

## **A Framework for Independent Monetary Policy in China**

Marvin Goodfriend and Eswar Prasad<sup>1</sup>

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### **Abstract**

As the Chinese 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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<sup>1</sup>Tepper School of Business, Carnegie Mellon University; and Research Department, IMF, respectively. We thank Ray Brooks, Steven Dunaway, John Fernald, Jiming Ha, Robert Hetzel, Lamin Leigh, Allan Meltzer, Ronald McKinnon, Mark Stone, Sun Tao, Tao Zhang, Yanchun Zhang and seminar participants at the Federal Reserve Banks of Cleveland and San Francisco for useful comments. We are also grateful to numerous other colleagues at the IMF, including participants in various internal seminars, for helpful discussions and comments. The comments of the editor, Gerhard Illing, and two anonymous referees helped sharpen the presentation in the paper. Wellian Wiranto provided excellent research assistance. The views expressed in this paper are solely those of the authors and do not necessarily reflect those of the IMF or IMF policy.

## **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 an important policy priority. 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 limited in practice and could result in inadequate control of investment growth and inflationary (or deflationary) pressures. Moreover, the effectiveness of capital controls inevitably erodes over time as domestic and international investors find channels, including rising 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 limited de facto flexibility. Nevertheless, the authorities have clearly stated their intention to allow for greater flexibility over time; recent fluctuations in the exchange value of the renminbi confirm this intention.

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. 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 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 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. 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, 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. The consequences of the legacy of directed lending will also 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.

## **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 as the leading nominal anchor 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).<sup>2</sup>

### *II.1 Disadvantages of Alternative Nominal Anchors*

A fixed nominal exchange rate regime borrows the nominal anchor from abroad. 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

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<sup>2</sup> 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.

domestic policymakers to accept one of two unpleasant alternatives. Either domestic interest rates follow foreign rates closely irrespective of domestic circumstances, or the home country must impose controls on private international capital flows to try and insulate itself. 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. 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 employed by the U.S. Federal Reserve, among other central banks, to stabilize inflation in the 1970s and 1980s (see Goodfriend and King, 2005). However, central banks in most countries with well-developed banking and financial systems now employ interest rates to target low inflation, largely ignoring money growth. 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 underdeveloped financial systems and less reliable interest rate channels of monetary transmission. Nevertheless, developing economies, in particular, are subject to financial innovations that shift 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 low and stable inflation. Thus, a money growth target would not by itself constitute a stable anchor for inflation expectations.

## *II.2 Country Experiences with Different Anchors*

Numerous major central banks around the world—e.g., the Eurosystem and the Bank of 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 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.

Emerging market and developing economies that adopted various forms of inflation targeting, have in general had similar positive experiences. As noted by Mishkin (2000), some advantages of inflation targeting are particularly relevant for emerging market economies: (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 lists three major potential problems for inflation targeting in emerging markets; (i) inflation may be hard to control because of 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 empirical literature investigating the macroeconomic performance of emerging market economies under different monetary frameworks finds support for inflation targeting in practice.<sup>3</sup>

### **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.<sup>4</sup> 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; these concepts are quite general and apply, at a basic level, even to a socialist market economy such as China.

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. Such reasoning yields the fundamental principle of price stability: Monetary policy geared toward sustaining low inflation must manage aggregate demand so that production 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 principle of inflation targeting given above has the important implication that monetary policy geared to targeting inflation yields the best cyclical stabilization of employment (Goodfriend and King, 1997; Woodford 2003). Thus, even those who care mainly about the stabilization of employment can support a low inflation objective for monetary policy. But these points 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.

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<sup>3</sup> See, e.g., Jonas and Mishkin (2005), Mishkin and Schmidt-Hebbel (2005) and IMF (2006). For a skeptical view, see Blanchard (2005).

<sup>4</sup> This exposition draws on Goodfriend (2002) and Broadus and Goodfriend (2004).

Such reasoning assumes that all goods are produced by monopolistically competitive firms whose prices are sticky. In practice, 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 sufficiently, which 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 can be circumvented if the central bank targets an objective for low *core* inflation (excluding oil and food prices, in the example above). The economy can then adjust to changes in the relative prices of oil and food while core inflation and employment are both stabilized. This would 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.

Note that 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 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 wide range.

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.<sup>5</sup> 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—at the risk of precipitating a recession—in order to make sure that inflation doesn't spiral out of control.

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<sup>5</sup> Goodfriend (1993) and Goodfriend and King (2005) document how inflation scare shocks have destabilized the U.S. economy in the past. 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.



Deflation scares also involve a credibility problem—the possibility that interest rate policy might be immobilized at the zero bound 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, as well as anti-competitive policies, that could reduce potential GDP growth. 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.

In short, 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 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. Thus, credibility for low inflation tends to be self-enforcing to a considerable extent. 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. 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 quickly and aggressively over a large range if necessary. 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.

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 and indicators of the direction of pressures on future inflation. 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, it would help to guide monetary policy to keep track of the growth of various 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.

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 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.

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.<sup>6</sup>

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. Sterilization of foreign exchange flows, however, leaves the exchange rate and domestic interest rates unaffected, and does little to mitigate the factors that gave rise to those flows in the first place. Even when supplemented with capital controls, sterilization of inflows leads to rising quasi-fiscal costs or other implicit costs associated with financial repression. And

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<sup>6</sup> 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.

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.

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.

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.<sup>7</sup>

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. 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.

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 and minimize disruptions in banking and credit flows that would otherwise occur because rigid interest rates caused disintermediation in certain credit markets.

## **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. We highlight certain aspects of the banking and broader financial systems that

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<sup>7</sup> 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.

will command our attention in Section VI, where we propose a package of reforms that would enable China to adopt an independent monetary policy.

### *V.1 The Banking and Financial Systems*

The financial landscape in China is dominated by the state-owned banking system.<sup>8</sup> 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.<sup>9</sup>

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 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

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<sup>8</sup> 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.

<sup>9</sup> 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. In the first quarter of 2005, bank loans accounted for as much as 89 percent and corporate bonds and stocks for only about 1 percent.

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. Most of these reform efforts to date have focused on three of the SCBs—Bank of China, China Construction Bank and Industrial and Commercial Bank of China. Foreign strategic investors have been invited 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 have also been permitted to do IPOs abroad in order to strengthen their capital bases.

In sum, these three SCBs are in stronger shape 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, progress has been limited. A similar picture is true of the banking system at large.

