MONETARY POLICY IN POST-CRISIS PERIODS

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Indonesia appears now (February 2000) to have passed through the worst storms of its combined banking system/balance of payments crisis, and to have begun what promises to be a lengthy period of gradual recovery. In the process it appears to have successfully coped with the possibility that the dynamics of internal inflation would end up fully (or more than fully, or nearly fully) canceling out the incentive effects (on exports and on import substitutes) of the substantial nominal devaluation that the rupiah had experienced. As of now, the real price of the dollar has risen by something close to 50%, compared with its pre-crisis (June, 1997) level. Moreover, the general price level has exhibited a nearly flat trend starting around October, 1998. This trend has lasted too long for it to be attributed to some anomalous factor or to the continued declining prices of internationally tradable goods being offset by rising prices of nontradables. Though these elements were certainly present in the early stages, the later stages show substantial stability of both the nominal exchange rate and the general price level. This dual stability has its roots, I am convinced, in the management of macroeconomic policy, which has been strongly oriented toward "fundamentals".

A second positive sign is the increasing attention being paid to the urgency of moving ahead with banking system reforms and with regularizing the status of companies owing money

to domestic banks and/or foreign creditors. In three previous visits (September, 1998; December, 1998 and August, 1999) I tried to sound the alarm in this regard. Many Indonesian experts easily agreed with me, having come to the same conclusion from their own analyses of the situation. What was lacking, however, was the same sense of urgency at the points where real actions had to take place. In particular IBRA seemed enmeshed in legal and other entanglements, which kept it from moving decisively toward the liquidation of the nonperforming bank loans that had come into its vaults as a consequence of the crisis. At the same time, the Jakarta Initiative, which was aimed at promoting the renegotiation and settlement of the debts of ailing Indonesian business, seemed to be getting off to a very slow start, with little sense of urgency. What one sees at present is definite measures to remove the roadblocks that have kept IBRA from proceeding more rapidly with its liquidations, and positive (though less decisive) steps to activate the Jakarta Initiative.

One clearly cannot say that all is well at the present time. It is rather that what seemed to some of us as a sort of mixture of lethargy and complacency has given way to a quite serious sense of urgency, with some decisive measures having been taken already, and others being seriously sought for prompt implementation.

Monetary Policy Under Fixed Exchange Rates

Before trying to outline what I feel is today's thinking concerning monetary policy, let me begin with a brief sketch of older visions of the same subject. First, we have the classic fixed exchange rate policy, enshrined in economics texts first as the gold standard, then as what was called the gold exchange standard, and finally as a simple fixed parity rate (to the dollar, or some other major currency, or even a "basket" of major currencies). In recent times we have heard a great deal about two more extreme variants -- currency boards and "dollarization".

Though there are operational differences among these different variants, they have in common the major attribute of having a fixed exchange rate (in some form or other) as the cornerstone of a country's monetary policy. Historically, fixed exchange rates get mixed reviews. When such systems are run well, with monetary and fiscal discipline being steadily maintained, they come out quite well "most of the time". The times they come out badly fall quite neatly under two labels "indiscipline" and "bad luck".

Indiscipline is not always as irresponsible as it sounds. Governments have to live in the environment of their own time. And one aspect of that environment is the political strength of the government itself. Weakness can easily lead to unwarranted fiscal deficits, with excessive monetary expansion as its typical consequence. This leads to reserve losses, which can properly be stemmed by a return to monetary and fiscal discipline, but which in the case of weak governments lead more often to attempts to stem the reserve drain by controls of various sorts. These bottle up the excess monetary expansion within the country, causing it to be reflected in inflationary price rises, which carry the internal price level more and more out of line with the fixed exchange rate. With luck, a timely abandonment of the fix may avert a "speculative attack" on the currency. In this case one can get a relatively smooth transition from fixed to flexible rates. If, on the other hand, a speculative attack occurs, the exchange rate simply must be freed, and it then typically goes through exaggerated overshoots before settling on a new "equilibrium" path.

But even with good discipline and high competence in monetary management, fixed exchange rates can run into serious trouble arising from simple "bad luck". Fixed rate systems have shown themselves quite capable of coping with small shocks, regardless of whether they are positive or negative. And they have also demonstrated that they can handle large positive shocks with relative ease. Examples of such shocks are large capital inflows and large and rapid

rises in the prices of major export products. Such bonanzas bring with them an abundance of foreign currency, which leads to a fall in the equilibrium real price of the dollar (i.e., the equilibrium real exchange rate). Since the nominal exchange rate, E, is fixed, the only way the country can by its own devices bring about a fall in the RER is through a rise in p_d, the internal price level (e.g., the consumer price index or the GDP deflator). This happens quite naturally under a fixed rate system. The increased supply of dollars will keep adding to the supply of base money until enough "induced demand for dollars" has been created so that dollar inflow once again is matched by dollar outflow. The sources for this induced demand for dollars are: a) an induced rise in real GDP stemming from the positive shock itself in the case of an export boom, and from an induced increase in the demand for nontradable goods and services in both (export boom and capital inflow) cases, and b) a fall in the equilibrium real exchange rate (RER) brought about by a rise in the internal price level, making imports cheaper relative to nontradables. This rise in the internal price level should really be thought of as a relative price adjustment, and not as inflation per se, because it is a critical part of the mechanism that brings the supply and demand for foreign exchange back into equilibrium after a large positive shock.

