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A Framework for Independent Monetary Policy in China

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Abstract

This Working Paper should not be reported as representing the views of the IMF.

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

As China's economy becomes more market based and continues its rapid integration into the global economy, having an independent and effective monetary policy regime oriented to domestic objectives will become increasingly important. Employing modern principles of monetary policy in light of the current state of China's financial institutions, we motivate and present a package of proposals to guide the operation of a new monetary policy regime. Specifically, we recommend an explicit low long-run inflation objective, operational independence for the People's Bank of China (PBC) with formal strategic guidance from the government, and a minimal set of financial sector reforms (to make the Chinese banking system robust against interest rate fluctuations). We argue that anchoring monetary policy with an explicit inflation objective would be the most reliable way for the PBC to tie down inflation expectations, and thereby enable monetary policy to make the best contribution to macroeconomic and financial stability, as well as economic growth. The management and monitoring of money (and credit) growth by the PBC would continue to play a useful role in the stabilization of inflation, but a money target would not constitute a good stand-alone nominal anchor.

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I. INTRODUCTION AND OVERVIEW

As China's economy develops and becomes more market oriented, and as its integration with the world economy continues, monetary policy will need to shoulder an increasingly large burden in ensuring stable, noninflationary growth. Rising integration, for instance, implies greater vulnerability to external shocks, and monetary policy is typically the first line of defense against such shocks. Although deeper structural reforms may be the key determinants of long-term growth, monetary policy has an important role to play in creating a stable macroeconomic environment that is essential for those reforms to take root.

Monetary policy in China has in recent years operated under difficult constraints, including a fixed exchange rate regime, an underdeveloped financial system and numerous institutional weaknesses. Having an independent monetary policy is of course the first order of business. Maintenance of an exchange rate regime with limited de facto flexibility exposes the economy to significant risks of macroeconomic instability. While capital controls provide some room for maneuver for monetary policy even under such a regime, this room tends to be quite limited in practice and could result in inadequate control of investment growth and inflationary/deflationary pressures. Furthermore, the effectiveness of capital controls inevitably erodes over time as domestic and international investors find channels, including expanding trade, to evade them.

These considerations have led the authorities to initiate a move towards a more flexible exchange rate regime. On July 21, 2005, the renminbi was revalued by 2.1 percent relative to the U.S. dollar and it was announced that the value of the renminbi would henceforth be set with reference to a basket of currencies rather than having it pegged to the dollar. Since then, however, the renminbi has been maintained at a stable level relative to the dollar, indicating very limited de facto flexibility. Nevertheless, the authorities have clearly stated their intention to allow for greater flexibility over time.

An important consequence of the move towards a flexible exchange rate is the need to adopt a new nominal anchor and an associated strategy for monetary policy. In this paper, we make the case that China should adopt a low inflation objective as the new nominal anchor. Moreover, we conclude that, given the relative merits of an inflation objective and the potential problems associated with maintaining a fixed exchange rate, there are good reasons for China to adopt this new anchor expeditiously.

Theory and experience from around the world—from both advanced industrial economies as well as emerging market economies—suggest that making low inflation the main objective of monetary policy is the most reliable way to enable the People's Bank of China (PBC) to stabilize domestic inflation and employment against macroeconomic shocks. An inflation objective can accommodate fluctuations in productivity growth and changing relationships between monetary or credit aggregates and inflation, all of which are relevant considerations for a developing economy. It also has the virtue of easy communicability.

We are not advocating a full-fledged inflation targeting regime, although this could serve as a useful long-term goal. For an economy such as China that is undergoing marked transitions

in a variety of dimensions, there would be numerous impediments to effectively operating an inflation targeting regime. Our approach is more practical for the foreseeable future, and it should deliver most of the benefits of formal inflation targeting. In light of the changing structure of the economy and weaknesses in the monetary transmission mechanism, our framework could accommodate a continued role for the monitoring and management of monetary (and credit) aggregates by the PBC. But our view is that money would not constitute a good stand-alone nominal anchor since the changes in China's economic structure and financial markets imply that the rate of money growth consistent with a stable rate of inflation is likely to be highly variable.

Can this framework, which accords primacy to a low inflation objective, be reconciled with the broader mandate of the PBC? The PBC Law states that "Under the guidance of the State Council, the PBC formulates and implements monetary policy, prevents and resolves financial risks, and safeguards financial stability." And how would a low inflation objective be consistent with promoting sustained high employment growth, a key consideration for Chinese policymakers? Our response is that it is precisely by providing a firm and credible nominal anchor through a low inflation objective that the PBC can best contribute to overall macroeconomic stability, and best provide for sustained employment growth and financial stability.

Recent academic research and policy experiences lend strong support to this view. U.S. Federal Reserve Board Chairman Ben Bernanke has articulated a similar position. In his confirmation hearings before the U.S. Senate (Bernanke, 2005, p. 2), he said:

I view the explicit statement of a long-run inflation objective as fully consistent with the Federal Reserve's current policy approach, including its appropriate emphasis on the role of judgment and flexibility in policymaking. Most important, this step would in no way reduce the importance of maximum employment as a policy goal. Indeed, a key justification for this action is its potential to contribute to stronger and more stable employment growth by further stabilizing inflation and inflation expectations.

Although we are not advocating formal inflation targeting for China, some of the requirements of that regime are important for a low inflation objective as well. Principal among these is instrument (operational) independence for the central bank. This means that the PBC should have the authority and the capability to use its monetary policy instruments, e.g., bank reserves or an interest rate, to credibly anchor inflation and stabilize the macroeconomy in general. We do not believe that broader independence for the PBC is essential at this time, although the PBC must be empowered to build up institutional capacity necessary to support its monetary policy mission, and given the financial resources to do so. It is essential, however, that the Chinese government explicitly acknowledge its support for a low inflation objective as the nominal anchor for monetary policy.

What would it take to put in place a low inflation objective as an effective nominal anchor? Exchange rate flexibility is of course a prerequisite for an independent monetary policy oriented to domestic objectives. But a move towards greater exchange rate flexibility is

hardly the solution by itself. Indeed, enhancing the effectiveness of the monetary transmission mechanism poses difficult challenges independent of the constraints related to the exchange rate regime. Principal among these is the reform of the financial system, since it is through the banking system that monetary policy must influence economic activity.

The Chinese state-owned banking system has long labored under lending directives from the government. Progress has been made since the late 1990s in improving the commercial orientation of the banking sector, and significant strides have been made in improving banking supervision and regulation. But Chinese banks are still far from being robust commercially-driven financial entities. Given the dominance of the banking sector in China's financial landscape, this has important implications for monetary policy transmission.

The essence of the challenge is to transform the banking system from an off-budget arm of fiscal policy—which uses captive savings of households to support state enterprises, whether commercially viable or not—into a banking system that can direct credit prudently to its most valued uses given correct interest rate signals. Even in the best of circumstances, it will take years for China to put in place all of the components of a modern, efficient banking system. This is especially so when one recognizes that the transition process must be supervised and regulated with great care to preserve the public's confidence in the banks and guard against moral hazard problems associated with explicit or implicit deposit insurance provided by the government. Moreover, the consequences of the legacy of directed lending will inevitably complicate the transition.

Nevertheless, we believe that it is both feasible and desirable for China to put in place a minimal set of financial sector reforms and regulations that would enable it to adopt an independent monetary policy with low inflation as the nominal anchor. These reforms would be aimed at giving the PBC full control of its balance sheet so that the central bank could manage bank reserves solely for monetary policy purposes. The reforms and regulations would also need to ensure that banks could withstand the financial stress that results from fluctuations in interest rates necessary to stabilize the macroeconomy and maintain price stability. We believe that reforms could be put in place in the next few years to achieve these ends and serve as an adequate foundation for independent monetary policy.

Our proposal has three additional attributes. First, it would allow for continuity in the operational approach to monetary policy. The PBC could continue its current operations and gradually adapt its procedures to the pursuit of independent monetary policy as supporting reforms are put in place. Our proposal would mainly entail a shift in strategic focus to a well-defined inflation anchor. Second, under present circumstances, the shift to an inflation anchor would be seamless since it would involve merely locking in the current low rate of inflation. Third, the adoption of effective independent monetary policy would facilitate various reforms that have intrinsic benefits of their own. For instance, the resulting macroeconomic stability would facilitate the modernization of the financial system. In addition, the new policy regime would necessitate improvements in the statistical base that would enhance public sector transparency and encourage better communication about policy intentions.

Our main goal in this paper is to make the conceptual case for a low inflation objective as the nominal anchor for independent monetary policy in China. There are of course a number of important practical details that would need to be worked out, including the appropriate level and width of the target range for the inflation objective, the best method for communicating this objective, the appropriate measure of inflation to be used etc. Other than discussing some of these issues from an analytical perspective, we leave the specifics as open questions to be addressed in future work.

In the next section, we address a basic issue: why an inflation target is preferable to a fixed exchange rate or a stand-alone money growth target as the nominal anchor for monetary policy. In Section III, we use the modern theory of monetary policy to review the macroeconomic principles underlying the case for adopting an inflation objective as the nominal anchor. We explain why and how stabilizing inflation also stabilizes employment and allows an economy to grow at its potential. And we describe the mechanics by which monetary policy actions work to stabilize employment and inflation. In Section IV, we describe the institutional support that a central bank needs in order to implement independent monetary policy effectively.

In Section V, we describe the main features of current monetary and banking institutions in China in order to identify constraints in the Chinese financial sector that would impede the effective adoption of independent monetary policy. In Section VI, we lay out our proposal for China to adopt an independent monetary policy with low inflation as its nominal anchor. In particular, we recommend a minimal set of financial sector and other reforms that China could put in place in a few years to credibly sustain low inflation and enable monetary policy to make its maximum contribution to macroeconomic stability and economic growth. Section VII contains some concluding remarks.

II. LOW INFLATION OBJECTIVE AS NOMINAL ANCHOR

An inflation objective—an explicit or implicit long-run range for the inflation rate and an acknowledgement that low inflation is a priority for monetary policy—has emerged in recent years as the leading nominal anchor for monetary policy in practice around the world. We begin by reviewing the advantages of an inflation objective compared to its two leading competitors for nominal anchor—a fixed nominal exchange rate and a money growth target. Our reasoning applies equally well to emerging market economies such as China as it does to advanced industrial economies. Note that, for the purposes of this discussion, we have adopted an expansive definition of a low-inflation objective, encompassing full-fledged formal inflation targeting regimes (e.g., Canada and New Zealand) as well as implicit inflation targeting regimes (e.g., the United States).²

² See Bernanke and others (1999) for a discussion of inflation targeting around the world, and Goodfriend (2005) on implicit inflation targeting in the United States.

A. Disadvantages of Alternative Nominal Anchors

A fixed nominal exchange rate regime borrows the nominal anchor from abroad. When the nominal exchange rate is fixed, arbitrage in traded goods markets causes the domestic price level and inflation rate to move (on average over time) with those of the country to which the domestic currency is pegged. If the partner country anchors *its* price level or inflation rate, domestic inflation is well anchored, too. Otherwise, the fixed exchange rate system imports the variability in foreign inflation or deflation.

Even if foreign inflation remains low on average, the fixed exchange rate forces domestic policymakers to accept one of two unpleasant alternatives. Either domestic interest rates follow foreign rates closely, or the home country must impose controls on private international capital flows to try and insulate itself. There are problems with either alternative. In the first case, if home and foreign business cycles are out of phase, then the home country could import cyclically destabilizing interest rate policy actions. In the second case, capital controls provide room for monetary policy to move domestic interest rates somewhat independently of foreign interest rates. But controls impede the efficient flow of private international capital. And monetary policy directed at domestic employment and inflation objectives in the presence of a fixed exchange rate can result in a problematic accumulation or decumulation of foreign exchange reserves that threatens the viability of the exchange rate regime itself.³ Moreover, once the viability of a fixed rate regime is called into question, the expected returns to attacking the fixed rate make the regime susceptible to destabilizing speculative flows that are by then difficult to deter with capital controls.

For all of the above reasons, fixed exchange rate regimes have tended to be fragile in practice, even when supported by capital controls; and so a fixed nominal exchange rate has proven to be an unreliable nominal anchor for monetary policy (see Obstfeld and Rogoff, 1995).

What of a money growth target as the nominal anchor? Monetary targets were usefully employed by the U.S. Federal Reserve, among other central banks, to stabilize inflation in the 1970s and 1980s (see Goodfriend and King, 2005). And money growth targets continue to be employed productively by some central banks to help stabilize inflation. In the Eurosystem, for instance, the inflation objective is supplemented by a reference range for money growth. However, central banks in some countries with well-developed banking and financial systems, e.g., the U.S. Federal Reserve, employ interest rates to target low inflation, largely ignoring money growth in the process.

³ Excessive outflows can force a depreciation of the exchange rate unless domestic interest rates are raised to deter them. Excessive inflows create inflationary money growth unless they are sterilized or interest rates are cut to deter them.

It must be emphasized that the circumstances in which money can be ignored in the implementation of monetary policy are special. They are environments in which a central bank can reliably steer aggregate demand to credibly hit an inflation target by managing interest rates alone.⁴ Even in the United States, circumstances could arise—if interest rates were to hit the zero bound, or if inflation were to become high and volatile again—in which the Federal Reserve would need to utilize money targets to implement monetary policy. The latter circumstance would imply that inflation expectations had gotten out of hand, in which case the consequences for real interest rates of nominal interest rate policy actions would be difficult to predict.

Because money growth and inflation tend to be highly correlated in the long run, targets for deposits, bank reserves and the monetary base can still play a useful operational role in stabilizing inflation in countries with less developed financial systems and less reliable interest rate channels of monetary transmission. Nevertheless, developing economies, in particular, are subject to financial innovations that have the potential to substantially weaken the short-run relationship between monetary aggregates, on one hand, and economic activity and inflation on the other. Moreover, money growth targets must be adjusted from time to time in order to accommodate changes in potential output growth and trend velocity in order to sustain a low and stable rate of inflation. Thus, a money growth target would not by itself constitute a stable anchor for inflation expectations.

B. Country Experiences with Different Anchors

The long-standing attachment to fixed exchange rates in many countries probably resulted from the fact that alternative domestically-oriented nominal anchors—money growth or inflation objectives—require a competent central bank with operational independence sufficient to manage the nominal anchor credibly, as well as sound fiscal policies and exchange rate flexibility supportive of the nominal anchor. In developing countries with histories of high macroeconomic volatility, fixed exchange rates have also provided a clearly identifiable and easily communicable nominal anchor that has been regarded as a useful commitment device for policymakers.

As the fixed rate option came to be seen as unsustainable, however, more countries opted to do the hard work of building the infrastructure needed to support credible inflation objectives. It has taken considerable time, effort, and a commitment by political systems to develop both the government institutions and the degree of macroeconomic discipline required for such a domestic nominal anchor to be effective. The upshot is that numerous central banks around the world—e.g., the Eurosystem, the Bank of Japan and the Bank of

⁴ Of course, a central bank must support its interest rate policy actions with open market operations to accommodate the quantity of base money demanded along the chosen interest rate path. But the resulting path for base money need not play a causal role in the transmission of monetary policy.