### *V.2 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.<sup>10</sup> Another instrument, which is used less as it is constrained by the fixed exchange rate regime, is interest rate policy (interest rates on PBC lending and reserves held at the PBC, as well as other rates including banks' base deposit and lending rates). The PBC has recently been using growth rates of money and bank lending as explicit intermediate targets. The relationship of these aggregates to real activity has not been 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.

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 rapid 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 end-2000 to 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

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<sup>10</sup> See Yi (2001) and Xie (2004). A telling (and probably slightly unfair!) indication of the importance accorded to 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."

and 5.6 percent for the RCCs. This still suggests a high level of liquidity in the banking system. Notwithstanding the abundance of 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. 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 have taken only limited advantage of this added flexibility in lending to the private sector. A survey reported in Table 2 of the PBC's 2004Q3 Monetary Policy 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.<sup>11</sup> 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).<sup>12</sup> The subsequent widening of the gap between the base 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. This could reflect concerns banks have about their risk-assessment capabilities, especially in an environment where there are still strong pressures 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.<sup>13</sup> Deficiencies in the legal framework may also play a role. Collateral provisions are generally 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).

### *V.3 The Exchange Rate Regime*

From 1995 to 2005, the renminbi was maintained at a fixed parity relative to the U.S. dollar. This regime was 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

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<sup>11</sup> Bad loans to SOEs are more readily forgiven than bad loans to the private sector.

<sup>12</sup> See Dunaway and Prasad (2004) for an assessment of the potential benefits of this policy shift.

<sup>13</sup> 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. For more on Chinese banking reforms, see Dobson and Kashyap (2006) and Garcia-Herrero et al. (2006).



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

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 moved only by modest amounts against the dollar.

This rigidity of the exchange rate has constrained monetary policy independence by making it difficult for the PBC to use interest rates as an 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 rapid build-up of international reserves since 2001, when the renminbi began to come under appreciation pressures (Figure 6). 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 more important during 2005.

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).

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. 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 has facilitated sterilization operations. Saving rates are very high; corporate saving, in particular, has increased sharply over the last year. Most of these savings

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 and improve their balance sheets. 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. 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.

## **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.

### *VI.1 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.<sup>14</sup> 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 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 sharp 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.<sup>15</sup> 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.”*

#### *VI.2 Instrument Independence for the PBC with Strategic Guidance from the Government*

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<sup>14</sup> 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.

<sup>15</sup> Food prices are quite volatile in China. Food accounts for about 40 percent of the consumption basket of Chinese households, giving it a large weight in the CPI. The retail price of energy is administered.

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 banking system is not essential for monetary policy purposes.<sup>16</sup> 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

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<sup>16</sup> 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.

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. Experience 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.<sup>17</sup> 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.<sup>18</sup> 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

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<sup>17</sup> 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 A of the working paper version of this paper (Goodfriend and Prasad, 2006).

<sup>18</sup> This would not preclude the PBC from limited foreign exchange intervention at the margin. See Broaddus and Goodfriend (1996) for an analysis of the Federal Reserve's foreign exchange operations.

enough new securities every year for the PBC to purchase. 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 would facilitate the conduct of monetary policy by making PBC asset acquisition independent of foreign exchange policy and of bank supervision and regulation. 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 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. To prepare China for independent monetary policy, it is now essential that Chinese banks be made financially robust to fluctuations in short-term interest rates. This 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 by local managers politically motivated (or under pressure of provincial government officials) to direct credit to SOEs. The high rate of saving and the lack of alternative investment opportunities in China provide the banking system with ample loanable funds to finance 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.<sup>19</sup>

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 in

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<sup>19</sup> 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.

order to fortify the banking system against flexible interest rate policy. China must also 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 by a resurgence of NPLs.

Chinese banks are essentially involved in a *fiscal policy* function—the financing of SOEs to support employment in the state sector until it can be absorbed by the growing private sector. Although that financing is provided in the form of “loans,” it is not *banking policy*. 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 Goodfriend and Prasad (2006, Appendix B), 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.

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.<sup>20</sup>

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.

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<sup>20</sup> As long as inflation remains low, open market operations sufficient to implement monetary policy have relatively minor fiscal implications.

It will take much longer for Chinese banks to modernize fully, in particular to adopt methods for efficiently pricing loans according to risk. Nevertheless, 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.<sup>21</sup> In any case, full 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.

### *VI.3 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.

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<sup>21</sup> For instance, interest rate ceilings in the U.S. 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. Nevertheless, interest rate regulations inhibited the flexibility of the economy to respond to monetary policy actions.



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. We recognize that improving the consistency, reliability and timeliness of macroeconomic data is no small challenge, but 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.

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.<sup>22</sup> 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. 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

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<sup>22</sup> 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.

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.

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.

## References

- Allen, Franklin, Jun Qian, and Meijun Qian, 2005, "Law, Finance and Economic Growth in China," *Journal of Financial Economics*, Vol. 77, No. 1, pp. 57-116.
- Barnett, Steven, 2004, "Banking Sector Developments," in Eswar Prasad, ed., *China's Growth and Integration into the World Economy: Prospects and Challenges*, IMF Occasional Paper No. 232 (Washington: International Monetary Fund).
- Bernanke, Ben, 2004, "Inflation Targeting," *Federal Reserve Bank of St. Louis Review*, July/August, pp. 165-68.
- \_\_\_\_\_, 2005, "Testimony of Ben S. Bernanke," Nomination Hearing Before the Committee on Banking, Housing and Urban Affairs, U.S. Senate, November 15, <http://www.federalreserve.gov/boarddocs/testimony/2005/>
- Bernanke, Ben, Thomas Laubach, Fredrick Mishkin, and Adam Posen, 1999, *Inflation Targeting: Lessons from International Experience* (Princeton, N.J.: Princeton University Press).
- Bernanke, Ben, and Michael Woodford, eds., 2005, *The Inflation Targeting Debate* (Chicago, IL: University of Chicago Press).
- Blanchard, Olivier, 2005, "Discussion of Inflation Targeting in Transition Countries: Experience and Prospects," in *The Inflation Targeting Debate*, edited by Ben Bernanke and Michael Woodford (Chicago, IL: University of Chicago Press).
- Broadus, J. Alfred, and Marvin Goodfriend, 1996, "Foreign Exchange Operations and the Federal Reserve," *Economic Quarterly*, Federal Reserve Bank of Richmond, Winter, pp. 1-20.
- \_\_\_\_\_, 2001, "What Assets Should the Federal Reserve Buy?" *Economic Quarterly*, Federal Reserve Bank of Richmond, Winter, pp. 7-22.
- \_\_\_\_\_, 2004, "Sustaining Price Stability," *Economic Quarterly*, Federal Reserve Bank of Richmond, Summer, pp. 3-20.
- Cole, Harold, and Lee Ohanian, 2001, "New Deal Policies and the Persistence of the Great Depression: A General Equilibrium Analysis," Federal Reserve Bank of Minneapolis, Research Department Working Paper, No. 597, May.
- Dobson, Wendy, and Anil Kashyap, 2006, "The Contradiction in China's Gradualist Banking Reform," *Brookings Panel on Economic Activity*, forthcoming.

