



Statement by Stanley Fischer ^{1/}
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CENTRAL BANKING: THE CHALLENGES AHEAD

It is a great honor for the IMF and for me to have been invited to deliver this keynote address at the 25th Anniversary symposium of the Monetary Authority of Singapore. Singapore's monetary performance in the quarter century of the Monetary Authority's existence has been as remarkable as the country's overall economic performance in the years since independence: the inflation rate since the MAS was established in 1971 has averaged 4.1 percent (indeed only 2.5 percent since 1980), during a period in which growth has averaged 8 percent, the balance of payments has run comfortable surpluses, and the capital markets have developed to the point where Singapore is a major financial center and the fourth largest foreign exchange market in the world.

Singapore's historically extraordinary achievement is to have raised living standards from the levels of a poor developing country to those of the leading industrialized countries, within a generation. Of course, it has been asserted that this remarkable achievement reflects "merely" factor accumulation. This is not the occasion to enter that debate in depth, but it should suffice to note first, that very few countries have been able to accumulate factors at such a rate, and second, that even fewer have been able to do so while staying on the production frontier, that is, without declines in multifactor productivity.

Singapore's extraordinary growth over thirty years could not have been achieved in the face of macroeconomic instability. The Monetary Authority of Singapore has thus played a critical role in the economic development of this country. It will no doubt continue to do so in the years ahead.

My topic today is the challenges ahead for central banking. It is more than a little inhibiting to be speaking on this occasion, on this topic. After all, here is a monetary authority that has succeeded, as part of a government in which the conflicts that motivate the case for central bank independence appear entirely absent. One way of proceeding would be for me to attempt to draw the lessons of Singapore's success, and to define the challenge of central banking as being to implement those lessons. While those lessons, about the benefits of fiscal discipline and coordinated monetary and fiscal policy, of high saving and hard work, are clear, I shall not adopt that approach. Rather I shall address the challenges facing the vast majority of central banks, which do not operate under Singapore's fortunate, hard-earned, special conditions.

The academic and policy debate, on central banking as on other topics, is naturally always moving to address the new and the novel, to the emerging and perhaps-to-emerge challenges, and I shall devote the final part of this lecture to some of the banking and financial sector issues with

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which central banks all over the world -- as well as the IMF -- are now grappling. But the new challenges should not be allowed to obscure the enduring challenge faced by the central bank, to fight inflation, a battle that is never over.

I. Price stability

The fundamental task of the central bank is to preserve the value of the currency. The understanding of the centrality of price stability has evolved over the years, and I will take some time today reviewing selectively recent developments in thinking about this aspect of the role of the central bank, with an emphasis on unsettled and controversial issues.

As long as countries adhered to the gold standard, rapid inflations were precluded, although prolonged movements in the inflation rate were evident in the nineteenth century -- indeed these price movements were the primary evidence adduced for the existence of the long Kondratieff cycle. Policy debates arising out of the inflations associated with the Napoleonic wars, the United States Civil War, and World War I, added greatly to the understanding of both monetary issues and the costs of general price movements.

The gold standard has two fundamental disadvantages: it makes the growth rate of the monetary base dependent on the vagaries of the supply of gold; and it is a costly way of producing money -- printing and book- or electronic-entry are much cheaper.^{2/} But it did in principle have the advantage of keeping control over the quantity of money out of the government's hands. The enthusiasm of central bankers and academics for this benefit led after World War I to a return to gold in Europe and the spread of gold-standard based central banking to many independent developing countries. Currency boards in a number of colonies effectively placed them too on the gold standard, at one remove.

The predominant view before the Great Depression was that the macroeconomy was best put on automatic pilot. Britain's difficulties after its return to gold in 1925, and even more the Great Depression, reduced confidence in the benefits of the automaticity of the operation of the gold standard and of the market system. Keynes' General Theory, produced during the Great Depression, provided the predominant theoretical framework in which macroeconomic policy problems was analyzed during and after World War II.

The General Theory does not deal with inflation. But wartime and post-War inflations made inflation impossible to ignore. For a while there was an awkward intellectual gap between the Keynesian model, used to determine the level of output, and the analysis of inflation, primarily

^{2/} A number of scholars have analyzed the possibility of operating monetary policy by seeking to hold the price of gold, or a bundle of commodities, constant, without holding reserves of these goods. In principle these schemes could yield the benefits of the gold standard without its cost in terms of resource use, but they also reveal how difficult such a policy would be to implement.

through the quantity theory. That gap was closed by adding the Phillips curve to the Keynesian model.^{3/}

The implication of the original Phillips curve that there is a long-run tradeoff between inflation and unemployment has long since been abandoned, on empirical as well as theoretical grounds. A closely related notion, that inflation might be good for growth, has also been refuted by empirical evidence, which shows that inflation is negatively correlated with growth. (Fischer, 1993; Barro 1995; Bruno and Easterly, 1995; and Sarel, 1996).

