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Sterilization,
and Policy Dilemma

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Introduction

Surges in capital inflows distort relative prices, exacerbate weakness in a nation's financial sector, and feed asset-price bubbles. A capital inflow represents an increase in the demand for a country's assets—thus, in the absence of policy intervention, the currency tends to appreciate on foreign exchange markets. Hence, when purchasing foreign exchange brings inflationary pressures through an increase in reserve money, monetary authorities step in to sterilize the excessive liquidity to mitigate inflationary pressures and real exchange rate appreciation, and to avoid the loss of control over the domestic money stock.

Past observations, however, tell us that the sterilization policy cannot be a lasting solution, and can be costly. Among the countries of developing Asia, the People's Republic of China (PRC) and India have in particular been receiving large capital inflows and experiencing a rapid increase in foreign exchange reserves. As their reserve growth exceeded 30 percent in the past 2 years, liquidity management has become a pressing issue creating a policy dilemma. This brief outlines the sterilization practices in these two capital importing countries to shed light on the policy dilemma that they face, and concludes in favor of more freedom in policy options.

Sterilization Policies, Channels for Impacts, and Evidence

Policymakers often struggle to limit the expansionary consequences of capital flows by relying primarily on tightening monetary policy by sterilizing capital inflows through open-market operations (OMO); window guidance (direct control on credit volume of selected banks); and/or increased reserve requirements. Central banks sell treasury bills or central bank paper—sterilization intervention through OMO—to offset some or all of the monetary expansion associated with purchasing foreign exchange. Other forms of

sterilization include raising banks' reserve requirements or increasing discount rates. In some cases, liberalization of capital outflows, and/or management of government funds complement open-market operations.

While sterilization is a widely used tool, measuring foreign exchange intervention and sterilization success is difficult.¹ Two long-discussed channels for sterilized intervention that have real effects are portfolio balance channel and signaling channel. The portfolio balance channel assumes the public considers foreign assets to be imperfect substitutes for domestic assets. Following an intervention against the currency, the public would find itself holding a larger share of domestic currency assets than before. At prevailing exchange rates, this would induce people to attempt to sell these extra domestic currency assets to rebalance their portfolios. As a result, the exchange rate value of the local currency would fall below what its value would have been without the intervention. Alternatively, under the signaling channel, foreign exchange intervention conveys a signal that changes the public's expectations about the future exchange rate path. For a successful intervention against the currency under the signaling channel, the change in public expectations may reflect either a change in expectations concerning future monetary policy or a change in economic fundamentals.² Empirical support for the two channels, however, has been weak, and concentrated on the three major currencies (dollar, mark, and yen) (Dominguez and Frankel 1993).

For developing countries, Reinhart and Reinhart (1998) document sterilization experiences through OMO showing that domestic interest rates rose when sterilization began, and that short-term flows as a share of total capital flows rose as a result of an increase in the short-

¹ Monetary authorities claim that they intervene only when exchange rate levels deviate from true underlying "fundamentals." Thus, it is difficult to distinguish whether the currency movements reflect interventions or changes in fundamentals that led to them. Further, it is complex to assess the timing of the market's response to an intervention. If the foreign exchange intervention were anticipated, then speculators would be likely to respond to its anticipated impact before it actually occurred. Alternatively, if the market were initially uncertain about the magnitude of an intervention, its response might be delayed until the true magnitude is revealed.

² Obstfeld (1988) argues, by looking at industrialized countries, that sterilization intervention, in itself, has played an unimportant role. Instead, clear shifts in patterns of monetary and fiscal policy appear to have been the main medium-term policy factors determining currency values.

term interest rate.³ However, they do not find any pronounced or sustained shift in the composition of capital inflows as a result of such intervention. Another study by Reinhart and Reinhart (1999) examines the impacts of reserve requirements by looking at money multipliers, and deposit and lending rates. They find that first, deposit-to-lending interest rate spreads widen and money multipliers declined in the wake of an increase in reserve requirements. Second, in some cases where lending rates did not fall in nominal terms at the time of the change in reserve requirements, inflation was also declining. Overall, they find that there were some real effects although the impact was temporary.

Sterilization Intervention: Country Experiences

People's Republic of China

In the PRC, credit growth has been very strong, averaging 18 percent for 2002–2003, accelerated by an interest rate cut in March 2002. Growing concern over investment-led overheating caused the central bank, People's Bank of China, to resort to window guidance in the third quarter of 2003, after annual credit growth rate had exceeded 20 percent and the broad money multiplier reached over 6 (Table 1 columns 4 and 5). Credit growth and the money multipliers responded quickly and declined somewhat. Overnight and repo rates rose sharply by about 70 basis points following an increase in reserve requirements and the window guidance that took place in September 2003. The policy measures adopted appeared effective, at least in the short run, in curbing money expansion.

