MONETARY MANAGEMENT IN MAINLAND CHINA IN THE FACE OF LARGE CAPITAL INFLOWS[1]

Key Points:

- *Recent surges of capital inflows to mainland China have prompted the People's Bank of China (PBoC) to improve its monetary management techniques. Increasing sophistication in open market operations has allowed the PBoC to sterilise the impact of foreign exchange intervention on domestic liquidity.*

- *The PBoC carried out 110 open market operations in 2004, through which 42 percent of the increase in domestic liquidity as a result of foreign exchange purchase was sterilized. By the end of 2004, the outstanding amount of central bank bills amounted to close to RMB1 trillion yuan, equivalent to about 17 percent of reserve money or 7 percent of nominal GDP.*

- *Preliminary econometric analysis shows that the reaction by the PBoC has been strong and swift. The central bank has also become more active in sterilisation operations in the last couple of years.*

- *Nevertheless, it is difficult to judge the effectiveness of these operations in insulating domestic monetary conditions from surges of capital inflows. Although there appears to be little indication that capital inflows have had a causal effect on domestic credit growth, this observation may simply reflect the possibility that there is no effective transmission mechanism between changes in the PBoC's balance sheet and those of the commercial banks.*

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[1] The views expressed herein do not represent those of the Hong Kong Monetary Authority.

I.   INTRODUCTION

Strong capital inflows to mainland China in recent years have contributed to a rapid growth of foreign reserves, as the People's Bank of China (PBoC) intervened in the foreign exchange market in order to maintain a stable exchange rate between the renminbi and the U.S. dollar. The PBoC also conducted open market operations in order to sterilise the impact of the inflows on reserve money. Nevertheless, there are concerns whether the PBoC has been successful in its sterilisation operations, and whether the credit boom in the last two years has been fuelled by capital inflows from abroad. This study attempts to shed light on these questions. This paper is organised as follows. Section 2 describes the characteristics of recent episodes of fast foreign exchange accumulation in the Mainland. Section 3 examines the measures the PBoC has taken in response to capital inflows. The final section presents the results of some preliminary econometric work gauging the effectiveness of the PBoC's sterilisation operations. The assessment is carried out by analysing how the structure of the PBoC's balance sheet has been changed in reaction to capital inflows, and how such changes have been transmitted to the balance sheets of the commercial banks.

# II.   THE CHARACTERISTICS OF CAPITAL INFLOWS

Foreign reserves in mainland China have been building up since the mid-1990s. (Figure 1) There were two episodes when foreign reserves rose rapidly. The first wave of notable capital inflows took place during 1994-1997 when the accumulation of foreign reserves averaged at around US$30 billion per annum or 4% of nominal GDP. This round of foreign reserves build-up was mainly attributable to net foreign direct investment (FDI) inflows, as a result of further opening up of the economy. The accumulation of foreign reserves slowed towards the end of the last decade, as the domestic slowdown following the bursting of the 1992-93 bubble and the outbreak of Asian financial crisis in 1997 led to expectations for a renminbi devaluation and capital flight.

The latest episode of foreign reserve build-up was more pronounced, averaging at around US$110 billion *per annum* or 8% of nominal GDP during 2001 – 2004. In 2000 and 2001, the interest rate differential was a key factor in driving money into the Mainland. (Figure 2) The spread between deposit rates of the US dollar and renminbi switched from positive to negative in the third quarter of 2001, and has remained in the negative territory since then, leading to residents' preference for renminbi deposits over foreign currency deposits.   There was also some repatriation of overseas assets induced by the negative interest rate differential. Apart

from marked increases in recorded capital inflows, the "errors and omissions" item on the Mainland's balance of payments turned into positive over the past three years, reflecting capital inflows through unspecified channels. (Figure 3)

Figure 1

Change in foreign reserves
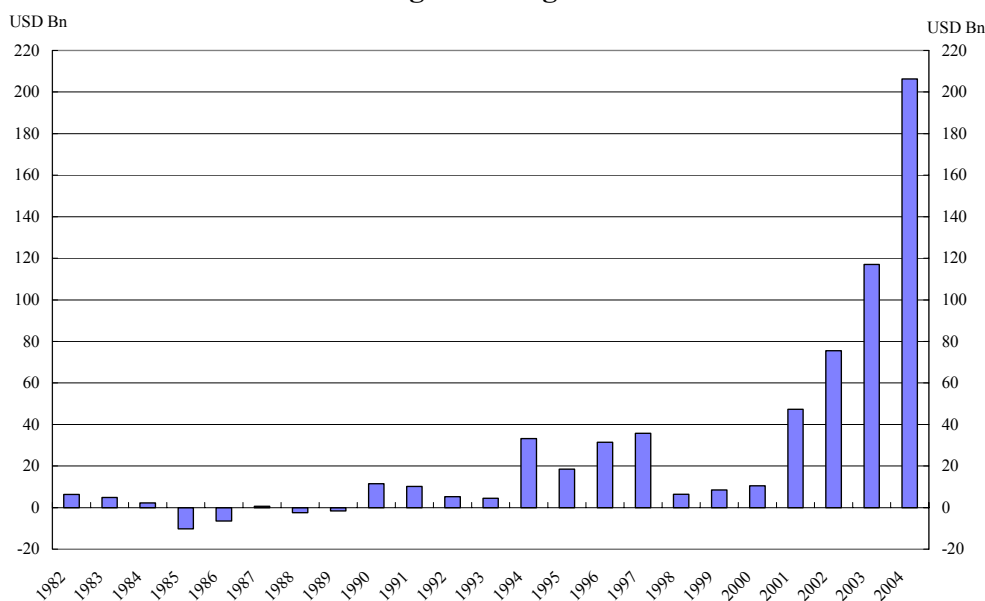
Source: CEIC.