- Dunaway, Steven, and Eswar Prasad, 2004, "Interest Rate Liberalization in China," Op-ed article in *International Herald Tribune*, December 3.
- Eichengreen, Barry, 2004, "Chinese Currency Controversies." CEPR Discussion Paper No. 4375 (London, U.K.: Center for Economic Policy Research).
- García-Herrero, Alicia, Sergio Gavilá, and Daniel Santabárbara, 2006, "China's banking Reform: An Assessment of its Evolution and Possible Impact," *CESifo Economic Studies*, Vol. 52, pp. 304-63.
- Goldstein, Morris, and Nicholas R. Lardy, 2004, "What Kind of Landing for the Chinese Economy?" Policy Briefs in International Economics, No. PB04-7 (Washington: Institute for International Economics).
- Goodfriend, Marvin, 2002, "Monetary Policy in the New Neoclassical Synthesis: A Primer," *International Finance*, Summer, pp. 165-92. Reprinted in *Economic Quarterly*, Federal Reserve Bank of Richmond, Summer 2004, pp. 21-45.
- \_\_\_\_\_, 2004, "Understanding the Transmission of Monetary Policy," manuscript, Federal Reserve Bank of Richmond. Presented at Joint China-IMF High Level Seminar on "China's Monetary Policy Transmission Mechanism," Beijing, May 2004.
- \_\_\_\_\_, 2005, "Inflation Targeting in the United States?" in *The Inflation Targeting Debate*, eds. Ben Bernanke and Michael Woodford (Chicago: University of Chicago Press).
- Goodfriend, Marvin, and Robert King, 1997, "The New Neoclassical Synthesis and the Role of Monetary Policy," in *NBER Macroeconomics Annual*, eds. Ben Bernanke and Julio Rotemberg, pp. 231-95 (Cambridge, MA: MIT Press).
- \_\_\_\_\_, 2005, "The Incredible Volcker Disinflation," *Journal of Monetary Economics*, 52, July, pp. 981-1016.
- Goodfriend, Marvin, and Eswar Prasad, 2006, "A Framework for Independent Monetary Policy in China," IMF Working Paper WP/06/111 (Washington: International Monetary Fund).
- Green, Stephen, 2005a, "Making Monetary Policy Work in China: A Report from the Money Market Front Line," manuscript (Shanghai, China: Standard Chartered Bank).
- \_\_\_\_\_, 2005b, "On the Ground—China" various research reports of Standard Chartered Bank Global Research, Shanghai, China.
- Ho, Corinne, and Robert McCauley, 2003, "Living with Flexible Exchange Rates: Issues and Recent Experiences in Inflation Targeting Emerging Market Economies," BIS Working Paper No. 130.

Hope, Nicholas, and Fred Hu, 2005, "Reforming Chinese Banking: How Much Can Foreign Entry Help?" manuscript (Stanford, CA: Stanford University).

International Monetary Fund, 2004, 2005, *People's Republic of China: Article IV Consultation—Staff Report*, IMF Staff Country Reports 04/351 and 05/411. Available on the web at [www.imf.org](http://www.imf.org) (Washington: International Monetary Fund).

International Monetary Fund, 2006, "Inflation Targeting and the IMF," manuscript in preparation by Nicolleta Batini, Peter Breuer, Kalpana Kochhar and Scott Roger.

Jonas, Jiri, and Frederic S. Mishkin, 2005, "Inflation Targeting in Transition Countries: Experience and Prospects," in *The Inflation Targeting Debate*, edited by Ben Bernanke and Michael Woodford (Chicago, IL: University of Chicago Press).

McKinnon, Ronald I., 2006, "China's Exchange Rate Trap: Japan Redux?" *American Economic Review*, forthcoming.

Mishkin, Frederic S., 2000, "Inflation Targeting in Emerging-Market Countries," *The American Economic Review, Papers and Proceedings*, Vol. 90, No. 2, pp. 105-109.

Mishkin, Frederic S., and Klaus Schmidt-Hebbel, 2005, "Does Inflation Targeting Make a Difference," manuscript, Columbia University.

Obstfeld, Maurice and Kenneth Rogoff, 1995, "The Mirage of Fixed Exchange Rates," *Journal of Economic Perspectives*, 9, Fall, pp. 73-96.

People's Bank of China, *China Monetary Policy Report*, various issues (Beijing, China).

People's Bank of China, *China Financial Stability Report 2005* (Beijing, China).

Podpiera, Richard, 2006, "Progress in China's Banking Sector Reform: Has Bank Behavior Changed?" IMF Working Paper, forthcoming.

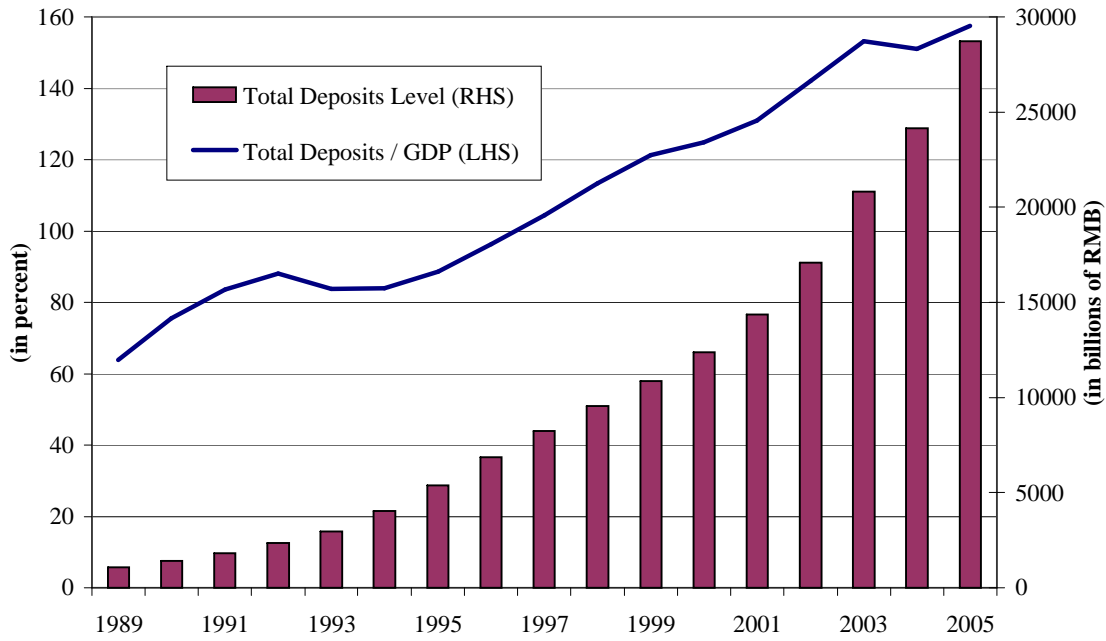
Poole, William, 1978, *Money and the Economy: A Monetarist View* (Reading: Addison-Wesley Publishing Co.).