Large negative shocks, in contrast, are not so easily handled under a fixed exchange rate system. The reason is that they require an upward adjustment of the RER, which with fixed nominal rates typically entails a major reduction in p_d, the internal price level. Modern economic history is replete with cases showing how serious recession or depression, with prolonged periods of reduced overall output and employment, seem to be the inevitable consequence of large negative shocks under fixed exchange rate systems. In many of these cases, the fixed rate system was abandoned in midstream, but a recent "pure" case is that of Argentina, where a series of negative shocks, starting with the Mexican crisis of 1994-95, has led to chronically high unemployment, averaging over 15% for five consecutive years.

The reason for this vulnerability of fixed exchange rate systems to large negative shocks is the familiar reality known as the downward rigidity of wages. Wages are a very special type of price because there are so many different types and categories of labor. Truly, no factor of production is more fundamentally heterogeneous than the human factor. Yet there are times when the equilibrium real wages of many different classes of labor tend to move up and down together. The main forces working in this direction are those of economic growth (not under discussion here) and real exchange rate adjustment. On the positive side, export booms and large capital inflows cause expanded demand in the nontradables sector. This induces new demand for many classes of workers and skills, leading to an upward drift of real wages generally. When the external shock is negative, there is reduced demand for a broad range of labor categories, and a consequent downward pressure on real wages. Under a flexible rate system, movements of the nominal exchange rate, E, can with luck bring about easy upward and downward adjustment of everybody's real wage, leaving only the fine tuning to the labor market. With a fixed exchange rate the whole job of real wage adjustment falls on the labor market. As mentioned earlier, labor markets manage this task reasonably well when the necessary adjustment of real wages is upward (the case of a positive external shock). But it is a different story when the pressure on real wages is downward. Whereas with flexible exchange rates the nominal exchange rate can rise to bring about a general reduction in real wages, under fixed rates the only way to achieve the same adjustment is by companies somehow reducing the nominal wage rates that they pay. And it is here that a natural resistance forms against a simple and flexible adjustment. At its core is the natural suspicion that arises in workers' minds when their employer asks them to take a pay cut. Is he picking on them? Is he asking them to accept a sacrifice that will merely produce a benefit for the employer? Is this wage cut <u>really</u> necessary to insure survival of the enterprise? It is questions like these that explain why layoffs rather than wage cuts are the standard and most

widely accepted response -- and in the end why large negative shocks produce such prolonged and severe unemployment episodes.

The actual exercise of monetary policy can take different forms, even under the constraints given by a fixed exchange rate system. Typically, a Central Bank will have the possibility of affecting interest rates and the amount of base money (M_0) via rediscount policy and/or open market operations. These could, in principle, be carried out exclusively in local currency obligations (pesos), possibly giving rise to a varying differential between peso and dollar interest rates. But the Central Bank can also influence the local monetary scene, simply by varying its policy with respect to international reserves. To see this, consider the consolidated balance sheet of the banking system. Its major liability is a broad concept of money (M_2 or something similar), encompassing currency, demand and time deposits, certificates of deposit and the like. Its major assets are, in the language of the IMF's International Financial Statistics, net foreign assets, credit to the government, and credit to the private sector. For most developing countries, the net foreign assets of the consolidated banking system consist principally of the international reserves of the Central Bank.

Now the key to understanding many aspects of monetary policy is the fact that it is the public that in the end determines the money supply in real terms. (If the system gives them more than they want to hold, they will spend part of the excess each period, and some of this will actually disappear from the country through loss of international reserves. In a given scenario, this process will continue until there are no "undesired monetary balances" left.) If the public determines the size of the main liability of the consolidated banking system, this also determines, to a reasonably close approximation the sum of the three major components of the asset side. If now the Central Bank decides to increase its international reserve holdings, something else on

the asset side has to give. Typically, this will mean a squeezing of bank credit to the private sector, with the consequent effect of higher internal interest rates.

A key concept in the analysis of monetary policy in a relatively open economy is the idea of "reflux". This refers to the fact that, in the scenario just described, additional foreign capital flows may be stimulated by the rise in interest rates that results from the Central Bank putting additional money abroad. This "reflux" can be thought of as a percentage of the initial placement of funds in New York or London or some other world center. With a reflux coefficient of 40%, the placement of $1,000 of additional reserves abroad would lead to an induced reflux of $400. Countries with poor links to the world capital market will have very low reflux coefficients. As these links improve, and in particular as the country in question is judged to have less and less "country risk", the reflux coefficient gets higher.