Some uncertainty remains about the relationship between inflation and growth at low inflation rates. In principle, there is likely to be a turning point in the relationship, since there are grounds for believing deflation is bad for growth. In my work, I have found the negative relationship to continue even in the low single digit range. However both Barro (1995) and Sarel (1996) do not find a clear negative relationship below 8 percent inflation, though they do confirm a strong negative relationship at higher inflation rates. Notwithstanding the uncertainty about the negative inflation-growth correlation at inflation rates below 8 percent, no-one has yet found evidence for a positive correlation over any sustained period.

Nonetheless, the short-run Phillips curve tradeoff between inflation and unemployment remains central to the macroeconomics of monetary policy. It is this short-run tradeoff between inflation and the level of economic activity with which central bankers grapple much of the time -- often while denying its existence.^{4/} While there may be good political reasons to wish there were no short-run tradeoff, a moment's reflection on the circumstances in which monetary policy is eased or tightened -- as well as more formal empirical evidence -- confirms its existence.

This detour into history and the nature of the Phillips curve serves as background for the discussion of the goals and strategy of monetary policy. I will take up the following issues:

- central bank independence;
- should the promotion of full employment have the same priority as preserving the value of money?;
- explicit inflation targeting versus less explicit monetary policy goal-setting;
- the optimal inflation rate;
- intermediate policy targets;

^{3/} Phillips' famous article was published in 1958. The notion that prices increase more rapidly in boom times and tend to decrease when times are bad is implicit in much earlier thinking, and was explicit in a 1926 article by Irving Fisher. The inclusion of the Phillips curve or aggregate supply in the basic macro model was the essential innovation that marked the generation of macroeconomics textbooks that starts with Dornbusch and Fischer (1978).

^{4/} For a time, proponents of the rational expectations approach to macroeconomics argued that only unexpected changes in monetary policy had any impact on output, but that view has not survived the test of experience.

· the exchange rate regime, and the currency board approach.

Central bank independence

The arguments for central bank independence are well known.^{5/} They are arguments from the world of the second best. In a first best world, monetary and fiscal policy would be perfectly coordinated and chosen, and there would be no need for an independent central bank. That may describe monetary management in Singapore. But in the imperfect second-best world in which most central bankers ply their trade, political systems tend to behave myopically, favoring inflationary policies with short-run benefits and discounting excessively their long-run costs. An independent central bank, given responsibility for price stability, can overcome this inflationary bias.

The empirical evidence that, on average, countries with more independent central banks have lower inflation, at no cost in terms of growth or the variability of growth, is persuasive. Of course, as Singapore shows, it is possible to have low inflation without an independent central bank. Nevertheless, the evidence is that a country is more likely to have low inflation if the central bank is independent, and there are good reasons to expect that outcome when the fiscal authority is not highly disciplined.

Price stability as the only goal?

We turn next to the question of whether, given the short-run Phillips curve, the central bank should not be given the task of maintaining full employment together with that of maintaining low inflation. It is sometimes argued that the rate of unemployment is determined by structural factors, and that it is therefore inappropriate to direct monetary policy to take unemployment or the level of output into account. While structural unemployment is beyond the reach of monetary policy,^{6/} cyclical unemployment is not. It cannot therefore be argued that monetary policy decisions should pay no heed to the state of the business cycle, and focus only on the rate of inflation. Nor does any central bank behave that way.

Most of the time -- when the economy is being affected by demand shocks -- a monetary policy that has the goal of maintaining low inflation will also be appropriate for the stabilization of output. When the economy is overheating, restrictive monetary policies will both prevent inflation from rising and output from over-expanding. When the economy is in recession, or recession is anticipated, monetary policy can become more expansionary without increasing the inflation rate. However, there are always differences of view on the speed with which policy should be adjusted, and on the balance of risks, even in dealing with demand shifts. These conflicts become more marked when the economy is hit by a supply shock. In practice, central banks tend to accommodate adverse supply shocks, allowing a temporary rise in inflation to mitigate the decline in output.

Not only does monetary policy affect both output and inflation, but inflation is also affected by other policies, especially fiscal policy. It is a political judgment, supported by political and

^{5/} They are developed in Fischer (1994), which goes in more depth into several of the issues taken up in this section of the paper.