England—now employ an explicit target range for inflation as the nominal anchor for monetary policy. Others, such as the U.S. Federal Reserve, anchor monetary policy with an implicit low inflation objective.

Where central banks have been given the necessary institutional support to stabilize inflation, they have been able to acquire an impressive degree of credibility for low inflation that has anchored inflation expectations firmly and thereby contributed importantly to stabilizing actual inflation (see, e.g., Bernanke et al., 1999; Goodfriend, 2005). Under such circumstances, an inflation objective appears to generate a virtuous circle of credibility. This is evident in the United States, where the Federal Reserve's implicit targeting of low inflation has made an important contribution to macroeconomic stability. The United States has had only two relatively mild recessions, in 1990-91 and in 2001, and two of the longest expansions in its history since inflation was stabilized in the early 1980s.

Other countries, including many emerging market and developing economies that adopted various forms of inflation targeting, have in general had similar positive experiences. In particular, the financial crises experienced by some emerging markets with fixed exchange rate regimes have led an increasing number of these countries to adopt some form of inflation targeting. As noted by Mishkin (2000), the advantages of inflation targeting that are particularly relevant for emerging market economies are the following: (i) a stable relationship between money and inflation is not critical to its success; (ii) inflation targeting is easily understood by the public and is transparent; and (iii) inflation targeting focuses the political debate on what monetary policy can (and can not) achieve in the long run and away from the temptation to use monetary policy to stimulate employment growth in the short run.

Mishkin emphasizes that the central bank must be given operational independence to achieve the credibility to make inflation targeting work well. He lists three major potential problems for inflation targeting in emerging markets; (i) inflation may be particularly hard to control because of relatively underdeveloped financial systems; (ii) inflation targeting requires fiscal policy to support the inflation target; and (iii) the exchange rate flexibility required for inflation targeting might be difficult for policymakers to allow.

Based on the experiences of a few inflation targeting emerging market economies, Mishkin concludes that these problems can be overcome in practice. Moreover, a large and growing formal empirical literature investigating the macroeconomic performance of emerging market economies under alternative monetary frameworks generally finds support for inflation targeting in practice.⁵ An important finding of Mishkin and Schmidt-Hebbel (2005), for example, is that the benefits of inflation targeting are larger once a country has achieved sufficient disinflation to make its inflation objective stationary. In the next section, we explain why the modern theory of monetary policy suggests that an inflation objective can be made to work well as the nominal anchor, as long as fiscal policy supports the inflation objective and the exchange rate is sufficiently flexible.

⁵ See, e.g., Jonas and Mishkin (2005) and IMF (2006). For a skeptical view, see Blanchard (2005).

III. PRINCIPLES OF MONETARY POLICY GEARED TOWARD TARGETING INFLATION

We now summarize briefly the *principles* of monetary policy geared toward sustaining an objective for low inflation.⁶ We explain why stabilizing inflation also stabilizes employment over the business cycle and accommodates economic growth. And we emphasize the complications and virtues of the fact that inflation targeting depends heavily for its effectiveness on the credibility of the central bank's commitment to low inflation. We use the principles of the modern theory of monetary policy to guide our discussion but emphasize that the concepts below are quite general and apply, at a basic level, even to a socialist market economy such as China.

The Fundamental Principle of Price Stability: The modern theory of monetary policy has at its core monopolistically competitive firms that set product prices at a markup over marginal production costs (wages and materials costs) that is expected to maximize profits over time. Firms consider changing product prices only if demand and cost conditions threaten to compress or elevate markups significantly and persistently relative to their profit-maximizing levels. For instance, firms consider raising product prices when strong aggregate demand increases the intensity of resource utilization, and thereby causes wages and materials costs to rise relative to prices. And firms consider cutting product prices when weak aggregate demand causes firms to relax resource utilization and thereby bid down wage and materials costs relative to prices.

Such reasoning yields the fundamental principle of price stability: Monetary policy geared toward sustaining low inflation must manage aggregate demand so that production costs (wages and materials costs) rise at the targeted rate of inflation—then firms will raise product prices at the targeted rate of inflation because they are confident that doing so will keep actual markups at profit-maximizing markups.

The Stabilization of Employment: The principle of inflation targeting given above has the important implication that monetary policy that targets inflation also stabilizes employment. The reasoning is as follows. First—an economy with a stable inflation rate must be one in which firms maintain their profit-maximizing markups on average, otherwise actual inflation would deviate from targeted inflation as firms attempted to restore their profit-maximizing markups. Second—an economy in which monetary policy sustains the profit-maximizing markup would operate as if firms sustained the profit-maximizing markup themselves, by adjusting product prices flexibly and continuously. Third—targeting inflation thus makes actual output conform to potential output, i.e., the level of aggregate output determined by supply factors in an environment of perfectly flexible prices. Fourth—this reasoning implies that monetary policy geared to targeting inflation yields the best cyclical stabilization of employment (Goodfriend and King, 1997; Woodford 2003).

⁶ This exposition draws on Goodfriend (2002) and Broaddus and Goodfriend (2004).

These points imply that even those who care mainly about the stabilization of employment can support a low inflation objective for monetary policy. But they also have the important implication that the best that monetary policy can do is to stabilize inflation; it should not be used to try to counteract fluctuations in output and employment that are due to shocks to productivity and other factors affecting aggregate supply.

Such reasoning assumes that all goods are produced by monopolistically competitive firms whose prices are relatively sticky. In practice, important products such as oil and food are produced and traded in highly competitive markets where shocks to supply and demand impact overall inflation directly. In order to stabilize overall inflation against a positive shock to the flexible-price sector, monetary policy would have to depress aggregate demand enough to prevent the overall inflation rate from rising, but it would then raise the markup and create an output gap in the sticky-price sector.

Thus, monetary policy would appear to face a trade-off between inflation and employment variability in the short run with respect to shocks to the flexible-price sector. However, the problem arises only if the central bank targets an overall inflation objective. It is sufficient to establish a nominal anchor for monetary policy to target an objective for low *core* inflation. In this example, the core inflation index would exclude oil and food prices. When an objective for core inflation is adopted as the nominal anchor, the economy can adjust to changes in relative prices of oil and food while core inflation and employment are both stabilized. This would, therefore, be a more stable nominal anchor than an overall inflation objective, especially at short to medium horizons, and serve as a better anchor for inflation expectations. Moreover, stabilizing core inflation and letting other prices adjust would make the economy operate most like a flexible-price economy.

The Accommodation of Productivity Growth: Any rate of productivity growth is compatible with a particular inflation objective. The logic is as follows. Production costs rise over time at the rate of wage inflation minus the rate of labor productivity growth. When actual markups are stabilized at profit-maximizing markups, firms are content to raise product prices at the rate of wage inflation minus the rate of labor productivity growth. Competition for labor tends to raise wages on average over time at the rate of labor productivity growth plus an adjustment for inflation. Hence, any rate of productivity growth is consistent with the maintenance of the profit-maximizing markup and the targeted rate of inflation on average over time.

The capability of a nominal anchor to accommodate high, and potentially highly variable, productivity growth is important for a rapidly developing country like China. The discussion above indicates that Chinese monetary policy can and should maintain a low objective for inflation even if productivity growth fluctuates over a relatively wide range.

The Prevention of Inflation and Deflation Scares: In addition to the direct benefits of an inflation objective described above, it can improve macroeconomic performance indirectly by tying down inflation expectations. Imperfect credibility for low and stable inflation makes

an economy vulnerable to fluctuating beliefs about inflation or deflation, which, in extreme cases, can take the form of inflation or deflation scares.⁷ For instance, inflation scares manifested in sharply rising long bond rates have destabilized the U.S. economy on many occasions. Moreover, they can be triggered by events beyond the central bank's control. For instance, the January 1980 inflation scare in the United States was triggered, in part, by the oil price shock and the Soviet invasion of Afghanistan; the 1983-84 U.S. inflation scare may have been triggered in part by the rising budget deficit; and the 1994 inflation scare may have been set off by doubts about congressional support for the policy tightening then being undertaken by the Fed. The United States experienced a mini-deflation scare in 2003 when, at its May meeting, the Federal Open Market Committee expressed concern that inflation might decline too far, saying that "the probability of an unwelcome substantial fall in inflation, though minor, exceeded that of a pickup in inflation from its already low level."⁸

What makes inflation and deflation scares destabilizing? Inflation scares present a central bank with a dilemma. Ignoring them encourages even more doubt about a central bank's commitment to low inflation. However, to restore credibility for low inflation, a central bank may have to tighten monetary policy aggressively to weaken aggregate demand, slow wage growth, and elevate markups above profit-maximizing markups to offset an inclination of firms to raise prices. In other words, when faced with an inflation scare, a central bank may have to push very hard—at the risk of precipitating a recession—in order to make sure that inflation doesn't spiral out of control. The Federal Reserve did exactly this on a number of occasions prior to and during the disinflation of the early 1980s (Goodfriend and King, 2005).

Deflation scares are equally problematic. Monetary policy can, in principle, fight a deflation scare by stimulating demand and recompressing markups relative to profit-maximizing markups. A deflation scare involves a different credibility problem, however—the possibility that interest rate policy might be immobilized at the zero bound before deflation can be deterred, and that the central bank might be unwilling or unable to act against deflation with unconventional monetary policy at the zero bound. Moreover, a policy vacuum at the zero bound could encourage ill-advised fiscal policy actions. Some fiscal actions, such as money-financed government budget deficits, might be desirable under extreme circumstances (Svensson, 2003). But others such as wasteful spending, distortionary credit subsidies, or

⁷ Goodfriend (1993) and Goodfriend and King (2005) document how inflation scares have destabilized the U.S. economy in the past. On the flip side, credibility for low inflation achieved by the Greenspan Fed played an important role in holding down actual and expected inflation on three occasions since the mid-1990s—when the unemployment rate dropped to 4 percent during the late 1990s, when the Fed cut interest rates from 6 ½ percent to 1 ¾ percent to fight the recession in 2001, and when energy prices rose sharply in 2004-5.

⁸ Although inflation in China has been reasonably stable of late, China's earlier experiences suggest that it is potentially susceptible to both inflation and deflation scares. For instance, the Chinese economy endured a burst of high inflation in 1994-5, when inflation exceeded 20 percent (Figure A1). The economy experienced deflationary episodes in 1998-99 and 2002.

inefficient forbearance in the banking system, would not be. The government might resort to off-budget policies such as anti-competitive measures to support wages or prices in favored sectors. Such actions can lower potential GDP substantially, and appear to have done so during the Great Depression of the 1930s in the United States (Cole and Ohanian, 2001).

The threat to potential output exacerbates a deflation scare by lowering future income prospects and causing households and firms to cut current spending, which reduces labor demand, lowers wages, and elevates markups further. Thus, a deflation scare is problematic because, like an inflation scare, it has the potential to lead to a protracted recession.

The Importance of Credibility for Low Inflation: The above discussion makes clear that inflation targeting depends heavily for its effectiveness on the credibility of the central bank's perceived power, will, and competence to maintain low and stable inflation. The reliance on credibility is both a complication and a virtue. It is a complication because a monetary policy regime geared to targeting low inflation needs substantial institutional support to guarantee the credibility of the central bank's commitment to low inflation. In addition, a country must have in place a fiscal policy regime which is not expected to need or resort to inflationary finance in the future.

However, once credible institutional support for inflation targeting has been created, the reliance on credibility is a virtue. If the public believes that the central bank has the power and the scope to use monetary policy to maintain stable inflation, then firms will be inclined to keep price adjustments on target because they will regard any deviations of actual markups from profit-maximizing markups as temporary. In other words, firms will believe that such deviations would soon be reversed by monetary policy actions, if need be. Thus, credibility for low inflation tends to be self-enforcing to a considerable extent. Credibility buys time for a central bank to recognize and counteract threats to price stability. Inflation and deflation scares are less likely. With credible institutional support in place, markets tend to be relatively forgiving of temporary tactical policy mistakes that may be committed by a central bank as it acts to stabilize inflation.

IV. INSTITUTIONAL SUPPORT FOR INDEPENDENT MONETARY POLICY

A variety of institutional preconditions are needed to support *operating procedures* to enable a central bank to pursue independent monetary policy with a low inflation anchor. We discuss the most important of these arrangements, which involve the central bank, commercial banks, and the exchange rate regime.

Central Bank Instrument Independence with Strategic Guidance: A central bank must have *instrument independence*—the authority and will to use its policy instruments to act quickly and decisively in response to incoming data—to maximize the potential for monetary policy to stabilize inflation, inflation expectations and employment, and to ensure financial market stability. In particular, a central bank must be prepared to move short-term interest rates aggressively over a large range if necessary. Furthermore, a central bank must be able to act quickly and decisively with its policy instrument to prevent financial market shocks

from destabilizing employment and inflation. Even in the United States, which has maintained low inflation consistently for two decades now, the Federal Reserve has had to allow short-term interest rates to fluctuate in a wide range to maintain low inflation.⁹

In order for monetary policy to consistently preempt fluctuations in inflation around an inflation objective, a central bank must utilize modern statistical techniques together with comprehensive, timely and reasonably accurate statistical indicators of macroeconomic conditions to guide its policy actions. A central bank needs reliable measures of inflation itself, as well as indicators of the direction of pressures on future inflation. The theory of monetary policy described above and the practical experiences of central banks such as the Federal Reserve suggest that such indicators could include aggregate price markups, estimates of the gap between actual and potential output, estimates of capacity utilization in the manufacturing sector, measures of employment growth relative to estimated trend labor force growth, and indicators of inflation expectations. In general, to guide monetary policy, it would be helpful to keep track of the growth of financial aggregates such as the monetary base, bank reserves, bank deposits and loans against estimated growth rates believed to be consistent with low inflation. Moreover, a central bank must develop techniques to produce efficient conditional forecasts of inflation and output to inform policy decisions.

Finally, the government should grant the central bank instrument independence with strategic guidance directing monetary policy to be used flexibly to stabilize employment and financial markets, subject to inflation remaining in or near an explicit low inflation objective. A public understanding of the commitment to low inflation is necessary to assure its credibility. The credibility of that commitment requires central bank instrument independence to achieve it, the government's agreement to support it, and a role for oversight by government and markets to hold the central bank accountable for carrying it out.

Central Bank Control of Bank Reserves: As a mechanical matter, monetary policy is implemented by managing the aggregate supply of bank reserves, which are deposits of commercial banks at the central bank. These include required reserves plus any excess reserves beyond those that satisfy reserve requirements. A central bank creates aggregate bank reserves by purchasing private securities or other assets, by making loans to commercial banks or other entities, or by making net purchases of outstanding central bank bills or government bonds. Conversely, a central bank drains reserves from the banking system by reversing the above transactions.