A good rule of thumb for thinking about the phenomenon of reflux is that if a country has problems attracting foreign funds (particularly in the form of bank deposits and portfolio investments), the reflux coefficient is bound to be quite low -- low enough so that it is not a major impediment to the exercise of monetary policy. On the other hand, when small rises in internal interest rates attract a flood of foreign funds, that is a signal of a high reflux coefficient, and should be taken as a cautionary signal concerning the limits of an independent monetary policy. To me, there is no doubt whatsoever that the phenomenon of reflux is unimportant in the Indonesian case, both now and for the foreseeable future.

As long as reflux is relatively small or moderate (say, a reflux coefficient of 0.5 or less), the Central Bank has an important tool for influencing the economy. This tool is its policy concerning the accumulation or decumulation of international reserves. Increasing international reserves is a way of cooling off the local economy, through its effects of squeezing the amount of real credit available to the productive sector of the economy, with a concomitant tendency for the

real interest rate to rise. Reducing international reserves has the opposite effect of stimulating the economy, by expanding the amount of real credit and simultaneously reducing real interest rates.

Sometimes a Central Bank's policy with regard to international reserves falls under the label of "sterilization" of capital inflows or outflows. Readers should recall that the underlying guideline of a fixed exchange rate system is that the Central Bank buys and sells all the foreign currency (dollars) that is offered or demanded at the specified fixed rate. Thus a net inflow of foreign currency (whatever the source) gives rise to a corresponding increase in base money (M_0). This base money will be multiplied in the system, in the end producing an outflow of reserves as the public responds to: a) unwanted real money balances, b) increased income from higher demand for nontradables, and c) an increased relative price of nontradables. A Central Bank will engage in sterilization operations if it wants to short-circuit this series of natural consequences of an increase in its international reserves. The easy way to think of this is that the Central Bank decides that it wants to keep some or all of the newly arrived additional reserves, and recognizes that in order to accomplish this it has to squeeze the other major asset of the consolidated banking system, i.e., domestic credit.

There is another term in common use, namely "sterilized intervention". This is very similar to straight "sterilization" as described above. The difference is in the underlying scenario. "Sterilization" can be thought of as a response to the automatic changes in international reserves that result from the Central Bank's simply buying and selling dollars at the specified fixed exchange rate. In contrast, "sterilized intervention" takes place when the Central Bank provides the motive force for the increase in reserves. An easy way to think of this is that the Central Bank sells bonds or bills in the open market, thus obtaining ordinary M_2 money, which it then uses to buy some of the dollars that are coming in through its foreign exchange

window, without its having to issue any new base money in the process. The end result of "sterilized intervention", then, is that the Central Bank's reserves go up, interest rates rise, and credit to the private sector goes down, just as in the case of ordinary sterilization. The difference lies only in what was the motive force giving rise to the initial increase in reserves. In the first case it was the natural result of market forces (capital inflow, rising oil price, etc.) while in the second case the increase in international reserves was something the Central Bank set out actively to produce.

In my own thinking, I prefer not to worry about such subtle distinctions. The key element is that under a standard fixed exchange rate system the Central Bank can affect the real economy through variations in the amount of international reserves it chooses to hold. Even though the amount of real monetary balances (M_2/p_d) is substantially outside its control, the Central Bank can influence the reflection of that money supply in one part consisting of international reserves and another part made up of domestic credit. Tighter money means more international reserves and less domestic credit; with easier money it is the other way around.

I have gone into some detail on the way the Central Bank can influence the economy under fixed exchange rates, mainly because the same elements are typically present under other exchange rate systems as well. Only currency boards (if strictly implemented) and dollarization can take away this potential.

Monetary Policy Under Flexible Exchange Rates

Flexible exchange rate systems encompass an unruly family of alternatives, simply because one rarely finds a genuine case of a strictly freely floating rate. The purest such case would be that of a Central Bank that was precluded from holding (or acquiring) any international reserves. Since real-world Central Banks seem always to have international reserves and to

engage in transactions which increase or reduce them, we can conclude that the real world presents us mostly with cases of a less-than-fully-pure "free float".

Even impure cases might be easy to deal with if we had a clear picture of the principles governing Central Bank intervention, but we usually do not. Perhaps the concept of a "dirty float" best captures the reality of most cases. This connotes Central Bank intervention in the foreign exchange market, without saying anything about the purpose or purposes of such intervention. And in a way it makes sense that it should be that way. A Central Bank with lots of reserves might be quite ready to use those reserves to cushion a shock or to stimulate a flagging economy, but its behavior probably would (and probably should) be quite different if it has only a minimal quantity of international reserves to start with.