^{6/} This assumes the natural rate of unemployment is not affected by actual unemployment experience, the topic studied under the heading of hysteresis.

economic theory and evidence, that control over inflation should nonetheless be made the primary goal of monetary policy. A central bank given multiple and general goals may choose among them, and will certainly be subject to political pressures to shift among its goals depending on the state of the electoral cycle. Sharing the formal responsibility for inflation control equally among several policy-making branches of government, helps ensure that none takes actual responsibility.

That is the case for giving primary responsibility for control over inflation to the central bank. However, since the public needs to understand the basis for monetary policy decisions, it is best in specifying the goals of monetary policy to recognize that monetary policy does affect output. The approach taken in the statutes of the new European Central Bank is to specify preservation of the value of the currency as the primary goal of the central bank, with the promotion of full employment and growth being permitted to the extent that this does not conflict with the goal of price stability.^{7/} Alternatively, the primary goal could be set as the preservation of the value of the currency, taking account of the impact of monetary policy decisions on economic activity.

The central bank could also be assigned the task of promoting growth -- but it has to be understood that this is best done by maintaining a low rate of inflation and ensuring the health of the financial system.

How explicit should the inflation target be?

There is a division of views among central banks on the advisability of setting explicit inflation targets. Several, such as the Bank of Canada, the Bank of England, and the Reserve Bank of New Zealand, that have recently reformed their monetary policy procedures have adopted explicit inflation targets. Others whose credibility in fighting inflation is longer established, among them the Bundesbank and the Swiss National Bank, have not set explicit goals, certainly not formal annual inflation targets.

The setting of explicit goals promotes accountability, making it more likely that the central bank will come close to target. Accountability and the need to explain deviations from targets should promote transparency, allowing the public to understand the basis for monetary policy decisions, and thus to form more accurate expectations. I therefore favor explicit inflation targeting, while recognizing that there is no urgent need for central banks with a sustained record of producing low inflation to shift their approach.

The optimal target inflation rate

What rate of inflation should be targeted? Low inflation countries have chosen inflation targets in the range of one to three percent. Even taking into account the likely upward bias in the measured inflation rate, this allows for some secular increase in the price level. There has been relatively little analysis of the optimal target inflation rate. Zero inflation is the obvious starting

^{7/} Strictly speaking, the conservative central banker approach of Rogoff (1985) establishes that the central bank should give greater weight to inflation prevention than does the society itself; it comes close to but does not fully justify the "primary goal" language.

point.^{8/} It has long been argued that downward price or wage stickiness would justify some inflation, the notion that inflation greases the wheels of the economy. Interest in this question has revived as worldwide inflation rates have declined, though there is not yet a consensus on whether wages or prices are in fact inflexible downwards, or whether they would gradually become more flexible if inflation were maintained at low rates.^{9/} The research on the relation between growth and inflation described above does not provide much guidance on the choice among target inflation rates once they are below 8 percent.

The main argument for a positive rather than a zero inflation target is that in a monetary economy, the existence of cash puts a lower bound of zero on the nominal interest rate; at zero inflation this puts a lower bound of zero on the real interest rate. In times of recession, it may be useful to allow the real interest rate to become negative, and that is precluded if the target inflation rate is zero -- and becomes even more problematic when we recognize that inflation tends to be below average during recessions. Thus a target inflation rate above zero allows some room for negative *ex ante* real interest rates during the cycle.^{10/} This argument would justify a target inflation range of one to three percent. But it is clear that further research is needed to refine the notion of the optimal inflation target, and its determinants.^{11/} For instance, the inflation target can and should be adjusted to take supply shocks, including changes in the terms of trade and indirect taxes, into account -- thereby allowing for the short-run tradeoff between output and inflation.

Central bank charters and official statements typically specify price stability as the goal of monetary policy. Figure 1 illustrates a subtle but important difference between specifying an inflation target and price stability. If the target each year is the inflation rate, the central bank is not required to compensate for failures to achieve its target in previous years. If the target is the price level, or a path for the price level, the central bank does have to attempt to compensate for missing the target in previous years. For instance, if the target inflation rate is two percent, and inflation last year was four percent, then under inflation targeting, the goal this year will be two percent inflation; under price level targeting, the goal this year would be less than two percent, for example one percent, since the central bank has the obligation to return to its target path for prices.

