The Role of the Central Bank in Promoting Sustainable Growth:
Perspectives on the Implementation of Flexible ITF in Indonesia[1]

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Abstract

The global financial crisis of 2008–09 (GFC) and the deep accompanying recession created an overarching structural condition of a global and domestic demand shortage. Since then, from a broader policy perspective, there has been a growing call for a revival of the subdued role of the central bank in promoting sustainable economic growth. This paper shows that, in the midst of global uncertainty, the policy configuration to maintain sustainable economic growth should be aimed to simultaneously strike the internal and external balance. This implies that domestic policy cannot abandon export promotion strategies, while building up the domestic demand side of

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*the economy. The role of the central bank, therefore, should be direct-
ed to integrate monetary and financial system stability frameworks.
The paper also shows that the post–GFC monetary policy framework
enhancement in Indonesia is characterized by the Flexible Inflation
Targeting Framework (ITF). In this regard, the policy framework
continues to adhere to an inflation target as the overriding objective
of monetary policy. The main characteristics of ITF will remain;
however, Bank Indonesia must also consider a number of other fac-
tors, including financial sector stability as well as the dynamics of
capital flows and exchange rates. The feasibility of the framework
should be in line with the empirical findings of this paper and pro-
vide a firm justification that, in a broader sense, a monetary policy
framework aimed at achieving price stability is relevant for the In-
donesian economy. By adopting ITF-based monetary policy, Bank
Indonesia has sufficient policy space to absorb a certain degree of
negative impacts of a crisis, thus preserving economic growth. To
this point, strengthening policy coordination between Bank Indo-
nesia and the Government in order to advance structural reform
is sufficient to drive sustainable growth in the medium–long term.*

Keywords: *Monetary policy, Instrument mix, Inflation Targeting
Framework (ITF), Flexible ITF, Bank Indonesia.*
JEL: *E44, E52, E58, E63.*

I. Introduction

Prior to the global financial crisis of 2008-09 (GFC), a financial
crisis that emerged in 2008, initially caused by subprime mortgage crisis
in US and then widespread to financial sector globally, global development
policy strategy was dominated by the paradigm of export-led growth. That
paradigm was part of a consensus among economists concerning the bene-
fits of economic openness. Meanwhile, on the monetary policy front, many
central banks have adopted monetary policy strategy with a final objective
of price stability, known as the inflation targeting framework (ITF). The

ITF adopted since the 1990's is an alternative to pre-existing policy strategies, namely monetary aggregate targeting or exchange rate targeting. The GFC and the deep accompanying recession created an overarching structural condition of a global demand shortage. Since then, from a broader policy perspective, there has been a growing call for a revival of the subdued role of the central bank in promoting sustainable economic growth. Given the necessity to build fundamental strength in the post-crisis period, the directive to reinforce the basis for sustainable economic growth has become stronger in many countries.

The rationales underlying that directive are quite essential given a number of factors. First, learning from the history of economic crises occurring over past decades reveals the basic concept that the crises had major underlying causes originating from real economic problems; they were not just the result of changes in financial sector behavior. Therefore, the scope of the central bank's policies should be integrated to strengthen real sector development. Second, the roots of future economic problems facing central banks will be extremely complicated. There is a tendency that the central bank's role is no longer perceived as identical to the monetary authority, whose responsibility is conventionally led by monetary management; rather, the central bank should take part also in strategic roles beyond monetary boundaries. Third, in the evolution of central bank towards the modern era, there are always conflicts between the central bank's role in safeguarding economic stability (stabilizing role) and promoting economic growth (developmental role). Yet, there is strong empirical evidence that the central bank should not fully abandon its developmental role.

Given these profound rationales, many agree that the overarching goal of monetary policy should continue to be achieving price stability or low inflation. However, the problem is that, when confronted by the post-GFC challenges, standard ITF cannot be applied effectively. As an example, under the standard ITF, the interest rate is used as the sole monetary policy instrument, which subsequently affects aggregate demand and the output gap, with inflation expectations anchored towards the inflation target. However, in an open economy, raising the interest rate is frequently ineffective because of the subsequent surge in capital inflows that add liquidity into the economy. Without sterilization, the additional liquidity will drive up inflation and trigger an asset bubble, which will affect finan-

cial system stability. At that point, it could be noted that, while the crisis taught us that monetary policy should remain focused on price stability as the primary goal (Mishkin, 2011), nascent consensus seems to indicate that achieving price stability is insufficient to guarantee macroeconomic stability overall because macroeconomic instability frequently stems from instability in the financial sector, even when inflation is maintained at a low level (Bean, et al, 2010).

These policy perspectives and empirical facts trigger additional complications to the implementation of ITF-based monetary policy in the context of a small open economy, such as that of Indonesia. As is the case in many emerging countries, the orientation of Indonesian monetary policy in the midst of high global uncertainty is tactically directed not only towards controlling inflation, but also managing the exchange rate in line with macroeconomic fundamentals, through active and measurable interventions on the foreign exchange market. In addition, the monetary policy regime simultaneously manages international reserves at safe levels. This condition has a logical consequence whereby exchange rate dynamics are not completely influenced by market forces but also by domestic monetary policy (Juhro, 2010).

A preliminary assessment provides strong evidence that there is a tendency for monetary policy strategy to move away from that which is hypothesized by the monetary policy trilemma. Referring to the trilemma index[3] developed by Aizenman et al. (2008), it can be seen that, over the past 15 years, there is a shifting in the behavior of monetary policy trilemma in Indonesia. It seems that exchange rate stability and monetary policy autonomy could be maintained along with financial market integration/openness, so that there is no such a clear trade-off among the three indicators. The table shows that along with the high degree of integration between Indonesian financial markets and global financial markets and improving domestic monetary policy autonomy, exchange rate developments have tended to be more stable (Table 1).

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3   The metrics for measuring the degree of exchange rate flexibility, monetary autonomy, and capital account openness, while taking into account the development of international reserve accumulation.

Table 1. Indonesia Monetary Policy Trilemma Index

Trilemma Index	1997 – 2000 1997-98 Crisis	2001 – 2005 Trend of ITF	2006 – 2008 ITF Pre-GFC	2009 – 2013 GFC–Post-GFC
Exchange rate stability	0.11	0.27	0.25	0.28
Monetary policy autonomy	0.45	0.30	0.50	0.57
Financial market integration	0.74	0.69	0.69	0.71

This paper aims to address three issues. First, what are the best central bank policy strategies to promote sustainable economic growth? From an Indonesian economic perspective, it will focus mainly on the relevance of Bank Indonesia policy strategy to rebalance the sources of economic growth in order to maintain sustainable economic development in the medium-long term. Second, does the assessment suggest a need for changes in the design of post-GFC ITF-based monetary policy in the context of a small open economy? It will explore basic rational arguments for Bank Indonesia to formulate the optimal strategy to transform the 'impossible trinity' into a 'possible trinity'. Third, what is the implication of a preferred monetary policy framework on stability and growth? It will seek justification on whether the implementation of ITF-based monetary policy harms output growth or not.

This paper shows that, in the midst of global uncertainty, the policy configuration to maintain sustainable economic growth should be aimed to simultaneously strike an internal and external balance. Referring to a number of prominent sustainable growth model recalibrations, this implies that domestic policy cannot abandon export promotion strategies, while building up the domestic demand side of the economy. The role of the central bank, therefore, should be directed to integrate monetary and financial system stability frameworks. The paper also shows that the post-GFC monetary policy framework enhancement in Indonesia is characterized by the flexible ITF. In this regard, the policy framework continues to adhere to an inflation target as the overriding objective of monetary policy. The main characteristics of ITF will remain; however, Bank Indonesia must also consider a number of other factors, including financial sector stability as well as the dynamics of capital flows and exchange rates.

Finally, the paper shows that stylized facts on the stability-growth nexus firmly reflect a notable feature of Indonesian monetary policy in the

midst of a crisis, namely the gradual disinflationary policy in support of sustainable economic growth. To support the analysis, the author employs a univariate exponential generalized autoregressive conditional heteroskedasticity (E-GARCH) method and a rolling regression on the New Keynessian Phillips Curve (NKPC) for quarterly observations ranging since 1990s to the present day. As expected, empirical findings in this paper provide a firm justification that, in a broader sense, a monetary policy framework aimed at achieving price stability is relevant for Indonesian economy.

The following section presents current state of the Indonesia economy, especially stylized facts on the stability-growth nexus and major policy challenges to maintain sustainable economic growth. The third section provides policy strategy to promote sustainable growth, focusing on the role of the central bank under a new sustainable growth model and theoretical and empirical review of feasibility of flexible ITF, which leads to the integration of monetary and financial system stability frameworks. This section also presents the monetary regime shifting in Indonesia, as a result of framework enhancement under unconventional wisdom of monetary policy over the crisis periods, from a standard ITF to a flexible ITF.[4] The fourth section explores recent salient empirical findings on the implications of ITF-based monetary policy on stability and growth. The last section concludes this paper.