⁹ Since the mid-1980s, the federal funds rate policy instrument ranged from a high of nearly 10 percent, to resist rising inflation in early 1989, to a low of 1 percent to preempt deflation in 2003. Moreover, the Fed has had to move interest rates aggressively on a number of occasions. For instance, in order to preempt rising inflation during 1994, the Fed raised short rates by 3 percentage points. The Fed lowered short rates in 2001 by 4 ¾ percentage points to cushion the recession. On two occasions in particular, after the October 1987 stock market crash and the 2001 terrorist attacks, the Fed had to cut the federal funds rate aggressively on very short notice to stabilize financial markets.

A central bank must have *full* control of aggregate bank reserves to stabilize inflation expectations credibly. Control of bank reserves is *necessary* because a central bank must manage aggregate demand over the business cycle by manipulating the supply of bank reserves. To offset weakness in aggregate demand, a central bank must increase the growth of bank reserves. The excess supply of bank reserves encourages borrowing and spending by stimulating bank lending, putting downward pressure on interbank interest rates, and inducing banks to cut loan rates. To offset excessive strength in aggregate demand, a central bank must reduce the growth of bank reserves. Excess demand for bank reserves slows borrowing and spending by restricting bank lending, driving up interbank interest rates, and inducing banks to raise loan rates.

A central bank's control of bank reserves is compromised when it is obliged to acquire or sell assets for reasons other than managing aggregate bank reserves to stabilize inflation. In general, there are three reasons why a central bank might have to do so: (i) it might be directed to buy government debt, i.e., to finance a government deficit in whole or in part with newly created bank reserves; (ii) it might be directed to lend to banks, non-financial firms, or state enterprises; or (iii) it might be obliged to buy foreign assets to support a managed or fixed exchange rate. For instance, when a nation such as China chooses to manage its foreign exchange rate within a tight range, the central bank must accommodate the market's excess demand or supply of foreign exchange at the stabilized exchange rate by creating or draining bank reserves.¹⁰

It may be possible for the central bank to offset, or sterilize, the effect of the required asset action on aggregate bank reserves by taking an opposite asset action with another asset or liability on its balance sheet. For instance, a central bank could sterilize purchases of foreign exchange by selling central bank bills. Sterilization of foreign exchange flows, however, leaves the exchange rate and domestic interest rates unaffected, and does little to reduce the incentives that gave rise to the foreign exchange flows in the first place. Even when supplemented with capital controls, sterilization of inflows typically leads to rising quasi-fiscal costs or other implicit costs associated with financial repression. And the buildup of foreign exchange reserves exposes the central bank balance sheet to risks of capital losses associated with exchange rate and interest rate fluctuations (see Appendix I).

To reiterate, the central bank needs to be free of any significant obligations that compromise its ability to manage aggregate reserves to stabilize inflation. In particular, monetary policy credibly geared toward targeting low inflation must be accompanied by a willingness on the part of the government and the public to allow a substantial degree of flexibility in the foreign exchange rate, so that exchange rate adjustments, and not central bank purchases and sales of foreign assets, can allow the foreign exchange market to clear.

¹⁰ We follow the usual presumption—that the demand for currency is unaffected by capital flows—so that unsterilized purchases or sales of foreign exchange by a central bank show up as changes in bank reserves.

Financial Robustness of the Banking System: Even if a central bank has full control of aggregate bank reserves, it must be *willing* to use its control of bank reserves to move short-term interest rates in a relatively wide range, aggressively at times, to sustain credibility for low inflation in order to implement monetary stabilization policy effectively. An inclination to *smooth* short-term interest rates to cushion the banking system against financial stress would compromise the central bank's ability to manage aggregate demand to sustain low inflation, severely undermine the credibility of its inflation target, and destabilize employment and inflation over the business cycle.¹¹

The banking system must be *financially robust* to fluctuations in short-term interest rates so that the central bank is willing to move short-term interest rates as needed to manage monetary policy effectively. The banking system must be sufficiently robust to deliver payments services consistently. Banks must maintain the confidence of depositors, and banks must have cash flow from earnings to pay interest sufficient to retain depositors when interest rates on alternative investments move up. Even if a country has in place credible deposit insurance that protects the viability of the banking system, a central bank might be reluctant to make full use of its instrument independence against inflation if raising interest rates triggers cash flow problems for banks, with the potential to precipitate a public sector bailout. Thus, it is essential for the credibility of monetary policy geared to targeting low inflation that financial vulnerabilities of the banking system to high interest rates and to large fluctuations in interest rates be corrected.

Other aspects of financially robust banking are also relevant for the ability of banks to withstand large fluctuations in short rates without endangering financial stability. Banks must be well supervised and regulated, especially to mitigate the moral hazard problems associated with deposit insurance. They must also be well capitalized so that bank managers have a strong incentive to see that deposit funds are loaned or invested prudently. Only when these conditions are satisfied will a central bank be willing to stick to a path for bank reserves consistent with its inflation objective regardless of the consequences for interest rates. And only then can monetary policy geared to targeting inflation be fully credible.

Finally, assuming that banks are well capitalized, managed, and regulated so that they lend funds prudently, rates on bank deposits and loans as well as non-bank money market instruments should be deregulated and free to reflect the cost of loanable funds in the interbank market. This would broaden the channels by which monetary policy is transmitted to the economy. For instance, an increase in the interbank rate due to a tightening of reserve conditions should be reflected in an increase in deposit rates and loan rates. Beyond spreading monetary transmission more broadly, flexible interest rates would minimize disruptions in banking and credit flows that would otherwise occur because rigid interest rates caused disintermediation in certain credit markets.

¹¹ See Goodfriend and King (2005). Poole (1978), pp. 105-10, describes how interest rate smoothing contributed to the destabilization of inflation and output in the United States in the 1960s and 1970s.

V. MONETARY AND BANKING INSTITUTIONS IN CHINA

In this section, we present a broad overview of current monetary and banking institutions in China in order to assess the adequacy of the Chinese financial system to support independent monetary policy. The Chinese economy is becoming increasingly developed and market-oriented, necessitating a shift from inflexible direct methods of allocating credit and implementing monetary policy, to flexible indirect methods using a liberalized banking system and the management of bank reserves by the central bank. Yet, the tightly managed foreign exchange rate has subjected the economy to enormous capital inflows in recent years that threaten to overwhelm the PBC's control of aggregate bank reserves. And in spite of the recent recapitalization of many banks, the legacy of directed lending continues to weaken the banking system financially. We describe below the transformation of the Chinese financial system in recent years, with particular emphasis on aspects of the system that will command our attention in Section VI, where we propose a package of reforms that would enable China to adopt an independent monetary policy.

A. The Banking and Financial Systems

The financial landscape in China is dominated by the state-owned banking system.¹² The stock and bond markets have rather limited roles. Total deposits in the banking system amount to about 160 percent of GDP, compared to an outstanding stock of government debt of about 25 percent of GDP (Figures 1 and 2). The corporate bond market is small and the stock market is relatively thin as well. With only a small number of enterprises permitted to list and about two-thirds of shares in listed enterprises held by the state and not traded, the stock market does not play a major role in intermediating household saving into corporate investment.¹³

The banking system has been dominated by four large state commercial banks (SCBs) that together account for more than half of the total assets of the banking system (56 percent as of end-2005; this share has been declining in recent years). The joint stock commercial banks (JSCBs) have expanded the size of their balance sheets quite rapidly in recent years and now account for about one-fifth of total banking system assets. A few policy banks such as the China Development bank have explicit directed lending mandates. The banking system is

¹² Allen, Qian and Qian (2005) argue that there is also a large unregulated informal financial sector that plays an important role in financial intermediation in China.

¹³ The PBC's Monetary Policy Report for the fourth quarter of 2005 notes that, of the funds raised in the domestic financial market in that quarter, bank loans account for 78 percent, corporate bonds and stocks account for about 6 percent each, and the rest are government securities. This represents a significant change relative to even the first quarter of 2005, when bank loans accounted for as much as 89 percent and corporate bonds and stocks for only about 1 percent. The government has initiated efforts to reduce the number of nontraded shares and improve the functioning of equity markets.

rounded out by a number of smaller banks, including rural and urban credit cooperatives (see Barnett, 2004, for a fuller description of the structure of the Chinese banking system).

During the 1980s and through the late-1990s, Chinese banks, including the SCBs, were provided explicit official guidance on their lending operations. This approach of “directed lending” favored large state-owned enterprises (SOEs). Such SOEs were seen as important not only for employment generation but also because—by providing benefits such as housing, education, health and pensions to their workers—they served an important role in the delivery of social services. The availability of such directed lending meant that commercially unviable enterprises could continue getting funding for working capital and even for new investments.

The policy of directed lending was terminated around 1998. However, the legacy of directed lending stayed with the banks in the form of nonperforming loans (NPLs). Estimates of the stock of NPLs in the banking system vary across a wide range and are subject to numerous measurement problems (see Barnett, 2004). But the recognition that the stock was large and a major hindrance to banking reforms led to a carve-out of some NPLs from the SCBs to asset management companies (AMCs) earlier this decade. These AMCs have had a relatively low cash recovery rate on these NPLs (on average about 20 percent of the nominal loan amounts), indicating the poor quality of the underlying assets.

More importantly, the blunt tools available for controlling credit growth—including ceilings on total loan growth at each bank—and the strong signal that banks should reduce NPL accumulation may in fact have had perverse effects on the quality of lending. These factors may together have provided an incentive for banks to continue rolling over loans to SOEs, even unviable ones, in order to prevent those loans from appearing as NPLs. At the same time, profitable SOEs are not required to pay dividends to the state and, therefore, have had an incentive to plow their retained earnings back into new investments. Thus, price increases and rising profitability in some sectors, in addition to the availability of cheap bank financing, appear to have fueled the recent investment boom. The high level and sectoral concentration of investment may both presage the build up of excess capacity in some sectors, which in turn could lead to a resurgence of NPLs over the next 2-5 years (Goldstein and Lardy, 2004).

Recognizing these potential problems and the need for a robust financial sector, the Chinese authorities have redoubled their efforts on banking sector reforms in the last 2-3 years. Most of these reform efforts to date have focused on three of the SCBs—Bank of China (BOC), China Construction Bank (CCB) and Industrial and Commercial Bank of China (ICBC). An important part of this process has been to invite foreign strategic investors to take equity stakes in these banks, in the hope that this will expedite improvements in corporate governance and lead to transfers of managerial and risk-management expertise (see Hope and Hu, 2005). Each foreign strategic investor is permitted to hold up to a 20 percent equity stake in a bank, with a cap of 25 percent on the total equity stakes of all such investors.

To make progress on bank restructuring and entice foreign strategic investors, large amounts of NPLs have been transferred from these banks to asset management companies. The PBC,

through a holding company called Central Huijin Investment Company, has infused capital (using portions of the stock of foreign exchange reserves) into these banks. As a consequence, these banks already meet or are close to meeting the threshold capital adequacy ratio of 8 percent, with provisioning for loan losses. These banks are also being permitted to do IPOs abroad in order to strengthen their capital bases. CCB has already had a successful IPO in Hong Kong SAR, and the other two banks are also expected to do IPOs in the near future.

In sum, these three SCBs are in much stronger shape financially than they were a couple of years ago. Whether these banks now constitute efficient financial intermediaries is a different matter, of course. On that score, as discussed elsewhere in this paper, progress has been quite limited. A similar picture is true of the banking system at large.¹⁴

B. Monetary Policy Implementation

The primary instruments of monetary policy used by the PBC are open market operations, changes in the discount rate, and reserve requirements, aided and abetted by “window guidance” to banks on their lending operations.¹⁵ Xie (2004), following Yi (2001), classifies central bank lending, interest rate policy (which includes interest rates on PBC lending and reserves held at the PBC, as well as other rates including banks’ base deposit and lending rates), and open market operations as the main instruments. He refers to reserve requirements, the rediscount rate, instructive credit plans, credit policy, and window guidance as complementary instruments.

Xie (2004) also indicates that the monetary base is the operational target and the money supply is the intermediate target. More recently, the PBC has been using growth rates of both money and bank lending as explicit intermediate targets. The relationship of these aggregates to real activity has not necessarily stayed stable over time. Furthermore, there has been a trend decline in velocity, with the growth rate of M2 consistently being a few percentage points higher than nominal GDP growth over the last few years, complicating things further. Yet, targets for money and credit growth have become an important device for the PBC to signal its monetary policy intentions.

¹⁴ Under WTO accession commitments, foreign banks will be allowed to enter China at the end of 2006. Although the degree of penetration by foreign banks is likely to be limited in the foreseeable future, the Chinese authorities are using this date as a deadline for all banks to meet a number of objectives, including benchmark capital adequacy ratios and improvements in governance indicators.

¹⁵ A telling (and probably slightly unfair!) indication of the importance accorded to such non-market based and non-prudential measures to control credit growth is a sub-heading in the chapter on Monetary Policy Conduct in the PBC’s 2004Q2 Monetary Policy Report (page 44). It reads: “Moral suasion intensified to guide credit structure optimization.”

Reserve requirements have recently been used quite extensively as a monetary policy instrument. The required reserve ratio (ratio to a bank's deposits) was reduced from 13 percent during the early 1990s to 8 percent in 1998 and to 6 percent in 2000, in part to allow banks to better manage their funds (Figure 3a). This ratio was raised to 7 percent in September 2003 and further to 7.5 percent in April 2004, as part of a series of measures intended to control lending growth amidst concerns about the rapid pace of credit growth and potential overheating in the economy.

In addition to changes in reserve requirements, differentiated reserve requirements were introduced in April 2004. This affected second-tier banks, including the joint stock commercial banks that had accounted for a significant part of the surge in lending growth in 2003. Those banks in this category that did not meet certain standards in terms of the quality of their loan portfolios and capital adequacy were subject to a reserve requirement of 8 percent, half a percentage point higher than the standard required reserve ratio. Rural and urban credit cooperatives were exempt from this higher reserve requirement.

One complication in using the reserve requirement ratio as an active instrument of monetary policy is that the state banks, especially the SCBs, have tended to maintain substantial excess reserves at the PBC. A portion of these excess reserves is believed to be used for interbank settlement and liquidity management purposes, but it is difficult to discern how large the banks' perceived need for excess reserves for this purpose is. The PBC clearly has a concern that a significant amount of excess reserves makes the banks less sensitive to changes in its policy interest rates in the interbank market. This led the PBC to reduce the rate of remuneration on excess reserves to 1.62 percent in December 2003 and to 0.99 percent in April 2005 (compared to the unchanged rate of 1.89 percent on required reserves; Figure 3b).