Price level targeting produces more certainty about prices in the distant future than does inflation targeting. Price level targeting thus encourages long-term nominal contracting. But, as the previous example implies, it does this at the cost of creating more short-run variability in inflation.^{12/} For this reason, it is preferable to target inflation rather than the price level.

^{8/} Milton Friedman (1969) develops a model in which the optimal inflation rate is negative, at a rate such that the nominal interest rate is zero. Much subsequent theoretical research, some of it focusing on the inflation tax, has examined conditions under which this prescription does not hold.

^{9/} See for instance Akerlof, Dickens and Perry (1996) and Card and Hyslop (1996).

^{10/} The argument is developed in Summers (1991).

^{11/} There is also a set of questions about operating procedures, for example whether to specify a single number or a range of inflation rates, and how far into the future the target should extend, which I will not pursue here.

^{12/} Svensson (1995) shows that price level targeting may under certain conditions produce both more stable prices and more stable inflation rates than inflation targeting.

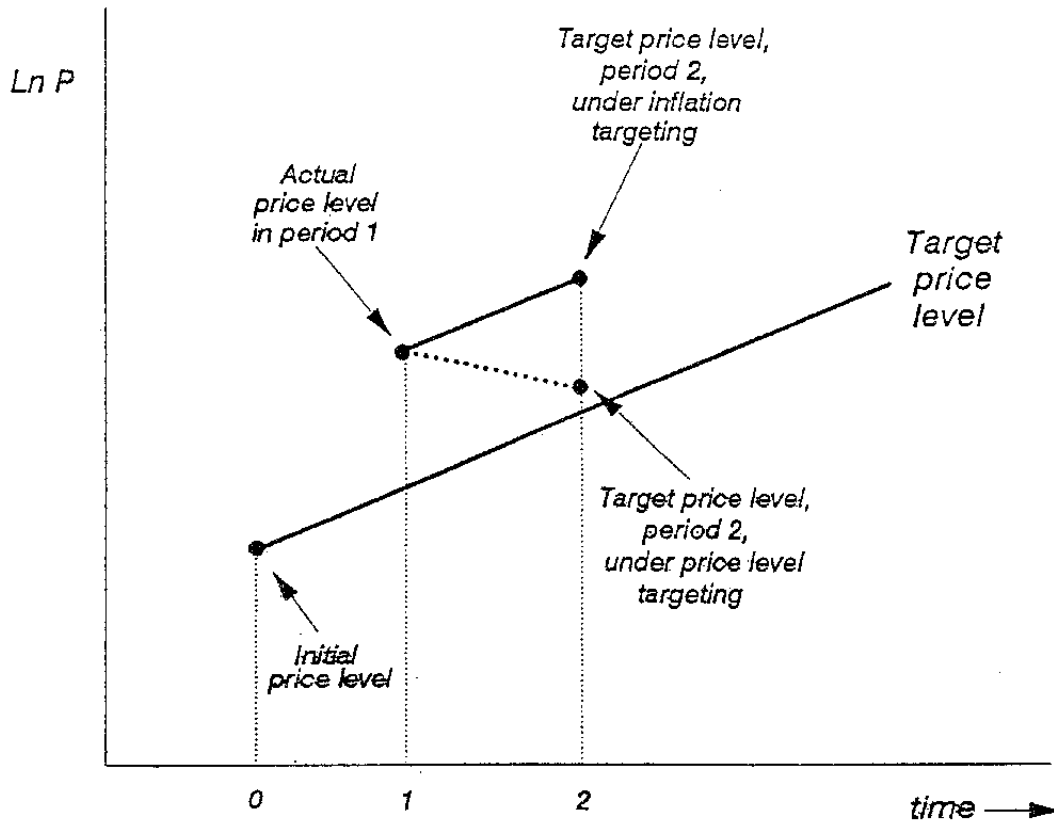


Figure 1. Inflation versus Price Level Targeting

Intermediate policy targets

Monetary targeting was widely adopted in the inflationary 1970s. It was always understood that it depended for its success on the stability or at least predictability of money demand. The approach began to break down in the 1980s, as money demand equations moved off track, possibly due to the pace of financial innovation. Some central banks continue to announce money targets, and at least in Germany, these targets appear to affect subsequent policy decisions.

The extent to which the preannounced targets should constrain subsequent decisions depends on the stability of the money demand function, or equivalently, on whether money growth developments are good predictors of future inflation and output trends.^{13/} If money growth or any other potential intermediate target is a poor predictor of future inflation or output, then publicizing it as an intermediate target of monetary policy may be counterproductive. Either the central bank has to ignore the behavior of that variable, and undermine its credibility, or it sticks to it, and reduces the effectiveness of its policies.