## II. Stability and Growth Potential: Indonesia Case

The past few years have brought Indonesia many economic surprises and challenges. Even today the global economy remains beset by substantial risks and uncertainties. However, despite this backdrop of strong headwinds from abroad, the Indonesian economy has emerged, not only with its economic standing intact, but with its standing strengthened. Vigorous economic progress has been made achievable on the back of fundamental strengths attributable to wide-ranging economic reforms since the Asian financial crisis of 1997-98, including the monetary, fiscal, banking and real sectors. These fundamental strengths afforded Indonesia a strong footing

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4   In many literatures, a 'flexible' ITF term suggests that the central bank should not focus solely on inflation gap. Rather, the central bank should also pay attention to the output gap, and financial stability. See Walsh (2008) and Svensson (1999).

when the GFC touched Asian shores in 2008-09. Indonesia also avoided the downward spiral of sovereign debt crisis that is threatening Europe much better than its Asian peers.

Such notable progress has, no doubt, had a positive impact on domestic economic resilience. Despite the fragile global economy, the Indonesian economy continues to demonstrate considerable resilience with an average of 6.0 percent in the last five years (2010-13). Indonesia's resilience arose amidst a sharp fall in exports as a result of pressures from the global economic slowdown. The leading source of Indonesian economic growth has been strong domestic demand growth with an increasing role from an average of 80 percent prior to the Asian financial crisis of 1997-98 to 90 percent in the post-crisis period (Figure 1).[5] In 2014 GDP of Indonesia at current price is about Rp 10,500 trillions, in which consumption amounts to Rp 7,000 trillions, investment amounts to Rp 3,400 trillions, while export and import is about Rp 2,500 trillions and Rp 2,600 trillions, respectively.

Figure 1. GDP Growth and its Determinants
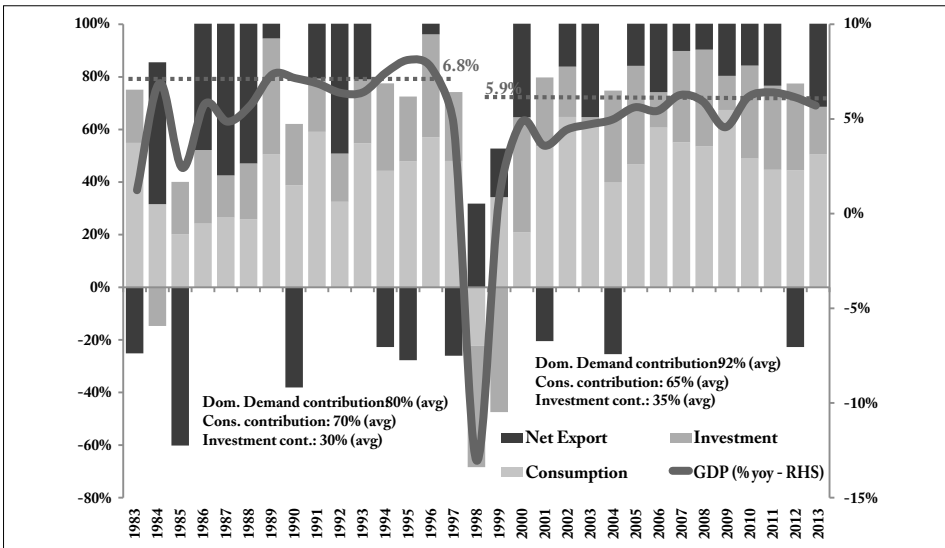
Source: Bank Indonesia, Indonesia Financial Statistics

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5   While strong private consumption is the major impetus of domestic demand growth, investment also plays a more substantial role in supporting economic growth. The continued strength of private consumption is the result of rising consumer confidence and a steady level of public purchasing power. Other key factors of buoyant investment growth include expansive private consumption and a climate conducive to invest.

It was a special case indeed, when the episode of robust growth did not occur with rising inflation. Despite robust economic growth, however, Indonesia experienced relatively low and stable inflation. Moreover, Indonesia has convincingly entered an era of structurally lower inflation. Inflation has reached a single digit due to improving ITF policy credibility since its adoption in 2005, as reflected by the declining trend of core inflation notably from an average of 8.1 percent during the pre-ITF period to 5.2 percent in the ITF period (Figure 2). The contributing fundamental factors to this downward trend include inflation expectations that were kept subdued and adequate supply-side capacity in response to demand. This showed that inflation moderation has been structural in nature because potential growth has risen and the output gap remains negative in spite of rising investment to GDP.

Figure 2. Headline and Core Inflation
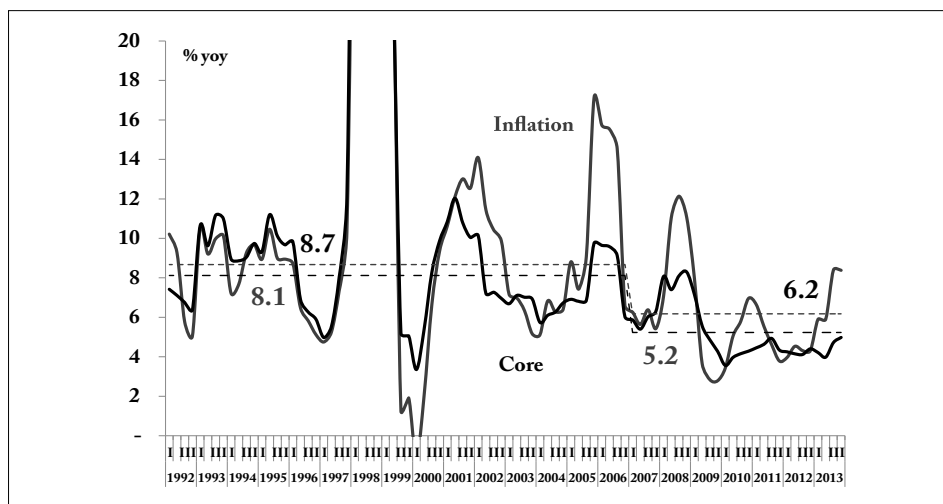
Source: Bank Indonesia, Indonesia Financial Statistics

It is interesting to note an indication of a shift in the degree of the stability-growth nexus during the ITF period. The nexus appears to have weakened, reflected by an apparent flattening of the Phillips Curve (slope), especially during the post-GFC period (Figure 3).[6]

6   Simply indicated from a trend line of a scatter chart (inflation against output growth). A more detailed and rigorous assessment on the Phillips Curve will be provided in section four.

Figure 3. Inflation and GDP Growth Nexus
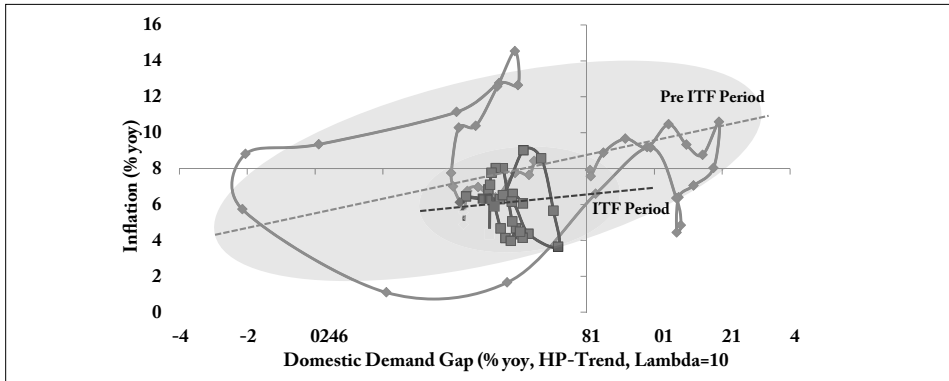
Source: Bank Indonesia, Indonesia Financial Statistics, processed.

This phenomenon may imply that inflation is less responsive to domestic demand. Rather, it is relatively more affected by a supply response, such as a temporary cost-push shock related to the exchange rate, commodity price movements or weather anomalies. Another factor contributing to the flattening of the Phillips Curve is policy credibility gained by Bank Indonesia in terms of controlling inflation. One important thing that should be noted is the success of policy coordination between Bank Indonesia and the Government in controlling inflation over the last decade.[7]

Nevertheless, the success story of ITF cannot be concluded yet, as several empirical questions remain unanswered, in particular relating to economic capacity to grow sustainably in the medium-long term. Moderating global demand, reflected in slower export growth, paired with rebalancing sources of growth towards domestic demand has led to a widening current account (CA) deficit. Having experienced a surplus during the period after the Asian financial crisis of 1997-98, since the last quarter

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7   Policy coordination efforts consisting of routine coordination meetings between Bank Indonesia and the Government to discuss recent economic developments as well as Bank Indonesia participation in cabinet meetings chaired by the President of the Republic of Indonesia to share BI's views towards macroeconomic and monetary developments, specifically pertaining to achieving the inflation target must be continued. In addition, enhanced coordination with the government is required that is duly authorized to decide on specific matters pertaining to inflationary issues encountered in the field through the National Inflation Task Force (Tim Pengendalian Inflasi/TPI) established in 2005 and the Regional Inflation Task Force (Tim Pengendalian Inflasi Daerah/TPID), which was initiated in 2008. Since its establishment, the number of TPID reached around 400, spread across 33 provinces in Indonesia.

of 2011 the CA balance has recorded a deficit, mainly owing to decreasing export growth amidst considerably stronger import growth driven by higher investment rather than consumption. The flagging economies of major trading partners, such as Europe, China, Japan and India, potentially hamper the rate of recovery in export growth.