In recent years, the amount of excess reserves maintained by banks (in percent of total bank deposits) has declined from 7.3 percent at the end of 2000 to about 4 percent in March 2005 (Figure 3a). At that time, excess reserves were on the order of 4 percent for the SCBs, 5.3 percent for the JSCBs and 5.6 percent for the RCCs. This still suggests a fairly high level of liquidity in the banking system. Notwithstanding the availability of all this liquidity and the low interest rate on excess reserve holdings at the PBC, the lending behavior of the banks, especially the SCBs, has been held in check partly due to their objective of meeting mandated capital adequacy requirements (8 percent) by 2007.

The PBC has been trying to build up the interbank market and improve its effectiveness as a channel for the transmission of monetary policy. However, the existence of substantial excess reserves undermines the predictability of monetary policy actions on reserve pressures. For instance, in October 2003, a modest change in reserve requirements caused the SCBs to build up excess reserves in anticipation of further increases in reserve requirements as the PBC sought to aggressively tighten credit. Consequently, there was a sharp spike in interbank rates as the smaller banks, especially the JSCBs, sought funding from the interbank market.

Another problem is that firms besides banks—securities firms and nonbank finance companies—operate directly in the interbank market (Green, 2005). These companies are not

as well regulated as banks and may pose a risk to the resilience of the interbank market. In any event, the interbank market has expanded rapidly in recent years, with the transaction volume rising from about 1 trillion yuan in 1999 to 23 trillion yuan in 2005. In recent years, repurchases have accounted for around two-thirds of these transactions and interbank borrowing for about a quarter of the transactions (PBC's Monetary Policy Reports).

A further challenge faced by the PBC is that liquidity management is complicated by unpredictable seasonal fluctuations in government deposits maintained at the PBC (Figure 4). Tax and other revenue collections during the year typically lead to a buildup of deposits over the course of the year. These deposits are generally withdrawn towards the end of the year to finance various expenditure obligations (withdrawals for public investment, in particular, tend to be concentrated towards year-end). This introduces strong seasonal components—whose magnitudes can be unpredictable—in government deposits at the PBC.

In addition to its policy rate (rediscount rate) that affects the interbank market, base deposit and lending rates of the state banks have traditionally been set by the PBC with prior approval of the State Council. More recently, the PBC has been afforded some independence to change the floating bands around the base rates that provide some degree of flexibility to banks in setting deposit and lending rates. Interest rate liberalization has proceeded in steps over the last couple of years. On January 1, 2004, the PBC increased the flexibility in the rate for loans to the private sector to 0.9-1.7 times the base rate for commercial banks and urban credit cooperatives and 0.9-2.0 times the base rate for rural credit cooperatives. Financial institutions were also given the freedom to determine lending rates for individual borrowers based on their risk profiles and other characteristics, rather than being constrained by guidelines on pricing loans related solely to size and ownership structure of borrowers.

Interestingly, banks seem to have taken only limited advantage of this added flexibility in lending to the private sector. A survey conducted by the PBC for its 2004Q3 Monetary Policy Report (Table 2 of that report) reveals that, in the first three quarters of 2004, about half of all loans were made at or below the base lending rate. The state commercial banks, in particular, priced two-thirds of their loans at or below the base rate and did less than 5 percent of their new lending at more than 1.3 times the base rate. A possible explanation is that the degree of flexibility in lending rates may simply not have been sufficient to compensate banks for lending to private sector firms, whose loans are inherently riskier than those made to state-owned enterprises.¹⁶ The regional commercial banks and rural credit cooperatives, on the other hand, made better use of this flexibility, pricing 66 percent and 93 percent of their loans, respectively, above the base rate.

On October 29, 2004, the ceiling on lending rates was scrapped altogether (except for urban and rural credit cooperatives).¹⁷ The subsequent widening of the gap between the base

¹⁶ Bad loans to SOEs are more readily forgiven than bad loans to the private sector.

¹⁷ See Dunaway and Prasad (2004) for an assessment of the potential benefits of this policy shift.

lending rate and the actual lending rate (a weighted average based on loan volumes) indicates that banks are beginning to use this margin (Figure 5b). However, there is still little evidence that the SCBs, in particular, are using this flexibility to substantially redirect lending to the private sector at higher interest rates. A survey in the 2005Q4 Monetary Policy Report, like the one noted above for 2004, reveals a similar picture in terms of the pricing of loans by different types of banks.¹⁸ This could in part reflect concerns banks have about their own risk-assessment capabilities, especially in an environment where there is still strong pressure to avoid accumulation of new nonperforming loans (NPLs). A less benign explanation is that banks are responding to an informal incentive structure that remains unchanged—loans made to state enterprises are still regarded as less risky in terms of reputational costs to bank managers and loan officers, while loans made to private sector enterprises that become nonperforming could entail charges of incompetence or corruption.¹⁹ Deficiencies in the legal framework may also play a role. Weak legal protection means that collateral provisions are difficult to enforce, so lending to the private sector carries additional risks.

Along with the liberalization of lending rates, banks were given more freedom to make downward adjustments to deposit rates. The maintenance of a floor on lending rates and a ceiling on deposit rates appears intended to ensure that competition among banks does not drive down margins, which are seen as essential to maintain bank profitability and enable them to fortify their balance sheets by using profits to write off loan losses (Figure 5a).

C. The Exchange Rate Regime

Since 1995, the renminbi has been maintained at a fixed parity relative to the U.S. dollar. This regime was officially classified by the authorities as a managed float since the rate could in principle move by 0.3 percent around this parity. In practice, the rate remained essentially fixed at the central parity. The number of participants in the foreign exchange market, the China Foreign Exchange Trading System (CFETS), was limited to a handful including some of the SCBs. In fact, these banks acted as clearing agents for many of the trades that they settled directly without the transactions ever reaching the CFETS. This kept the foreign exchange market relatively thin and underdeveloped. But it also made the mechanics of

¹⁸ There has been some recent improvement in this dimension, even among the SCBs. In the fourth quarter of 2005, the share of loans priced at or below the base rate was down to three-fifths, while the share of loans priced above 1.3 times the base rate rose marginally to 6 percent.

¹⁹ Podpiera (2006) examines lending growth, credit pricing, and regional patterns in lending to look for evidence of changes in the behavior of SCBs following recent reforms and strengthening of their balance sheets. He concludes that the pricing of credit risk remains rather undifferentiated and that SCBs do not appear to take enterprise profitability into account when making lending decisions.

tightly managing the exchange rate easier for the PBC since it could correct any deviations from the central parity relatively quickly and easily.

On July 21, 2005, the renminbi was revalued by 2.1 percent relative to the U.S. dollar and the government announced that the external value of the renminbi would henceforth be set with reference to a basket of currencies, although neither the currency composition of the basket nor the basket weights have been publicly disclosed. The new regime also allows for fluctuations of up to 0.3 percent around the reference rate against the U.S. dollar. In principle, this could mean that the exchange rate is allowed to drift up (or down) by 0.3 percent each day, which could amount to a significant appreciation (or depreciation) over a period of time. In practice, however, the renminbi has barely moved against the dollar since July; its lack of movement is also not consistent with variations that may have been expected based on various plausible assumptions about the currency composition of the reference basket.

This rigidity of the exchange rate has important consequences for monetary policy. It has obviously constrained monetary policy independence by making it difficult for the PBC to use interest rates as a monetary policy instrument to meet domestic policy objectives. The existence of capital controls, even though they may not be fully effective, implies some room for monetary policy independence. In practice, however, interest rate changes are tightly restricted by the financial repression and capital controls needed to keep banks solvent.

The complications created by a fixed exchange rate have been most evident in the remarkably rapid build-up of international reserves since 2001, when the renminbi began to come under appreciation pressures (Figure 6). Gross international reserves stood at 890 billion U.S. dollars at the end of 2005.²⁰ The spike in the pace of reserve accumulation during 2001-04 is largely attributable to a surge in speculative capital inflows (through both official and unofficial channels; see Prasad and Wei, 2005), although a rapid expansion in the trade surplus seems to have become a more important factor during 2005. During 2005, reserve accumulation has averaged about \$17 billion a month.

Until 2002, government bonds had been used as the primary instrument for sterilization of foreign inflows. Some conversion to central bank bills (PBC bills) took place in late 2002, when the stock of government bonds available for repo transactions shrank to very low levels. The first full-fledged auction of new PBC bills took place in May 2003. PBC bills have now become the primary instrument for sterilization of capital inflows and, with the surge in inflows, the stock of outstanding PBC bills has increased rapidly (Figure 7).

²⁰ This is higher than the official figure of \$819 billion at end-2005, as it includes the reserves used for recapitalization of the SCBs—\$45 billion in December 2003 (Bank of China and China Construction Bank; \$22.5 billion each) and \$15 billion in April 2005 (Industrial and Commercial Bank of China). It also includes \$5 billion transferred to the Export-Import Bank in September 2005 and \$6 billion worth of foreign exchange swaps that the PBC conducted with domestic banks in November 2005.

The fraction of reserves sterilized by the central bank has varied over the last few years and it is not straightforward to assess exactly how much sterilization has taken place.²¹ By and large, the PBC seems to have had little trouble soaking up liquidity using PBC bills. While a few analysts have taken the low levels of sterilization as signaling, at least in some periods, potential problems in sterilization operations, this is far from obvious. The rate of credit growth has, after all, come down significantly relative to the very high growth rates observed in 2003-04. Furthermore, the interest rate on PBC bills remains quite low.

A confluence of forces appears to have made sterilization operations relatively easy to carry out. Saving rates continue to be very high; corporate saving, in particular, has increased sharply over the last year. Most of these savings invariably flow into the banking system since there are few alternatives. This has made the banks flush with liquidity, particularly at a time when they are under pressure to hold down growth in credit. As noted above, the SCBs are also aggressively trying to improve their balance sheets, including in terms of meeting capital adequacy norms set by the government, in order to attract strategic investors and make a case for doing IPOs. In this context, banks have an incentive to hold PBC bills rather than increase their lending since corporate lending, for instance, carries a capital requirement of 100 percent while no capital needs to be put aside for lending to the government. Thus, there is a great deal of demand for PBC bills even at relatively low interest rates, well below the rates of return on comparable-maturity industrial country treasury bonds (Figure 8). This means that, at the margin, sterilization is essentially a money-making operation for the PBC.

But such a cost-benefit calculation can be deceptive. One of the principal concerns is that the lack of exchange rate flexibility not only reduces monetary policy independence, it also affects banking sector reforms. The inability of the PBC to use interest rates as a primary tool of monetary policy implies that credit growth is often controlled by much blunter and non-market-oriented tools, including non-prudential administrative measures. As argued by Prasad and Rajan (2005), this vitiates the process of banking reform by keeping banks' lending growth under the administrative guidance of the PBC rather than letting it be guided by market signals. This constraint has also perpetuated large efficiency costs via provision of cheap subsidized credit to inefficient state enterprises. The incidence of these and other costs of banking system inefficiency are not obvious, but they are probably ultimately borne by depositors in the form of low real returns on their saving.

²¹ Stephen Green estimates that, in 2004, the PBC sterilized about 48 percent of total net foreign exchange inflows (\$98.3 billion of base money withdrawal relative to inflows of about \$206 billion). This includes about \$74.5 billion in net issuance of PBC bills. The overall sterilization estimate includes an amount of \$23.8 billion in PBC bills that Green believes were issued in secret to the four SCBs. Repo transactions were used to sterilize base money in the middle of the year but their net effect on the monetary base during the year was about zero. Green estimates that, during July-August 2005, the sterilization ratio may have dropped below 20 percent, as the PBC shifted monetary policy to a more neutral mode to offset any adverse effects of the currency revaluation.

VI. INDEPENDENT MONETARY POLICY FOR CHINA

China's declared intention to adopt a flexible exchange rate necessitates the choice of a new nominal anchor and a new strategy for monetary policy. Employing the principles of monetary policy discussed earlier in light of China's current financial institutions, we present a package of proposals to guide China's new independent monetary policy regime. We recommend a low inflation nominal anchor, operational independence for the PBC with formal strategic guidance from the government, reforms to make the Chinese banking system robust against interest rate fluctuations, and specific advice regarding the improvement of statistics, communications, and the institutional capacity of the PBC.

A. Low Inflation Nominal Anchor

We believe that an explicit fixed low inflation objective would be an appropriate nominal anchor for China—it would help to firmly anchor inflation expectations and has many advantages over the alternatives, including the current de facto fixed exchange rate regime. This new nominal anchor could be supplemented, for the foreseeable future, with an operational role for money growth targets to help achieve the announced low inflation objective. Money growth targets would be of great help in China, which is just beginning to modernize its banking system and to utilize indirect monetary policy instruments in lieu of direct credit controls to implement monetary policy. For the reasons discussed in Section II, however, we believe that a money growth target would not be a good *stand-alone* nominal anchor for Chinese monetary policy.

To set in motion the shift to an independent monetary policy framework, China should announce in the near future its intention to adopt an explicit low long-run inflation objective in order to lock in the current low inflation rate indefinitely. A qualitative commitment to low inflation might suffice until the details of the explicit inflation objective are worked out. The announcement should explain that monetary policy anchored by a long-run inflation objective would direct the PBC to stabilize employment and financial markets in the short run, subject to a commitment to keep inflation at or near the fixed long-run inflation objective on average over the medium term. Such a statement would be consistent with the broader mandate of the PBC and would enable it to carry out independent monetary policy flexibly.²² In our view, it is premature and probably unnecessary for China to adopt formal, elaborate, inflation targeting procedures advocated by some economists and pursued by some

²² The flexible strategy for monetary policy anchored by a long-run inflation objective that we suggest for China is closely related to that recommended for the United States by Bernanke (2004) and Goodfriend (2005). It is also related to the “inflation targeting lite” approach (Stone, 2003), although we believe that the subordination of the inflation target to other macroeconomic objectives considered there would hamper the effectiveness of monetary policy in anchoring inflation expectations.

central banks; although more formal inflation targeting procedures should not be ruled out for the future.

While the shift to independent policy disciplined by a low inflation anchor is in principle a major undertaking, the PBC would not need to make any discrete changes in its operating procedures while supporting reforms for the new framework are put in place. Nevertheless, it is important for China to adopt a low inflation objective soon so that it is not without a nominal anchor during the transition to a flexible exchange rate regime, which is a stated medium-term objective of the authorities.

It will be important to specify the long-run inflation objective in more precise quantitative terms. As argued in Section II, there are sound analytical reasons for defining the inflation objective on the basis of a measure of core inflation (ex food and energy).²³ Eventually, other choices and decisions about the nature of the inflation objective will need to be addressed—e.g., point target vs. range; level of the target etc. In this paper, our focus is more on the strategic aspects rather than technical details, so we leave these as open questions for now. What we wish to emphasize here is the principle of transparency in monetary policy making, which would be embodied in an explicit numerical inflation objective. To quote Ben Bernanke (2005, p. 2):

Providing quantitative guidance about the meaning of “long-term price stability” could have several advantages, including further reducing public uncertainty about monetary policy and anchoring long-term expectations even more effectively.