2004 saw a particularly remarkable increase of over US$200 billion in foreign reserves, with a net increase of US$95 billion alone in the final quarter. Compared with previous years, a notable development is that visible trade surplus and FDI inflows only accounted for about 60% of the increase, and capital flows from other channels contributed significantly. Among different channels, there were sizeable inflows, to the tune of US$60 billion in 2004, pertaining to a reduction of foreign asset holdings by Mainland entities and repatriation of such funds back to the Mainland. Remittance to individuals from overseas, at around US$24 billion, was also a significant source of inflows in that period. Expectations of a renminbi appreciation appeared to be the driving forces behind such inflows.
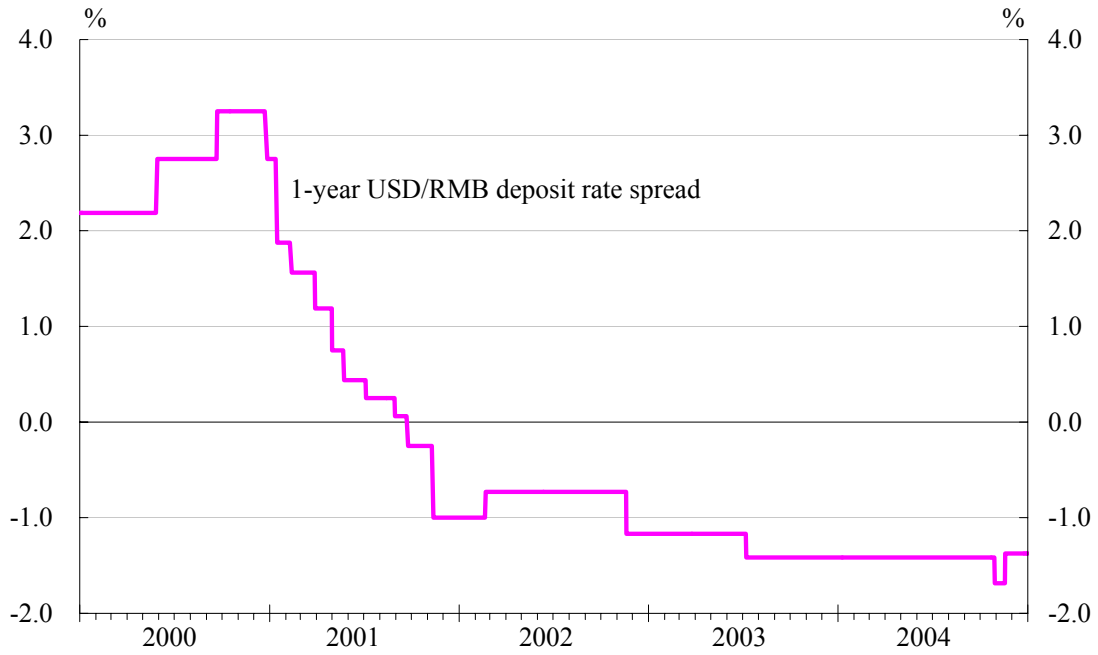
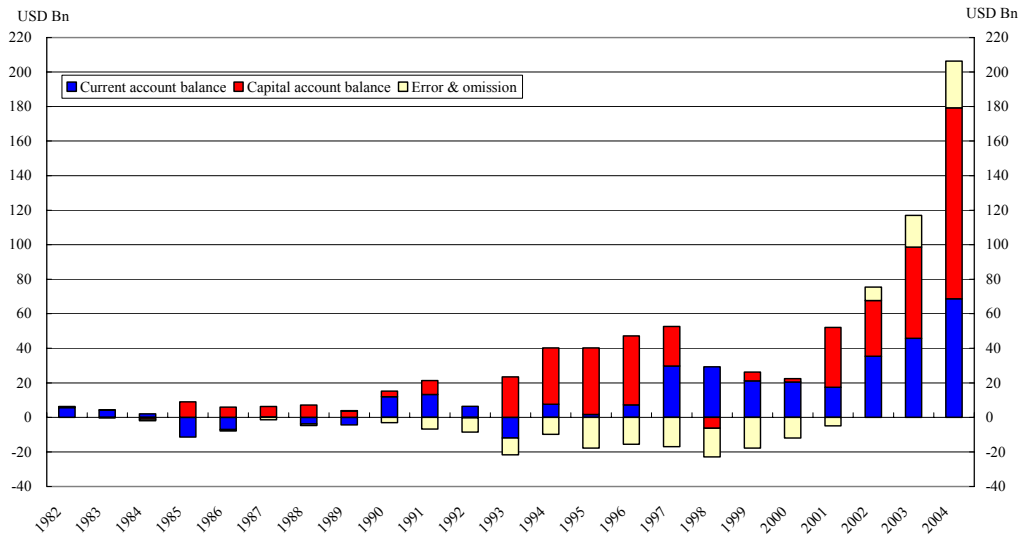**Figure 2**

Interest Rate Differential

Figure 3

Composition of Balance of Payments

Source: CEIC and Reuters.

Table 1: Decomposition of reserve accumulation

(US$ billion)	Average 1998-2000	2001	2002	2003	2004	2004H1	2004Q4 [b]
Increase in foreign reserves	**8.5**	**47.3**	**75.5**	**117.0** [a]	**206.4**	**67.0**	**95.4**
a. Current account balance	23.7	17.4	35.4	45.9	68.7	7.5	n.a.
Of which: visible trade balance	*39.0*	*34.0*	*44.2*	*44.7*	*59.0*	*5.9*	*28.1*
b. Capital account balance	0.3	34.8	32.3	52.7	110.7	66.8	n.a.
Of which: FDI inflows	*42.2*	*46.8*	*52.7*	*53.5*	*60.6*	*33.9*	*11.9*
c. Errors & omissions	-15.4	-4.9	7.8	18.4	27.0	-7.3	n.a.
Inflows unaccounted for by FDI and visible trade balance	***-72.7***	***-33.5***	***-21.4***	***18.9***	***86.8***	***27.2***	***55.3***

Source: CEIC and staff estimates.
Notes: (a) Increases in foreign reserves for 2003 include the US$45 billion used for bank recapitalisation.
(b) Figures for 2004Q4 are staff estimates based on trade and FDI statistics. Discrepancies exist between trade statistics and balance of payment (BoP) data as the latter excludes freight and insurance costs.