In line with external performance that has failed to meet expectations, structural weaknesses in the Indonesian economy have also pushed CA deficit problems that require serious attention. Figure 4 shows a pre and post-Asian financial crisis comparative assessment of the relationship between the trend of the growth rate of real domestic demand (% yoy) and the trend of the CA balance (% GDP). The slope summarizing the relationship between the two has shifted. Specifically, the adverse impact of an accelerated growth rate of real domestic demand on the outturns of the CA balance was less pronounced during the pre-Asian financial crisis of 1997-98 vis-à-vis the post-Asian financial crisis era. In the post-GFC era, the slope summarizing the relationship between domestic demand and the current account has steepened even more. More importantly, however, exchange rate adjustment since 2013 has been less potent than the previous two episodes of large depreciation in 2005 and 2008 in securing a positive outturn in the CA (Figure 4).

Figure 4. CA Balance and Domestic Demand Growth
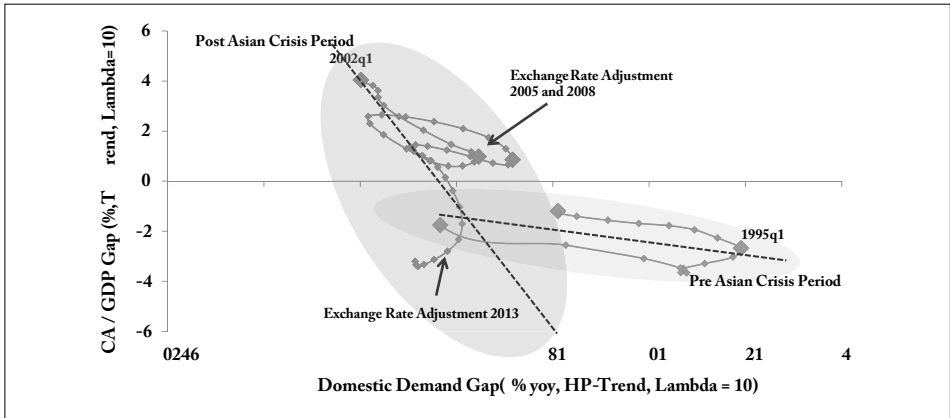
Source: Bank Indonesia, Indonesia Financial Statistics, processed.

The above observations further suggest the presence of "balance of payments constrained growth" in Indonesia. In this case, any effort to accelerate domestic demand, thus economic growth, is constrained by a widening CA deficit. The problem of a stubborn CA deficit could potentially hamper macroeconomic balance and economic growth sustainability in the medium term. This, in turn, leads to the issue of economic efficiency and competitiveness, which in many facets is structural in nature as opposed to cyclical.

Meanwhile, another challenge in the financial sector relates to financing sources for development, which still lack long-term funds. Sources of financing through bank credit generally account for less than 40 percent, while sources of financing through bond and stock markets are very limited, or even relatively underdeveloped compared to peer countries in the region (Table 2). The capacity and liquidity of the corporate bond market are also low, while the level of participation of pension funds or insurance with long-term lenders is also still limited. It cannot be denied that this lack of financial deepening could potentially weaken economic growth potential in the medium term.

Table 2. Indicators of Financial Deepening

Rp Bn	Banking Credit		Government Bond		Central Bank Certificate		Stock	
	Level	% of GDP	Level	% of GDP	Level	% of GDP	Level	% of GDP
1990	95,704	0.5						
1995	234,611	51.6	–	–	–	–	–	–
2000	269,000	19.4	–	–	–	–	–	–
2004	555,236	24.2	402,099	17.5	102,731	4.5	398,897	17.4
2005	698,695	25.2	399,839	14.4	72,237	2.6	468,220	16.9
2006	796,767	23.9	418,751	12.5	207,400	6.2	711,682	21.3
2007	1,004,178	25.4	477,750	12.1	267,710	6.8	1,191,782	30.2
2008	1,313,873	26.5	525,690	10.6	166,714	3.4	657,705	13.3
2009	1,446,808	25.8	581,750	10.4	255,520	4.6	1,151,357	20.5
2010	1,783,601	27.7	641,220	9.9	200,110	3.1	1,885,801	29.3
2011	2,223,685	30.0	723,620	9.8	119,780	1.6	2,091,205	28.2
2012	2,738,054	33.3	820,260	10.0	78,870	1.0	2,284,731	27.8
2013	3,322,683	36.6	995,250	11.0	91,390	1.0	2,525,005	27.8
2014	3,707,916	35.2	1,061,698	10.1	88,899	0.8	2,891,739	27.4

Source: Bank Indonesia, Indonesia Financial Statistics

III. Policy Strategy To Promote Sustainable Growth Under Flexible Itf

3.1. The Role of the Central Bank in a New Sustainable Growth Model

As noted earlier, the post-GFC policy paradigm was colored by a growing call for a revival of the subdued role of the central bank in promoting sustainable economic growth. Central bankers are confronted by the need to abandon conventional wisdom and develop alternative policy frameworks based on a new model of sustainable growth. Recent studies posed a prominent recalibration of thoughts, which has facilitated discussions on the determination of optimal sustainable growth strategy, not only viewed from a broader perspective, such as Coats (2011) and Watts and Botsch (2010) but also focused on macroeconomic policy perspectives, as per Palley (2011) and Felipe and Lim (2005).

From a macroeconomic policy perspective, where central banks play a pivotal role in the context of demand management policy, an interesting discussion leads to the choice of a preferred paradigm; whether the old paradigm of export-led growth or a new paradigm of domestic demand-led growth? Palley (2011), for instance, certainly acknowledges that in order to grasp the benefits of economic development, developing countries need to export. However, it is argued that the global trading system must be made the servant of domestic development and that domestic development must not be forgone for the sake of international competitive advantage. In this regard, domestic demand growth should rest on four pillars, namely: (i) improved income distribution, (ii) good governance, (iii) financial stability, and (iv) a fairly priced supply of development finance. And the policies needed to put these pillars in place are (i) labor and democratic rights; (ii) financial reforms; and (iii) a combination of debt relief, increased foreign aid, and increased development assistance through the expansion of special drawing rights.

What is the strategic role of central bank? To answer this question, we need to consider two aspects that form the basis of policy strategy formulation, namely policy configuration and policy implementation. Based on emerging market countries' experiences, it is believed that one could not differentiate clearly where the sources of economic growth come from. Empirical evidence in some Asian countries also shows that successful and

sustained growth requires growth in both domestic demand and net exports (Felipe and Lim, 2005). In conjunction with these salient facts, the development strategy should not abandon export strategies, while building up the domestic demand side of the economy. In this regard, the central bank policy configuration needs to strike the internal and external balances properly (Figure 5).

Figure 5. Key Strategies under the Sustainable Growth Model
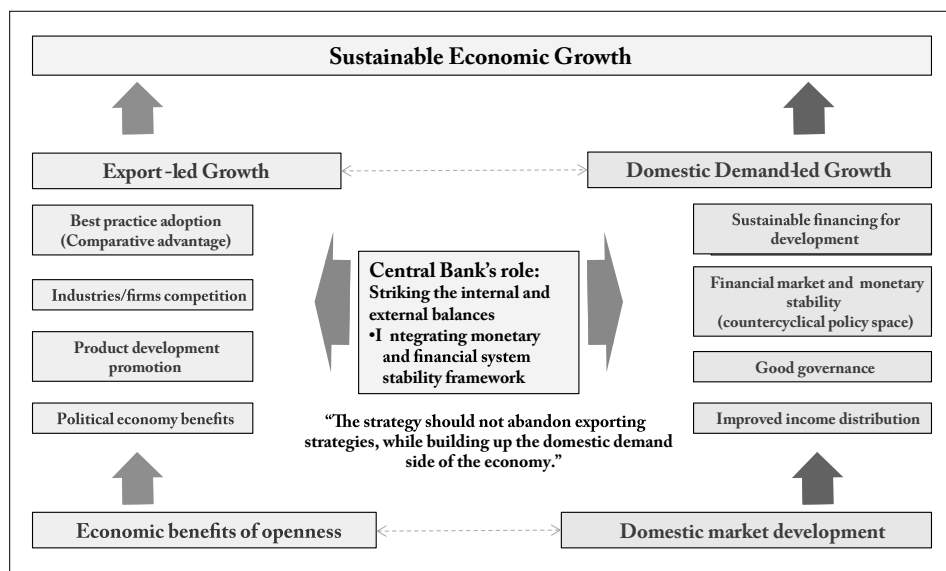
Source: Palley (2011) and Juhro (2012)

In addition, policy implementation should be differentiated into two perspectives, namely the short-term and medium-long term. According to the short-term perspective, policy strategy should be geared towards managing the economic cycle on the demand side through countercyclical policies (for example monetary and macroprudential policies). Meanwhile, in the medium-to-long term perspective, policy strategy should also be directed to minimize potential economic shocks that may arise and simultaneously increase the capacity of the economy to achieve sustainable economic growth. This can be achieved through the advancement of structural reforms, in both the real and financial sectors.