B. Instrument Independence for the PBC with Strategic Guidance from the Government

China has already done much to modernize its banking and financial system. However, it must undertake additional reforms to support an independent monetary policy. The crucial requirement is that the PBC be granted instrument (operational) independence. Operational independence is necessary because the PBC must have the *authority* to move its policy instruments aggressively on short notice without permission from other government agencies. In turn, there are two key prerequisites for effective instrument independence: the PBC must be given full control of aggregate bank reserves, and the Chinese banking system must be made financially robust against interest rate fluctuations. We recommend a minimal set of banking reforms below that could provide the requisite financial robustness in a few years. The modernization of the banking system will take much longer, but a fully modern

²³ Food prices are quite volatile in China and, to a lesser extent, so are energy prices. Food still accounts for about forty percent of the consumption basket of Chinese households, giving it a large weight in the CPI, and retail prices of energy are administered.

banking system is not essential for monetary policy purposes.²⁴ In addition, we emphasize that, to make instrument independence fully effective, the PBC will need the discipline and accountability provided by formal strategic guidance from the government.

Full PBC Control of Bank Reserves: China has already put in place some of the institutional arrangements necessary for the PBC to effectively manage aggregate bank reserves in the short run. It has created a deep, liquid market in central bank bills through which the PBC can manage aggregate bank reserves effectively with open market operations. The Chinese have also created an active, liquid repo market that the PBC uses to manage the supply of reserves on a day-to-day basis. The infrastructure for borrowing or lending reserves among banks in the interbank market on the basis of repos or on an uncollateralized basis at the CHIBOR rate is well established. The level of interbank rates is determined flexibly to clear the market for borrowing and lending reserves, and the spread between the rates varies with such things as the nature of collateral backing the loan. The reserve market allows a given pressure on reserve positions to be distributed evenly across banks because each has the opportunity to obtain or release reserves into the market at common interbank interest rates.

Our positive assessment of certain aspects of the interbank market must, however, be balanced against a number of its unsatisfactory features: its relative thinness and illiquidity, the fact that major players may have excessive market power, and the fact that non-bank participants have the potential to destabilize the market. We believe that the Chinese financial authorities can and will remedy such defects before too long.

One defect deserves a little more attention. The behavior of excess reserve demand is said to complicate the transmission of monetary policy. Excess reserve demand appears to be volatile, and it has a tendency to offset the effect of changes in aggregate reserve supply on short-term interest rates, thus short-circuiting somewhat the PBC's power to influence bank lending. We have two recommendations for mitigating this problem. First, the PBC should refrain from discretionary reserve requirement adjustments because these induce volatility in excess reserve demand as banks try to anticipate and prepare for changes in reserve requirements by building up excess reserves in advance.

Second, the PBC ought to discontinue the payment of interest on excess reserves. Currently, the PBC pays interest on excess reserves and sets the rate not far below the interbank rate, so that the interest opportunity cost of excess reserves is very low. It is well known that excess reserve demand is highly interest elastic when the opportunity cost is small. Experience

²⁴ The optimal speed of financial sector reforms in a second-best world with multiple distortions, and how it is tied in with other reforms, is a complicated issue (see Prasad and Rajan, 2006). Indeed, instruments such as "window guidance" may continue to play a limited role during the transition to a more efficient banking system. However, such instruments must be utilized with care since they may not work as expected and may have perverse side-effects.

suggests that discontinuing interest on excess reserves in order to raise the opportunity cost would lower the elasticity of the excess reserve demand and greatly reduce its volatility. To the extent that banks economize on excess reserves as a result, the PBC could drain reserves with PBC bills. Those banks unable to economize on excess reserve demand would lose interest income. But the PBC could ease the loss of interest income by initially returning lost interest earnings and withdrawing the interest rate rebate from banks over time.

At present, the primary threat to the PBC's independent control of bank reserves arises from its responsibility to buy or sell foreign exchange in support of the tightly managed exchange rate.²⁵ It is not enough that China intends to introduce more flexibility into the exchange rate over time to facilitate adjustment in its external accounts. The government, as part of its program to grant the PBC operational independence for monetary policy, should relieve the PBC of the responsibility to support particular exchange rate objectives through its foreign exchange operations.²⁶ Only then can the PBC manage its balance sheet with full credibility to maximize the power of monetary policy to stabilize the Chinese macroeconomy.

Another consideration is that, over the long run, the PBC must continually accumulate assets to provide for the trend growth of bank reserves and currency. In recent years, foreign exchange acquisitions in connection with China's exchange rate policy have provided more than enough longer-run growth of the PBC balance sheet; earlier, PBC lending to banks did so. Because the stock of foreign assets has grown so large, and because a large portion has been sterilized with PBC bills, even if foreign exchange inflows slow or reverse, the PBC should be able to provide for trend growth of its balance sheet for a while by allowing PBC bills to run off. However, once PBC bills have run off, the PBC must be prepared to acquire assets on a regular basis to provide for trend growth of currency.

One possibility would be for China to create a liquid government securities market to enable the PBC to expand its balance sheet by acquiring government securities rather than by accumulating foreign exchange or by lending to banks. Under this arrangement, the government would issue enough new securities every year for the PBC to purchase. The stock of floating debt could be kept to the minimum needed to support reasonable market liquidity. Importantly, the PBC would need to have the discretion to purchase just enough debt to allow the stock of currency to grow at a rate consistent with its inflation objective. This arrangement would facilitate the conduct of monetary policy by making PBC asset acquisition independent of both foreign exchange policy and of bank supervision and

²⁵ The notions that the current exchange rate regime is sustainable indefinitely and that capital controls will continue to provide room for independent monetary policy are, in our view, either fallacious or ignore many of the attendant costs and risks. This issue is discussed at length in Appendix I.

²⁶ This would not preclude the PBC from engaging in limited foreign exchange intervention at the margin. See Broaddus and Goodfriend (1996) for an analysis of the Federal Reserve's foreign exchange operations.

regulation.²⁷ For its part, the PBC would return to the government the interest paid on the securities it buys, net of its operating needs, and the government would obtain the revenue generated from the growing demand for currency at stable prices. For this arrangement to work well, the inflation objective would of course have to be explicitly backed by the government (including the fiscal authority).

Robust Banking against Interest Rate Fluctuations: China has taken a number of steps to modernize its banking system, and has already created much of the institutional flexibility for the PBC to transmit monetary policy actions effectively to aggregate demand—through a liquid bank reserves market, with flexible, competitively determined interbank interest rates managed by open market operations in PBC bills. What is essential now to prepare China for independent monetary policy is that Chinese banks must be made financially robust to fluctuations in short-term interest rates. Financial robustness is necessary both for banks to manage lending prudently and for the PBC to allow interbank interest rates to fluctuate as needed to manage independent monetary policy effectively.

The fundamental source of the financial robustness problem in China's banking system is two-fold: (i) China's banks have long been a primary means of financing state-owned enterprises (SOEs), and (ii) many of China's banks are themselves run as SOEs by local managers politically motivated (or under pressure of provincial government officials) to direct credit to SOEs. In principle, SOEs have been encouraged to be self-financing. In practice, however, it is increasingly difficult for government-run firms to remain competitive with firms in the Chinese private sector and with imports from abroad. Moreover, it will take time for the growing private sector to absorb labor from the state sector. To manage the unemployment problem in the meantime, local bank managers have a powerful incentive to support SOEs with bank loans. The high rate of saving and the lack of alternative investment opportunities in China provide the banking system with ample loanable funds to finance

²⁷ Broaddus and Goodfriend (2001) make this point with reference to the Federal Reserve. They argue that, to formulate and carry out monetary policy effectively, the Federal Reserve must maintain a high level of independence within the government, and its asset practices must support and reinforce that independence. With this in mind, they propose two related principles to guide Federal Reserve asset selection: (i) acquisitions should respect the integrity of fiscal policy by precluding the use of the Federal Reserve's "off-budget" status to allocate credit across various sectors of the economy, and (ii) acquisitions should insulate the Federal Reserve from political entanglements that could undermine its independence. Broaddus and Goodfriend argue that the Federal Reserve should conform to these principles by restricting its asset purchases to Treasury securities. By extending its credit to the Treasury, the Federal Reserve minimizes its participation in private credit markets and transfers directly to the government all the revenue (net of operating expenses) from money creation. Finally, they argue that the Treasury should maintain and replenish a floating debt sufficient to satisfy the Federal Reserve's asset acquisition needs, even if the Treasury has no fiscal reason to issue debt.

questionable loans to SOEs. With the government's tacit approval, moreover, banks have an incentive to carry loss-making SOE loans on their books indefinitely.²⁸

The problem is that banks whose interest earnings are significantly impaired due to NPLs have cash flow sufficient only to pay relatively low interest on loanable funds acquired in the interbank and deposit markets. Higher interbank rates associated with more restrictive monetary policy would put weak banks under stress. Since banks are tightly connected through the payments system and the network of interbank balances, the financial distress would threaten the entire banking system. The distorted incentives for bank managers that lead to the accumulation of non-performing loans (NPLs) must be overcome if the Chinese banking system is to be made financially robust to flexible interest rates.

In short, a financially fragile banking system has the potential to undermine central bank independence by, for instance, making the PBC reluctant to raise interest rates to head off inflationary pressures.

The financial vulnerability of the Chinese banking system to interest rate fluctuations is a difficult problem. Clearly, the authorities must complete the removal of NPLs from banks (to attain international benchmarks for capital adequacy standards, with adequate loan loss provisioning) in order to fortify the banking system against flexible interest rate policy. However, it is not enough to deal with legacy NPLs. China must reform its banking system so that bank managers are free from political pressures to lend to underperforming SOEs and are instead motivated to make prudent loans to viable enterprises. Otherwise, the banking system is likely to be weakened again before long by a resurgence of NPLs.

We see the nature of the problem this way: Chinese banks are asked to perform what is essentially a *fiscal policy* function—the financing of SOEs by the Chinese government to support employment in the state sector until it can be absorbed by the growing private sector. Even though that financing is provided in the form of “loans,” it is not *banking policy*. That finance essentially involves *fiscal* transfers—with little expectation of repayment—whose purpose is to cushion the transitory unemployment costs of economic development in China. The problem is that bank managers cannot be asked to lend prudently, with an expectation that loans be repaid and bank capital preserved, when managers are rewarded by the political system for directing fiscal transfers to state firms, and then largely excused for loan losses in the state sector.

We conclude that, in order to make the banking system robust against interest rate fluctuations going forward, the Chinese government must disentangle bank lending from the financing of nonviable SOEs. In Appendix II, we propose that this could be accomplished by channeling financial support for nonviable SOEs through a separate government agency, an essential step that we believe could be completed in a few years.

²⁸ The ceiling on deposit rates and the floor on loan rates together have kept cash flows in the banking system positive, in spite of the large share of NPLs on bank balance sheets.

An important related point is that, in order to protect against moral hazard in connection with the implicit insurance of Chinese bank deposits, supervisors and regulators must be empowered to ensure that bank capital remains above required minimums, and to intervene promptly to restrict the disposition of bank assets in the event that a bank's capital falls below required minimums. Furthermore, to make enforcement fully credible, Chinese bank regulators must have access to sufficient funding, e.g., a deposit insurance fund, to pay off depositors promptly if a bank is unable to abide by its regulations.

To sum up, the financing of SOEs through the banking system in China impedes the development of banking, fiscal, and monetary policies. Chinese banks cannot be governed according to good banking practice and regulated with the help of good banking policy, unless they are relieved of their responsibility for financing SOEs. The separation of fiscal policy support for SOEs from banking is the key to making Chinese banks financially robust against interest rate fluctuations. The robustness of Chinese banks, in turn, is necessary to provide a sufficient degree of separation of monetary policy from both banking and fiscal policies so that the PBC can conduct monetary operations independently and effectively.²⁹

We believe that China could complete the reforms outlined above in a few years, in large part because Chinese financial authorities have been working hard to strengthen the banking system. The authorities clearly recognize the need for bank reform, China has the resources to deal with the NPL problem, and the authorities appreciate the urgency for doing what is necessary to support independent monetary policy for China.

It will take much longer for Chinese banks to modernize fully, in particular to adopt methods for efficiently pricing loans according to risk. Nevertheless, we believe that Chinese monetary policy can be transmitted effectively through a banking system that may be far from the efficient banking frontier, as long as the banking system is financially robust against interest rate fluctuations and the exchange rate regime does not inhibit the PBC from employing the full range of interest rate variability to stabilize inflation and economic activity.

It would be very helpful at some point for China to deregulate bank deposit and lending rates further, although full deregulation of interest rates is not critical for monetary policy to achieve its primary macroeconomic objectives—the PBC can manage bank reserves to achieve whatever restraint on the growth of money and credit is needed.³⁰ In any case, full

²⁹ As long as inflation remains low, open market operations sufficient to implement monetary policy have relatively minor fiscal implications.

³⁰ For instance, interest rate ceilings in the United States did not prevent the Federal Reserve from achieving its macroeconomic objectives with monetary policy in the period before interest rates were deregulated fully by the Depository Institutions Deregulation and Monetary Control Act of 1980. The Fed managed the growth of bank reserves to achieve whatever degree of restraint on the growth of money and credit was deemed necessary. When
(continued...)

relaxation of interest rate restraints must be undertaken in conjunction with regulatory improvements to minimize moral hazard problems connected with deposit insurance.

Strategic Guidance from the Government: We emphasize that instrument independence must be granted in tandem with strategic guidance from the government. The operationally independent PBC should be instructed by the government to pursue the objectives for monetary policy enumerated in the PBC law, subject to a commitment to keep inflation at or near the fixed long-run inflation objective on average over the business cycle. Government support for operational independence is necessary to encourage the PBC to take potentially difficult monetary policy actions that may be needed on occasion. Explicit government direction must also serve as the basis upon which the PBC can be held accountable in some way for achieving its mandated objectives—perhaps through regular monetary policy oversight hearings. Without such strategic guidance from the government, the PBC would be deprived of the credibility essential to make independent monetary policy work well.

C. Statistics, Communications, and Institutional Capacity

The transitional nature of the Chinese economy creates unique problems in the production and interpretation of statistical indicators, including those relevant for monetary policy decisions. Even with accurate data in hand, there would be relatively little history on which to base forecasts of inflation. Moreover, productivity growth, which is difficult to forecast even in the United States, is very difficult to predict in an emerging market economy like China where growth rates could vary over a much wider range. Given such complications, it would be useful for the PBC, in guiding monetary policy, to keep track of the growth of various money and credit aggregates against estimated growth rates believed to be consistent with low inflation.

At a minimum, the PBC must have timely access to accurate and comprehensive data on Chinese macroeconomic and financial conditions. It will be important for the government to make the gathering of accurate data (including at the provincial levels) a high priority for enabling effective macroeconomic management. Although we recognize that improving the consistency, reliability and timeliness of macroeconomic data is no small challenge, our view is that the PBC, with the help of other government statistical agencies, should be able to satisfy adequately its basic statistical needs within a few years. In addition, the PBC should use its regional branches to construct a nation-wide network to capture the latest anecdotal information on current economic and financial conditions in China.

regulatory restraints on explicit interest rates were binding, a combination of disintermediation, implicit payment of interest and non-price rationing cleared the credit markets. Nevertheless, interest rate regulations inhibited the flexibility of the economy to respond to monetary policy actions.

