Macro-prudential Policies

Schematically, implementation of policy mix should be conducted synergistically to maintain the business cycle path in line with the economy's potential. Monetary policy is used to maintain monetary stability as reflected in price stability with the instruments of interest rate, Statutory Reserves, and other instruments, while macro-prudential instrument is used to maintain the financial system's stability, particularly in response to systematic risks using Loan To Value (LTV), *countercyclical capital buffer*, and other instruments. A detailed explanation is shown at Diagram 6.2.

In relation to the above-mentioned aspects, there are several aspects that needs to be taken into consideration, which are:

- *First*, as the main monetary policy instrument, interest rate policy changes are conducted to response fundamental inflationary pressure, as reflected in changes to the *core inflation*.
- *Second*, the use of monetary and macro-prudential instruments should be supportive each other.
- *Third*, a policy mix is needed to adjust interest rate instruments in order to maintain both the stability of the monetary and financial sector. In many cases, the use of interest rate instrument alone requires different levels to maintain both monetary stability and financial system stability (left figure). However, by applying policy mix, the monetary and financial system stability can subsequently be simultaneously achieved (right figure).

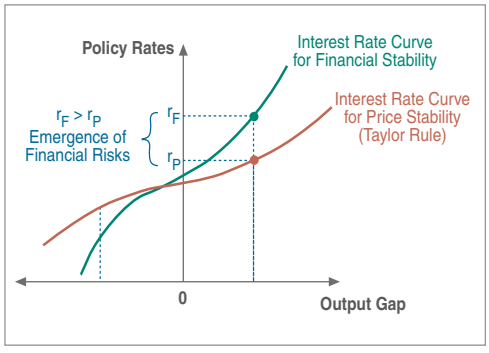

Figure 6.1
Use of Interest Rate Instruments (only)

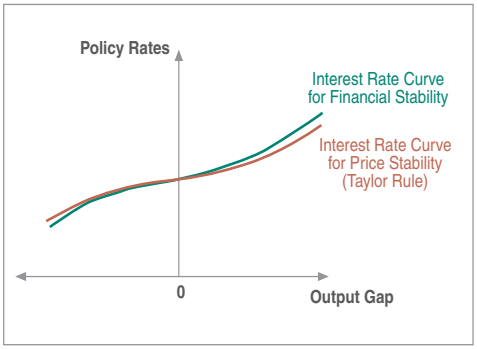

Figure 6.2
Use of Interest Rate and Macroprudential

Implementation of Policy Mix Needs to Take Timing and Magnitude Into Consideration

Timing

- Policy response should be used to anticipate signals of potential instability of the macro-economy in the future *(forward looking)*.
- Policy implementation needs to take into consideration the economic and financial cycles. Indicators or analysis to guide policy responses needs to be used for mapping imbalances and systemic risk under the framework of an early warning system.
- There is a need to strengthen analysis to ensure that the extraction of the financial cycle towards its long-term trend is conducted in a measured and punctual manner (such as "excessive" loan growth, "inflated" asset prices, "abundant " liquidity).

Magnitude

- Uncertainty on the impact of a macro-prudential instrument requires judgment to allow adjustments to be effectively applied.
- Policies should be implemented with the right magnitude
- Decisions should be made on the basis of constrained discretion.

6.3.2. Managing Foreign Capital Flow and Exchange Rate

Increased integration of the domestic economy to the global economy along with the rapid inflow of foreign capital has increased the complexity of macroeconomic management, particularly in formulating monetary and exchange rate policy. Strengthening the management of capital flow and the currency exchange rate changes is carried out through the application of the following basic principles, which includes:

1. Coordination in implementing policy mix is an important part of the strategy that is needed to ensure optimal 'possible trinity'.
2. From the capital flow perspective, by maintaining the free foreign exchange regime, macro-prudential policy in managing capital flow is a policy option aimed at reducing excessive short-term capital flow.

- Provide room/possibility for the exchange rate to appreciate, accumulate foreign exchange reserves and utilize other monetary and fiscal policies.
- Always consider using prudent and structural policies to manage capital inflow

3. In terms of exchange rate, to cope with capital flow, exchange rate is managed to move flexibly and provided room to appreciate, but to avoid misalignment.
   - exchange rate management that is in line with fundamental conditions is carried out by symmetrically intervening in the forex market, thereby providing room for an appreciation in the event of high foreign capital flow.
   - In terms of monetary policy, the complexity of the monetary policy through the interest rate policy can be supported by applying macro-prudential policies.
4. Monetary policy could be supported by macro-prudential policy in order to minimize impact of the capital inflow on asset price bubble and excessive loan growth, which giving pressure on stability of monetary and financial system, including capital flow management (CFM).

Overall, optimized '*possible trinity*' scheme is shown below :

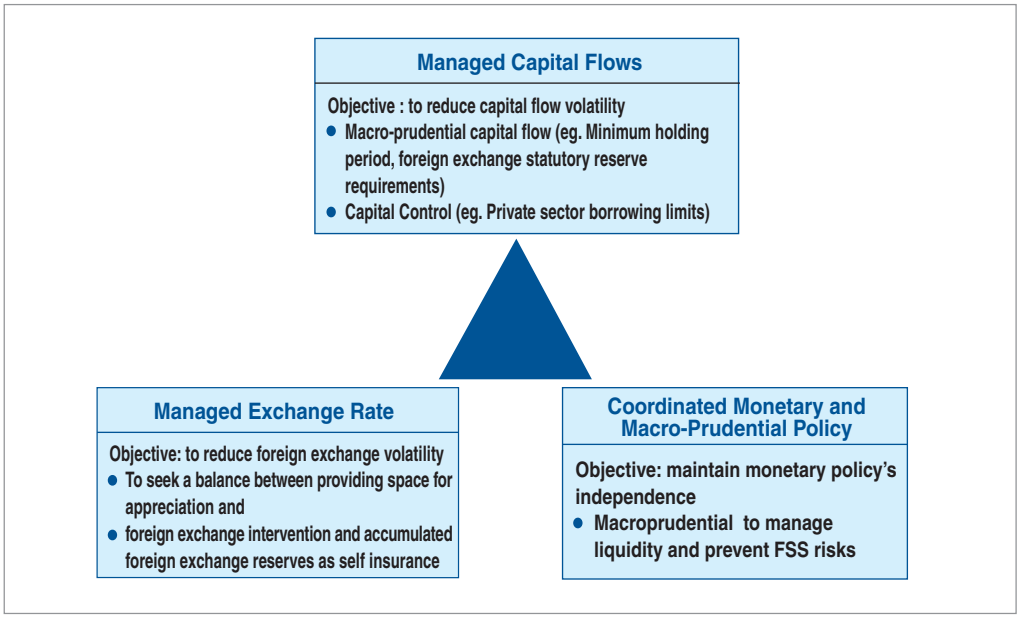

Diagram 6.3.
Optimized 'Possible Trinity'

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