All central banks monitor a variety of economic variables, among them the money supply and interest rates, but also, for example, wages and inventories. Those that can be influenced relatively strongly and directly by the central bank could play the role of intermediate targets of policy. However, if the empirical relations tying those variables to the state of the economy are unstable, it becomes preferable to downplay their role by describing them as monitoring variables rather than intermediate targets.

The exchange rate regime and the currency board approach

The choice of exchange rate regime is one of the longest running debates in economics. The fact that it is not resolved must mean that there is no exchange rate system that is superior in all circumstances.

By successfully pegging to a stable foreign currency or a basket of currencies of low inflation countries, a country can assure itself of low inflation. The goals of monetary policy become simplified -- the task is simply to maintain the peg. Indeed, this is one of the strong arguments in favor of pegging, that it helps focus the mind of the government on a very clear constraint on policy, and thus helps bring about more responsible policies.

Pegs are rarely permanent. This was true even under the gold standard, when countries would occasionally have to suspend convertibility. However, an adjustable peg regime too may help reduce the inflation rate. Countries with a pegged rate regime have on average had lower inflation in the period 1979-1993 than those with floating rates, but the direction of causality in this case is hard to determine.^{14/}

^{13/} These issues have been extensively explored by Benjamin Friedman. See for instance Friedman (1996).

^{14/} Nonetheless, a country's willingness to accept even a temporarily fixed rate is an indicator of the seriousness it attaches to a low inflation goal. See Fry, Goodhart and Oliveira (1995) for the empirical evidence.

One major difficulty with exchange rate pegs, which has received a great deal of attention in the wake of the ERM and Mexican crises is that the system appears crisis-prone: often, a peg or the pegged rate regime itself is changed too late, and in a crisis. The problem of choosing an optimal time to change the peg or the regime has been named the "exit strategy". Analytically, the question of when to change a peg must depend in large part on an estimate of the sustainability of the current account, and thus on an estimate of the equilibrium exchange rate. It is conceptually straightforward to define an equilibrium rate from the viewpoint of the current account, but less simple to estimate an equilibrium rate in the presence of capital flows.

Maintenance of a fixed rate becomes more difficult as financial liberalization is undertaken. In particular, countries attempting to maintain a fixed rate or a crawling peg often have to deal with the inconsistency between the foreign interest rate and the interest rate they would prefer from the domestic viewpoint. When a country is pursuing tight money to fight inflation, its domestic interest rates may well exceed foreign rates, even adjusted for expected exchange rate changes. The resultant capital inflows tend to offset the effects of the tight money. This is the capital inflows problem, which has affected several countries in this region.

It has to be recognized that countries with open capital accounts cannot insulate themselves from monetary conditions abroad. Nonetheless, there are ways of mitigating the capital inflows problem. The right way to deal with capital inflows depends on the source of the flows. If the capital inflow is caused by an increase in the demand for domestic money, it is easily handled in a fixed rate regime by allowing the money supply to expand. But there is no fully satisfactory answer to the capital inflows problem if it results from a decrease in foreign interest rates or a shift in the preferences of foreign investors. Sometimes currency appreciation will be advisable. Countries seeking to avoid appreciation have a number of possibilities. One route is through sterilized intervention, increasing foreign reserves while maintaining the money supply constant. That may be expensive, especially if domestic interest rates exceed foreign rates, as is inherent in the situation. Fiscal contraction is generally advised and advisable. Market-based policies to reduce the returns to foreign investors, such as increases in the reserve requirements on foreign-owned deposits, or taxes on their returns, have been used effectively for short periods in some countries.

An exchange rate peg may be used as a nominal anchor by a country stabilizing from high inflation. This approach was successful in Israel in 1985, Poland in 1990, and—with variations—in Brazil in 1994 and 1995; it is also being used by several other transition economies, among them Russia. Provided the peg is not maintained too long, this is a powerful tool to use in bringing about rapid disinflation.

Once a country has achieved low inflation, and provided it can keep fiscal discipline without the constraint of the fixed exchange rate system, it can move to a system that permits more exchange rate flexibility. However, governments cannot and should not give the markets the impression that the level of the exchange rate is of no concern.

But of course, a country in that situation can also maintain a fixed exchange rate. Which should it do? Exchange rate flexibility provides an added element of adjustment to internal and external shocks. In principle, that flexibility could also be provided by domestic wage and price flexibility. When the source of the disturbance is foreign, it is far simpler for the exchange rate to adjust rather than for a multiple of domestic prices to have to be adjusted. Exchange rate flexibility is thus likely to be preferable.