The PBC must also acquire the analytical capacity to decide how to move its instruments flexibly in response to developments in the economy. That capability involves the acquisition of the relevant hardware as well as a staff of well-trained economists and statisticians. The PBC must be empowered to build up the institutional capacity necessary to support its monetary policy mission, and given the financial resources to do so.

In preparation for the day when it is called upon to manage monetary policy independently, the PBC should continue to improve and broaden its published assessments of economic and financial conditions in China, its monetary policy communications, and its judgments about future economic conditions.³¹ Communications should motivate the steps that China is taking to modernize its banking and financial systems. The PBC and the China Banking Regulatory Commission (CRBC), which was spun off from the PBC in 2003, should continue advertising and explaining institutional reforms that have been undertaken in this regard.

We think it would be useful, as well, for the PBC and the CRBC to explain the reforms, in part, as necessary to adopt a framework for independent monetary policy. The PBC, in particular, should explain, along the lines we've outlined in this paper, the need to prepare China for independent monetary policy and its advantages for China over the long run. Talking about the need for reforms to facilitate the effectiveness of monetary policy would both motivate the reforms and help build credibility for the government's commitment to low inflation.

VII. CONCLUDING REMARKS

A flexible, independent monetary policy oriented to domestic objectives is fast becoming indispensable for the effective management of the Chinese economy. In this paper, we have attempted to provide both motivation and direction for China's transition to an independent monetary policy. Given the current underdeveloped state of the Chinese banking and financial systems, some may think our focus on this issue is premature. We think otherwise. Given China's intention to move to a flexible exchange rate, there are good reasons for China to begin to build the institutional foundations for the transition now. In particular, China must choose a new nominal anchor for monetary policy as it introduces flexibility into its nominal exchange rate.

There is a clear case for making a low long-run inflation objective that new nominal anchor, and little reason to delay its adoption. It will take many years to modernize China's financial system fully, but we have argued that China could put in place in the next few years a modest package of reforms that would serve as an effective foundation for independent monetary policy anchored by a low inflation objective.

³¹ The PBC issues quarterly monetary policy reports. In addition, the PBC recently released its first Financial Stability Report; this is expected to be an [annual] report.

The key is to grant the PBC operational monetary policy independence, which requires that the PBC be given full control of bank reserves and that the Chinese banking system be made robust against interest rate fluctuations. To satisfy the former requirement, the government must allow a substantial degree of flexibility in the foreign exchange rate, so that exchange rate adjustments, and not PBC purchases and sales of foreign assets, can clear the foreign exchange market. Strengthening of bank balance sheets, including by removal of NPLs, is necessary to satisfy the latter requirement. Bank lending must also be disentangled from the financing of nonviable SOEs, which we proposed could be accomplished by channeling financial support for nonviable SOEs through a separate government agency.

In addition, we emphasized that PBC operational independence must be granted with formal strategic guidance from the government. Without such strategic guidance, monetary policy would lack credibility and the PBC would be deprived of the support needed to take potentially difficult monetary policy actions. Finally, we underscored the need for the PBC to be given financial resources and encouragement by the government to build up the institutional capacity necessary to support its monetary policy mission.

Sustainability of the Current Exchange Rate Regime: Implications for Monetary Policy

In recent years, trend growth of currency and reserves has absorbed much of the monetary base created by the PBC in defense of the exchange rate. Nevertheless, the PBC sterilized around half of the growth of base money between 2003 and 2005 to keep bank reserves, bank lending, and deposit creation in a range believed to be compatible with low and stable inflation. If one judges the degree of pressure on reserves by the level of the interbank rate, then the sterilization has been successful at stabilizing the stance of monetary policy: with a couple of exceptions, the PBC has kept the repo rate near 2 percent for the last five years. Since the middle of 2004, the PBC has allowed some easing of pressures on reserve positions, allowing the repo rate to fall from around 2½ percent to around 1¾ percent. Currently, inflation expectations appear to be well anchored in China, even though interbank interest rates have been falling for over a year.

The situation seems sustainable. Should we conclude that the PBC has the *latitude and flexibility*—in spite of the exchange rate constraint—to manage the growth of bank reserves independently over time to maximize the potential for monetary policy to stabilize macroeconomic conditions in China? We think not. At a given targeted exchange rate, only by accident will the level of short-term interest rates supportive of low and stable inflation in China be compatible with the level of short rates abroad and a sustainable external balance. Higher interest rates than that will attract capital and put upward pressure on the exchange rate; lower interest rates will cause a capital outflow and put downward pressure on the exchange rate.

Controls on capital flows provide some scope for short-term interest rates in China to move independently of those abroad. However, three factors provide extensive opportunities to evade Chinese controls in practice: the encouragement of foreign direct investment, the openness of the Chinese economy to trade, and the extensive reprocessing trade in China. Moreover, the incentive to profit from a possible adjustment of the exchange rate also undermines the effectiveness of controls. Altogether, it seems unlikely that capital controls can be counted upon to provide much scope for independent monetary policy in the presence of a tightly managed exchange rate.³²

That explains why the PBC has had to rely heavily on sterilization to retain control of bank reserves in the face of the huge capital inflows. At best, however, sterilization blunts the process by which interest rates and the exchange rate must adjust to attain external balance.

³² Also see the discussion in Eichengreen (2004) and Prasad, Rumbaugh and Wang (2005). Prasad and Wei (2005) document that a surge in non-FDI capital inflows—mostly reflecting a sharp reversal of net errors and omissions (unrecorded flows), which had been negative for most of the latter half of the 1990s—accounts for much of the surge in the pace of reserve accumulation during the period 2001-04. They also show that short-term external debt has risen sharply in recent years, perhaps in part reflecting anticipation of an appreciation of the renminbi. This could increase external vulnerability if circumstances were to change.

At worst, if the external imbalance persists, sterilization can become unsustainable. Thus, the credibility of a program to sterilize capital flows on a massive scale is always in doubt.

To appreciate the point, we review the costs and risks incurred when the PBC sterilizes capital inflows. First, consider the potential fiscal costs for the government and, by implication, the Chinese taxpayer. The PBC finances the sterilization of foreign exchange with funds obtained by selling PBC bills. Currently this investment generates positive cash flows for the PBC because short-term renminbi interest rates are below corresponding short-term dollar rates. The defense of the renminbi is currently sustainable in the sense that the PBC actually “makes money” from its acquisition of dollar assets. However, the PBC’s investment in dollar assets involves market risk in terms of capital losses if the renminbi did eventually appreciate against the dollar, lowering the renminbi value of the PBC’s portfolio of dollar assets. Similarly, an upward shift in the medium to long end of the industrial country treasury yield curve could lead to capital losses in the bond portfolio on a mark-to-market basis. There are other possibilities. For instance, if the U.S. economy weakens substantially relative to the Chinese economy, it is possible that U.S. short rates could fall below renminbi rates while the PBC holds a large portfolio of foreign exchange. Such a scenario would create potentially greater fiscal costs than the first, since investors would then have more incentive to move capital into China and cash flow on the PBC position in foreign exchange could turn negative.

Second, consider the costs imposed on financial intermediation in China. Suppose that the PBC is determined to keep the growth of aggregate bank reserves and bank deposits on a path consistent with non-inflationary growth. The banking system balance sheet constraint then implies that the growth of banking system assets would be maintained on its initial path as well. If the PBC sterilizes its acquisition of foreign exchange by selling PBC bills to the banks, then banks purchase PBC bills instead of making loans. If the non-bank public purchases PBC bills instead, then the public holds less bank deposits.³³ Either way, sterilization is costly because it crowds out bank lending.³⁴ Under present circumstances—with high investment growth partly being fueled by bank credit—such crowding out may in fact be useful as a means of absorbing funds that might otherwise finance inefficient investment projects. However, as China deregulates interest rates and improves the efficiency of bank lending, there will be significant crowding out costs associated with large sterilized purchases of foreign exchange by the PBC.

There is another subtle but important cost imposed on financial intermediation. China maintains controls on capital outflows and domestic financial repression to maintain at low levels the interest rate on PBC bills. To maintain bank profits, the government mandates low deposit rates as well. The cost of these distortions is ultimately borne by depositors in the

³³ In this second case, the PBC would drain reserves from the banking system to maintain the desired degree of pressure on reserve positions.

³⁴ Note that the banking system has some limited capacity to accommodate a given flow of central bank bills indefinitely on a balanced growth path. The balanced issuance of PBC bills would keep the relative extent of crowding out constant.

banking system—which includes most households, given the lack of alternative investment opportunities—in the form of low real rates of return on their deposits (Prasad, 2006).

The main point is this: the massive acquisition of foreign exchange by the PBC exposes Chinese taxpayers to potentially large fiscal losses and crowds out bank lending. Moreover, an inflation scare is always possible if the credibility of the sterilization program is called into question. In different circumstances, inflexible monetary policy has the potential to weaken China's defenses against deflation.

Some authors such as McKinnon (2006) have forcefully argued that the fixed exchange rate has served China well as a nominal anchor and that any change in the exchange rate regime would not only foster instability but could also increase deflationary risks, especially if the change involved a revaluation of the currency. Our response is that, while the fixed exchange rate may have contributed to maintaining stable growth in the recent past, the risks of not having the flexibility to respond to shocks are rising over time as the Chinese economy opens up. Furthermore, as argued by Prasad, Rumbaugh and Wang (2005), what is essential for China is not so much a revaluation as a more flexible exchange rate. A low inflation objective and a flexible exchange rate together would in fact anchor inflation expectations and provide the room to respond to shocks, both of which should reduce deflationary risks.

A Proposal to Separate Funding for Nonviable SOEs from Bank Lending

How could banks be taken out of the business of financing nonviable SOEs without causing these enterprises major financial distress? One approach would be for the government to explicitly channel fiscal support for SOEs through a new government agency, a State Enterprise Finance Corporation (SEFC). Importantly, the SEFC should be financed by long-term bonds, so that it would be robust against short-term interest fluctuations. The long-term bonds could be issued to domestic investors; the bonds would serve as an alternative to bank deposits for households and businesses, and provide a welcome hedge against long-term retirement, pension, or life insurance commitments. At a minimum, SEFC bonds should be issued initially in sufficient quantity to acquire the entire existing stock of nonviable SOE loans from banks. Over time, the SEFC would finance its support of SOEs, including interest and principal on its bonds, with funds provided directly by the Chinese government.

The government would provide oversight for the SEFC, determine the limits on bond issuance, and set up a mechanism by which the SEFC would allocate transfers to SOEs. SOEs that turned a profit could be required to repay part of their transfers. The SEFC would balance political pressure to support SOEs against the explicit fiscal cost of that support evident in its outstanding bonds. Finally, since the SEFC would not be expected to be self-financing, its bonds would need the backing of the government.

The SEFC, in conjunction with bank regulators, should determine the financial viability of SOEs. Only those SOEs designated as viable should be eligible to borrow from banks, and only with strict oversight to guard against abuses. With the SEFC in place, bank supervisors and regulators could credibly enforce guidelines for prudent bank lending, and managers would then have the incentive to make credit decisions prudently, protective of bank capital.

The SEFC would have a role complementary to that of the Asset Management Companies (AMCs) and the State-owned Assets Supervision and Administration Commission (SASAC). The AMCs are responsible for disposing of nonperforming assets of the banking system. SASAC, which was set up in 2003, oversees about 200 of the major SOEs and its mandate is to "...perform the responsibilities as the investor of the state-owned assets on behalf of the central government." Neither of these institutions is set up to effectively accomplish what we think is essential—separating the *new* financing of SOEs from banks. The SEFC and SASAC could of course jointly determine the financial viability of SOEs, which in turn would determine their eligibility for continued bank financing. One might argue that the SEFC would be subject to the same governance problems (related to political pressures) as the banks in terms of determining the viability of SOEs. But the key point is that, under our proposal, the financing of nonviable SOEs, and the fiscal costs thereof, would be made explicit and not impede the modernization of the banking system or the establishment of independent monetary policy.

One could imagine other approaches to deal with the fiscal support for SOEs, so long as such support is made explicit and separated from the banking system—which, in our view, is the main point. But our approach would give the government more direct control in the process and could enhance transparency.

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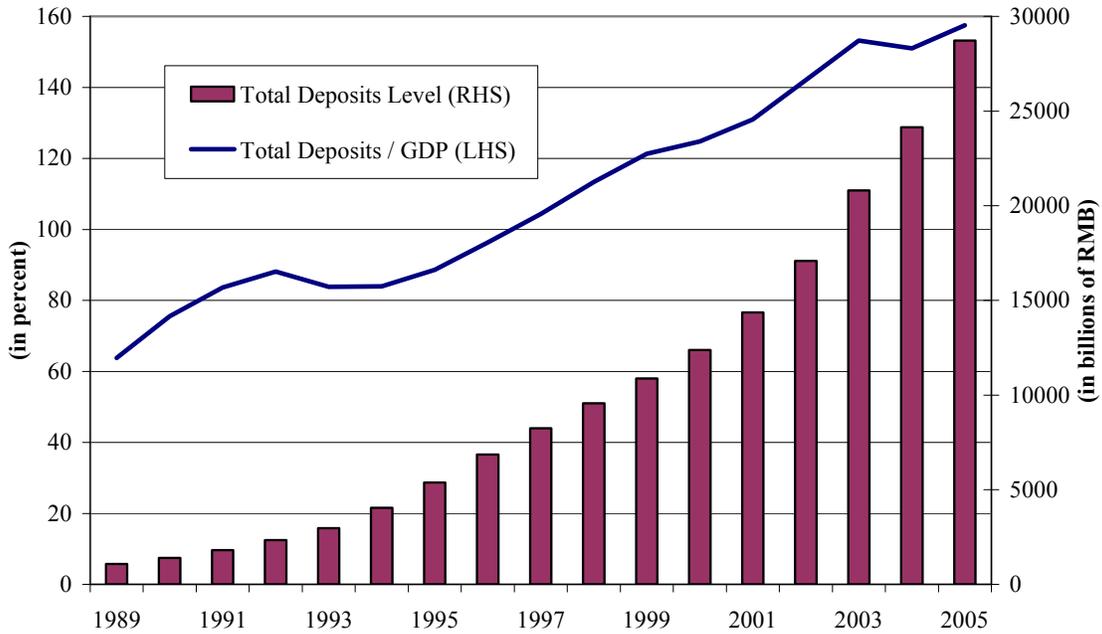
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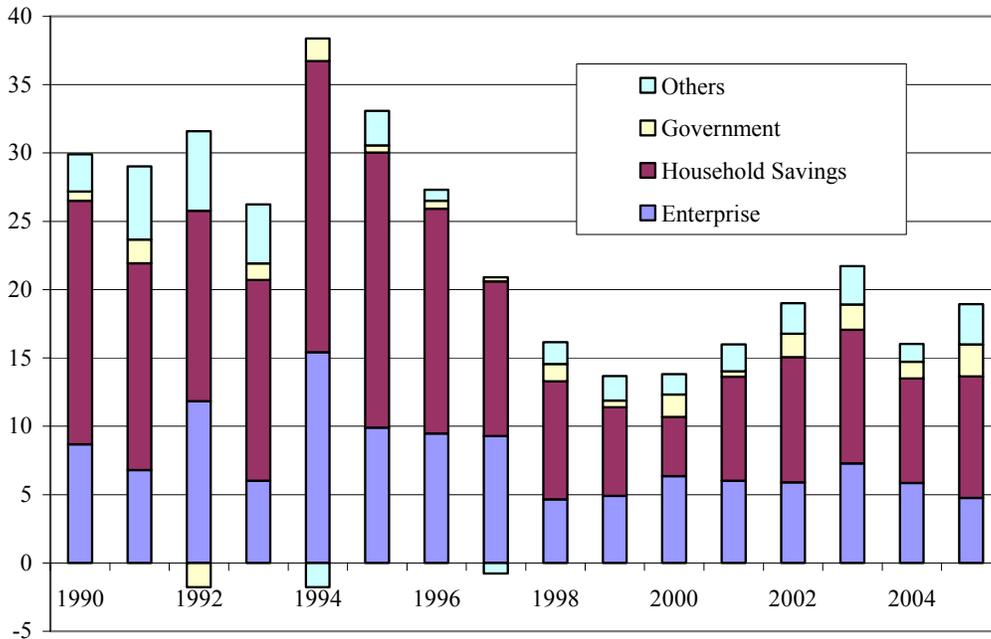
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Figure 1.
Total Deposits in Financial Institutions