Figure 6. Short Term and Medium-long Term Policy Strategies for Sustainable Growth
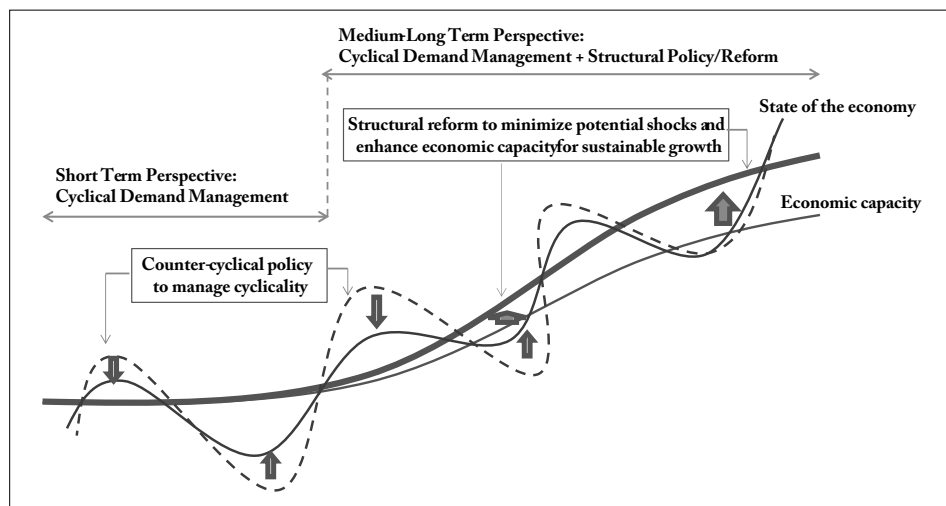
Considering the above aspects, from a central bank policy perspective it could be argued that the aforementioned policy strategies can feasibly be achieved by integrating the monetary and financial system stability frameworks.[8] The preferred strategy to integrate monetary and financial system stability frameworks is generally in line with the basic spirit of many central bank mandates, especially in the post-GFC period. For instance, Bank Indonesia's mission is "to achieve and maintain price stability and contribute to safeguarding financial system stability; in order to promote sustainable economic development".[9] According to the mission, there are two interlinked-frameworks to ptomote sustainable economic growth, namely monetary stability framework and financial stability framework.

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8   It should be noted that, in practice most central banks generally perform a function in the payment system area. In this case, payment system stability (including instruments, volume of transactions, institution and infrastructure) will be pursued in order to work in a safe and efficient manner able to withstand internal and external shocks that will support monetary and financial system stability. Seeing the strategic role of the payment system, its institutional set up can be considered as one specific wing, separate from monetary and financial stability. Conceptually, however, the payment system is generally regarded as an important part of supporting monetary and financial system stability. In this paper, given the payment system function in Bank Indonesia, which is still in the early stage of development, especially in terms of system and framework, the payment system function is considered already inherent in monetary and financial system stability.

9   As per the proposed draft to the House of Representatives of the Republic of Indonesia.

Under the monetary stability framework, the policy strategy aims to: (i) achieve price stability; (ii) stabilize exchange rate movements in line with its fundamental value; and (iii) manage capital flow dynamics to support macroeconomic stability. Congruent with the monetary stability framework, the financial stability framework aims to achieve a broader sense of financial system stability, namely (i) strengthening financial system resilience (e.g. managing inter-connectedness); (ii) balancing financial intermediation (e.g. managing pro-cyclicality); and (iii) promoting financial inclusion.[10]

It is argued that, by integrating the two frameworks, monetary stability and financial stability, the central bank can feasibly achieve sustainable economic growth. In this regard, monetary and macroprudential policy should be mixed and directed to manage external balance while providing support to domestic economic development. From a short-term policy perspective, this argument is believed to be valid. Therefore, to ensure sufficient conditions for sustainable economic growth in the medium-long term, integrated policy coordination between the central bank and the government is essential to advance structural reforms, such as improving domestic competitiveness and sustainable sources of financing for development.

Figure 7. Policy Framework to Promote Sustainable Growth
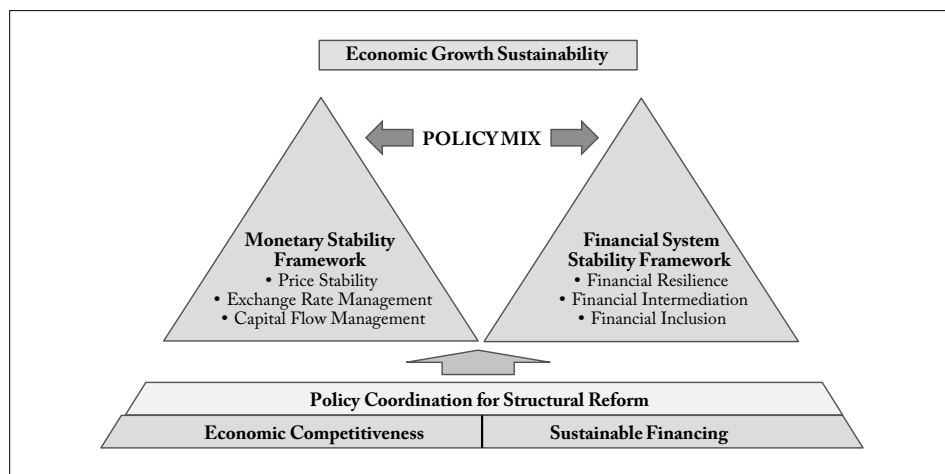
Source: Bank Indonesia

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10   There are ongoing discussions on the issue, including formulation of the future Bank Indonesia policy framework. For example, see Warjiyo and Juhro (2012) and Warjiyo (2013).

3.2. Stabilization Trade-Off and the Feasibility of Flexible ITF

ITF, which was originally implemented as an 'art of central banking' by strengthening the institutional framework of monetary policy to support expectation management and policy credibility (Bernanke et al., 1999), gradually began to be considered through the foundation development of macroeconomic theory. Although a lot of literature has taken into account the existence of ITF since the 1990s,[11] theoretical substance ITF, including the flexibility of its implementation, was observed much earlier by Kydland and Prescott (1977) and Barro and Gordon (1983). It was shown that with pre-commitment, a central bank can credibly achieve an inflation rate at the desired level and according to public expectations with minimal losses. On the contrary, with discretion, changing public expectations in line with the central bank's 'inconsistency', will cause inflation bias. In this case, inflation is a product of certain considerations that arise as a result of policy authorities' desire to promote economic growth. This condition also shows that basically there is a trade-off between credibility versus flexibility in the sense that with the flexibility to pursue the output stabilization, policy credibility to control inflation would be disturbed.

In the model of Barro-Gordon (1983), which is also the basis for the development of the model by Rogoff (1985), the development output (y) is formulated based on the supply curve specification ala "Lucas":

$$y_t = a(\pi_t - \pi_t^e) + \varepsilon_t \qquad \qquad \ldots (1)$$

where πt is inflation, π_t^ete is inflation expectations, and ε_tt is iid shocks with average zero and variance σ_ε^2. a is a parameter that reflects the influence of misperception on the output formation. Expectations are believed to be formed prior to the existence of shocks and before policymakers determine π_t. The objective function is policymakers

$$L_t = \pi_t^2 + b(y_t - y^*)^2 \qquad \qquad \ldots (2)$$

where, b > 0 and natural level of output, y* > 0. Substituted (1) into (2) gives:

$$L_t = \pi_t^2 + b(a(\pi_t - \pi_t^e) + \varepsilon_t - y^*)^2 \qquad \ldots (2')$$

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11   See for example, Rotemberg and Woodford (1997), Svensson, (1997), Clarida et al. (1999), Goodfriend and King (1997).

Assuming that , first order condition provides solutions:

$$E_{t-1}(\pi_t) = aby^* > 0 \qquad \qquad \dots (3)$$

$$\pi_t = aby^* - \frac{ab}{1+a^2b}\,\varepsilon_t \qquad \qquad \dots (4)$$

$$y_t = \frac{1}{1+a^2b}\,\varepsilon_t \qquad \qquad \dots (5)$$

Policy rule (4), which also represents the expected augmented Phillips Curve, contains a component known as the inflation bias aby* and stabilization component (ab / (1 + a2b)) ε. The solution shows that the characteristic of expected augmented Phillips Curve would lead to optimal inflation which is greater than zero because it is influenced by inflation expectations (in general), which are also greater than zero. In fact, if inflation expectations are equal to zero, optimal inflation will still be greater than zero because the parameters of social costs and economic capacity (b and y*) as well as deviation from the inflation target (a).

From equations (3) – (5) can be obtained unconditional moments:

$$E(\pi_t) = aby^* \Rightarrow \frac{\partial E(\pi_t)}{\partial b} > 0 \qquad \qquad \dots (6)$$

$$E(y_t) = 0 \qquad \qquad \dots (7)$$

$$\mathrm{var}(\pi_t) = \left(\frac{ab}{1+a^2b}\right)^2 \Rightarrow \frac{\partial\,\mathrm{var}(\pi_t)}{\partial b} > 0 \qquad \dots (8)$$

$$\mathrm{var}(y_t) = \left(\frac{1}{1+a^2b}\right)^2 \Rightarrow \frac{\partial\,\mathrm{var}(y_t)}{\partial b} < 0 \qquad \dots (9)$$

From these results it can be concluded that discretionary monetary policy will lead to higher inflation without pushing output to exceed the natural rate, otherwise known as stagflation. In addition, there is a stabilization trade-off, where the smaller weight output stabilization (b) - the more credible a policy, inflation is low and stable, but is accompanied by output volatility. Conversely, if the parameter b is greater, the volatility of output is low, but at the expense of the average and volatility of inflation increases.

