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TOWARDS IMPLEMENTATION OF INFLATION TARGETING IN INDONESIA

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The experience of high inflation accompanying the economic crisis in 1998 has brought back painful memories of hyperinflation in the 1960s. Success with inflation targeting (IT) in other countries has prompted Indonesia to consider this framework as the basis for monetary policy, a response that seems justified on at least two grounds. First, monetary policy needs a new anchor after the abandonment in 1997 of the previous regime of managed floating. Second, the central bank law enacted in 1999 prescribes stability of the value of the rupiah as Bank Indonesia's sole objective. This paper explores the future framework of monetary policy under a formal IT approach and highlights the constraints Bank Indonesia faces in implementing such an approach. It discusses the monetary policy framework before and during the crisis, and in the post-crisis period. It then goes on to outline a preliminary design for a suitable IT framework for Indonesia.

INTRODUCTION

Over the past decade inflation targeting (IT) has become a fashionable framework for monetary policy in many countries. This new framework involves the following basic elements: first, deciding on, and announcing, a target level of inflation for the coming period; second, forecasting the level of inflation in the coming period, given assumed monetary policy settings (i.e. of one or more monetary variables under the control of the central bank, such as base money growth or a key interest rate); third, adjusting these monetary policy settings in order to achieve the targeted inflation rate; and fourth, adjusting the monetary policy settings in line with revised inflation forecasts as new data come to hand. It is a monetary policy alternative to targeting the rate of growth of monetary aggregates, the exchange rate, or interest rates. Effectively, IT introduces

transparency, discipline, accountability and a forward looking operating procedure.

Pioneered by New Zealand and followed by many industrial countries such as Canada, the United Kingdom, Sweden, Finland, Spain, Australia and Israel, IT quickly gained support and was adopted in several emerging market countries such as Chile and the Czech Republic. Quite recently, Brazil and several Asian countries such as Korea, Thailand and the Philippines have also officially adopted inflation as their nominal anchor for monetary policy.

International experience with IT has shown some very positive results. In general, those countries employing an IT framework have experienced both lower rates of inflation and lower expected inflation—that is, lower than in the pre-IT period and lower than in other

countries (Bernanke *et al.* 1999; Allen 2000; Haldane 1995). A study by Corbo *et al.* (2001), for example, reports that inflation in developing countries adopting an IT framework declines significantly to low levels similar to those in developed countries. Countries adopting IT have also enjoyed lower nominal interest rates. Finally, it is found that with increases in central bank credibility over time, IT reduces the variability of both inflation and output (Cecchetti and Ehrmann 1999). This last finding is crucial, since many argue that the adoption of IT may sacrifice output growth, especially in developing countries that may put great weight on rapid growth to generate much needed welfare improvements for their population.

The experience of countries that have pioneered IT seems to suggest that a prerequisite for the successful implementation of this approach is a high degree of central bank independence, especially in the pursuit of monetary policy (Debelle 1997; Debelle *et al.* 1998). In all IT countries, the central bank has some degree of independence either in formulating its objective (goal independence) or at least in choosing the instruments with which to achieve the rate of inflation deemed appropriate by the authorities (instrument independence). Related to this, the monetisation of fiscal deficits needs to be strictly prohibited or limited.

Apart from the success of the framework in other countries, there seem to be at least two other grounds to justify the use of explicit IT in Indonesia. First, following the abandonment in 1997 of the use of intervention bands under the previous regime of managed floating, monetary policy needs an alternative nominal anchor; the inflation rate is one such alternative. Second, the new central bank law enacted in 1999 prescribes the stabilisation of the rupiah's value as

the sole objective of Bank Indonesia (BI). Although the law does not explicitly call for the use of IT, the features of monetary policy it outlines—such as the announcement of an inflation target, the adoption of rupiah stability as the single objective, and the granting of instrument independence—appear to us to have placed BI's monetary policy implicitly into an IT framework.

Lessons from international experience will be indispensable in providing insights into the preconditions for, and the necessary institutional set-up surrounding, the implementation of IT. These insights will be important even if factors that were seen to be critical to ensuring the success of IT in more developed countries may have different weights in the context of emerging markets like Indonesia. Experience from countries such as Israel and Chile suggests that achieving and maintaining price stability relies on a strong political commitment to sustaining an appropriate macroeconomic policy mix. Furthermore, although technical capability is certainly not a rigid requirement, any lack of it, especially in inflation and output forecasting, may inhibit the smooth implementation of IT. In brief, although some basic elements of IT can be identified as necessary conditions, further analysis of the preconditions and the institutional set-up will also be crucial when a developing country like Indonesia decides to adopt this approach.