Prasad, Eswar, Thomas Rumbaugh, and Qing Wang, 2005, "Putting the Cart before the Horse? Capital Account Liberalization and Exchange Rate Flexibility in China," IMF Policy Discussion Paper 05/1 (Washington: International Monetary Fund).

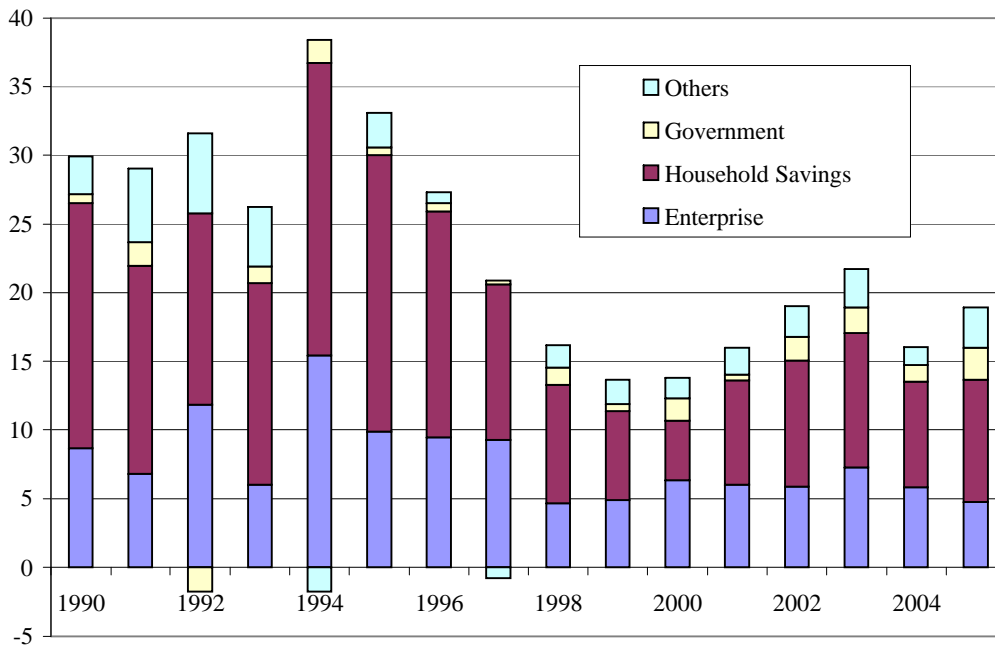
Prasad, Eswar, and Shang-Jin Wei, 2005, "China's Approach to Capital Inflows: Patterns and Possible Explanations," IMF Working Paper 05/79. Forthcoming in an NBER Volume on Capital Flows edited by Sebastian Edwards.

- Prasad, Eswar, and Raghuram Rajan, 2005, "China's Financial Sector Challenge," Op-ed article in *Financial Times*, May 3.
- Prasad, Eswar, and Raghuram Rajan, 2006, "Modernizing China's Growth Paradigm," *American Economic Review*, forthcoming.
- Setser, Brad, 2006, "The Chinese Conundrum: External Financial Strength, Domestic Financial Weakness," *CESifo Economic Studies*, Vol. 52, pp. 364-95.
- Stone, Mark, 2003, "Inflation Targeting Lite," IMF Working Paper 03/12 (Washington: International Monetary Fund).
- Svensson, Lars E. O., 2003, "Escaping from a Liquidity Trap and Deflation: The Foolproof Way and Others," *Journal of Economic Perspectives*, Fall, pp. 145-66.
- Woodford, Michael, 2003, *Interest and Prices: Foundations of a Theory of Monetary Policy*, Princeton, N.J.: Princeton University Press.
- Xie, Ping, 2004, "China's Monetary Policy: 1998-2002," Stanford Center for International Development Working Paper No. 217 (Stanford, CA: Stanford University).
- Xie, Ping, and Xiong Luo, 2001, "Taylor Rule and China's Monetary Policy," manuscript, People's Bank of China (Beijing, China).
- Yi, Gang, 2001, "The Framework of China's Monetary Policy," manuscript, People's Bank of China (Beijing, China). Presented at the PBC-IMF International Seminar on Monetary Policy Operations, May 2001, Suzhou, China.