Subsequently, credit growth and money multipliers turned around and started to rise once again during the first quarter of 2004. The central bank responded by increasing the reserve requirement ratio and implementing window guidance measures. Despite the

³ Domestic interest rates would rise if the domestic currency assets that investors want to hold (i.e., bank certificates of deposit and bonds) are poor substitutes for short-term central bank paper or treasury bills supplied by the central bank. To induce investors to hold the increased supply of short-term paper, the price of this paper has to decline and yields have to increase. Also, interest rates could rise if the demand for money rose. By sterilizing, the monetary authorities are not accommodating the increased demand for money, and forcing the money market to clear at a higher interest rate. Samples of the study include Indonesia (1989-1994), Republic of Korea (1988-1989), Malaysia (1989-1994), and Philippines (1992-1993).

Table 1. Policy Interventions,
Credit Growth, and Money Multipliers in the PRC

Policy Interventions	Annual Credit Growth (percent)		Overnight Interest Rate	Broad Money Multiplier	Narrow Money Multiplier
	Total	Agriculture			
Jun 2003	22	38	2.08	6.16	2.28
Jul 2003	22	31	2.13	6.09	2.25
Aug 2003	22	36	2.09	6.12	2.24
Sep 2003					
WG	21	20	2.52	5.89	2.18
WG and RR	20	17	2.78	5.67	2.12
Oct 2003	18	10	2.37	5.67	2.12
Nov 2003					
Dec 2003	17	5	2.04	5.23	1.99
Floating band of lending rates widened					
Jan 2004	17	-2	2.17	4.46	1.66
Feb 2004	18	-2	2.09	4.57	1.68
Mar 2004	18	-7	1.90	4.77	1.77
WG (Q1)	17	-9	2.05	4.80	1.76
RR	14	-13	1.99	4.90	1.81
May 2004	9	-25			
Jun 2004					

Note: WG means window guidance, RR means reserve requirement raised. Occasional window guidance was also conducted during the first quarter of 2004.

Sources: People's Bank of China, DataStream, Hagiwara (2004).

commitment to cool down the economy, the PRC authorities are concerned with the slowing of economic activity in lagging sectors, such as agriculture, and in the poorer provinces, where more investment is needed. Therefore, measures like window guidance to halt the nongovernment-approved construction loan were preferred rather than raising discount rates as they focus their effects on specific sectors and areas (Table 1 columns 2 and 3).

Concurrently, People's Bank of China withdrew large amounts of base money through OMO amounting to CNY269 billion in 2003 and CNY281 billion in the first quarter of 2004. Nonetheless, the current exchange rate policy is still generating a rapid increase in base money as capital inflows remain buoyant, thus increasing the money supply and hampering efforts to ease the growth in lending.

India

In India, large capital inflows have dominated monetary policy decisions in recent years. In contrast to the PRC, OMO is the major monetary tool. Since the Reserve Bank of India cannot issue central bank bills, efforts to sterilize the expansionary impact of capital flows took the form of large OMO and continuous repo operations under the Liquidity Adjustment Facility. To offset the impact on reserve money of large purchases of US dollars, the Reserve Bank of India made substantial sales of government bonds. The net sales of government-dated securities through OMO peaked in October 2003 reaching about 139 billion rupees before the magnitude of intervention slowed somewhat. Meanwhile repo transactions have increased in importance as a monetary tool, with the magnitude of these transactions far exceeding that of dated securities. The net absorption of the liquidity through the Liquidity Adjustment Facility exceeded 500 billion rupees in March 2004.

As managing liquidity has become more challenging in 2004, the Reserve Bank of India is also seeking to bring down the large surplus on the capital account by relaxing exchange restrictions on resident investment abroad, and by lowering interest rates paid on nonresident Indian deposit accounts. In response to a shortage of rupee securities, the Market Stabilization Scheme was introduced in April 2004. Subsequently, the Reserve Bank of India conducted the sale of stabilization bonds amounting to 50 billion rupees.

As a result of the authorities' efforts, interest rates in India have shown signs of increasing in the second quarter of 2004. Further, the initial reaction to the easing of restrictions on outflows appears to have been well received by investors, though uncertainties surrounding

the new coalition government's policy, as well as changes in global stock market dynamism, induced net outflows in May. Despite the sterilization efforts, inflation exceeded 8 percent in August, and the central bank had to increase the cash reserve ratio by 25 basis points in September, and is planning another 25 basis points increase in October 2004.

Concluding Remarks

The two countries' experiences suggest that liquidity management is not an easy task: being affected by volatile exogenous factors as in India, or having to commit to the existing exchange rate policy while accommodating the development objective as in the PRC. As capital inflows persist and reserves accumulate, the sterilization policy cannot be sustainable. The monetary authorities face a dilemma in selecting correct policies to meet their objectives of exchange rate stability, controlling inflation, and economic growth. In this respect, it is crucial to recognize that all the objectives cannot be effectively pursued by any single economic policy.

As relaxing capital controls progresses further, volatile financial flows will then challenge the still fragile domestic financial system. The strongest policy lesson is the need for more freedom in policy options, which, with a strengthened financial system, would entail a reconsideration of existing exchange rate policies and practices.

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