THE EXISTING MONETARY POLICY FRAMEWORK: TOWARDS INFLATION TARGETING

The monetary policy framework in Indonesia has evolved gradually over the past three decades. For example, monetary management has moved from direct controls in the form of credit and interest rate ceilings to indirect control through open market operations. While

the ultimate objectives of monetary policy were vaguely formulated, and included keeping inflation under control, the main anchor of monetary policy was the exchange rate. With a heavily managed exchange rate system, the conduct of monetary management was effectively constrained and, given the multiple objectives of policy, the central bank ended up with an eclectic approach in its decisions. This approach—combining money, interest rate and exchange rate targeting—proved very difficult to administer, especially during the 1990s when the integration of the economy with the international financial market became more pronounced.¹ With an open capital account coupled with large and volatile capital flows, the policy of keeping the exchange rate within a relatively narrow band faced tremendous challenges. As the currency crisis began to get under way in mid 1997, speculative pressures in both the money and foreign exchange markets increased dramatically, leading to the adoption of a flexible exchange rate system in August 1997.

Under the new flexible exchange rate regime, choosing an alternative nominal anchor became critical to monetary policy. The 1999 central bank law set out a new framework for such policy, and has provided the basis for BI to search for a new and appropriate nominal anchor. While during the post-crisis period base money is still being used as the anchor under the IMF assistance program, its suitability for the future needs to be questioned. In any case, as it reflects on past experience and contemplates the challenges ahead, BI should see the search for a new anchor as part of a quest for economic discipline through transparency and accountability, and for a more forward looking operating procedure in the conduct of monetary policy—that is, placing

greater emphasis on forecasting inflation and adjusting monetary policy settings in light of these forecasts.

The Monetary Policy Framework Prior to the Crisis

Before the crisis, monetary policy was conducted mainly by using base money as the operational instrument for controlling other monetary aggregates such as broad money. While there were multiple objectives—such as a low level of unemployment, high economic growth, a sustainable balance of payments position and a tolerable rate of inflation—the anchor of monetary policy during this period was clearly the nominal exchange rate, which was managed heavily within a relatively narrow band that depreciated at a fairly steady rate (McLeod 1997a: 22). The band was gradually widened after 1992, reaching plus or minus 12% from the central parity in July 1997, about a month before Indonesia's currency crisis broke. Although the use of base money as the operational instrument for monetary policy seemed to have been effective in the 1980s and early 1990s, the same approach was strongly challenged thereafter, not least because the relationship between nominal income and broad money became increasingly unstable as a result of global financial innovations and deregulation.

There has been concern that it is difficult for policy makers to control base money growth for at least two reasons (Boediono 1998). First, the markets for the instruments with which open market operations were conducted, namely central bank bills (SBI, Sertifikat Bank Indonesia) and money market paper (SBPU, Surat Berharga Pasar Uang), were relatively thin and fragmented.² The liquid reserves of the banking system were not distributed evenly among banks; most outstanding SBI were held

by the state banks, so that the private banks relied heavily on the interbank market to manage their liquidity, and were therefore vulnerable to sudden shocks. With this fragmented market it was quite difficult for BI to control system liquidity without creating pressure on interest rates. For example, in September 1984, when BI squeezed liquidity from the market, the interbank overnight rate jumped to 90% per annum. And in mid 1987, when BI wanted to counteract speculative transactions in the foreign exchange market, the state banks had to be forced to repurchase SPBU, and state-owned enterprises to use their deposits held at the state banks to buy SBI, in order to reduce the availability of funds for speculation. A similar story was played out early in 1991.

Second, in certain periods base money is endogenous with respect to output. For example, during periods of upswing in the economy, rising aggregate demand is accompanied by both increased foreign borrowing and the liquidation of SBI by sale to the central bank, both of which result in increases in base money (given the quasi-fixed exchange rate policy and a reluctance to allow SBI rates to rise). Controlling the growth of base money (and through it, aggregate demand) is therefore a difficult job that sometimes needs extremely high interest rates. The difficulties of controlling base money using market instruments led, in some cases, to the use of non-market instruments such as reserve requirements, moral suasion and tighter prudential regulations for the banks.

In short, monetary policy using quantity targets became less effective. Faced with this challenge, BI initially followed a pragmatic or eclectic approach. Without abandoning quantity targeting, it gave more attention to interest rates. Moreover, as noted above, the intervention band under the managed exchange

rate regime was widened several times to allow greater flexibility and to ease the conflict with monetary policy. This pragmatic approach was viewed as part of a transitional phase during which the monetary authority was shifting its policy from quantity targeting to price (interest rate) targeting. To a large extent, however, the recent financial crisis has forced BI to postpone adopting the price targeting approach and continue to use the quantity approach, for reasons discussed below. Despite these reservations, prior to the crisis the overall stance of monetary policy appears comparable to the anti-inflationary stance of the US Federal Reserve's policy in the Volker-Greenspan era: interest rates are found to have reacted in virtually identical ways to changes in expected inflation and in overall demand in Indonesia as they have in the United States (McNelis 2000).