**Figure 1.**  
**Total Deposits in Financial Institutions**

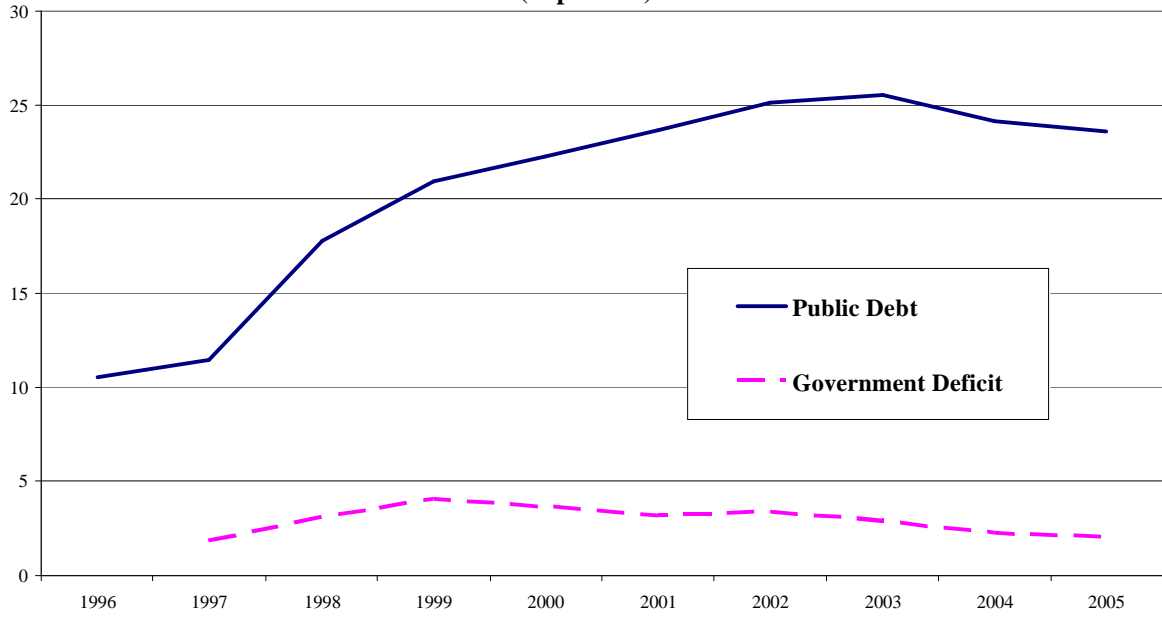


**Growth of Total Deposits and Contributions of Components**  
**(in percent)**



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.

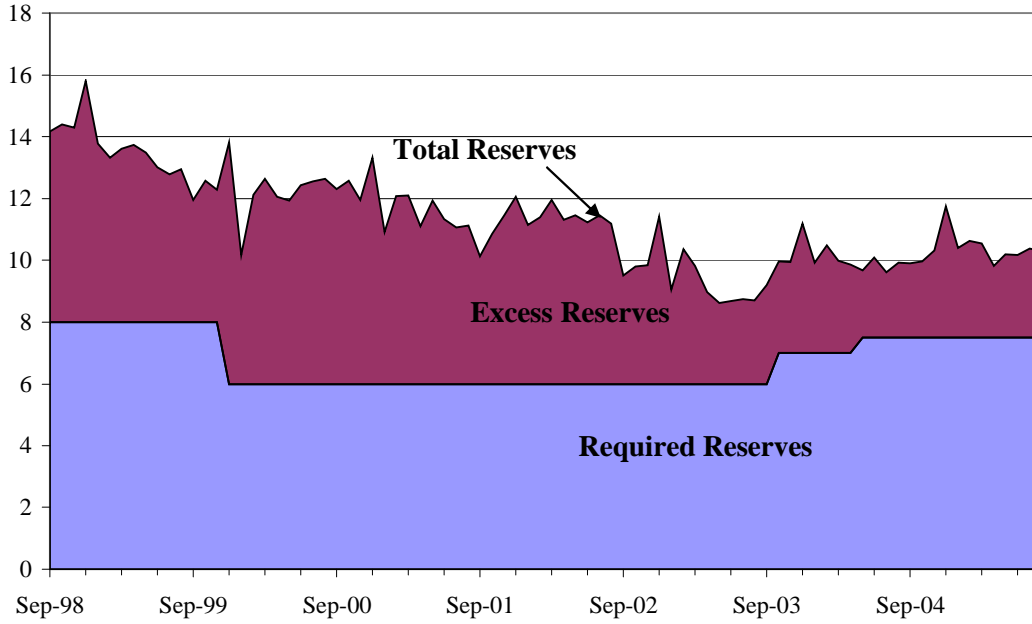
**Figure 2. Government Deficit and Public Debt as Ratio to GDP  
(in percent)**



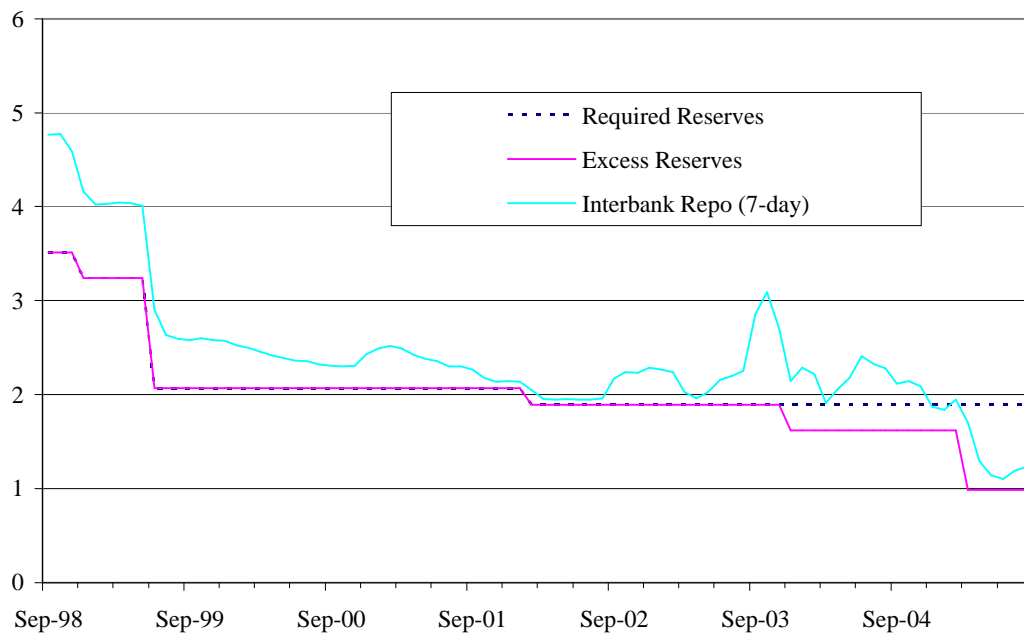
Source: International Monetary Fund.