III. THE PBoC'S RESPONSE TO CAPITAL INFLOWS

In the face of large capital inflows, the PBoC had to intervene in the foreign exchange market and stand ready to sell renminbi in order to maintain the exchange rate peg. The resulting liquidity creation, if left unsterilised, would quickly overwhelm the growth of reserve money—an operating target of the PBoC's monetary policy framework (box 1). For example, liquidity injected into the banking system through the PBoC's purchase of foreign exchange in 2004 would have represented an increase of 30 percent of reserve money growth, if no liquidity-draining operations were conducted. In reality, reserve money grew by 11.4 percent in 2004 as a result of the PBoC's sterilisation operations. (Figure 4)

The PBoC could offset the impact of an increase in net foreign assets (foreign reserves) by engineering a reduction in net domestic assets on its balance sheet, either through an increase in reserve requirements or by open market operations. (Figure 5) Thus, in response to a rapid rise in domestic credit, the central bank raised the minimum reserve requirement by 1 percentage point in September 2003, and by another 0.5 percentage point in April 2004.

Box 1. Monetary Policy Framework of the PBoC

Monetary policy is still largely operated under a quantity-based framework, reflecting limited depth and breadth of financial markets in mainland China. The framework can be described as follows:[2]

- Final target: inflation, and growth/employment
- Intermediate target: M2, and banking system credit growth
- Operating target: reserve money, with an eye on short-term interbank interest rates
- Policy instruments: various policy rates (including rediscount, re-lending, base lending and deposits rates), reserve requirements, open market operations, and "window guidance"

The PBoC has used the second tool—sterilisation through open market operations—intensively, especially in 2004. According to the PBoC's 2004 Report on Open Market Operations, the central bank carried out 110 operations in the RMB market during the year. The net withdrawal of liquidity through these operations was RMB669 billion yuan, implying that 42 percent of the increase in domestic liquidity (RMB1609.8 billion yuan) as a result of foreign exchange purchase was sterilised, 17 percentage points higher than the extent of sterilisation in 2003 (25 percent). The PBoC conducted open market operations mainly by issuing central bank bills, and undertaking repos and reverse repos of such bills and other government bonds. (Box 2) By the end of 2004, the outstanding amount of central bank bills amounted to RMB974 billion yuan, equivalent to 16.5% of reserve money or 7% of nominal GDP.

The intensity of sterilisation varied throughout the year, according to the need of macroeconomic control, market liquidity conditions and the pace of capital inflows. The operations in 2004 can be roughly divided into two periods.

➢ In the first quarter when monetary aggregates and fixed asset investment grew at a fast pace, a tightening bias was adopted and the central bank 'over-sterilised' as reserve money actually declined amidst significant rises in net foreign assets. (Figure 5)

➢ Since the second quarter, a neutral stance was taken as growth in M2 and credit moderated. The emphasis of the operation shifted from overall quantity control to component adjustment as some banks with fast credit expansion were required to purchase central bank bills.

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[2] To the authors' knowledge, the PBoC does not have an official articulation of its monetary policy framework.

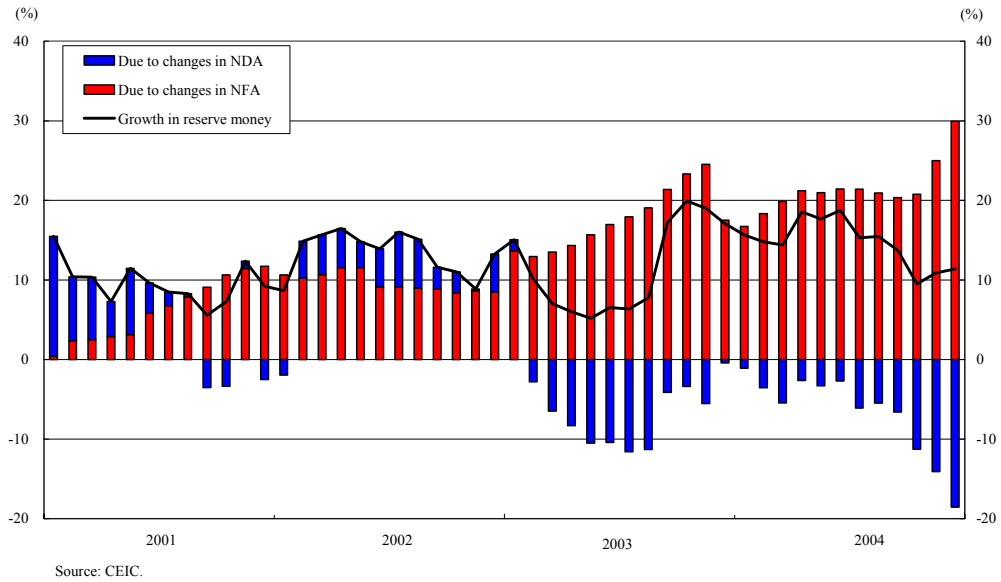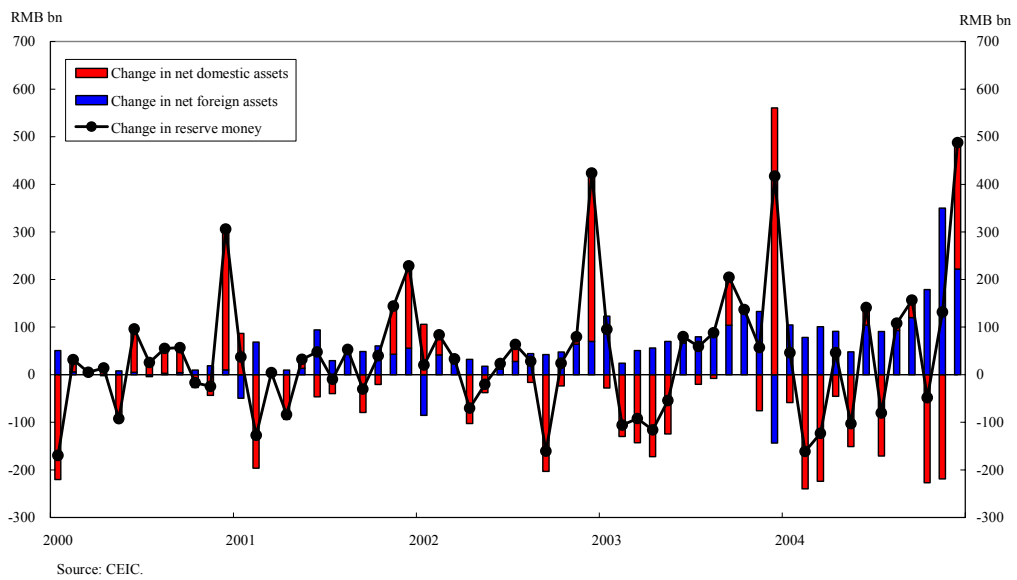**Figure 4**