The Framework during the Crisis

The financial crisis had a highly destabilising impact on the economy. Pressure on the exchange rate and on foreign currency reserves early in the crisis forced BI to abandon the crawling band exchange rate regime and to allow the rupiah to float in August 1997. Triggered by dramatic depreciation of the rupiah, the crisis resulted in the most severe economic downturn in more than 30 years. Real GDP shrank by 13.2% during 1998, alongside a large-scale collapse of the banking system, and widespread business failures and job losses in the modern sector, especially in construction.

Soon after floating the currency, the government adopted an extremely tight monetary policy, raising interest rates sharply and forcing state enterprises to withdraw funds from the banking system and purchase SBI; it also suspended the use of several monetary instruments that had an expansionary impact, such

as auctions of SBPU, the Discount Facility I and repurchases of SBI.³ The jump in interest rates and the enormous depreciation of the rupiah severely affected the banking and real sectors. Given the fragility of both sectors, this contributed to widespread corporate failures and resulted in a worsening of the banks' asset quality.

To prevent bank runs and a collapse of the entire banking system, BI was obliged, as lender of last resort, to provide large-scale liquidity support to troubled banks; this caused a temporary loss of monetary control in late 1997 and early 1998. As a result, base money grew by 115% and broad money by 68% between November 1997 and July 1998. As people's confidence in the rupiah eroded, a cycle of weakening currency, soaring prices and expanding money supply threatened to break out into hyperinflation. BI's main objective, therefore, was to restore confidence in the currency; hyperinflation had to be prevented and inflation brought down. BI believed that if prices were stabilised, this would in turn strengthen the value of the rupiah relative to other currencies.

To achieve these aims, monetary expansion needed first to be halted, and BI needed to regain control over its own balance sheet. All sources of central bank money creation needed to be brought under control, and BI needed to reabsorb excess liquidity from the banking system and in the broader economy. With the support of the IMF, BI pursued a tight money policy stance, with base money as the target. Quantitative targets were also set for other items in the central bank's balance sheet. BI did not allow domestic assets to expand; broadly speaking, net domestic assets were targeted for zero growth. To protect its foreign asset position, a floor was established for net international reserves. In April 1998, to prevent further growth of

liquidity support, BI imposed high penalties on the use of the discount window facility and on commercial banks' negative balances (overdrafts) at the central bank. Furthermore, in May 1998 BI placed ceilings on deposit rates and interbank rates for bank liabilities that had been guaranteed by the government since late January. The policy aimed at preventing banks from adopting imprudent measures that could lead to self-reinforcing expansions of liquidity support.

Because of a number of constraints on the use of money market instruments (such as the thin market for SBI), open market operations were not able fully to absorb all of the excess liquidity in the economy. To achieve the quantitative target, attempts were made to render open market operations more effective. On 29 July 1998 BI changed the auction system of SBI, such that emphasis was shifted from interest rate targets to quantitative targets. Furthermore, participation in the SBI auctions was broadened from primary dealers to include banks, money brokers, capital market brokers and the general public. These changes were intended to allow greater competition among auction participants, so that the SBI rate would better reflect the interaction between demand and supply.

Another innovation that enhanced monetary policy operations was 'rupiah intervention'—the provision of a facility under which banks that fail to purchase the desired quantity of SBI in the regular auctions can lend their excess reserves to BI for short terms (one to seven days), at an interest rate lower than that for longer maturity SBI; this instrument is used to support monetary restraint. Control of monetary expansion resulting from government expenditure is also effected from time to time by sterilisation in the foreign exchange market—

that is, by the sale of foreign exchange, which helps to strengthen the rupiah.

To sum up, targeting of the monetary base was adopted by BI after the crisis as a temporary measure intended mainly to absorb the monetary expansion originating from liquidity support to the banking system, rather than being based on more fundamental considerations such as a stable relationship between inflation and base money (Iljas 1999).⁴

Toward an Inflation Targeting Framework:

The 1999 Central Bank Law

A major change in the conduct of monetary policy in the aftermath of the crisis was the enactment of a new central banking law in May 1999, which gives full autonomy to BI in formulating and implementing monetary policy. The legislation drew upon international best practice—for example, at the Bundesbank of Germany.⁵

Certain features of the new law have important consequences for the conduct of monetary policy. First, in contrast to the previous law, which prescribed multiple objectives for monetary policy, the new law clearly states that the sole objective of monetary policy is to pursue and maintain stability of the value of the rupiah. This objective might be argued to be somewhat ambiguous. ‘The value of the rupiah’ could refer to its value in terms of another currency unit—presumably the US dollar, but perhaps some other currency such as the Japanese yen or the Euro. The alternative interpretation is that it refers to the value of the goods and services the rupiah can buy. This interpretation implies that the objective is the maintenance of domestic price stability, and it is this interpretation that has emerged as the operational one. The distinction between these two interpretations, and any attrib-

uted ambiguity, may be overstated, however. In practice, exchange rate and price stability are usually closely correlated. Certainly, low inflation has generally been consistent with reasonable exchange rate stability in the past—although the recent crisis raises doubts as to whether this can be taken for granted in the future.