**Figure 3a. Bank Reserves**



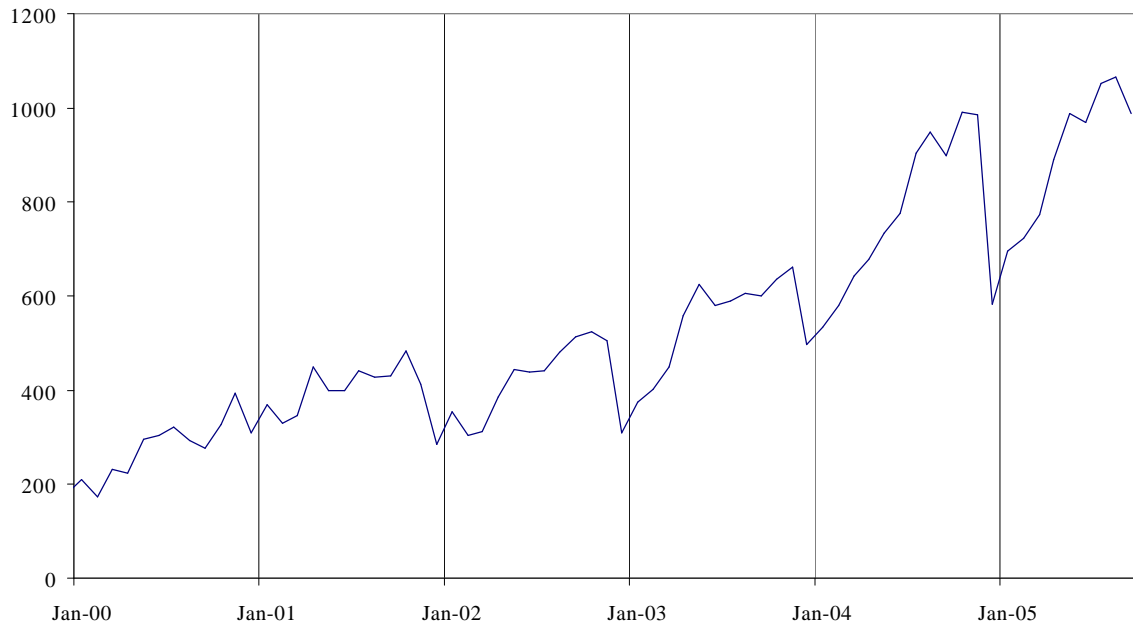
**Figure 3b. Rate of Remuneration on Reserves**



Source: CEIC and authors' calculations.

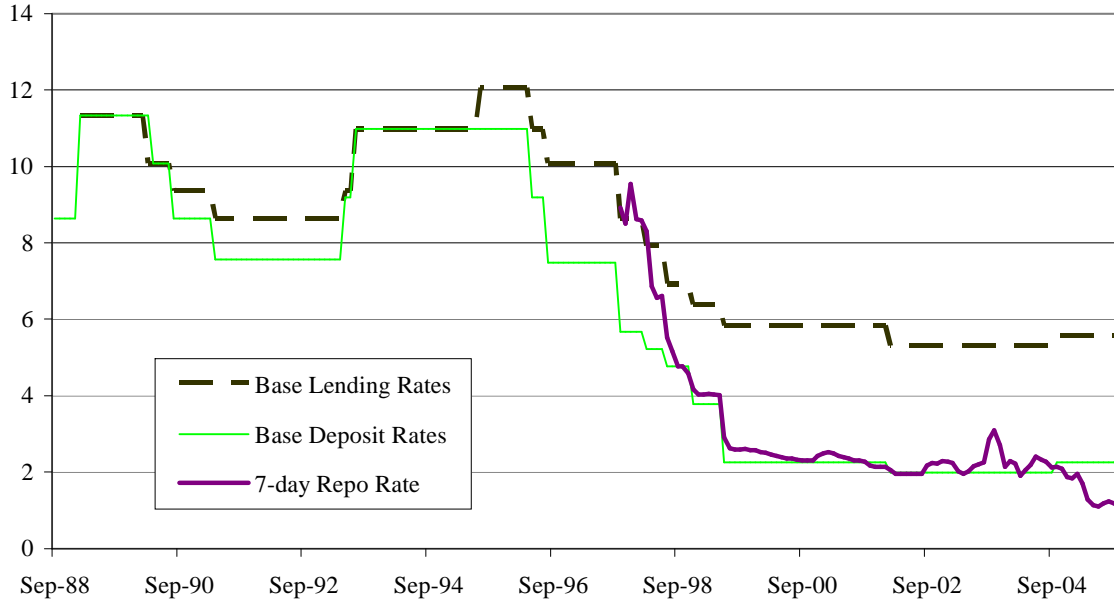
Notes: Bank reserves are expressed as percentage ratios of total deposits in the banking system. The rate of remuneration on required and excess reserves was the same until December 2003.

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

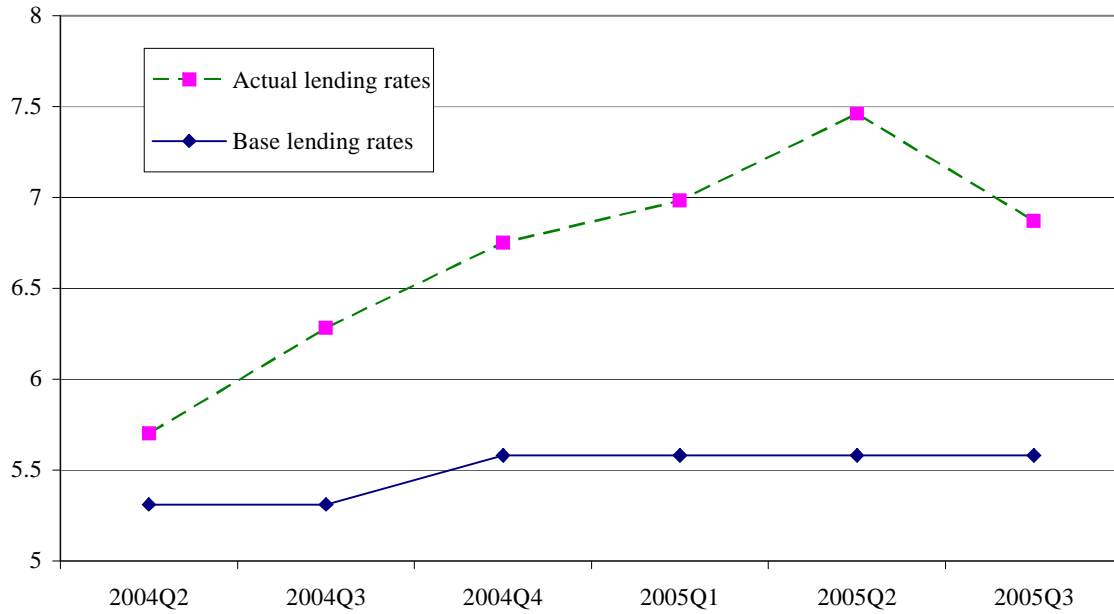


Source: CEIC.