One popular and suspiciously neat formulation argues that as capital mobility increases, only the two extreme regimes, of pure floating or of truly fixed exchange rates, are viable. A currency board arrangement provides one example of a truly fixed rate regime, with the strongest of commitments to the exchange rate peg. Currency boards have operated well in several small countries, and very well in Hong Kong.^{15/} It is also often argued that recent Argentine experience, not least in 1995 when the currency peg was preserved, supports the case for currency boards.

The monetary theory of the currency board is exactly that of the gold standard. Provided the arrangement is credible, it brings the benefit of rapid convergence towards international inflation and interest rates, as can be seen in the Argentinean experience. But there should be no mistaking the severe demands a currency board puts on monetary policy: adjusting the monetary base one for one with the balance of payments can create major swings in the money supply.

It is sometimes said that the foreign currency reserves fully cover the domestic money supply under a currency board. However, the reserves necessarily cover only the money base. An increase in the demand for currency will force a contraction of the banking system in a strict currency board system, and that is why a currency board can put severe strains on the banking system. The strains are more difficult to deal with because there is no lender of last resort, unless the country has built up a large excess of cover for the domestic monetary base, as Singapore has.

A sharp way of describing the problem is to say that a currency board is a device that can turn a currency crisis into a banking crisis. The problem of the potential fragility of the domestic banking system under a currency board was not as clear in the nineteenth century, because the banks in currency board countries were typically part of the metropolitan power's financial system. A currency board would be much easier to operate if all banks were foreign, supervised by the monetary authorities of other countries, and with access to their lender of last resort facilities.

In sum, I advocate central bank independence, inflation targeting, with adjustments for supply shocks in recognition of the short-run tradeoff between inflation and unemployment, a target inflation rate of one to three percent, and with a downplaying of intermediate targets that are not strong indicators of future inflation or output. An exchange rate peg can serve a useful purpose for a country that is trying to reduce inflation to world levels, but overvaluation must be avoided like the plague. Once low inflation and fiscal discipline are assured, a country may benefit from allowing more exchange rate flexibility. The currency board system is the strongest form of commitment to a fixed exchange rate, but its gold standard monetary policy rules may put severe strains on the banking system. A currency board can work well if fiscal policy is highly responsible – or will become responsible as a result of the currency board, and if the commercial banks are international.

We move now to the second part of the lecture, on the soundness of the financial system.

^{15/} While Singapore has one currency board element in keeping full cover for the monetary base, the monetary system is not strictly speaking a currency board, for the exchange rate is not pegged against a foreign currency, and the Monetary Authority does not automatically follow the gold standard rules.

II. Financial system soundness

For almost four decades after World War II, there was not much need for anyone but central bankers and supervisors to pay attention to the banking system. Deposit insurance seemed to be doing its job of preventing bank runs, and regulators and regulations seemed to ensure that individual banks were acting prudently. Macroeconomists periodically returned to the question of what distinguished banks from other financial intermediaries, and whether it mattered, but no major changes in thinking about policies for promoting financial sector soundness resulted.

The problem of banking and financial system soundness has shifted to center stage in the last two decades.^{16/} The international debt crisis threatened the health of major money center banks, the U.S. savings and loan crisis demanded a huge injection of public funds, major banking crises erupted in Scandinavian countries, and more recently in Japan. Financial crises in some Latin American countries have been exacerbated by banking system weaknesses. In the transition countries, the need to recapitalize banks puts major strains on the budget, while the weaknesses of banking systems delays growth.

These financial system crises are not only costly for the economy, they also reduce the effectiveness of monetary policy. They are costly because the volume and efficiency of financial intermediation is reduced when banks are being closed on a large scale or are struggling to strengthen their portfolios. They impair the effectiveness of monetary policy because banks in trouble do not react appropriately to interest rate changes and because the central bank has to exercise caution in using monetary policy for fear of damaging fragile banks.

Domestic financial deregulation before adequate reform of prudential supervision and the regulatory framework is one major reason that financial crises have become more common. Financial innovation, producing new and little-understood instruments, outstripping the reach of the regulators, is another. External financial liberalization, the removal of capital controls, before the soundness of the domestic financial system and macroeconomic policy are assured, is a third factor in explaining crises.