Second, the new law provides BI with a framework conducive to pursuing price stability. In conducting monetary policy, BI is granted full authority to decide upon the inflation target to be achieved (goal independence) and freedom of choice over various monetary instruments to achieve this target (instrument independence).⁶ The law also prescribes that BI, as an independent institution, is free from interference by the government and all other parties.

A PRELIMINARY DESIGN FOR AN INFLATION TARGETING FRAMEWORK

Under an IT framework, monetary policy is directed at influencing aggregate demand so that it is consistent with economic capacity from the supply side, to keep the rate of economic growth sustainable. The logic of this approach makes an inflation target for monetary policy widely acceptable. A problem arises at the level of implementation, however. Monetary policy confers only very imperfect control over inflation—or, as Milton Friedman has put it, monetary policy lags are long and variable. The channels through which monetary policy instruments influence the inflation rate—the monetary transmission mechanism—are still unclear, such that some economists have dubbed the transmission mechanism a ‘black box’.⁷ The mechanism is complex and the relationship between the variables is somewhat unstable. In this environment, uncertainty should be kept in

mind in designing a monetary policy framework.

These uncertainties aside, given the new basis for monetary policy that has been laid out under the 1999 central bank law, various practical issues need to be considered in designing the IT framework. They include the ability to forecast inflation; the appropriate measure of inflation; the optimum inflation rate; the appropriate time horizon; and the appropriate operating instrument.

Ability to Predict Inflation

An ability to make reasonably accurate predictions of inflation is one of the necessary conditions for implementing an IT framework, since such forecasts will determine what policy actions should be taken in order to keep inflation on target. Within BI a number of studies have been conducted of the inflation cycle, the diffusion index of the consumer price index (CPI), leading indicators of inflation, and other leading economic indicators that help to determine the direction of inflation; partial and general equilibrium models have also been built to forecast the inflation rate. The inflation cycle study serves as a means to capture cyclical swings, in order to forecast roughly when peaks and troughs of inflation will occur; studies of the diffusion index of the CPI can also provide this kind of information. In general, this research indicates that the inflation rate in Indonesia is broadly predictable on the basis of variables that include the output gap (the difference between actual GDP and the estimated long-run trend value of GDP), aggregate demand, real money balances, import prices, and the exchange rate (Bank Indonesia 1999a).

The index of leading indicators of inflation is an index of components that provide information on the likely direction of change in inflation. These com-

ponents include real broad money (M2), real bank loans, SBI rates, stock prices, the import price index, nominal GDP, and the number of documents cleared through the payments system. The index of leading indicators of inflation can only indicate the direction of future changes in inflation, not their magnitude. This information can be used as a check on the results from inflation forecasts. The information obtained from other leading economic indicators suggests the direction of change in future economic activity, especially on the demand side. Since demand pressures will affect inflation rates, these economic indicators can also serve as inputs for inflation forecasting.

Which Measure of Inflation?

BI uses the consumer price index, appropriately modified (as described below), as its basic target, in line with practice in other countries that have adopted IT. A theoretical advantage of using the CPI (in preference to other measures such as the GDP deflator or the producer price index) is that it directly indicates changes in the cost of living for consumers on fixed nominal incomes. A practical advantage is that the national statistical agency devotes more resources to obtaining reliable CPI data than to other price indices, as is also the case in other countries. CPI data are therefore of better quality and are available on a more timely basis than other price data.

Nevertheless CPI inflation in Indonesia is very much characterised by extreme price changes for certain goods, usually as a result of supply shocks associated with weather or seasonal patterns. Since supply shocks primarily affect food items, and since food accounts for 40% of the CPI, these shocks frequently have a large impact, at least on the monthly inflation rates. The im-

plication is that it could be destabilising to use overall (or 'headline') inflation as the target. For example, if there is a demand shock that leads to high inflation, the central bank will respond by tightening monetary conditions. In this way, monetary policy can adjust growth in aggregate demand so as to match output capacity. However, if inflation increases because of a supply shock such as bad weather that raises food prices, tightened monetary policy might cause an unintended slowing of economic growth. Likewise, if the headline rate falls in spite of an increase in underlying inflation, simply because a supply shock pulls down some food prices, a response that loosened monetary policy would add to the underlying inflation rate.