Contributions to Reserve Money Growth

Source: CEIC.

Figure 5

**Balance sheet of PBoC**

Source: CEIC.

Box 2. Increasing Sophistication of the PBoC Open Market Operations

The PBoC started issuing central bank bills in April 2003 when it began to auction on a regular basis bills of 3 month, 6 month and 1 year maturity. A number of innovations in the second half of 2004 allowed the PBoC to improve the effectiveness of its open market operations. By now the central bank appears to have gained self-confidence as a market for its bills is firmly established, and it can operate on that market with considerable latitude. It notes with satisfaction that volatility in repo rates declined significantly in 2004 as compared to 2003. (Figure 6)

The innovations in the second half of 2004 include the following:

- Increase the frequency of operations. Since 27 July, repo operations have been conducted on every Tuesday morning, and since 5 August, new bills have been also issued on every Thursday morning.
- Allow longer trading time. To increase the liquidity of central bank bills, commencement of trading was changed from two days after issuance to one day after issuance. In addition, cessation of trading was changed from ten days before maturity to three days before maturity.
- Develop new products. The PBoC began to issue 3-year notes in December 2004, and issued 1-year future-dated bills for the first time on 28 December.
- Improve support systems. In November 2004, a link was established between the trading system for central bank bills and the payment system, so that the settlement can be done on a Delivery-vs-Payment basis.

Figure 6

7-day Repo Rate
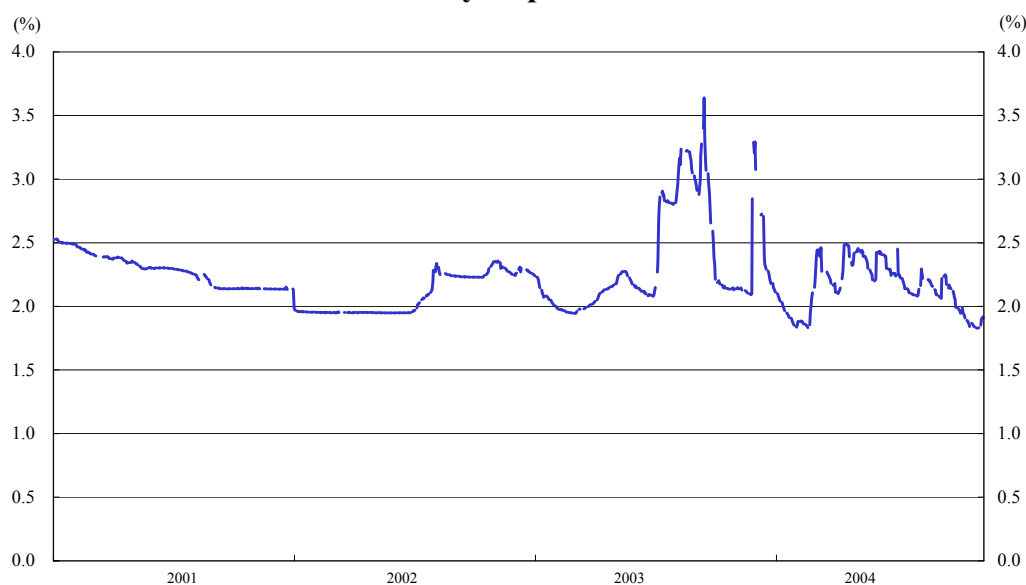
Source: CEIC.

IV. HOW EFFECTIVE HAS PBOC'S STERILISATION BEEN?

The discussions above raise the question of how successful the PBoC has been in neutralising the impact of capital flows on domestic monetary conditions. This question can be answered by examining the relationship among components of reserve money and wider monetary conditions. Changes in reserve money can be caused by either a change in net foreign assets (NFA) or a change in net domestic assets (NDA) on the balance sheet of the PBoC. Capital inflows triggered by developments in the external environment lead to an increase in the PBoC's NFA as it intervenes in the foreign exchange market in order to keep the exchange rate stable. To limit the impact of an increase in NFA on reserve money and domestic monetary conditions at large, the central bank needs to adjust its holding of NDA. Changes in reserve money – as a result of changes in NFA and sterilisation operations which alter the level of NDA – then exert their impact on wider monetary conditions. Therefore, effectiveness of sterilisation operations can be assessed by the central bank's ability to maintain stability in reserve money, monetary aggregates and interest rates.