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

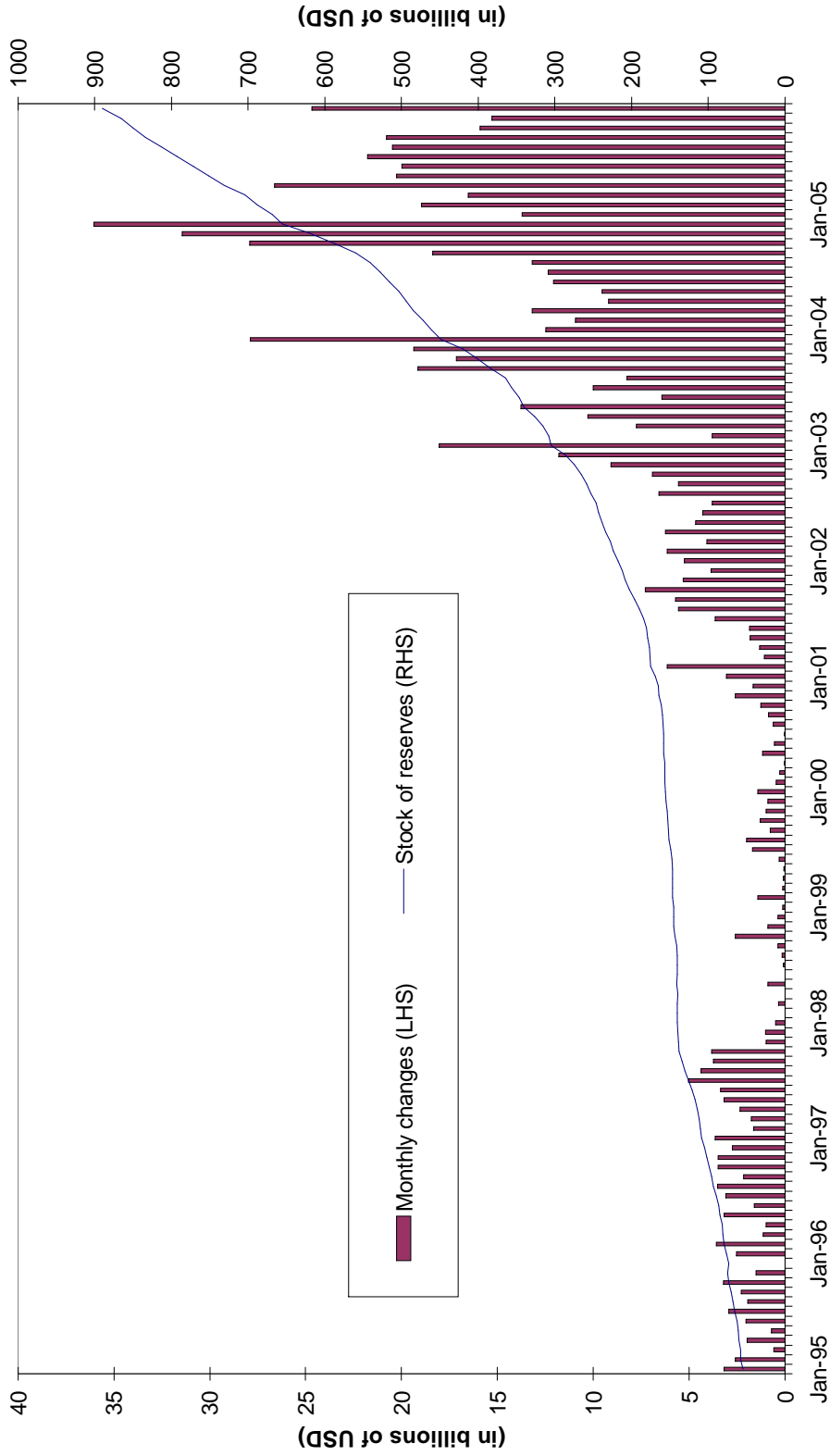


**Figure 5b. Base and Actual Lending Rates (1-year)  
(in percent)**



Source: CEIC, PBC Monetary Reports and IMF calculations.

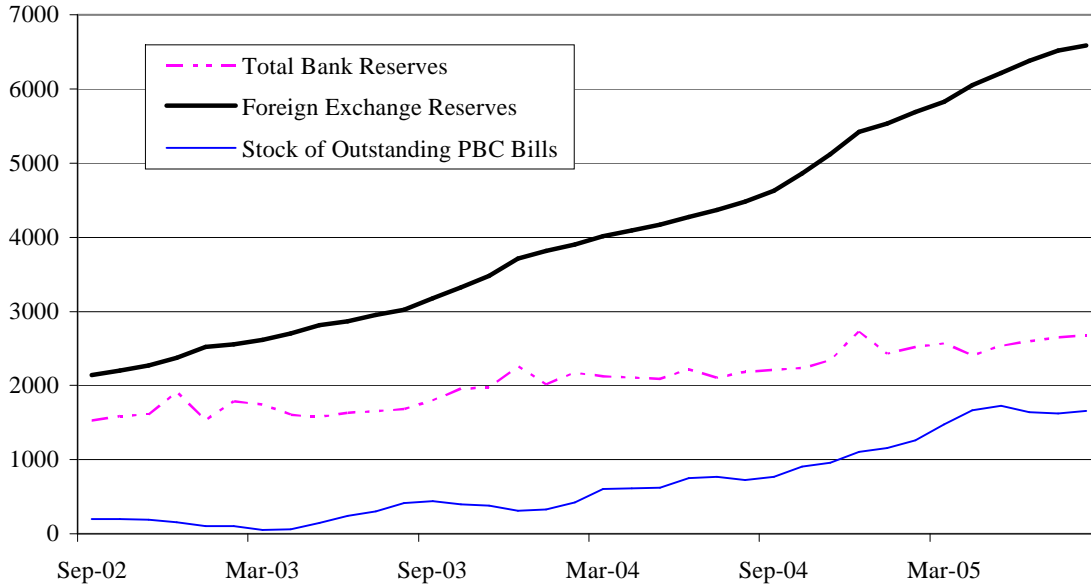
**Figure 6. Foreign Exchange Reserves: Flows and Stocks**



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.