To avoid such destabilising effects, some (e.g. Freedman 1997) argue that monetary policy should respond only to the second-round effects of supply shocks, ignoring the first-round effects: that is, since supply shocks cause price volatility in some components of the CPI, these components should be excluded from the measure of inflation. To put it differently, given the strong influence of supply shocks, there is an argument for dividing headline CPI inflation into two parts: core (or underlying) inflation and noise.⁸ Thus BI uses core, rather than headline, inflation as its target, since only core inflation is considered to be controllable by monetary policy. The guiding principle is that monetary policy should not be responsible for non-monetary factors that influence prices.

In choosing to use core rather than headline inflation as the target, however, BI faces a dilemma. Headline inflation is familiar to the general public, whereas the concept of core inflation is not. In consequence, most members of the general public care about the former but not

the latter, so if the inflation target is the core inflation rate this will be much less acceptable, and the credibility of the target might be questioned. Furthermore, since BI has been granted independence in setting the inflation target, calculation of the core rate of inflation by the same institution could exacerbate the credibility problem. For this reason it might be preferable if the job of calculating core inflation could be given to the national statistics agency.

Methodologies have been developed recently within BI to measure core inflation. These include adjustment by exclusion (excluding certain categories of goods such as energy and food from the price index calculation), specific adjustment (excluding categories of goods and services with government-controlled prices at times when their prices are altered), and statistical measures to reduce the impact of volatility in certain prices. Several countries use the exclusion method, excluding food and energy. However, experience within BI in estimating core inflation suggests that statistical measures to exclude (or 'trim') extreme price changes in the CPI basket are more robust.

The Target Inflation Level

The new law prescribes that BI is obliged to convey information to the public transparently through the mass media at the beginning of the year, covering topics such as monetary policy plans and targets derived from the inflation target. Thus, for example, there have been announcements following meetings of the Board of Governors stating that the target rate of inflation for 2000 was 3–5% and that for 2001 was 4–6%.⁹ These targets were for core inflation, and did not include possible increases in the price level caused by the government's plans to increase fuel and electricity

prices, civil servants' salaries, and other administered prices.

There is no specific rule on how low the target level of inflation should be. If interpreted literally, the term 'price stability' suggests a zero inflation target. However, given imperfections in the measurement of inflation, the target for most IT countries is usually set slightly higher than zero. In developing countries, where noise inflation due to supply shocks appears to be more significant than in developed countries, inflation targets are usually set at a still higher level (Mishkin and Schmidt-Hebbel 2001).

The IT framework is characterised by forward looking monetary policy, implemented in response not to past inflation but to expected inflation. That is, it is implemented after taking into account potential inflationary pressures in the future. For this reason a further consideration is that achieving the inflation target is difficult in the short run. There is a lag between changes to the setting of monetary policy and the full effect of these on inflation. This lag is influenced by the channel through which monetary policy is transmitted to the real economy, and also varies depending on whether monetary policy is being tightened or loosened. Accordingly, in addition to a short-term target, BI plans to establish a medium-term target to be reached in stages, to demonstrate BI's commitment to reaching and maintaining low inflation. This medium-term target is intended to become a basic reference point in determining the public's inflation expectations.

The inflation target can be expressed as a range or as a single point. A range target may give more flexibility in monetary management, especially if shocks are not always immediately recognised and their impacts on the general price level are

difficult to predict. On the other hand, a range target may compromise the credibility of the central bank, as the exact inflation rate upon which the central bank bases its monetary planning and policy may not be apparent to economic agents. In several IT countries, the strategy initially was to announce a single point inflation target, but as credibility has increased, their central banks have been moving gradually toward a relatively narrow range target. Other countries (e.g. Israel) initially opted to use a range target, but gradually shifted toward a single point target. In Indonesia's case, given the depth of the crisis and the longer transition period to recovery that might be needed, a more pragmatic or flexible approach that relies on a range target seems appropriate.

Time Horizon

Two questions need to be considered in specifying the appropriate time horizon for returning to the targeted level of inflation should the actual rate turn out to be different. The first is how long it would take to reach the inflation target with minimum output loss (assuming the target has been exceeded). This depends mainly on the short-run trade-off between output and inflation as reflected in the Phillips curve, and on the credibility of the monetary authority (as reflected in how the public forms its expectations of inflation). The second question is how long is the most appropriate forecasting horizon for monetary policy determination, which depends on monetary policy lags. Using various methods, an internal BI study suggests a policy lag of four to eight quarters—that is, it takes from one to two years for any change in SBI rates to have its full effect on the inflation rate. This finding is consistent with the monetary policy lag found in many countries.