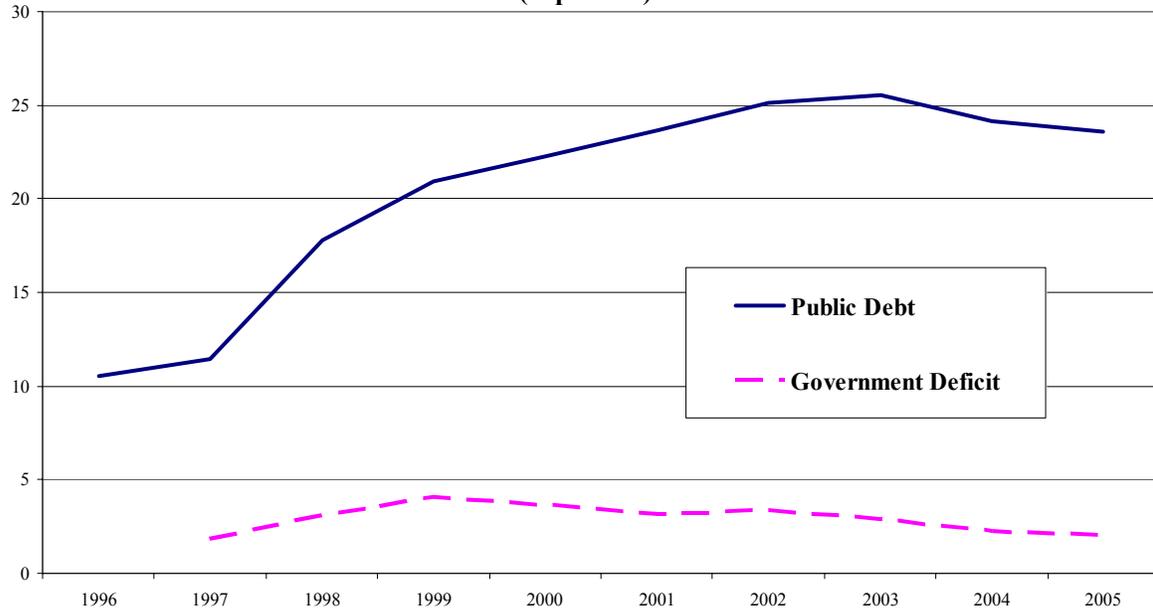


Growth of Total Deposits and Contributions of Components
(in percent)



Source: CEIC and authors' calculations. Government share of deposits include fiscal deposits as well as deposits by government agencies and organizations. Others refer to rural and trust deposits, and remaining components. Deposits figures are based on end-of-period data, and do not include foreign currency deposits.

**Figure 2. Government Deficit and Public Debt as Ratio to GDP
(in percent)**



Source: International Monetary Fund.

Figure 3a. Bank Reserves

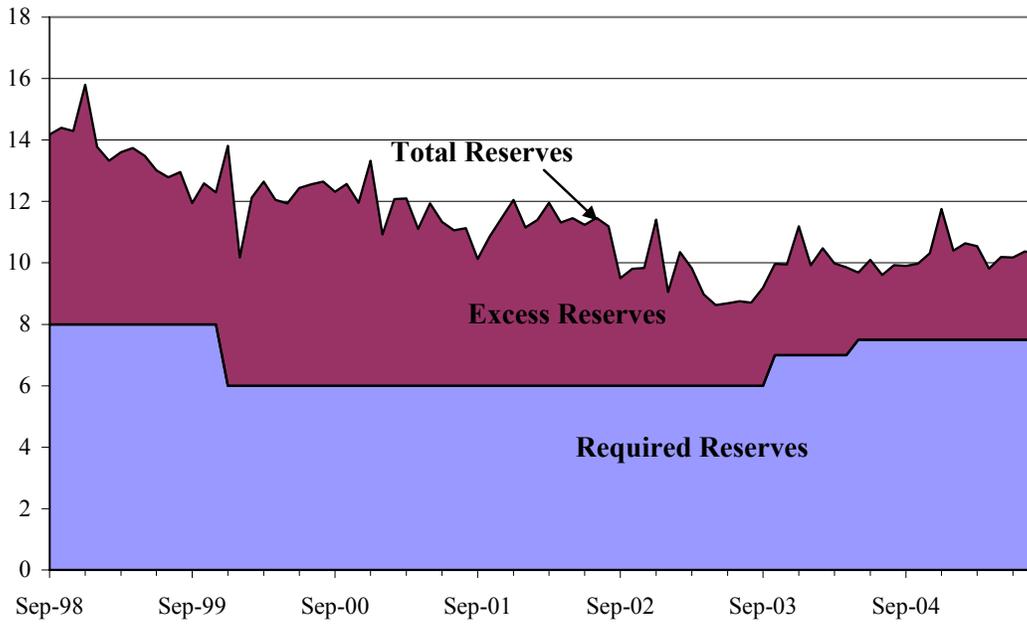
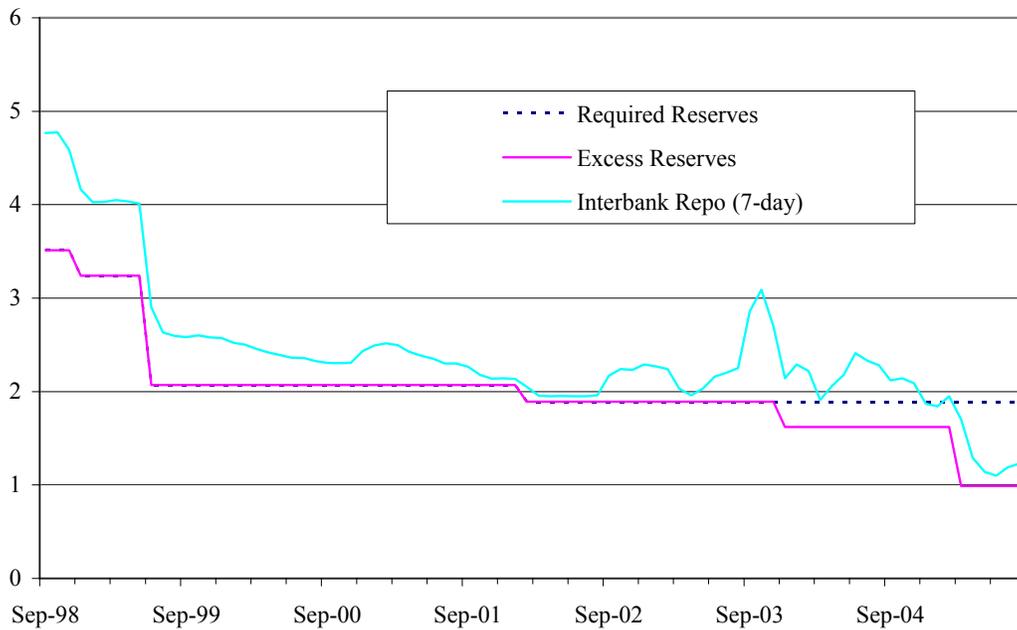


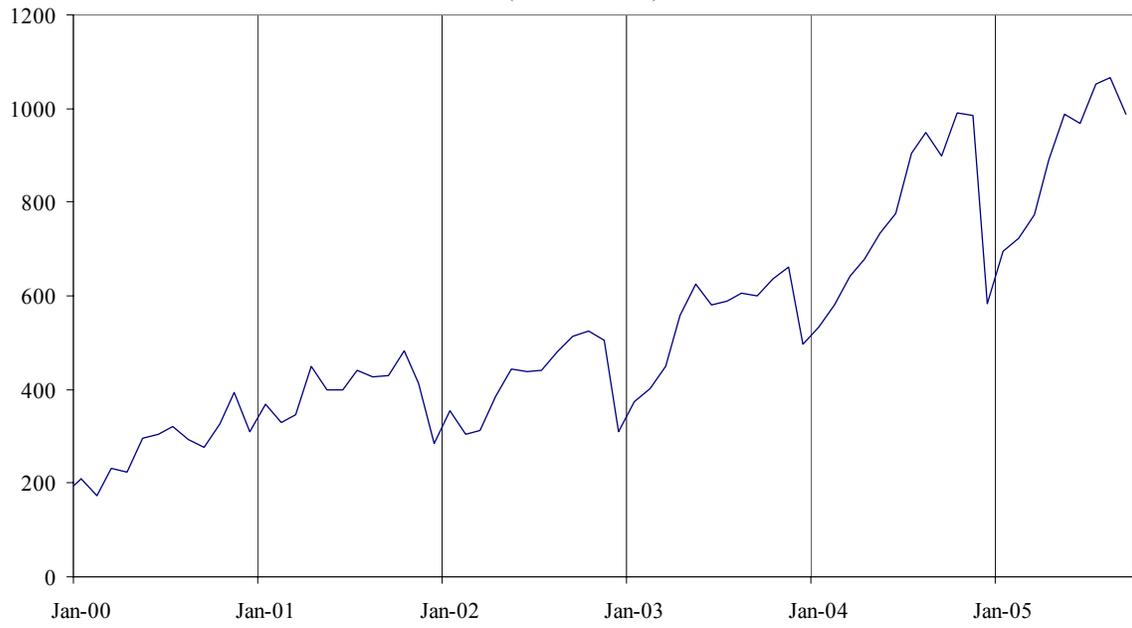
Figure 3b. Rate of Remuneration on Reserves



Source: CEIC and authors' calculations.

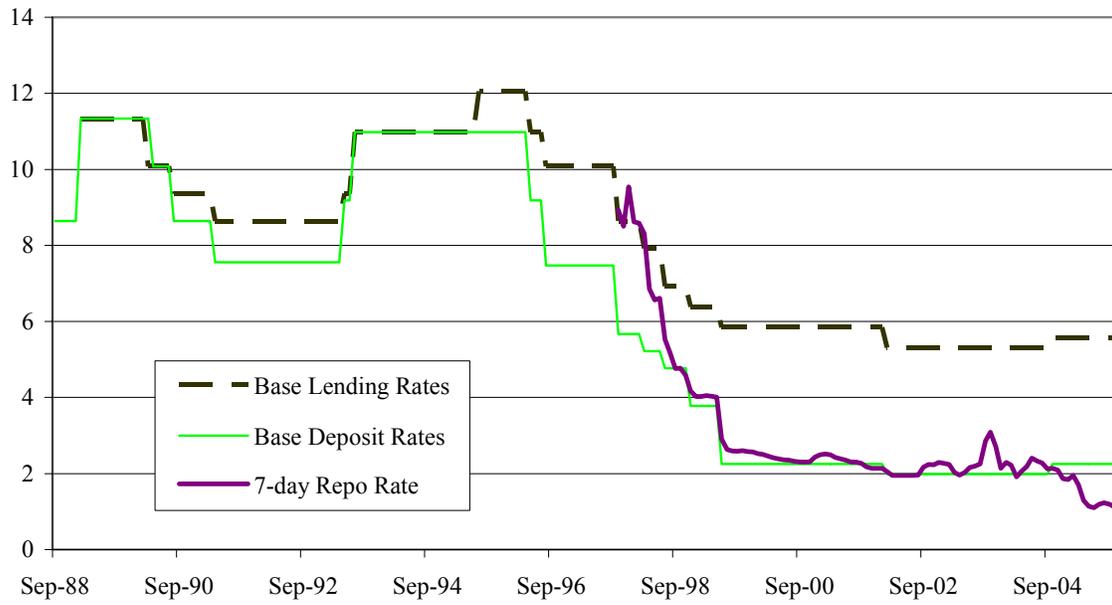
Notes: Bank reserves are expressed as percentage ratios of total deposits in the banking system. The rate of remuneration on required and excess reserves was the same until December 2003.

**Figure 4. Government Deposits at the Central Bank
(billions of RMB)**

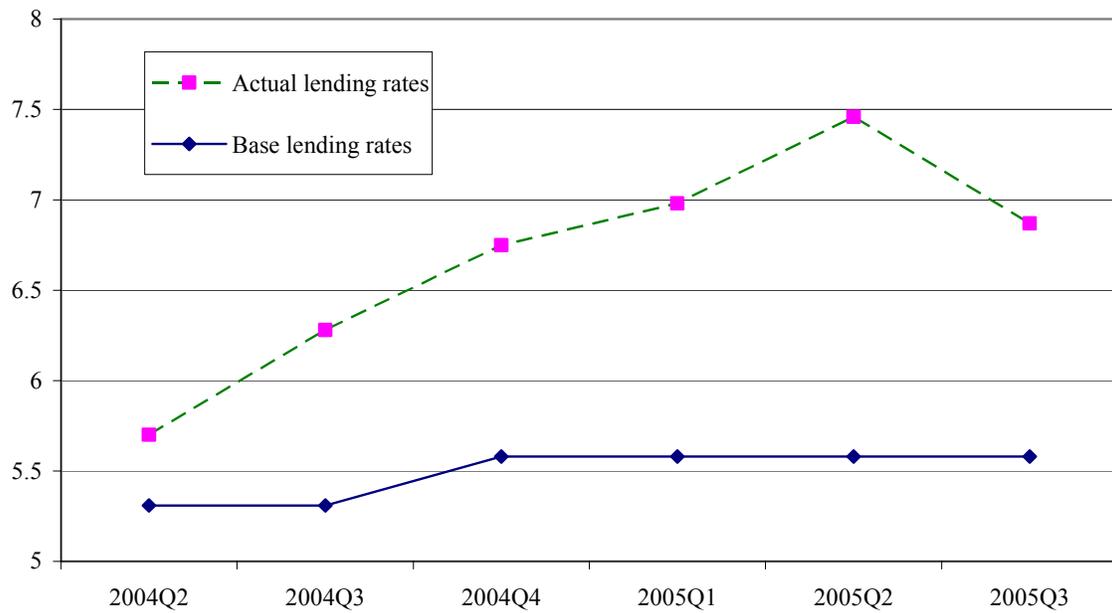


Source: CEIC.