In this era, as in earlier times, some banking system crises have been caused by the bursting of asset price bubbles. Inappropriate monetary policy may have contributed to the behavior of asset prices, but financial markets on occasion become carried away with enthusiasm. The worldwide real estate boom in the late 1980s was broken by higher interest rates, but with serious consequences for bank lending in the United States and especially Japan. There is no easy answer to the question of how to deal with asset price inflation: obviously monetary policy cannot remain indifferent when asset prices seem to be moving too fast, but it cannot be directed solely at maintaining the right level of asset prices.^{17/ 18/} One approach to dealing with asset prices that appear to be moving away from fundamental values is to use regulations to reduce the availability of credit for purchasing assets.

^{16/} For a practitioner's perspective, see McDonough (1996).

^{17/} This dilemma was also faced by the Federal Reserve in 1929, as U.S. stock prices continued rising at a time when economic activity was not booming.

^{18/} Some policymakers and economists believe that monetary policy should be directed at stabilizing the nominal price of gold, a belief I do not share.

The recent financial system crises as well as the process of deregulation have sparked a healthy and continuing reexamination of measures to prevent crises, and to respond to them when they do occur. I take up in turn crisis prevention and crisis response. Better regulation and supervision are key to prevention, and central bank cooperation has gone a long way in improving both. Regulation includes licensing requirements and the imposition of prudential standards. Supervision requires the monitoring and enforcement of these standards, a task that is rarely as easy as it sounds.

Given the complexity and the pace of innovation in modern financial markets, as well as the scope for and difficulty of detecting fraud or simply mismanagement, effective monitoring requires a constant process of probing, analyzing and questioning banks' activities and data. The direct resource costs can be large, and the appropriate quality staff scarce – even in the industrialized countries, but especially in developing countries. The burden can be eased somewhat through firm bank entry policies, but the supervisory challenge remains.^{19/} Supervisory authorities continue to seek better ways to monitor performance, some relying on markets, investors, and depositors to do part of the monitoring. It is fair to say, though, that we should never be confident that supervisory systems are adequate; this is an area where the IMF caution – complacency should be avoided – is certainly appropriate.

In seeking to prevent crises, central banks have also become increasingly concerned with the risks that arise in the payments system. Periodic net settlement systems may allow scope for major intraday, interbank exposures to go unmanaged, and even unrecognized. This is a potentially important channel through which difficulties in one financial institution can spread quickly to others through a payments default. The problem can be addressed in part by strengthening the legal framework that applies when it become necessary to unwind net payments.

More fundamentally, systemic payments risk can be contained either by strengthening risk management in net systems, or by introducing a real time gross settlement (RTGS) system, at least for large transactions. To the extent that the central bank provides intraday credit to prevent gridlock in an RTGS system, there are potentially extremely large exposures for the central bank itself to manage. Issues of pricing, collateralization, and credit limits become pressing, as reflected in recent changes under Fedwire in the U.S. for example.

At one time, deposit insurance was seen as a critical element in preventing financial crises. This view was based on a diagnosis that self-fulfilling bank runs were an important propagating mechanism in financial crises. Post-World War II experience has drawn increased attention to the moral hazards of explicit deposit insurance and the insurance implicit in the too big to fail doctrine. Accordingly formal deposit insurance is generally confined to individual depositors, up to a maximum. The implicit insurance coverage however remains, and there have been very few major bank failures in which depositors lost large sums of money – though depositors in some transition economies have taken relatively serious losses.

There is an important global perspective to the setting of prudential standards, to supervision, and the strengthening of payments systems. Differences among regulatory and insurance

^{19/} I will not go into the issue of whether the supervisory authority ought to be situated in the central bank or elsewhere; I regard the case for the central bank as stronger though not overwhelming.

frameworks can lead to arbitrage between systems (for instance, as in the development of the eurodollar market, and offshore banking centers). International harmonization and supervisory coordination has become increasingly important as political boundaries become less relevant to financial sector business, as global banking organizations have proliferated, and as economic integration has proceeded apace. In the payments area too, the need for harmonization and coordination has increased, not least because of the very large risks in foreign exchange settlement arrangements.

Major progress in coordination and harmonization of bank supervision has been achieved through the Basle Committee and the Concordat. The Basle standards are now applied in nearly 100 countries. At the same time, there have been parallel coordination efforts with supervisors of off-shore banking centers and, recognizing the increasingly fuzzy distinctions between banks and other financial institutions, with IOSCO and insurance supervisors. Coordination has further to go in these latter areas.

Gaps and differences among supervisory systems nonetheless remain, as demonstrated in several recent well-publicized cases. The need to deepen and especially to broaden international supervisory coordination is seen by many as one of the biggest immediate challenges for central banks. The IMF is willing to contribute, within the constraints of its limited supervisory resources, to furthering this process.