Operating Instruments

There had been debate before the crisis about switching the paradigm of monetary policy from conventional monetary targeting to IT. After the problem of temporary loss of monetary control during the crisis was resolved, the use of interest rates as monetary operating instruments could be considered seriously, resulting in an internal BI study that suggests that inflation can be targeted more effectively using interest rates as the operational instrument rather than base money (Bank Indonesia 1999b).¹⁰

At the time of writing BI is considering using a type of Taylor rule based on those used by central banks in New Zealand and the UK (Batini and Haldane 1999; Drew and Hunt 1999) as the benchmark for its monetary policy reaction function for adjusting monetary policy settings in accordance with revisions to forecasts of inflation and output. A simple Taylor-type rule for adjusting the interest rate can be expressed as:

$$r_t - r_{t-1} = \alpha(\pi_{t+k} - \pi^*) + \beta(y_{t+k} - y^*)$$

subject to

$$r_t - r_{t-1} \leq \eta,$$

where r_t is the current interest rate on the chosen instrument, π_{t+k} and y_{t+k} are projected inflation and output k periods into the future, respectively, π^* and y^* are the inflation target and potential output, respectively, at that time, and α , β and η are constants. The larger are α and β , the larger the adjustment of the interest rate to given deviations of inflation and output forecasts from the target and potential levels. The role of η is to limit the overall change in the interest rate from one period to the next. Uncertainties inherent in the transmission mechanism still suggest the advis-

ability of avoiding an approach that is too mechanistic, however—that is, we should not totally eschew reliance on discretion.

Having made the choice in principle of an interest rate rather than base money as our operational instrument, it is still necessary to choose the particular rate. In other words, which short-term market rate should the central bank manipulate, and how should it move this market rate to the desired level? In particular, BI is now trying to decide whether it should implement active open market operations similar to those used by the US Federal Reserve (which buys or sells government bonds or other securities in order to influence market rates), or whether it should adopt passive monetary management like that of the Reserve Bank of New Zealand, by creating an official cash rate with accompanying deposit and lending facilities at BI.

Another issue is whether there is a role for reserve requirements in an IT framework. Many IT countries have abandoned, or at least reduced, the role of reserve requirements as a monetary instrument. Our research indicates, however, that the reserve requirement can still play a significant role, particularly in reducing the volatility of interest rates and in improving the sensitivity to interest rate changes of the demand for bank reserves.

Finally, our experience during the crisis shows that price stability does not always go hand in hand with exchange rate stability, at least in the short run. BI often found itself faced with the dilemma of whether to let the exchange rate move freely or try to smooth its movement in order to minimise its impact on inflation. In this regard, we have yet to decide on the best policy response when exchange rate shocks occur. We hope to find some indicators to identify

the nature of the exchange rate shocks so that we can respond appropriately.

PROBLEMS AND CONSTRAINTS

Despite BI's keen interest in pursuing IT as the preferred approach to monetary policy, and despite having developed some aspects of an initial framework, in practice the bank has not yet fully implemented strict IT such as is practised in New Zealand or the United Kingdom. Its current IT regime retains considerable flexibility, because the bank still faces many constraints, including challenges in the institutional framework, unresolved policy issues, and problems of technical capability.

The Institutional Framework

With regard to constraints in the institutional framework, BI's independence is currently uncertain, in the light of a recent long debate in the legislature on possible amendments to the new central bank law. More fundamentally, however, central bank independence is not merely a matter of legislation. To be truly independent a central bank must command great respect throughout society and must have sufficient prestige to enable it to resist external pressure. This level of respect and prestige can only be developed over time, as the bank proves its ability to safeguard financial stability. For the time being, BI feels unable totally to ignore pressures from outside—for example, urging it to avoid raising interest rates too far.

Unresolved Policy Issues

As mentioned earlier, BI's legal responsibility to maintain the stability of the rupiah can be interpreted as referring to either *price stability* or *exchange rate stability*. By adopting a floating exchange rate regime it has, in effect, opted for the first of these interpretations. Nevertheless, recent volatility in the exchange

rate, driven mainly by non-economic factors, has at times led BI to take responsibility for stabilising it. Taking on two objectives (price and exchange rate stabilisation) makes it difficult for BI to determine its overall policy stance: monetary policy overall becomes subject to conflicting demands that may compromise the central bank's ability to keep inflation within the targeted range. Thus under current conditions it is difficult to decide whether BI should include the exchange rate directly in its reaction function, adjusting monetary policy in response to undesirable exchange rate movements.