Sometimes Central Banks will state an objective, such as maintaining the real exchange rate within a given band, or making regular exchange rate adjustments to correct for ongoing inflation. These policies come under labels such as "real exchange rate policies" or "crawling pegs". But once again our observations reveal that other considerations typically enter to complicate the picture. Thus, strong capital inflows or export price booms may lead to real exchange rate targets being modified downward (i.e., the country's currency being allowed to appreciate), or to crawling-peg adjustment being set somewhat below the ongoing inflation rate. In the final analysis, it seems that "clean" polices of any particular kind are hard to find, among countries that are not on fixed-rate systems. This does not give economists any serious reason to complain (why shouldn't a country use its instruments of policy for different purposes at different times?), but it certainly complicates our task of trying to describe and synthesize our worldwide experience with flexible rates.

Table 1 represents an attempt to show how the economy would respond to a particular type of disturbance -- a large negative shock -- under different types of monetary-cum-exchange

TABLE 1

RER Adjustment Under Different Nominal Rate Scenarios

	Nominal Exchange Rates ($E = P_t$)	Price of Nontradables	Domestic Price Level	Real Exchange Rate
	E	P_n	P_d	E/P_d
A. (starting point)	1.00	1.00	1.00	1.00
Alternative Adjustments to a Negative Shock Causing the Equilibrium RER to Rise to 1.25				
B. (fixed E)	1.00	.060	0.80	1.25
C. (p_d kept constant)	1.25	0.75	1.00	1.25
D. (p_d doubles)	2.50	1.50	2.00	1.25
E. (p_d triples)	3.75	2.25	3.00	1.25
F. (p_n kept constant)	1.67	1.00	1.33	1.25
G. (p_d rises by 20%)	1.50	0.90	1.20	1.25

Assumptions:

i) world prices remain constant in dollars, so E (exchange rate index) = p_t (tradables price index)

ii) tradables and nontradables have equal weight in the general price index (i.e., $p_d = .5\ p_t + .5\ p_n$).

rate policy. Recall that large negative shocks are the Achilles' heel of fixed exchange rate systems. This is reflected in the need to drive the general price level down to 80% of its prior level, in order to achieve the needed 25% increase of the real exchange rate. Worse yet, this entails the price level of nontradables falling to 60% of its prior level. Can anyone even imagine such an adjustment actually taking place in any known real-world setting? This does not actually happen in reality. Instead, the strong downward pressure on nontradable prices tends to result in real-world cases in protracted periods of high unemployment, coupled, of course, with depressed level of economic activity in the nontradables segment of the economy.

(Let me interrupt my story here to point out that one should not look for specific industries or products representing the "nontradables sector". People often point to various services -- restaurant meals, taxi rides, gardening -- as good examples of nontradables. Similarly, the actual and imputed rents from the existing stock of housing are another important candidate for the nontradables category. These are all sensible examples, but thinking about them leads us down the wrong track. The right way to think about tradables is as goods and services whose world price is predominantly determined in the international marketplace. This takes us from rice to automobiles, from lumber to computers. But even these commodities end up having some sort of nontradable component, as they enter into a final-products price index. The automobiles and computers sold to consumers contain both a local transport component and a retail markup. Looked at from the other side, the restaurant meals contain components of tradable food and equipment, and taxi rides contain components of tradable gasoline and tradable vehicles. At the end of the day, then, one must recognize that most final products other than exports, are, by the point of their final sale, mixtures of both tradable and nontradable components. Our economists' vision of the "tradables sector" is the summation of all the tradable components, and similarly our "nontradables sector" is the summation of all the

nontradable components. Since we never actually see anything like the whole amalgam of nontradables, we deal with it implicitly. In our example of case B of Table 1, we get the real exchange rate from two observables; the nominal exchange rate E and the domestic price index p_d. We then assign plausible weights to the tradables and nontradables components (here 0.5 each) to infer the value for p_n, the price level of nontradables. For our empirical work with real-world data we need not, and probably should not, go beyond the observed index p_d. All we have to really know is that p_d is an average of p_t and p_n.)

Returning now to Table 1, we next turn to case C, where p_d is kept constant, presumably by the action of the monetary authorities. One can easily see there that the shift from a fixed nominal exchange rate to a constant "price level target" somewhat reduces the deflationary pressure on the price of nontradables, but the achievement of a new real exchange rate equilibrium still requires a huge reduction in the nominal price level of nontradables. This type of price-level targeting has the same Achilles' heel as a fixed exchange rate system.

Obviously, case C entails exchange rate flexibility, but this is not sufficient to offset strong deflationary pressures on nontradables prices (mostly on the general level of wages) as the result of a large negative shock. This is certainly not a common response when the exchange rate has some flexibility. Typically, the authorities allow not only the exchange rate to rise, but also the general price level. Cases D and E are more realistic examples of how countries with flexible exchange rates have responded to major negative shocks. In the first of these cases the general price level doubles and the price level of nontradables increases by 50%, while the nominal exchange rate goes up by 150%. In case E the response is more inflationary, with the general price level tripling and the nontradables price level increasing by 125%, while the nominal exchange rate goes up by 275%.