When crisis prevention fails, the central bank, as lender of last resort (LoLR) has an obligation to help deal with the consequences, at minimum current and future cost. Dealing with significant individual failures, or with groups of very fragile institutions, requires a well developed strategy. Intervention, in the form of closure, merger, or some form of rehabilitation, needs to be decisive and determined. Owners and managers of the failed institutions need to incur substantial losses. At the same time, the strategy should seek to ensure that the central bank is not drawn unnecessarily into lender of last resort financing of troubled banks and exposure to major credit risks. Rather the costs of any publicly-funded financial support should be borne and recognized explicitly, generally in the budget. These expenses may become very large when much of the banking system is affected. Generally, the budget is charged with the interest costs on the resources put into recapitalizing and restructuring financial institutions. The issue of limiting monetization may also arise when the central bank directly or indirectly funds payouts made through formal deposit insurance schemes.

In discussing the central bank's role as lender of last resort, it is important to distinguish between a system-wide crisis, and an individual bank problem. In the systemic case, no-one other than the central bank can provide additional base money quickly, in the event of a confidence-related shock to the demand for it. In this context, LoLR lending does not conflict with monetary policy objectives, since it is a response to a shift in the demand for money base. Here all Bagehot's maxims apply.

Where individual bank problems are the issue, there is no presumption that access to the central bank's LoLR facility is appropriate. If access is allowed, it should be well collateralized and at a penal cost, and the monetary injection needs to be offset through other operations. In practice, of course, the challenge for central bankers is to identify whether or not a problem is, or is likely to become, a systemic one; and if so, to judge how much overall liquidity conditions need to be eased and for how long. This problem was evident after the 1987 stock market crash.

III. Concluding comments

While important progress has been made -- and will continue to be made -- in dealing with some of the problems that have caused financial system crises in the recent past, there are underlying tensions and tradeoffs that need to be recognized.

First, the benefits of strengthened supervision need to be weighed against the costs. For instance, increasing capital requirements, or restricting entry, is likely to increase the customers' cost of borrowing. Not surprisingly, supervisors sometimes take different views about where the appropriate balance lies -- as witness the different views about the need for more direct regulation of derivatives transactions. These differences can complicate the task of international coordination.

Second, there is the related issue of incentive compatibility. A beneficial regulatory framework needs to strengthen market incentives in a way that contributes to achieving the objectives of the regulations, rather than inadvertently creating perverse incentives. The issue is how to enlist market discipline in support of the objectives of prudential policy. For example, the recent introduction of risk-adjusted deposit insurance premia in the United States reflects recognition of the perverse incentive problems that the previous framework created.

The moral hazard problem is a key aspect of incentive compatibility. The problem may arise even in countries without formal deposit insurance. The too big to fail presumption often lurks in the background -- and there is no question that large failures can create extremely difficult situations for governments and central banks. Hence the supervisor's prayer: let there be failures, but let them be small ones.

As a matter of principle, and in order to reduce moral hazard, owners and managers of large as well as small banks need to bear substantial costs when an institution fails. But policy and practice differ on the extent to which depositors/investors should also bear costs. Supervisors must be guided, and be seen and believed to be guided, by the principle of maintaining the integrity of the system as a whole rather than that of individual institutions.

Neither of these two issues -- the balancing of costs and benefits of supervision and regulation, and incentive compatibility -- can in any sense be solved. Rather, the central bank has to take them into account in each situation and as the economy evolves. No doubt, solutions such as narrow banking will continue to be proposed. But the narrow banking solution will not work, for the incentive for each narrow bank will be to shade at the edges and become a real bank. Further, it is not credible that the central bank will fail to come to the rescue of non-bank intermediaries if their failure threatens major financial disruption.

Financial innovation by the private sector, designed in part to avoid regulations, will not cease. Nor will the political pressures that emerge in any situation where so much is at stake as in the financial system.

Central bankers can rest assured of an interesting life, in which they will continue to have to deal not only with the challenge of fighting inflation, but also with the challenges to the health of the financial system created by financial innovation, incentive incompatibility, political pressure, fraud, mismanagement, and investor overexuberance, all within the context of a rapidly globalizing economy.

As they do so, they will hope that they too will one day be able to operate in a macroeconomic environment as successful as that of Singapore over the past 25 years -- but they will recognize that even in an environment as successful as this one, the challenges of maintaining financial system soundness will always be with us.

Thank you.

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