Stabilization trade-off issues that arise and empirical findings

about the effect of ITF on the economy basically show that ITF possesses limitations. In a condition where an economy is facing large supply shocks, ITF will not work well to reduce output volatility. For example, in the event of a fall in productivity growth (negative supply shocks) that leads to an increase in input costs and a decrease in output production, monetary tightening measures by the central bank to control inflation will further reduce real output (Henderson and McKibbin, 1993). In such a situation, ITF will enlarge the output loss and escalate risk in an economy. Such conditions lead to the notion that a central bank could switch monetary policy strategy from ITF to Nominal GDP Targeting (NGT). With this strategy, the central bank may consider the increase in inflationary pressures and a decrease in real GDP, so that monetary policy could be implemented not too tightly, or even looser, when the expected decline in real GDP is larger than the expected decline in inflation expectations.

The concept of Flexible ITF (F-ITF), therefore, has a pivotal issue with NGT, where the potential decline in output is also taken into consideration when the central bank responds to the increase in inflation. With ambiguity between the theoretical aspects and actual regimes, F-ITF can be seen as an intermediate stage between pure ITF and NGT. In its developmental stage, the F-ITF is not only seen as a narrow stabilization trade-off strategy to manage inflation or output developments, which implies a change in policy credibility. However, it should be seen in terms of the possibility of implementing the policy mix strategy of the central bank in response to substantial shocks or changes in an economy, such as in the event of a financial crisis. The policy mix strategy is essential along with criticisms of ITF implementation considering the global economy has not fully recovered from the problems of the GFC.

The GFC taught a lesson that maintaining low inflation is insufficient to achieve the objectives of macroeconomic stability. Therefore, the key measure to manage macroeconomic stability not only depends on the success of controlling internal and external imbalances, such as inflation and the balance of payments, but also imbalances in the financial sector, such as excessive credit growth, asset price bubbles and the cycle of risk-taking behavior as the financial sector is highly susceptible to changes in market perception. In other words, the central bank is required to be more

flexible, beyond common belief, in responding to uncertainties that arise in an economy.

The implementation of F-ITF has at least three fundamental consequences on the behavior or preferences of central bank monetary policy, namely:

- In the short-term, especially during the period of recovery after the crisis, a monetary policy preference that favors economic growth rather than price stability could be possible, confirming the notion that achieving the ultimate goal of price stability does not necessarily mean that the central bank ignores altogether efforts to boost economic growth. On the contrary, in the short term, monetary policy can be directed, through certain calculations, to spur the process of economic recovery, while in the long-term perspective, price stability should be maintained in order to promote sustainable economic growth.
- There is a major consideration on the pivotal role of financial sector developments. This implies that a healthy macroeconomic management should also consider financial system stability as the foundation to realize a sustainable macroeconomic environment. Within this policy perspective, the format of central bank policy should integrate the frameworks of monetary and financial system stability
- The basic format of monetary policy in emerging markets should be set to make price stability the key element underlying the monetary policy response. From a tactical level, however, with emerging market economies characterized by undergoing general structural changes and macroeconomic fluctuations, an appropriate formula of monetary policy response should accommodate an element of flexibility; which is translated into a quality coordination between the central bank and the government.

It can be concluded that according to the F-ITF format, the substance of stability can be described in a broader consideration, not only the inflation-output growth trade-off in the short term but also financial system developments. As indicated, under F-ITF, the achievement of price stability is only necessary, not sufficient. To be sufficient, a regulatory framework in the financial sector should support the successful imple-

mentation of F-ITF (macroprudential policy framework). It consequently addresses one of the unfulfilled preconditions of successful ITF implementation, namely a healthy and efficient financial system. In this regard, macroprudential policy instruments are utilized to manage procyclicality and expedite monetary policy transmission.

In general, the feasibility of F-ITF should be in line with empirical findings from numerous studies providing firm justification that, in a broader sense, a monetary policy framework aimed at achieving price stability is relevant for a small open emerging economy with significant supply shocks. By adopting ITF-based monetary policy, the central bank has sufficient policy space to absorb a certain degree of negative crisis impacts, thus preserving economic growth.

Mishkin and Schmidt-Hebbel (2001) is a good reference as a success story of ITF implementation since 1990, which can also be found in many previous empirical studies. The successes of ITF summarized by Mishkin and Schmidt-Hebbel are as follows. First, ITF can help countries to lower inflation, although not in underdeveloped countries that do not implement ITF. Second, ITF can help lower and steer inflation expectations in the face of shocks to inflation. Third, ITF can help to lower output volatility in countries that implement it to a level approaching the performance of developed countries that do not apply the regime. A recent study by Daboussi (2014) investigated the effect of ITF on economic performance over the period of 1980-2012 in 53 developing countries, suggesting that the choice of ITF is beneficial for developing economies, consistent with past studies. The results for average inflation and inflation volatility are in favor of ITF. Countries that have adopted ITF have experienced significant economic growth volatility, which shows the challenge of monetary policy to confront the effect of shocks in the economy. However, in total, the results suggest that the effect of inflation targeting in developing economies will contribute effectively to achieve sound economic performance.

While the claims of the benefits of inflation targeting are sometimes disputed in empirical studies, McKibbin and Wang (2014) examine the economic performance of inflation targeting countries during the 2007-2012 global downturn compared to those without this policy. The baseline results show that inflation targeting works better than not target-

ing inflation for developed countries during downturns. The three metrics of inflation, GDP growth, and the unemployment rate show that developed countries with an inflation targeting policy are more insulated from the recessionary effects of the financial crisis compared to those who do not have the policy.[12] Meanwhile, the results for the inflation targeting emerging countries could not be more different to the results for the developed countries. This paper complements and extends much of the previous work on emerging countries finding that inflation targeting reduces inflation and inflation volatility compared to the non-inflation targeting counterparts.

3.3. Indonesia Monetary and Financial Stability Frameworks under Flexible ITF

1. Under ITF-based monetary policy, which was formally adopted in July 2005, the main priority of Bank Indonesia is to build credibility through the following actions (Juhro and Goeltom, 2015).
2. Bank Indonesia takes extensive steps to communicate the policy framework to the public through seminars and round-table discussions with bankers, academics, government officials, Bank Indonesia regional office officials and the media.
3. Communication is reinforced by quarterly policy announcements in order to establish consistency, a key prerequisite communicating inflation targeting policy. Success in building credibility will ensue only if the policy is clearly and consistently implemented in line with deviations of expected inflation from the target.
4. Decision-making processes within Bank Indonesia are strengthened as required by forward-looking strategy to determine monetary policy responses for achieving the inflation target. Overall macroeconomic conditions, the inflation forecast and monetary policy responses are assessed at each quarterly board meeting as the basis for deciding the BI Rate to attain the inflation target.
5. Regular press releases and press conferences are held to announce the decisions of the board meeting. These are supplemented with a

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12   For developed countries, the effectiveness of inflation targeting during downturns is an important result, and in contrast to the many papers who find that inflation targeting does not make much difference to outcomes in normally functioning markets.

quarterly Monetary Policy Report presenting an overall assessment of macroeconomic, inflation and monetary conditions; the inflation forecast and the monetary policy responses necessary to keep inflation on track with the target.

6. Policy coordination with the fiscal authorities is being strengthened. The magnitude of influence from hikes in administered prices on inflation means that inflationary pressures can potentially be mitigated through regular consultation on proper timing for adjustments in administered prices.

Implementation of monetary policy is ultimately balanced between flexibility on one hand and credibility and transparency on the other. Within these bounds, some discretion will be required in order to address Indonesia's short-term problems. However, excessive flexibility – which could, for example, give rise to unclear changes in policy decisions – would undermine the credibility and policies of the central bank. Therefore, it can only be expected that consistent commitment and determined implementation will be essential to the realization of a more credible ITF.

Despite progress having been made since the crisis, the economy is still burdened by various constraints and problems. The main challenges confronting the Indonesian economy are maintaining stability amid rising global uncertainty and reducing unemployment and poverty through accelerated growth. In this regard, the challenge in monetary policy is to contain rising inflationary pressures without impeding economic growth. The question is whether or not a monetary policy framework aimed at achieving price stability, e.g. ITF, is still relevant. The answer is a resounding "Yes".[13]

Although Bank Indonesia still sees ITF as a reliable monetary policy strategy for Indonesia, it needs to be enhanced by refining future ITF implementation strategy. There are two rationales underlying such enhancement. First, evaluations of ITF implementation in Indonesia have

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13 Theoretically, an ITF policy framework oriented toward achieving low inflation and implemented with greater transparency is surely still relevant when the objective of monetary policy is to achieve price stability. Mishkin (2011), who holistically evaluated nine principles of monetary policy, including ITF, which had become a kind of consensus prior to the crisis, concluded "none of the lessons from the financial crisis in any way undermines the nine basic principles of the science of monetary policy".

evidenced the need for a number of adjustments and refinements to ITF, which have been undertaken in line with conventional wisdom on monetary policy. In this case, there is justification for the need to implement a less rigid ITF (Flexible ITF) as an ideal format for the Indonesian economy (Juhro et al., 2009). Second, Indonesian economic performance during the GFC inspired confidence as to the aptness of ITF as a reliable monetary policy strategy for Indonesia. However, given the dynamics and complexity of the challenges faced, the framework requires further enhancements.