These cases do not overstate reality in any relevant sense. Readers are referred to Tables 2 and 3 of my paper on "The Anatomy of Crises", where the stories of Argentina (1980-85), Chile (1981-86), Peru (1982-87), Uruguay (1981-86) and Mexico (1992-96) are reviewed. Starting from the year immediately before the onset of the crisis, Chile's nominal exchange rate multiplied by 5, its price level by about 2.5. Uruguay's exchange rate multiplied by 14, its price level by more than 8. Peru's exchange rate multiplied by 24, its price level by 39 (a perverse case of RER appreciation), and everything in Argentina went through the roof, with prices and exchange rates multiplying by more than 1000. Mexico (1994-98) was more restrained, with the exchange rate rising by 170% while prices increased by about 150%.

These data show that cases D and E are really quite conservative when set against recent Latin American experiences in the wake of major negative shocks. They also suggest that even in the "good" cases (Mexico and Chile), Mexico ended up with a relatively low "efficiency" of real devaluation. (The Efficiency coefficient is the percentage of real devaluation divided by the percentage of nominal devaluation. It was about 40% for Chile (1981-85) and about 10% for Mexico (1994-98).

By contrast, the experience of the other sufferers from the Asian crisis looks more like case G of Table 1. In each of those countries (Korea, Malaysia and Thailand) the nominal exchange rate with the dollar has risen by 35 to 50 percent, while the consumer price index has gone up by only around 10% in each case (see Table 2). These countries have thus experienced real devaluations of close to 40% (for Malaysia and Thailand) and of about 25% for Korea. How can we "interpret" their monetary policy in terms of our own foregoing analysis?

The first point to be taken into account is that the weight of 0.5 given to tradables prices in the exercise of Table 1 is probably too high for countries like Korea, Malaysia and Thailand. Though for reasons previously given the setting of these weights is at best a judgment call, my

TABLE 2

Exchange Rates and Price Levels In

Korea, Malaysia and Thailand

	Korea		Malaysia		Thailand	
	E	p_d	E	p_d	E	p_d
II97	892	109	2.51	1.06	25.9	116
III97	899	110	2.78	106	33.0	113
IV97	1144	112	3.48	107	40.7	116
I98	16?5	118	4.00	110	47.1	118
II98	1395	118	3.85	112	403	121
III98	1326	118	4.06	112	41.1	122
IV98	1280	118	3.80	113	37.0	122
I99	n.a.	118	3.80	115	37.1	122
II99	1190	118	3.80	115	37.2	121
III99	1195	119		115	38.3	121

Source: IMF International Financial Statistics, January 2000.

E = nominal price of U.S. dollar (average over period, concept rf)

p_d = consumer price index (1995 = 100).

own instincts run closer to $p_d = .33\ p_t + .67\ p_n$ than to a 50-50 weighting split. This reflects the notion that a 50% weight for tradables implies a very open economy, not just a somewhat open one.

Using the new weights, we can ask two questions. First, what is the "predicted" level of p_d on the assumption that p_t moves with the dollar exchange rate, and that p_n does not change? When we insert $p_t = 1.35$ and $p_n = 1.0$ for Korea, we get an "implied" p_d of .45 + 67 = 1.12, very close to the actual rise in the consumer price index. If we do the same for Malaysia and Thailand, using $p_t = 1.50$ and $p_n = 1.0$, the "implied" p_d is .50 + .67 = 1.17, somewhat above the observed figure of around 1.10, but certainly within a margin that could be accounted for by the roughness of our assumptions, by statistical errors in the data, and by the hidden bias in p_d, introduced by suppressed inflation (administered prices, price controls, etc.)

If we turn the question around, and take the observed changes in the general price index as given, we can ask what is the "implied" change in p_n, the price level of nontradables. In the case of Korea, we have $1.10 = .33(1.35) + .67\ p_n$, which yields $p_n = .65/.67$, or .97. This is very close to one; it certainly cannot be thought of as implying a serious downward pressure on the nominal price level of nontradables. Doing the same for Malaysia and Thailand, we get $1.10 = (1/3)(1.50) + (2/3)\ p_n$, which yields $p_n = .90$. This troubles me, as I do not really believe that these countries have forced down the nominal price of nontradables by 10% since just before the crisis. But I am comforted that this result is within a range that can be explained by errors of the types listed above.

Some Guidelines for Monetary Policy in Indonesia

Bank Indonesia is now operating under a generalized guideline known as "inflation targeting". This may not be the ideal terminology, but it certainly can serve the purpose, if it is

understood properly. The basic idea is to enter each period, say a year, with a targeted increase in the price level over that period. That increase should be moderate (i.e., in the one-digit range). But presumably it should be responsible to the circumstances in which the economy finds itself. The operational management in pursuit of the target can be easily stated -- pull in the reins when prices tend to go up at faster than the targeted rate, and lean toward easier money when the rate is lower -- especially if there are also signs of weakness in the real economy.