In relation to *price stabilisation*, inflation is not easily controlled by the central bank alone. This is a particularly severe problem for Indonesia at present. Although the free-falling rupiah, soaring inflation and high interest rates that together led the economy to near collapse in 1997–98 have been brought under control, there is still much uncertainty about the speed of the recovery process. The fragility of the banking system, the huge fiscal deficit, massive arrears on private debt and an uncertain social and political environment in the first half of 2001 all contributed to weakening of the exchange rate, and so were likely to create inflationary pressure by increasing the prices of tradable goods and services. This is the reason the targeted range for core inflation announced at the beginning of 2001 was revised upward, creating problems for BI with respect to accountability and credibility. To maximise credibility, inflation targets were initially announced and interpreted as official inflation projections or forecasts. As inflation fell over time this procedure was changed, and the projections came to be viewed by the central bank and the markets as hard targets. However, experience suggests that it might be better to phase in hard infla-

tion targets only after there has been some successful disinflation and stabilisation of the exchange rate. Therefore, BI is unlikely to commit fully to explicit inflation targeting until the financial and bank restructuring process is completed.

A third interesting issue of current policy is whether BI should allow *more rapid growth of the monetary aggregates to encourage spending*, in order to absorb idle capacity and speed up the recovery, or whether controlling inflation should remain the top priority, regardless of whether this jeopardises near-term economic expansion. Estimates of capacity utilisation from BI's monthly Survey of Manufacturing Industry for May 2001, covering 522 firms from a range of sectors in 20 provinces, indicate that the average firm is running at only 40% of full capacity. This suggests that there should be ample room for demand to grow without generating inflationary pressure. The issue is not clear cut, however. All categories of commercial bank lending are well below pre-crisis levels, reflecting the breakdown of the banks' intermediary function. How does monetary policy affect the real economy in circumstances in which the banks are not making new loans? In other words, how does the transmission mechanism behave in such a situation? This puzzle has kept BI wondering how to decide on the right instrument to use as the monetary policy tool.

Another factor that discourages the adoption of IT for the time being is the fact that the *fiscal burden of bank recapitalisation costs* has placed a *de facto* constraint on monetary policy. The government has financed more than 80% of the cost of the bank recapitalisation program by issuing bonds whose interest costs are covered by the state budget. As at June 2001, Rp 409 trillion (about \$41 billion at an exchange rate of Rp 10,000/\$) of bank recapitalisation

bonds had been issued; the cost of servicing these bonds in 2001 is budgeted at Rp 61 trillion, or 4.2% of GDP. Higher interest rates would increase this already heavy burden on the budget, and might prove unsustainable. They would also undermine efforts to restructure the huge volume of non-performing loans in the banking sector.

BI has already increased the benchmark one-month SBI interest rate by more than two percentage points over the six months to June 2001, in attempting to help defend the ailing rupiah and to reduce inflation. A further consequence of higher SBI rates, however, is that with the current stock of outstanding SBI and rupiah (borrowing) interventions approaching Rp 100 trillion, every one percentage point increase in SBI and money market rates costs the central bank some Rp 1 trillion per year. Thus higher interest rates create a huge extra burden both for the budget and for the central bank.

Technical Capabilities

On the technical front, a good deal of empirical research has been done to test the causality between money, interest rates and prices, using non-structural analytical tools such as time series models. Some preliminary studies have shown that there is a significant role for the one-month SBI rate in affecting inflation through the money market channel (i.e. deposit rates at the commercial banks), the exchange rate, aggregate demand, and the gap between potential and actual output (Warjiyo and Zulverdy 1998). The impact of the SBI rate on rates in the money market verifies the efficacy of monetary policy in providing signals to this market. Nevertheless, conclusive studies of the costs and benefits of choosing certain channels in preference to others still need to be undertaken in order to decide on the optimal operational instrument.

CONCLUDING COMMENTS

In light of the 1999 central bank law that grants BI both goal and instrument independence, and under which its sole objective is to maintain stability of the value of the rupiah, we argue that the most suitable monetary policy approach for the future is IT. We argue that a flexible IT framework is more suitable for the time being, however, because there remain many constraints that are not conducive to the effective implementation of a strict IT approach. A flexible IT framework can be defined as one that allows the inflation target to be set as a range that is wide enough to accommodate uncertainty, and that adopts a time horizon long enough to achieve the inflation target with minimum loss of output.

Several issues need to be addressed before IT can be fully implemented. In the short run in particular, bank restructuring is at the top of BI's agenda. Restoration of the banking sector's intermediary function is very important to economic recovery, and support from a healthy banking industry is also badly needed to make various monetary policy instruments effective, thus boosting the capacity of the monetary authority to plan and carry out its functions. In addition, delays in restructuring the banks increase the cost involved, so we believe that this task should be given priority before BI accepts the challenge of adopting a strict IT strategy.