To this end, we build a Vector AutoRegression (VAR) model to investigate the transmission of an impulse from net foreign assets to net domestic assets, as well as to wider monetary conditions. The VAR includes four variables – NFA, NDA, domestic credit (DCR) and interest rates (IR), and allows interaction among the variables. Details of the model are presented in the Technical Appendix. Monthly data between 1998.1 and 2004.12 are used for the estimation. The model is also estimated on two sub-samples: 1998.1-2002.12 and 2003.1-2004.12. Capital

inflows to the Mainland have been especially strong in the last couple years. Therefore, it is of interest to examine whether the PBoC responded differently during this period.

Based on the established model, we analyse the dynamic response of the variables to different shocks, as well as the relative importance of each shock in explaining the movements of the four variables in the system. The dynamic analysis shows that NDA responded to movements in NFA, confirming that NDA has been used by the PBoC to neutralise the impact of capital flows on base money. The model shows that a RMB 1 yuan increase in NFA would lead to a decline of around RMB 1 yuan in NDA, and most of the response took place within one month.

Shocks to NFA had little influence on DCR and IR. That is, changes in capital inflows did not seem to affect domestic credit growth and interest rates. The responses of NDA, DCR and IR appear to suggest that the impact of increases in NFA has been effectively neutralised, and the PBoC's sterilisation operations have been successful in insulating domestic monetary conditions from swings in capital flows. However, this interpretation is subject to important qualifications. The lack of response of domestic credit to changes in the PBoC's net foreign assets may only reflect the fact that domestic credit did not respond to changes in the PBoC's net domestic assets. In other words, the transmission from the PBoC's operating targets to its intermediate targets did not work. Indeed, our model shows that DCR did not respond significantly to shocks in NDA.

Analysis based on the sub-sample estimation shows that the impacts of capital flows on the domestic economy were similar in the two periods. One notable observation, however, is that for the period of 2003-4, NDA responded more strongly to changes in NFA than before 2003. This suggests that the PBoC has probably become more active in sterilisation operations in the last two years.

Technical Appendix

This appendix describes the model that is used to empirically address the questions of how the PBoC responded in the face of large capital inflows, and how much impact capital flows had on domestic monetary conditions.

A large number of empirical studies have examined central banks' response to capital flows and the impact of capital inflows on the domestic economy. They basically follow two approaches. Using the structural approach initiated by Cumby and Obsfeld (1981), some studies estimate a central bank's reaction function in which changes of net domestic assets (ΔNDA) are related to changes in net foreign assets (ΔNFA) and a set of control variables. The coefficient on ΔNFA reflects the degree of sterilisation. If it equals -1, sterilisation is complete in that the impact on base money of increases in net foreign assets is fully neutralised by a reduction of the same magnitude in net domestic assets. If the coefficient is zero, there is no sterilisation with a rise in net foreign assets leading to an equal amount of increase in the monetary base. Examples applying this framework to study central banks' sterilisation operations include Kim (1995) for Korea, Takagi (1999) for Japan, and Brissimis *et al.* (2002) for Germany. In a separate development, Moreno (1996) and Christensen (2004) follow a reduced form approach, and use VAR models to analyse the impact of capital flows on the wider economy.

Empirical framework

We choose the framework of a VAR model as we intend to investigate the transmission of an impulse from net foreign assets to net domestic assets on the PBoC's balance-sheet, as well as to wider monetary conditions such as domestic credit and interest rates.

To this end, a four-variable VAR is specified as:

$$\Delta NFA_t = \phi_1 + \sum_{i=1}^{k} \beta_{1i}\Delta NFA_{t-i} + \sum_{i=1}^{k} \delta_{1i}\Delta NDA_{t-i} + \sum_{i=1}^{k} \alpha_{1i}\Delta LDCR_{t-i} + \sum_{i=1}^{k} \gamma_{1i}\Delta IR_{t-i} + \varepsilon_{1t}$$

$$\Delta NDA_t = \phi_2 + \sum_{i=1}^{k} \beta_{2i}\Delta NFA_{t-i} + \sum_{i=1}^{k} \delta_{2i}\Delta NDA_{t-i} + \sum_{i=1}^{k} \alpha_{2i}\Delta LDCR_{t-i} + \sum_{i=1}^{k} \gamma_{2i}\Delta IR_{t-i} + \varepsilon_{2t}$$

$$\Delta LDCR_t = \phi_3 + \sum_{i=1}^{k} \beta_{3i}\Delta NFA_{t-i} + \sum_{i=1}^{k} \delta_{3i}\Delta NDA_{t-i} + \sum_{i=1}^{k} \alpha_{3i}\Delta LDCR_{t-i} + \sum_{i=1}^{k} \gamma_{3i}\Delta IR_{t-i} + \varepsilon_{3t}$$

$$\Delta IR_t = \phi_4 + \sum_{i=1}^{k} \beta_{4i}\Delta NFA_{t-i} + \sum_{i=1}^{k} \delta_{4i}\Delta NDA_{t-i} + \sum_{i=1}^{k} \alpha_{4i}\Delta LDCR_{t-i} + \sum_{i=1}^{k} \gamma_{4i}\Delta IR_{t-i} + \varepsilon_{4t}$$

where:

NFA = net foreign assets
NDA = net domestic assets
DCR = domestic credit
IR = interest rate.

In the four-variable VAR specification, Δ denotes the first difference. As will be shown in the next section, all of the variables contain a unit root in their levels, and thus need to be transformed into a stationary form. DCR is transformed into the logarithm form, while NFA and NDA are not. The system specified in this way can directly show the extent of sterilisation as well as the impact of changes in NFA on the growth rate of monetary aggregates.