There are five principles of enhancement under unconventional wisdom of Flexible ITF: [14]

a. Continuing the adherence of policy framework to an inflation target as the overriding objective of monetary policy. The main characteristics of ITF will remain; e.g. preemptive, independent, transparent and accountable policy implementation.

b. Integrating monetary and macroprudential policy. Appropriate monetary and macroprudential policy integration is required in order to buttress monetary and financial system stability.

c. Managing the dynamics of capital flows and exchange rates. In supporting macroeconomic stability, coordinated implementation of a policy instrument mix must ultimately be part of an important strategy for optimally managing the monetary policy trilemma.

d. Strengthening policy communication strategy as part of the tool chest of policy instruments. Policy communication is no longer practiced purely for the sake of transparency and accountability; it is now regarded as a valuable monetary policy instrument.

e. Strengthening Bank Indonesia and government policy coordination. Policy coordination is crucial, given that inflation stemming from the supply side creates most inflation volatility.

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14   It was shown that the post-GFC monetary policy framework in Indonesia is, in general, characterised by 'enhanced' or flexible ITF. According to flexible ITF, the monetary policy framework continues to adhere to an inflation target as the overriding objective. The main characteristics of ITF remain, namely that the inflation target is announced publicly and that monetary policy is forward-looking, transparent and clearly accountable. However, ITF is implemented in a more flexible manner, in the sense that 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

Therefore, under Flexible ITF, feasibility in policy mix implementation can be achieved through, amongat others, additional macroprudential instruments in addition to monetary instruments, which should reinforce one another. While monetary instruments will be utilized to influence monetary variables, such as interest rate, exchange rate, credit and expectations, macroprudential instruments will be utilized mainly to manage risk potential or perceptions on financial markets. In connection with measures for averting potential policy conflicts, it is important to prioritize policy objectives by setting price stability (inflation) as the overriding objective.

Enhancement of the monetary framework under flexible ITF, by means of a monetary and macroprudential policy instrument mix, is described below (Figure 8).

Figure 8. Monetary and Macroprudential PolicyMix Framework under Flexible ITF
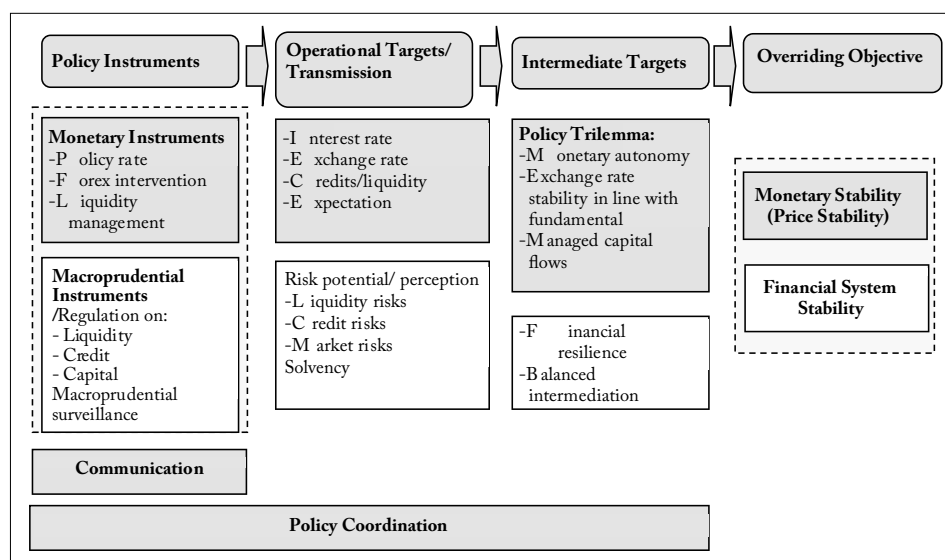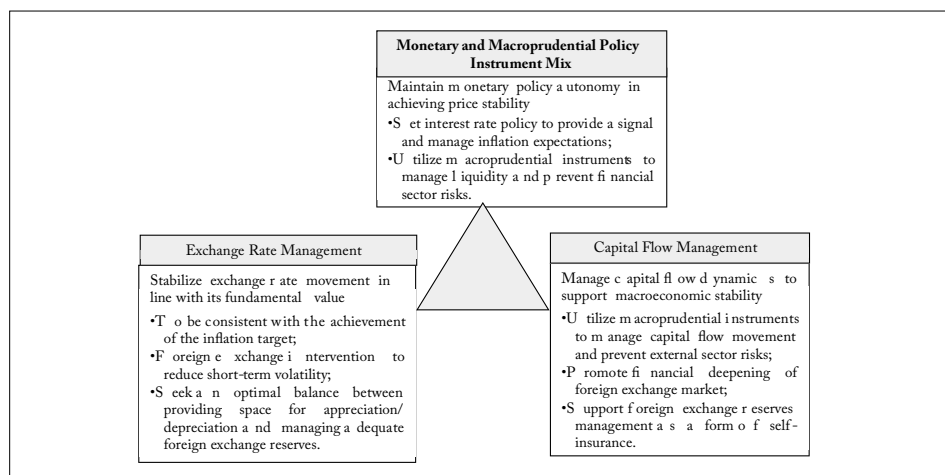

Source: Bank Indonesia

i. Trilemma Management under Monetary Stability Framework

Amidst widespread global uncertainty, the primary goal of monetary policy is to strike the right balance between mitigating the downward risks in domestic economic growth arising from the global economic downturn

while ensuring stability in the medium-long term. This remains a challenge as heightened uncertainty regarding near-term global economic prospects and loose monetary policies as well as unresolved fiscal and banking-sector problems in the developed world are likely to keep international capital flows volatile in a two-way direction. Meanwhile, greater domestic economic integration with the global economy, coupled with intense foreign capital flows and exchange rate dynamics, has increased the complexity of monetary management. To confront these issues, the choice of monetary policy strategy has become how to transform the impossible trinity into a possible trinity. The concept of a possible trinity can be expressed as an intermediate solution that avoids volatile swings in the exchange rate, controls excessive short-term capital inflows and reinforces independent monetary policy (Palley, 2009).

In this regard, for the case of Indonesia, to manage the monetary stability framework is indeed to manage the monetary policy trilemma, namely achieving the three intermediate goals of: (i) maintaining monetary policy autonomy in achieving price stability by utilizing a monetary and macroprudential policy (instrument) mix; (ii) stabilizing exchange rate movements in line with its fundamental value by employing exchange rate management; and (iii) managing capital flow dynamics to support macroeconomic stability by implementing capital flow management.

Figure 9. Monetary Policy Trilemma Management

Source: Bank Indonesia

Monetary policy complexity stemming from the interest rate can partially be resolved by quantitatively applying tighter monetary policy by raising the reserve requirement. In addition, macroprudential policy aims to avoid financial risks, such as asset bubbles and excessive credit growth, which could trigger potential financial system instability. This type of macroprudential policy is effective if banks can intermediate the capital flows. Nevertheless, if the capital flows emanate directly from unregulated sectors, such as direct loans from the private sector, measures to control capital inflows are another option, for example by limiting private loans.

In terms of the exchange rate, the rupiah should be managed to remain flexible and not only to provide space to appreciate/depreciate but also avoid being misaligned with economic fundamentals as this will endanger macroeconomic stability. Consequently, Bank Indonesia's presence is required on the foreign exchange market to ensure that the rupiah does not deviate with excessive volatility. Of course, this option is no longer available if the rupiah becomes overvalued. Simultaneously, efforts to accumulate foreign exchange reserves are vital as a form of self-insurance considering that short-term capital flows are particularly vulnerable to the risk of sudden reversal.

Regarding capital flows, by continuing to adhere to a free foreign exchange regime, macroprudential measures also consist of policy options designed to reduce excessive short-term capital flows, which could potentially lead to financial risks from the external side. Such measures have been introduced by Bank Indonesia through regulations that require investors to hold SBI (Bank Indonesia Certificates) for a minimum period of six months. This policy has helped diversify foreign portfolio capital flows and extend the duration of SBI, which consequently promoted financial market deepening, especially the foreign exchange market.

The coordinated implementation of a policy instrument mix is ultimately part of an important strategy to manage the monetary policy trilemma in the current climate blighted by ubiquitous uncertainty. Coordination is critical, not only to address sources of external and internal imbalances, but also to optimally manage the impact of monetary policy, while avoiding overkill and mutual exclusivity. Within that policy perspective, the achievement of macroeconomic stability is not only tied to mon-

etary stability (price stability) but also to financial system stability. Therefore, central bank policy formulation should simultaneously evaluate the strategic role of monetary policy and the financial system.

ii. Financial Stability Framework

In line with the monetary stability framework, the aim of the financial stability framework is to achieve a broader sense of financial system stability, namely (i) strengthening financial system resilience (managing inter-connectedness) by utilizing a sound surveillance framework; (ii) balancing financial intermediation (managing procyclicality) by utilizing macroprudential policy instruments; and (iii) promoting financial inclusion strategy by ensuring broad financial market access and development.