The very broad outlines of how to do inflation targeting are quite easy. One wants to avoid the extremes of tightness represented by cases B and C (of Table 1) on the one hand, and of inflationary looseness represented by cases D and E on the other. One definitely does not want to respond to a large negative shock by forcing a major decline in nontradables prices upon the economy -- either by trying to hold the nominal exchange rate E constant in the face of such a shock, or by trying to hold the general price level p_d constant in the face of the need for an important upward adjustment of E/p_d.

At a more refined level, I believe it would be wise to add a guideline of trying to avoid imposing significant downward movements of the implicit price of nontradables. That is, one should begin to worry if the general price level falls by more than, say, one third of the contemporaneous percentage fall in the nominal exchange rate. This is based on the same equation ($p_d = .33\ p_t + .67\ p_n$) that was used above for the cases of Korea, Malaysia and Thailand.

In this paper up to the present time, I have assumed that changes in the world price level can be neglected. This has been basically true for the past decade or so. If there is a need to incorporate an allowance for changing world prices, the relevant price indexes are the wholesale or producer price indexes of the major industrial countries. This is because wholesale price indexes are more representative of tradable goods than are consumer price indexes. Thus, a real

exchange rate making allowance for changes in world prices would have the form RER = Ep^*/p_d, where p^* is a weighted average of the wholesale price indexes of major industrial countries, expressed in terms of dollars if E is the nominal rupiah price of the dollar, and where p_d is the consumer price index (or the GDP deflator) of the country in question. (For further clarification, see my "The Indonesian Crisis Revisited" [December 1998], footnotes to Figures 1, 2 and 3.)

A Key Rule: Give the People What They Want (Not More, Not Less)

If there is any single rule that summarizes modern monetary policy in a nutshell, it is this. Clearly, if the authorities generate a real money supply (M_2/p_d) greater than what the public wants, the public will try to get rid of their excess cash balances and drive prices up. And if the authorities provide them with less than what they want, the public will try to add to their real cash balances and thus drive prices down.

The trick here is to be constantly on the alert for evidence of what the public is doing, and to bear other relevant considerations in mind in the process. Consider the trajectory of monetary policy in Indonesia between December, 1998 and the present time. Then, the interest rate on time deposits was around 35%; now it is around 11%. I am totally certain that, if people were to be offered a 35% rate on time deposits today, they would jump at the chance. Surely, M_2/p_d would be significantly greater than it is today. But instead of allowing or causing that to happen the Indonesian authorities wisely allowed the interest rate to drift down to around 11%. At this interest rate people appear to be content with the real cash balances they have.

This transition from extremely high to much more normal-looking nominal and real rates of interest was a triumph for Indonesian policy. But in calling it a triumph I am distinctly placing that policy in the special setting of Indonesia here and now. The key to seeing the difference is a recognition of the fact that in December, 1998, people were being bribed by

extraordinarily high interest rate to keep M_2/p where it was. Lying behind this was the fact that banks were receiving rates as high as 38% in SBIs. And in the end it was the taxpayers and citizens of Indonesia who were (or will be) paying the bill.

It was because the high interest rate was an artificial "bribe" to depositors to keep M_2/p_d high that it made sense to experiment with letting that interest rate drift down. Doing so ran the risk that people would reduce their deposits and shift an important part of their monetary holdings offshore. But that risk did not eventuate. As interest rates were eased downward, people remained willing to hold the same (or even somewhat greater) M_2 deposits in real terms, in spite of the fact that their yield was declining. As I read the record, the authorities felt their way, step by steps, in regulating the supply of SBIs on the market. As each step proved successful, in the sense of not precipitating a flight from money, the next tentative step was taken. As I see it, at each step throughout this process, the authorities were constantly "pushing the edge of the envelope", testing people's continued willingness to hold M_2/p_d balances, as lower and lower interest rates were paid on those balances (reflecting, in turn, the lower and lower interest rates that the authorities were paying in SBIs). In fact, real M_2 balances increased by almost 9% from December 1998 to October 1999.

I hope I have made it clear that this was indeed a triumph for Indonesian monetary policy. But suppose the underlying situation had been very different, with a clear separation between good and bad loans from the banking system, and with the good loans paying, say 40% nominal interest per year. In this imagined scenario, there is nothing artificial about the high interest rate on deposits. These deposits are being attracted because lenders have highly productive uses for the funds. Now in such a case it would be wrong for the authorities to try to push down interest rates. The private sector's demand for loans would be the driving force, and interest rates would properly fall only as one worked down the private sector's demand curve for

loans, as a result of the public increasing its holdings of M_2/p_d, presumably out of increasing real income and growing confidence. This hypothetical scenario would not have produced a fall of the interest rate on deposits from 35% to 11%, with only a modest increase in M_2/p_d. My intuition is that in this counterfactual situation, bank interest rates would have come down a lot more slowly than they did in fact in the actual real-world scenario (with congealed bank credit and real monetary balances initially kept artificially high by exaggerated interest-rate "bribes").