On the technical front, since IT is forward looking in nature, a forward

looking monetary reaction function or a feedback rule such as a Taylor rule is worth incorporating when revising BI's monetary policy models. Because of the significant lags in monetary policy, BI must rely on inflation forecasts to achieve any given inflation outcome, so the availability of timely data is essential. In addition to BI's existing business survey, other surveys such as a consumer survey and an export–import container survey in major ports would be a useful supplement to BI's leading macroeconomic indicators.

Given present conditions in which the economy is characterised by weak domestic demand, an undervalued exchange rate and a slow bank recovery process, several important questions still need to be answered by BI as it moves toward an explicit IT regime. First, should it include the exchange rate in its reaction function (given that the central bank's 'sole objective' as described in the 1999 law can be interpreted to include exchange rate stability) at times when exchange rate pressures emerge as a result of non-economic factors? Second, are monetary aggregates or interest rates the most appropriate instruments for the conduct of monetary policy for the time being, or would a combination of the two be preferable? Finally, what research priorities need to be established before moving to strict IT, given BI's current technical capabilities in forecasting GDP and inflation?

NOTES

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1 Conflicts between multiple objectives were discussed by McLeod (1997b), although in a slightly different context. In

- particular, he argued that Indonesia's efforts to limit the current account deficit to 2% of GDP conflicted with its 5% annual inflation target.
- 2 SBPU are purchased by BI from banks at times when an expansion of system liquidity is required.
 - 3 BI's Discount Facility I is designed to allow banks to cover any shortfall in their required minimum reserves. The maximum maturity of this facility is one month, but borrowings can be extended by a month each time they fall due.
 - 4 Whether the use of quantity targeting during the crisis was appropriate has been the subject of recent debate. Grenville (2000a, 2000b) argues that the growth of base money, especially currency, is demand determined. The increase in the demand for base money in the early months of the crisis was inevitable owing to a loss of confidence in the banking system, and the authorities needed to respond by providing cash. Along similar lines to what has been suggested above, he also argues that the relationship between base money and the ultimate objectives (either inflation or the growth of nominal GDP) is unstable in both the short and the long run. By contrast, Fane (2000a, 2000b) defends the IMF's strategy of tighter control of money growth, arguing that the collapse of the rupiah was the result of the inability of BI to control base money. Furthermore, he argues that targeting base money would help the monetary authority to rebuild its credibility, as the public can quickly monitor whether the central bank is hitting its target. Under high uncertainty during the crisis, targeting domestic prices could have undermined the central bank's credibility, as it would be very difficult for BI to achieve any given inflation target.
 - 5 See McLeod (1999) for a brief description of some aspects of the new law.
 - 6 One may argue that *goal* independence for a central bank is superfluous given *instrument* independence (e.g. Blinder 1998)—that is, that provided the central bank is able to implement monetary policy free of outside intervention, it does not matter whether the inflation target is set by it or by the government. But Schmidt-Hebbel (1999) argues that goal independence is needed in emerging economies prone to steadily increasing budget deficits. A middle way is perhaps the 'cooperative approach', as implemented in the Czech Republic. In this approach, the long-run inflation target is determined by agreement between the government and the central bank. The rationale for this is that a target that has been agreed to by society should result in greater price stability, since agents will use the inflation target in their decision making.
 - 7 See for example various papers presented at a Symposium on the Monetary Transmission Mechanism in the *Journal of Economic Perspectives* 9 (4) (1995). For discussion of the monetary transmission mechanism in Indonesia, see Boediono (1998); Sarwono and Warjiyo (1998); and Agung (1998, 2000).
 - 8 Headline inflation is inflation based on the CPI, as announced by the Central Statistics Agency and reported in the newspapers, while core inflation is a measure that excludes very volatile components such as foods, and/or components with administered prices, such as energy.
 - 9 The target for 2000 was missed; core inflation was 5.9%. Headline inflation, expected to be 5–7%, was actually 9.4%. The major sources of inflationary pressures in 2000 were the higher than expected depreciation of the rupiah, the impact of the increases in fuel and electricity prices and minimum wages, and the expectation of higher inflation. To reduce these inflationary pressures, BI tightened its monetary policy by increasing SBI rates. However, the scope for tighter monetary policy was limited because the fundamental condition of the economy was still very weak. The target for 2001 was revised upward in May for similar reasons.
 - 10 Using cointegration tests, the study concluded that the long-run relationships between M0 (base money) and M1 (narrow money), and between M0 and M2, existed only until 1988. After that period (the end of which coincided with far-

reaching deregulation of the banking sector), the relationship became unstable. Meanwhile, the long-run relationships between interest rates and the

output gap and interest rates and underlying inflation have been stronger since 1990.

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