Figure 10. Financial System Stability Framework
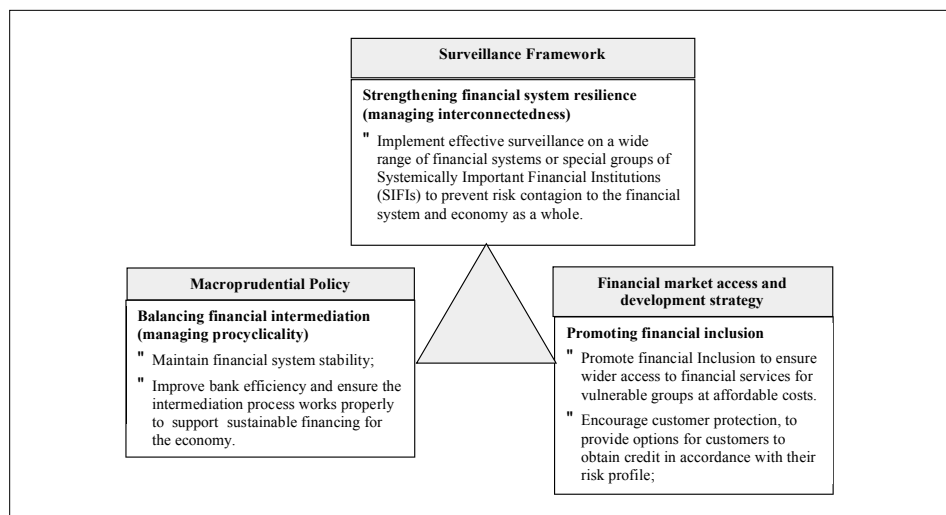
Source: Bank Indonesia

Apart from serving as an anchor for macroeconomic stability, Bank Indonesia continues to promote financial sector competitiveness, especially the banking sector. Bank Indonesia will continue to pay particular attention to policies that facilitate the banking system in adjusting to a competitive environment, while ensuring continued systemic soundness, promoting efficient risk management and ensuring a desirable role as effective

financial intermediaries.

The banking industry must continue to be encouraged to improve its resilience, efficiency and role in intermediation. Broadening public access to affordable banking services through financial inclusion is part of strengthening the intermediation function. The financial inclusion program must be implemented through the supply and demand sides. From the supply side, expanding access to affordable banking services and making banking products available that meet the needs of low-income are imperative. In this regard, going forward, Bank Indonesia will continue to broaden access to banking services by way of non-conventional measures through the use of information technology, telecommunications and agent cooperation, otherwise known as branchless banking or mobile payments. Through this strategy, banking services will reach every strata of society without the physical presence of a brick-and-mortar branch office. In Indonesia, there is ample room to further boost banking efficiency (efficiency space). On the flip side of the coin, however, this also creates policy space to reduce the cost of doing business. Moreover, by broadening public access to financial services, financial institutions' role as effective financial intermediaries can be ensured to promote inclusive growth.[15]

iii. Strengthening Policy Coordination to Advance Structural Reforms

The Asian financial crisis of 1997-98 taught us that macroeconomic stability offers no guarantee of sustainable economic performance, as long as economic infrastructure is fraught with weaknesses. Therefore, the authorities in Indonesia must strengthen policy coordination and apply an integrated macroeconomic strategy. Amongst others, the main thrust of the strategy is to strengthen domestic policy through improved monetary and financial stability, with the support of integrated structural reforms. Despite considerable debate on the immediate causes of the Asian financial crisis of 1997-98, there is broad consensus that the crisis was exacerbated by a number of structural weaknesses that developed in the economy long before the crisis hit. Unless those weaknesses are overcome, the prospect of

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15   In Indonesia, there is a case to be made for a structural rise in financial intermediation given that the credit-to-GDP ratio, at around 36%, is relatively low compared to Asian peers.

a sustainable recovery will remain in jeopardy.

Therefore, Bank Indonesia should strengthen policy coordination with the Government to accelerate structural reforms. The acceleration of structural reforms should focus on several leading issues, including strengthening the capability of the manufacturing industry to improve economic competitiveness and expanding the financial base for sustainable development through financial market deepening. From a financial perspective, in line with its authority, Bank Indonesia will continue to strengthen policy strategy to deepen the financial markets through a number of measures aimed at improving financial market liquidity and efficiency, while promoting resilience and maintaining prudential principles.

Financial market deepening is a shared responsibility and should be undertaken through coordination between Bank Indonesia as the financial market authority, the Financial Services Authority (Otoritas Jasa Keuangan/OJK) as the capital market authority, the Ministry of Finance as the fiscal authority, financial market participants as well as other stakeholders. In addition, Bank Indonesia, in cooperation with related financial authorities, will complement policy strategy to deepen the financial markets with financial inclusion programs to expand access to finance for the unbanked and underbanked. From the standpoint of Bank Indonesia, financial system inclusiveness will reinforce the foundations of national financial stability through the diversification of risk. From a broader perspective, financial system inclusiveness will also open up access for the poor to formal economic activities and will further create greater space for the implementation of economic policies in order to gradually improve social welfare and sustainable economic growth.

IV. Implication Of Itf-Based Monetary Policy On Stability And Growth

By observing the development of several key macro indicators over the past decade, the ITF-based monetary policy framework in Indonesia was shown to work well. Nevertheless, the core policy issue cannot yet be concluded unless we assess the impact of ITF on the dynamics of price stability and economic growth as well. As many have already opined, Bank Indonesia's commitment to price stability in the post-crisis period has been challenged by the need to preserve growth momentum. This is not an easy

task because combating inflationary pressures has become increasingly complex due to the nature of inflation in Indonesia, which is often characterized by supply rather than demand shocks. Another challenge is public expectations, which tend to be backward looking in nature and contribute to keep inflation stubbornly high in Indonesia and difficult to reduce.

This section explores empirical exercises to answer the proposed questions: (i) can ITF-based monetary policy reduce the variability of inflation and economic growth; (ii) can ITF-based monetary policy increase policy credibility in reshaping inflation expectations; and (iii) does the GFC affect the role of output under ITF? Using quarterly observations ranging from the 1990s to the present day, the estimation employs a univariate exponential generalized autoregressive conditional heteroskedasticity (E-GARCH) method and a rolling regression on the New Keynessian Phillips Curve (NKPC).

i. Variability of Inflation and Economic Growth

From Figure 2 and Figure 3 of the first section, it can be seen that during the past two decades, the behavior of inflation in Indonesia is described by a unique characteristic where inflation lingers at a fairly high level. After the Asian financial crisis of 1997-98, average headline inflation (excluding crisis figures) still remained at around 8.7 percent. Even after excluding the influence of transitory shocks, the conclusion about high inflation in Indonesia remains unchanged, as reflected by average core inflation of 8.2 percent. However, after the implementation of ITF, headline and core inflation tended to decline to around 6.2 percent and 5.2 percent respectively. Meanwhile, we also see a positive outlook in terms of economic growth after the implementation of ITF, whereby growth is relatively high, posting a figure of around 6.0 percent on average compared to the 6.4 percent average growth during the pre-ITF period (excluding crisis figures).

In this section, we try to find an empirical comparison of the variability (volatility), e.g. conditional standard deviation, of inflation and economic growth using univariate E-GARCH(1,1) method following Nelson (1991) with a mean equation as follows:

$$X_t = \alpha + \beta X_{t-1} + u_t$$

$$u_t \Omega_t \sim iid\ N(0, h_t)$$

$$\log(h_t) = \gamma + \zeta_1 \left| \frac{u_{t-1}}{\sqrt{h_{t-1}}} \right| + \xi_1 \frac{u_{t-1}}{\sqrt{h_{t-1}}} + \delta_1 \log(h_{t-1})$$

, where X_t is the related variable, i.e. core inflation and GDP growth. [16]

Here we use quarterly data of core inflation (Core_inf) and GDP growth (Growth) of Indonesia from 1991 to 2013.

The estimation result is shown in Table 3 and 4. The first part of the tables shows the estimation result of mean equation, and the second part shows the estimation result of variance equation, whereas the last part is diagnostic test. The result suggests that the E-GARCH(1,1) model is representative in explaining the variability of core inflation and GDP growth. Their adjusted R-squared are high enough and the ARCH LM test shows just a little evidence of remaining ARCH effects.

Table 3. Estimation Result – Core Inflation

Dependent Variable: Core Inflation (CORE_INF)	
Independent Variable	Coefficient
Mean Equation	
C5	.15***
AR(1) 0	.89***
Variance Equation	
C(3)	-0.04
C(4)	0.22
C(5)	-0.75*
C(6)	0.92**
Diagnostic Test	
T-Dist. DOF2	.18***
Adjusted R-Squared0	.76
ARCH LM Test	0.88

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16   Parameter are forced to be positive. Allows for an asymmetric effect to positive and negative shocks.

Table 4. Estimation Result – GDP Growth

Dependent Variable: GDP Growth (GROWTH)	
Independent Variable	Coefficient
Mean Equation	
C5	.73***
AR(1)	0.76**
Variance Equation	
C(3)	-0.61***
C(4)	0.84**
C(5)	-0.20
C(6)0	.94***
Diagnostic Test	
T-Dist. DOF4	.77
Adjusted R-Squared0	.77
ARCH LM Test	0.75

The result shows that both core inflation and economic growth are more stable during the ITF period. We see also that the variability of core inflation follows a declining trend during the ITF period to almost half that of the pre-ITF number, posting an average conditional standard deviation of around 1.7 percent (Figure 11). Headline and administered prices variability are also lower in the ITF period compared to the pre-ITF period. Similarly, the result shows that economic growth variability declines during the ITF period to almost one-third that of the pre-ITF number, with an average of 0.7 percent (Figure 12).