A Key Corollary: The Rule is Not Easy to Follow

I am fond of recalling a conversation I had with Allan Greenspan (in early 1998), in which I asked him whether he had, at the Federal Reserve Board in Washington, a whole corps of economists doing "detective work" to see how people's demand for real monetary balances had changed, with the idea that once they found out how the public's desired holdings of M_2/p_d had changed, the Fed could move to bring the supply into consonance with the demand, without causing the price level to move off its programmed path. His response to me was, "Yes, but that detective work is much more difficult than you make it sound."

The problems are many. The data that we get most quickly and readily are those on money supply, not money demand. It takes further observation to see whether a given change in supply will end up being willingly held, or whether people will try to get rid of it. Then we have the fact that some changes, on both the side of supply and the side of demand, are by their nature transitory, and thus likely to be quickly reversed without further action by the authorities. A good example is the recent "Y2K" episode. Here, as I understand it, there was an unprecedented surge in the demand for currency, as people tried to hedge against unforeseen "Y2K" contingencies. The authorities accommodated this demand through a large increase in the supply of base money in the form of currency. Happily, this extra currency came back quite quickly, once January 2000 had passed without major incidents. In this case, it was wise for the

authorities to take an accommodating stance. This kept the transition to the new year smooth. To have resisted the demand for cash, on the other hand could easily have brought disruption, perhaps even panic, to Indonesia's financial markets. This was a case where it was easy to accommodate a change in currency demand, because the demanders came to banks asking for currency, which in turn led the banks to ask for more currency from Bank Indonesia.

A different and more "normal" case turns out not to be so easy. Suppose we are in a normal banking system, without the problems of massive congealed credits and of banks unwilling to lend to business borrowers. In such a situation, business firms get more optimistic, and ask for more loans from the banks. So long as there are excess reserves in the system, the banks can create additional loans and additional deposits at the same time, with the business firms actually getting their loan money in the form of newly created deposits. But these enterprises wanted that money to spend, not to hold. Yet once they spend it, it ends up in the hands of the public, which probably has no special reason to want to hold this extra M_2. Here we have a case of the money supply going up in a quite natural way, but this increment in supply is not matched by an increase in demand. The authorities may have to wait for above-target price rises to take place before they can take corrective action. But detective work can help. If one observes increased monetary holdings by many depositors in many banks in many cities, they are more likely to be desired increases in M_2/p_d than if the increases are represented by "unusual" jumps in only a small fraction of accounts or locations.

One Must Watch Velocity and the Money Multiplier

I do not believe that Indonesia is the place to try to get econometric estimates of sophisticated demand functions for real money balances. Among other things, the turmoil of the past few years has been sufficient to almost guarantee that tastes and behavior patterns are likely now to be quite different from what they were in the years before the crisis. So whether we like

it or not, I believe we are condemned to work with simple indicators, watching carefully how they evolve through time. Of all the possible indicators, there are two that merit special attention -- GDP/M_2, the income velocity of circulation of M2, and the money multiplier M_2/M_0.

Looking from the standpoint of the Central Bank, base money is a clear and straightforward control variable. One would naturally think of trying to allow for changes in real GDP plus the programmed changes in the price level by linking movements in M_0 to the projected percentage increase in nominal GDP (incorporating both the expected real growth and the programmed price level changes). This is a perfectly good starting point but it should definitely not be the ending point. For in addition serious efforts should be made to allow for changes in GDP/M_2 and in M_2/M_0.

According to International Financial Statistics, the income velocity of M_2 in Indonesia dropped tenfold between 1968 and 1996. That means that in 1996, Indonesians were holding ten times the amount of real cash balances as in 1968, as a fraction of their real income. That is, it represents an enormous jump in the demand for real currency balances. I realize that it may be somewhat unfair to choose 1968 as the starting point, as that was the last year of a huge inflationary episode. So it is perhaps more relevant to point out that Indonesian's M_2 velocity was cut in half between 1985 and 1996. Indeed, by 1996 it was less than a third of what it had been in 1980. At the same time, the ratio of base money to M_2 was also changing dramatically, such that by 1995 it stood at only about a quarter of its 1980 level.

The changes in the income velocity of M_2 and in the M_0/M_2 ratio may have some interconnections, but I feel they should be regarded as substantially independent of each other. The first ratio deals with the (inverse of the) fraction of people's income they desire to maintain as M_2 balances. The second deals with the fraction of their balances that people want to hold in

the form of currency and the fraction of bank deposits that banks choose to (or are required to) hold as reserves against deposits.

The lesson to be drawn from these Indonesian data is that one should not assume constancy of either of these ratios, but rather to be alert to any ongoing trends or any other likely source of movement in them.