The VAR is in a reduced form, and thus the residuals from the four equations in the system are linear combinations of underlying structural shocks. To identify the underlying shocks, we use a recursive structure to transform the model into a structural VAR, and the Choleski decomposition is employed to orthogonalise the variance-covariance matrix of the residuals from the reduced-form VAR. In the decomposition, the causal ordering of the four-variable system is ΔNFA, ΔNDA, ΔLDCR and ΔIR. Net foreign assets are assumed to influence the other three variables contemporaneously, but not *vice versa*. This ordering is based on the observation that changes in the Mainland's net foreign assets due to capital flows are often triggered by developments in the external environment. To limit the impact of capital flows on reserve money and domestic monetary conditions at large, the central bank needs to adjust its holding of net domestic assets. Therefore, ΔNDA is ranked second in the VAR so that net domestic assets respond to changes in net foreign assets, and in turn exert their impact on domestic credit and interest rates. Domestic monetary conditions as reflected by domestic credit and interest rates are influenced by changes in the monetary base, as a result of changes in NDA and NFA.

Estimation results and interpretations

Before estimation, we first examine the stationarity property of the series included in the model. In carrying out unit root tests, we follow the general-to-specific approach in selecting the appropriate model. Starting with a maximum lag of 12, insignificant lags are eliminated sequentially and one at a time. Deterministic variables such as a trend and constant are also included initially. The model with the longest significant lag as well as necessary exogenous variables is selected to provide the ADF statistic.

Table A1 reports the results of unit root tests. All the four series are I(1), as they are non-stationary in levels, but stationary in their first differences.

Table A1 Unit root test results

Variables	Lag length	Exogenous variables	ADF test statistics
Level			
NFA	12	C, T	5.99
NDA	0	C, T	1.11
Log(DCR)	6	C, T	-2.09
IR	11	C	-2.51
First difference			
NFA	0	C,T	-6.33**
NDA	0	C,T	-8.62**
Log(DCR)	0	C	-7.61**
IR	12	None	-2.48**

Notes: ** indicates significance at the 1% level.

Monthly data between 1998.1 and 2004.12 are used for the estimation. The model is also estimated on two sub-samples: 1998.1-2002.12 and 2003.1-2004.12. Capital inflows to the Mainland have been especially strong in the last couple years. Therefore, it is of interest to examine whether the PBoC responded differently during this period.

Based on the Akaike Information Criterion, lag 1 is selected for the VAR. After estimating the reduced-form model, the recursive scheme described in the previous section is used to transform it into a structural VAR. Chart A1 presents the impulse response of the four variables to different shocks based on the structural VAR established over the full sample. The chart shows net domestic assets have responded strongly to changes in net foreign assets. An increase of RMB 1 yuan in net foreign assets would lead to roughly an equal amount of decline in net domestic assets, and most of the response took place within a month.

Shocks to net foreign assets had little influence on domestic credit and interest rates. The responses of NDA, DCR and IR can be interpreted as the impact of changes in net foreign assets has been effectively neutralised, and the PBoC's sterilisation operations have been successful in insulating domestic monetary conditions from swings in capital flows.[3] However, it is also possible that the lack of response of DCR to changes in NFA may only reflect the fact that domestic credit did not respond to changes in the PBoC's net domestic assets. Indeed, our model shows that DCR has not responded significantly to shocks in NDA. Therefore, it is not clear whether the lack of response from domestic credit to capital flows has been due to

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[3] The model is also estimated with domestic credit replaced by money supply M2. The alternative specification yields similar results.

successful sterilisation, or a broken link between the central bank's balance sheet and domestic credit. Should the latter be the case, it raises a fundamental issue of how an impulse from the PBoC's operating targets can be transmitted to its intermediate targets.

Variance decomposition, which provides information about the relative importance of each underlying structural shock to variables in the system, also paints the same picture (Table A2). It shows that the variance of ΔNFA was largely explained by the variable's own innovations, suggesting that movements in net foreign assets have been little influenced by other variables. For ΔNDA, 40% of its variance was accounted for by that of ΔNFA. This accords with the observation from the impulse response analysis that net domestic assets were used by the PBoC to neutralise the impact of capital flows on base money. Domestic credit and interest rates seem to be little influenced by net foreign and domestic assets as their variances are largely explained by their own innovations. This also indicates that domestic monetary conditions have been insulated from swings in capital flows.

Impulse response and variance decomposition analysis based on the sub-sample estimation shows that the impacts of capital flows on the domestic economy were similar in the two periods (Charts A2-3 and Tables A3-4). One notable observation, however, is that for the period of 2003-4, net domestic assets responded more strongly to changes in net foreign assets than before 2003, and a larger fraction of the variance of net domestic assets (a little over 50%) was explained by that of net foreign assets. This suggests that the PBoC has probably become more active in sterilisation operations in the last couple of years.

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Chart A1.   Impulse response based on the model estimated over 1998.1-2004.12