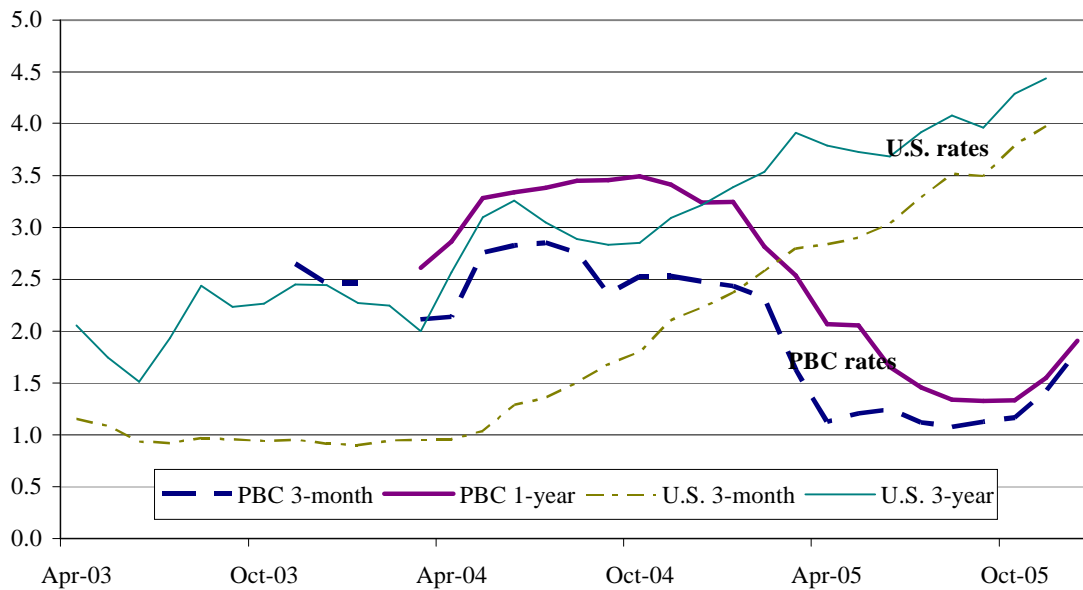
Source: CEIC and authors' calculations.

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



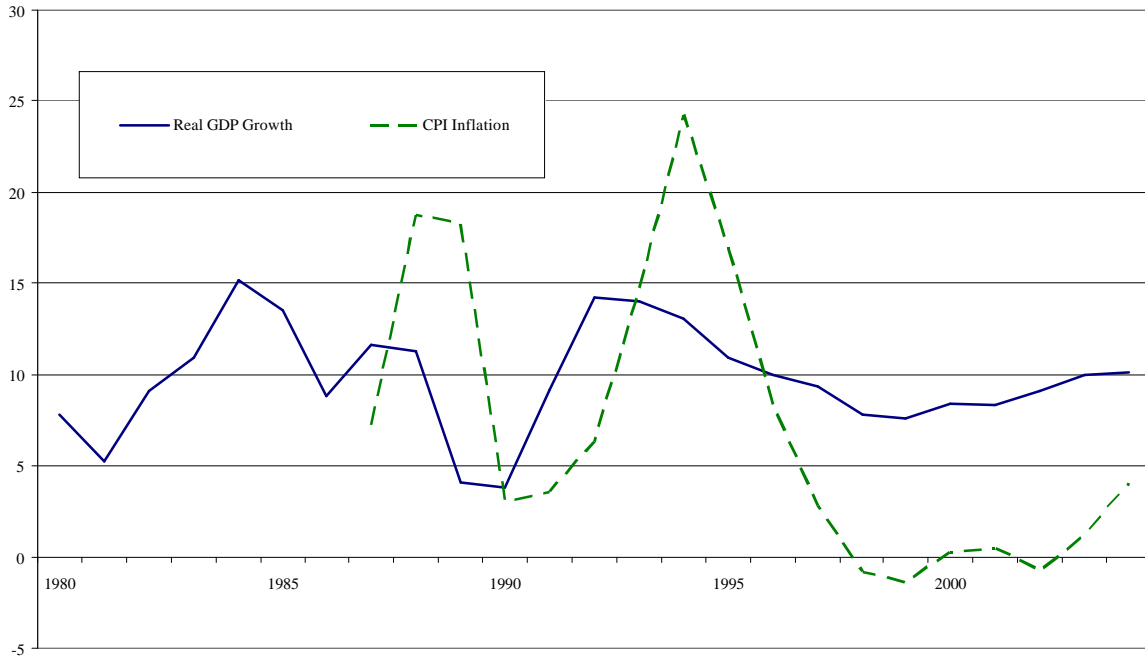
Source: PBC reports and CEIC.

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



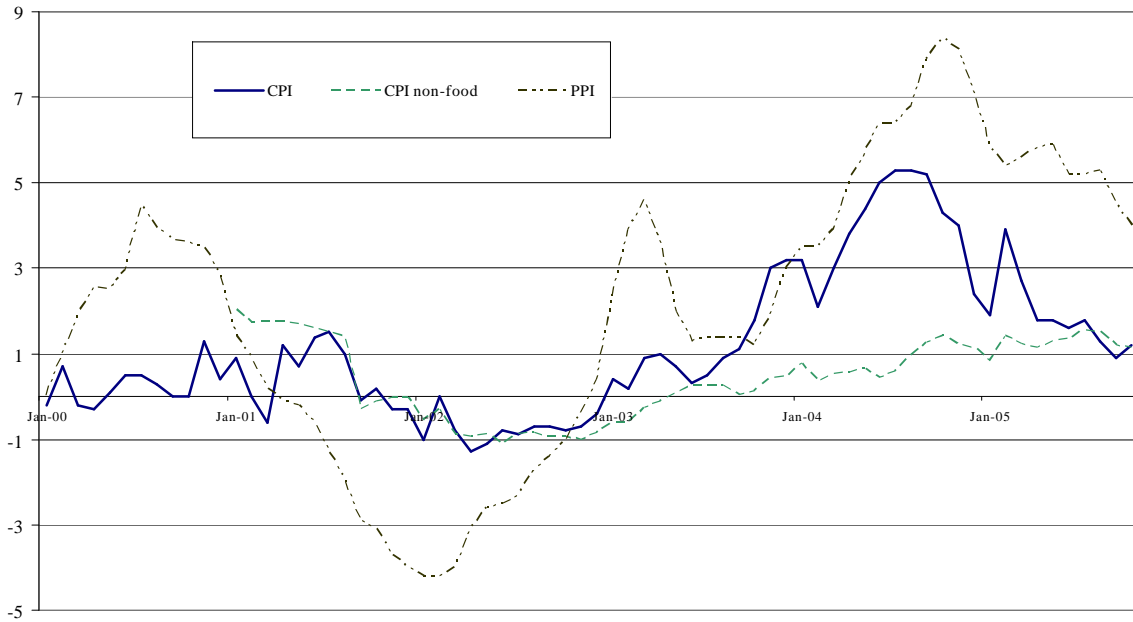
Source: CEIC and U.S. Treasury.

**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.