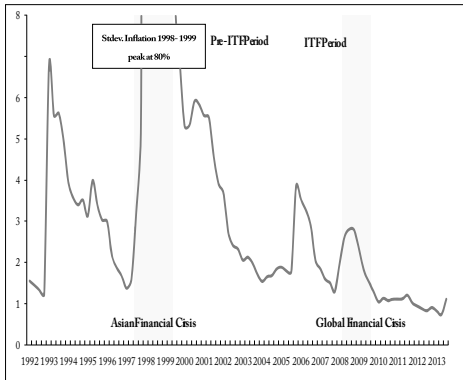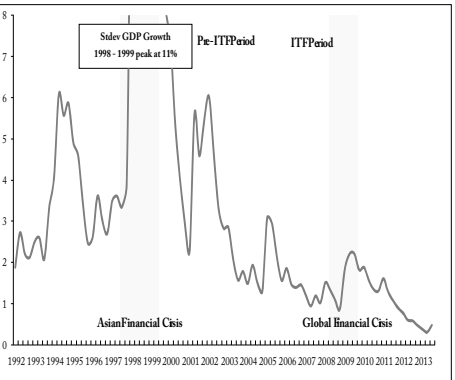**Figure 11.** Conditional Standard Inflation Deviation

Figure 12. Conditional of Core Deviation of GDP Growth

It seems that in relative terms, the average decline in output variability is higher than that of core inflation variability. These results imply that in general, the implementation of ITF in Indonesia pays sufficient attention to output stabilization. As indicated earlier, under ITF, there is sufficient flexibility allowing Bank Indonesia to make use of the short-run trade-offs between output and inflation. With those policy and practical perspectives, medium-term price stability can be maintained while still allowing some degree of short-run inflation variability, thus providing space for lower output variability.

ii. Inflation Expectation Formation and the Role of Output

Although inflation in Indonesia is still relatively high, its persistence has declined since the Asian financial crisis of 1997-98. Lower inflation persistence is usually associated with less reliance on the past inflation (backward-looking behavior) in the pricing mechanism and more forward-looking price-setting behavior. This behavior could be hypothesized as an improvement in terms of Bank Indonesia's credibility in guiding market expectations in line with BI's inflation target. Here we test the hypothesis using a simple empirical method of rolling regressions (24-quater window) on the NKPC of a small open economy (Gali, 2008):

$$\pi_t = (1 - \alpha)\pi_{t-1} + \alpha\pi_{t+1} + \beta\, Ygap_{t-1} + \gamma\, Zgap_{t-1}$$

where π_t is the inflation rate (yoy), π_{t-1} and π_{t+1} are the lag and lead of inflation (respectively), $Ygap_{t-1}$ (t-1) is the output gap lagged by one quarter and gap_t is the real exchange rate gap. Using this method, the coefficient alpha is designed to capture the changes in weight distribution between the backward-looking and forward-looking behavior of inflation over time.

The results show that there is an increasing trend in the value of alpha, starting from slightly below 0.2 at the beginning period to around

0.5 at the end (Figure 13).[17] This significantly indicated that there is a shift towards more forward-looking price setting behavior.[18] The finding is also in line with other observations on a similar subject, namely, Alamsyah (2008) using the NKPC model found that inflation persistence after the Asian financial crisis of 1997-98 is declining, and Harmanta (2009), using the Kalman Filter approach, found that Bank Indonesia's credibility has improved since implementation of ITF.

The argument that Bank Indonesia gains policy credibility is supported by a recent assessment showing that since ITF implementation, Bank Indonesia's monetary policy predictability has been quite good amidst serious policy transmission impairments. The study shows that the portion of financial market participants correctly predicting the monetary policy stance was around 80 percent. This level is comparable with that of other Asian countries implementing ITF, which vary from around 70 percent to 85 percent. Another observation also suggests that the existence of the BI Rate is sufficiently credible as an anchor of future inflation expectations. Changes to the BI Rate have a positive impact on changes in inflation expectations (Juhro and Goeltom, 2012).

In addition to inflation expectation formation, estimation on the NKPC reveals interesting findings on the role of output (Figure 14). The earlier indication of a flattening Phillips Curve is empirically justified, namely that inflation is less responsive to domestic demand, and rather, it is relatively more affected by a supply response, such as temporary cost-push shocks related to the exchange rate, commodity price movements or weather anomalies. While the role of output in determining inflation increased in the early stage of ITF (especially during the GFC), it has declined in the post-GFC period. This finding also strongly supports the

17   The challenges in which growth momentum and employment sometimes are at risk mean that Bank Indonesia will face scrutiny for the consistency and credibility of its policies. This is a reasonable view. Before the Asian financial crisis of 1997-98, the monetary policy response in Indonesia tended to be biased towards a discretionary approach. This manifested in an unclear pattern of policy responses using base money as the operational target. As a result, disinflationary policy failed to gain credibility and therefore proved ineffective in building forward-looking public expectations. This contributed to keeping inflation in Indonesia stubbornly high and difficult to reduce.

18   Earlier studies by Bank Indonesia confirmed the importance or predominant role of adaptive expectations in the behavior of economic actors. In this case, adaptive behavior was reflected in a relatively large number of economic actors using actual or last period inflation as the main determinant of their inflation expectations.

previously mentioned argument that by adopting ITF, Bank Indonesia has sufficient policy space or more flexibility to absorb a certain degree of negative crisis impacts.

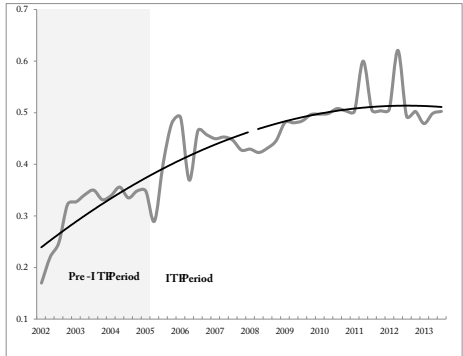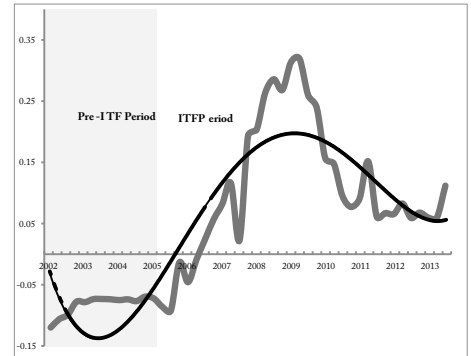**Figure 13.** NKPC's Forward-Looking Parameter

Figure 14. NKPC's Output Gap Parameter

V. Conclusion

This paper provides a significant contribution on the discussion of post-GFC central bank policy strategies in the context of a small open economy. It generally addresses the best central bank policy strategies to promote sustainable economic growth and specifically provides a firm justification on a positive implication of ITF-based monetary policy on inflation and output growth. The paper shows that in the midst of global economic uncertainty, the policy configuration to maintain sustainable economic growth should be aimed to strike an internal and external balance. Under a sustainable growth model, this policy configuration implies that policymaking cannot abandon export promotion strategies, while building up the domestic demand side of the economy. In this case, the role of central bank policy strategy should be directed to integrate monetary and financial system stability frameworks. While a monetary and macroprudential policy mix is necessary given the multiple challenges facing the economy, structural policies are sufficient to address medium-long term issues. At the operational level, policy responses in the monetary, financial and real sectors should be implemented properly by considering their mag-

nitude, timing and sequencing. Consequently, strengthening policy coordination amongst policy authorities is essential.

The paper also shows that post-GFC monetary policy framework enhancements in Indonesia are, in general, characterized by flexible ITF. In this regard, 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 implementation is more flexible, implying that 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 as well as the dynamics of capital flows and the exchange rate.

Such enhancements imply that the coordinated implementation of a policy instrument mix is ultimately part of an important strategy to optimally manage the monetary policy trilemma in the current climate blighted by widespread uncertainty. A transformation in the framework will consequently have a number of significant implications on the institutional mandate of Bank Indonesia. The paradigm that monetary policy requires the support of macroprudential policy has the consequence of being unable to separate monetary policy from macroprudential policy in order to ensure effective implementation. To that end, strengthening policy coordination between Bank Indonesia, the Government, and other related policy authorities to maintain monetary and financial system stability is indispensible.

Last but not least, stylized facts concerning the stability-growth nexus show a notable feature of Indonesian monetary policy in the midst of crises, namely gradual disinflationary policy in support of sustainable economic growth. This is consistent with a major empirical finding of this paper, namely that by adopting ITF-based monetary policy, Bank Indonesia has sufficient policy space to absorb a certain degree of negative crisis impacts, thus preserving economic growth. This finding, amongst others, provides a firm justification that, in a broader sense, a monetary policy framework aimed at achieving price stability is relevant for the Indonesian economy. To this point, strengthening policy coordination between Bank

Indonesia and the Government in order to advance structural reform is sufficient to drive sustainable growth in the medium–long term.

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