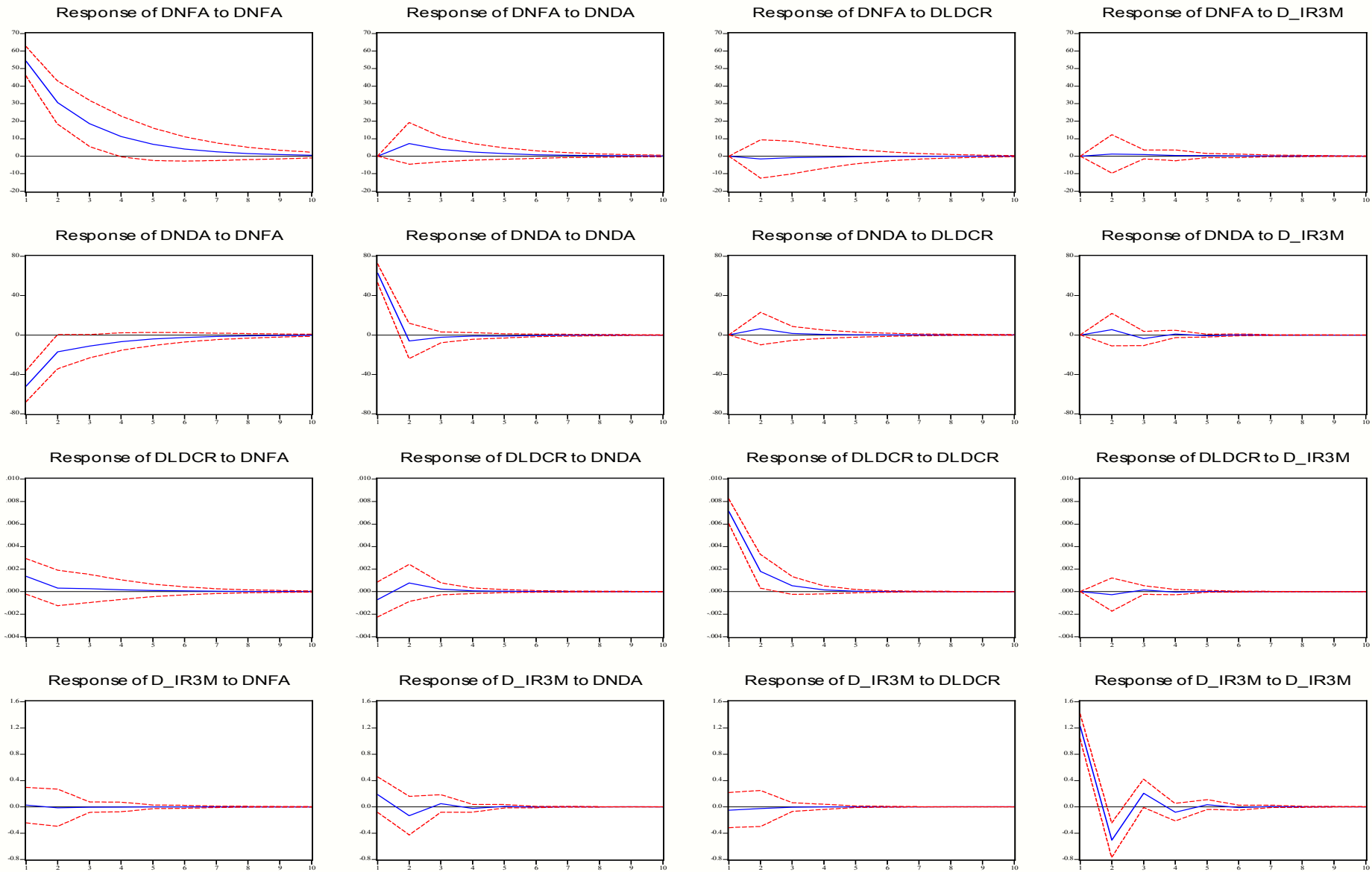Response to Cholesky One S.D. Innovations ± 2 S.E.

Chart A2.   Impulse response based on the model estimated over 1998.1-2002.12

Response to Cholesky One S.D. Innovations ± 2 S.E.
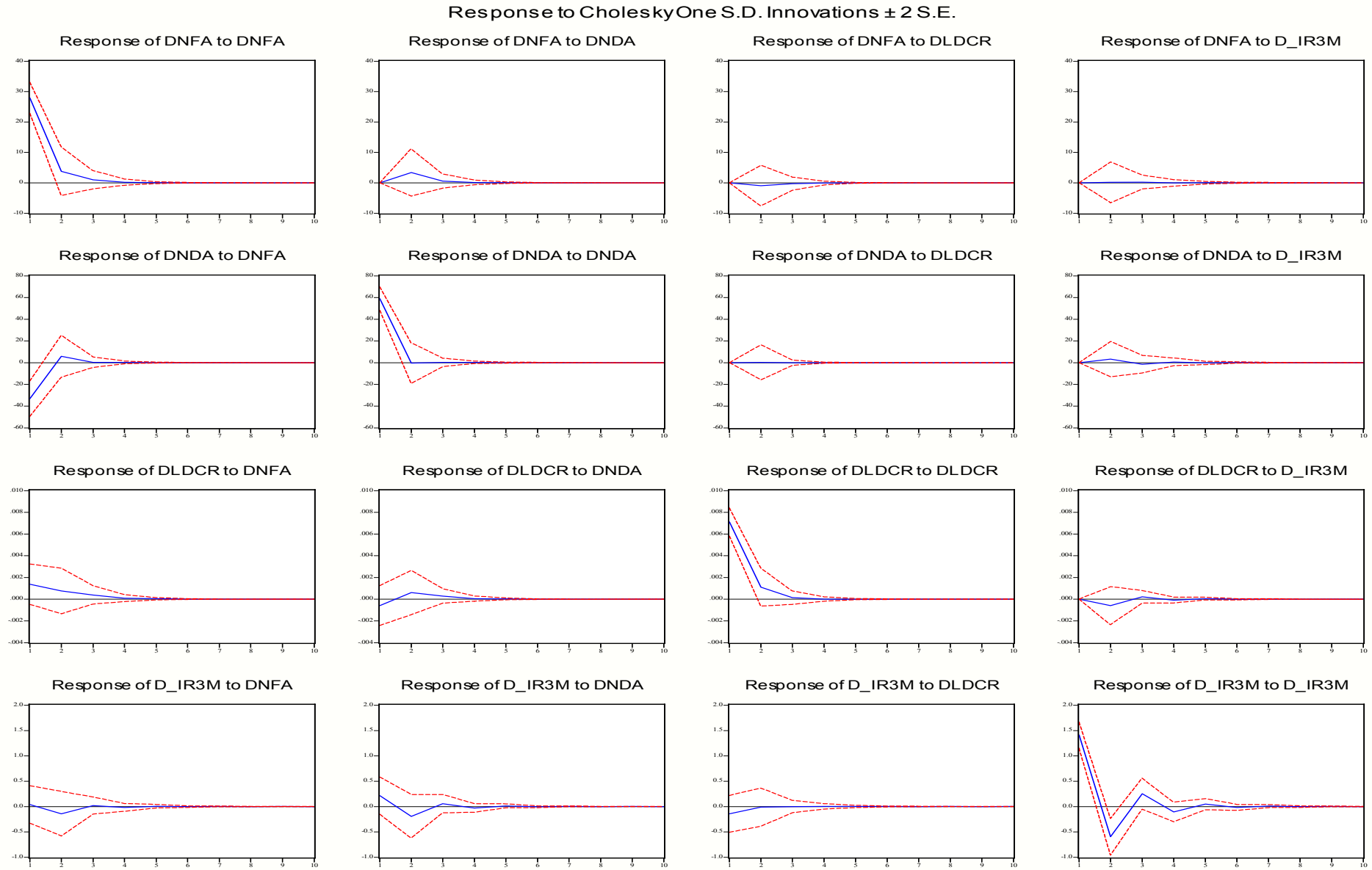
Chart A3.   Impulse response based on the model estimated over 2003.1-2004.12