Tables 3 and 4 attempt to show that variability in these key ratios has by no means been limited to Indonesia. For added relevance, I have chosen countries that were passing through the Latin American Debt Crisis (all of which experienced banking crises as well). The period is from immediately before the crisis, carrying forward well into its denouement. As an aid in interpreting the tables, I have added the ratio of the high to low values for each country over this period. The high/low ratios of Table 3 (income velocity) range from 1.2 for Peru to 2.4 for Argentina. The trend is flat for Peru, sharply downward for Chile and Uruguay, and moderately upward for Mexico. Argentina's velocity first increased steadily then decreased sharply during this period.

Table 4 shows that the money multiplier (actually its inverse) was also quite volatile. Its high/low ratios range from 1.4 for Peru to 3.8 for Argentina. The trend is upward for Peru, downward for Mexico, downward than upward for Uruguay, and upward then downward for Argentina. This should convince readers not to expect any natural, simple "normal" evolution of this variables in a country emerging from a crisis situation.

The lesson of this section is simple. Base money is not a straightforward surrogate for desired real money balances. Even after expressing M_0 in terms of expected nominal GDP, one must further modify the resulting "M_0 target", so as to offset actual or expected changes in: a)

TABLE 3

Income Velocity of M2 in the Years of the

Latin American Debt Crisis

(index, 1990 = 100)

Year	Argentina	Chile	Mexico	Peru	Uruguay
1979	26.3	203.3	66.3	42.8	180.2
1980	31.1	176.8	71.2	37.7	178.0
1981	36.7	140.3	67.4	39.5	147.2
1982	44.5	110.2	65.6	38.0	116.8
1983	57.5	108.6	75.2	36.2	108.9
1984	62.2	105.5	72.0	37.4	111.2
1985	53.1	103.9	78.9	38.7	108.4
1986	43.0	102.1	83.7	40.3	106.6
Hi/Low Ratio	2.4	2.0	1.4	1.2	1.7

Source: IMF International Financial Statistics: Yearbook 1997, pages 92-93.

TABLE 4

Ratio of Base Money to M2 in the Years of the

Latin American Debt Crisis

(percent)

Year	Argentina	Mexico	Peru	Uruguay
1979	25.9	58.5	49.9	38.2
1980	24.2	60.2	57.5	34.4
1981	26.2	58.5	52.9	27.0
1982	92.7	67.7	48.3	20.0
1983	84.3	65.2	512.1	30.7
1984	59.8	58.6	54.6	36.2
1985	55.2	47.8	67.0	34.3
1986	34.9	39.6	60.7	33.8
Hi/Low Ratio	3.8	1.7	1.4	1.9

Source: IMF, International Financial Statistics: Yearbook 1997, pages 88-89.

NOTE: Chile's high/low ratio over this period was around 6.0, but I chose to omit that case because changes in definition complicate the interpretation of the data.

desired M_2 holdings as a fraction of GDP and b) the money multiplier itself (i.e., the ratio that links M_0 to M_2). If ratios a) and b) happen to remain constant or nearly so, that would be a stroke of sheer luck. Experience, both in Indonesia and elsewhere, tells us that we must be alert to the possibility of significant changes in both ratios, perhaps especially so in a country that is emerging from a combined banking and balance-of-payments crisis.

Conclusion

In this paper I have tried to help readers organize their thoughts about the problems that monetary managers in Indonesia are likely to have to face in the coming years. I try to set the stage by looking first at the problems of monetary policy under fixed exchange rates, and then at some of the issues that arise under flexible rates.

I present inflation targeting as a modern solution that tries to avoid the specific weaknesses of fixed rates on the one hand and of several variants of flexible rates on the other. The guiding principle that I believe is the soundest is to avoid creating significant downward pressures on p_n, the price level of nontradable goods and services. Unfortunately, this is not a variable that we can directly observe. Perhaps as close as one can get in observable terms is to avoid creating significant downward pressures on the average level of nominal wages. This means setting the inflation target higher when the equilibrium real exchange rate is rising, because otherwise the RER adjustment would tend to generate increased unemployment and reduced economic activity (as downward rigidities interfered with proper labor market adjustment). I offer some evidence that this principle may have governed in the relatively successful adaptations of the economies of Korea, Malaysia and Thailand, in the period since 1997.

The simple rule for monetary policy under inflation targeting is for the authorities to provide the amount of M_2 balances that the public wants to hold, under the target price trajectory for each period. Unfortunately, it is not easy to extract desired monetary balances from

short-run movements in the data, as these may reflect changes in the supply of rather than the demand for M_2.

The best policy is for the authorities to be alert to changes of various relevant kinds, affecting the demand for real money balances. I cite very favorably the artful way in which the Indonesian authorities accommodated the demand for extra currency as the "Y2K" moment approached. This extra money cam back automatically once the "crisis" was perceived to be over.

Similar accommodation is needed in order to change M_0 so as to accommodate changes in the public's demand for M_2 in relation to GDP, and so as to offset movements in the ratio of M_2 to M_0 (the money multiplier). Data from Indonesia and from other countries show that these ratios have a habit of changing significantly over relatively short periods of time. Recognizing such changes, and adopting policy to take them into account is an important part of "The Art of Central Banking" in today's world.