**Figure 5a. Base Lending and Deposit Rates (1-year)
(in percent)**

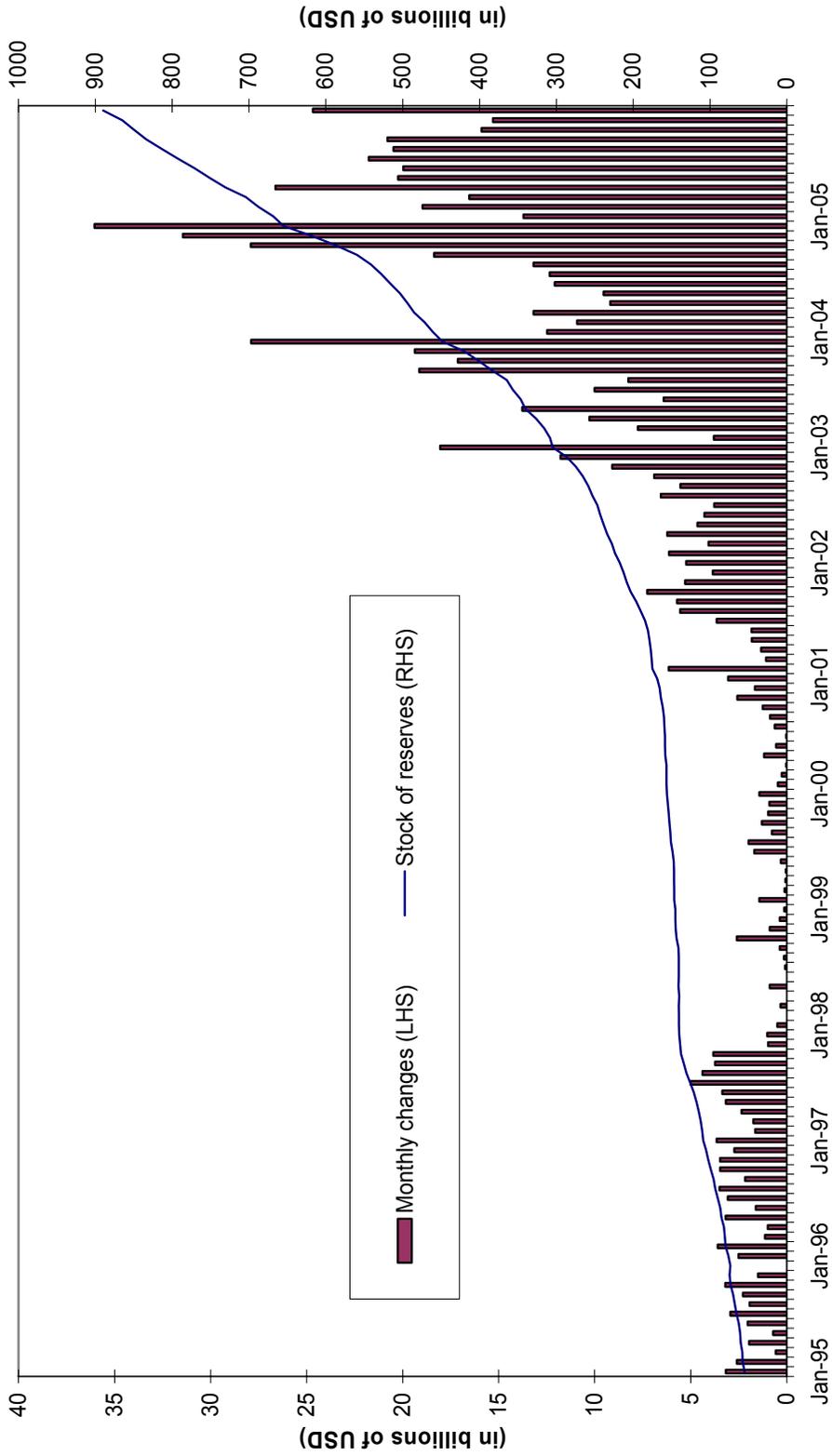


**Figure 5b. Base and Actual Lending Rates (1-year)
(in percent)**



Source: CEIC, PBC Monetary Reports and IMF calculations.

Figure 6. Foreign Exchange Reserves: Flows and Stocks



Notes: The flow and stock numbers for foreign exchange reserves in this figure include the amounts used for bank recapitalizations: \$45 billion in December 2003, \$15 billion in April 2005, and \$5 billion in September 2005; as well as a \$6 billion fx swap that PBoC conducted with domestic banks in November 2005.
 Source: CEIC and authors' calculations.

**Figure 7. Stocks of Reserves and Central Bank Bills
(in billions of RMB)**

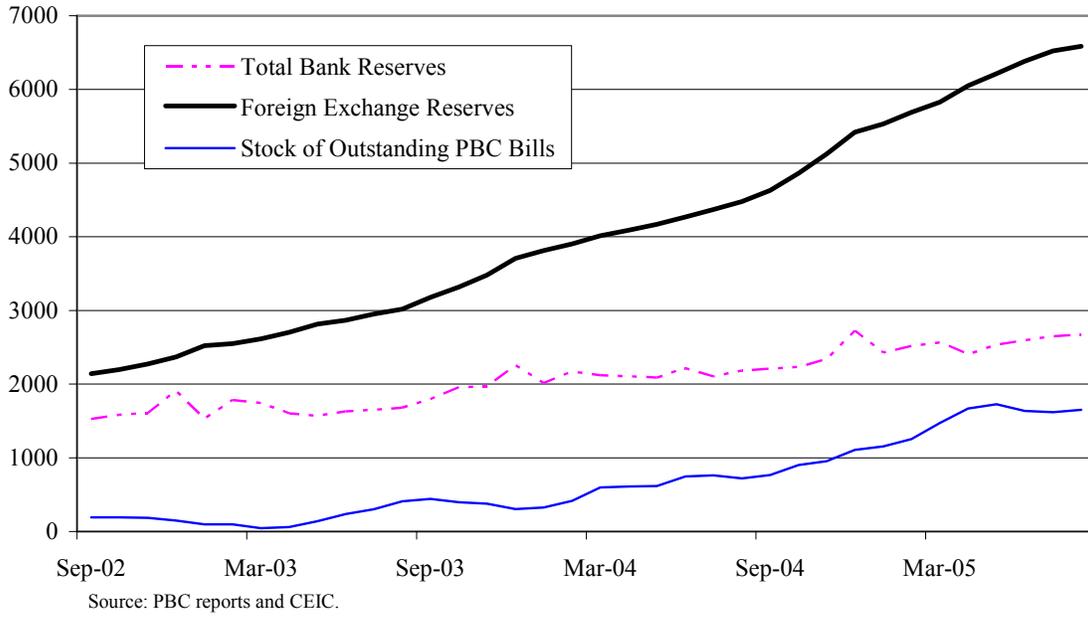


Figure 8. PBC Bill Rates vs. U.S. Treasury Yields

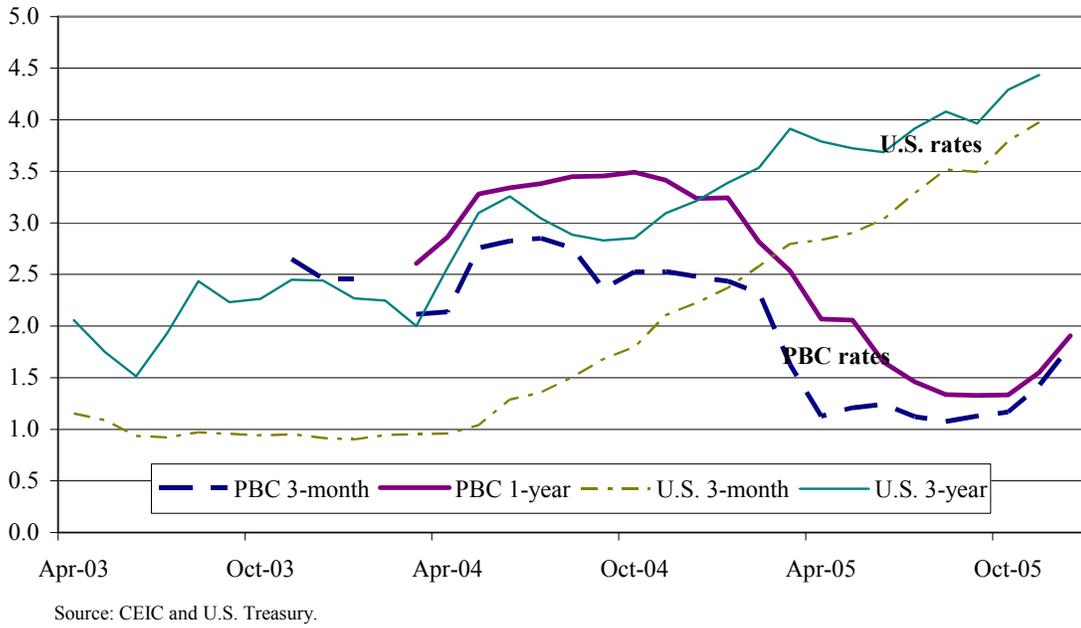
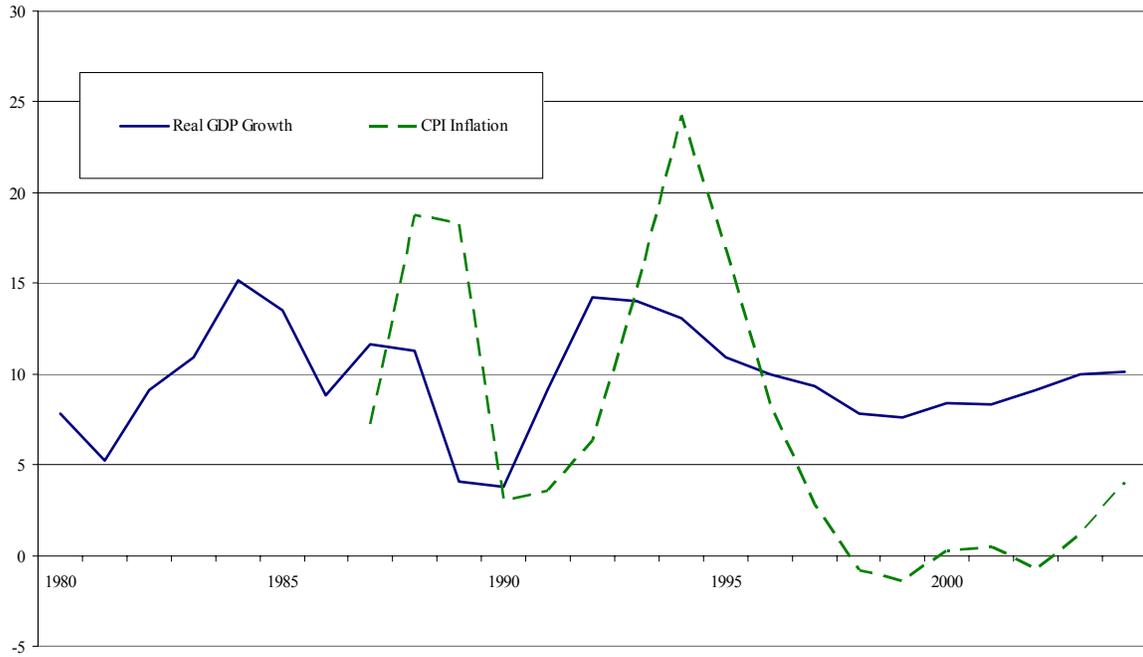
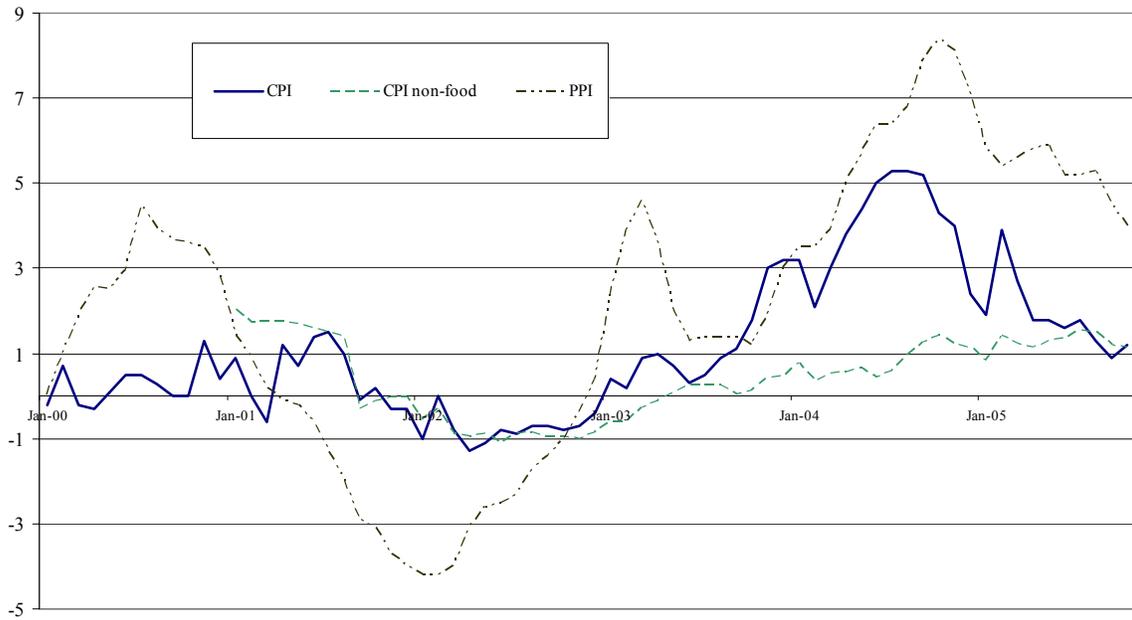


Figure A1. GDP Growth and Inflation Rates



Source: CEIC and IMF's International Financial Statistics.

**Figure A2. Alternative Measures of Inflation
(monthly data, year on year changes in prices)**



Source: CEIC and IMF's International Financial Statistics.