Response to Cholesky One S.D. Innovations ± 2 S.E.

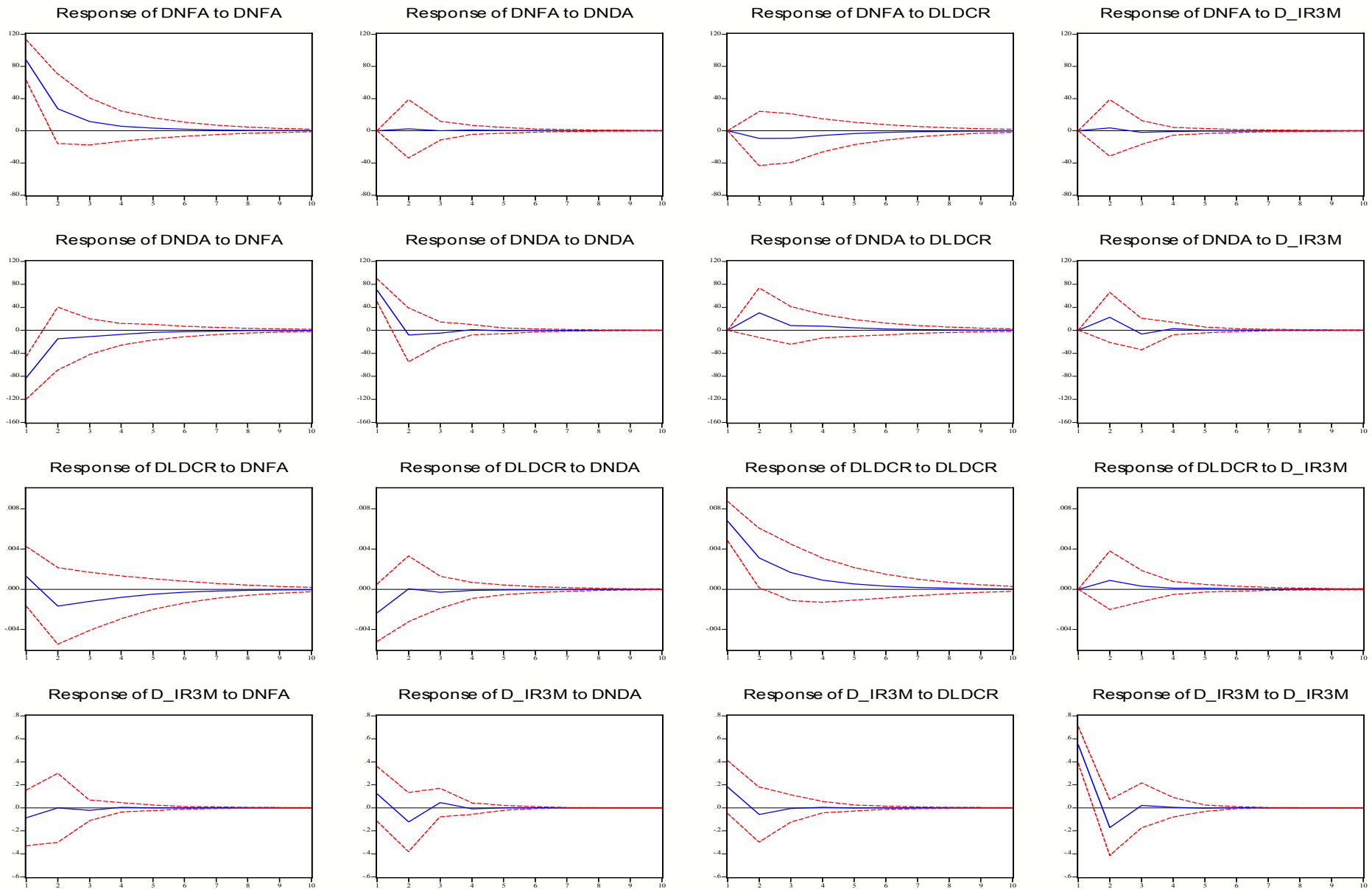**Table A2 Variance decomposition based on the model estimated over 1998.1 –2004.12**

ΔNFA

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	100.0	0.0	0.0	0.0
2-month	98.6	1.3	0.1	0.0
Long-run	98.1	1.7	0.1	0.1

ΔNDA

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	40.7	59.3	0.0	0.0
2-month	42.5	56.4	0.6	0.4
Long-run	44.0	54.8	0.6	0.6

ΔLog(DCR)

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	3.5	0.9	95.6	0.0
2-month	3.4	1.9	94.6	0.1
Long-run	3.6	2.0	94.3	0.2

ΔIR

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	0.0	2.2	0.2	97.6
2-month	0.0	2.9	0.2	96.9
Long-run	0.0	3.0	0.2	96.8

Table A3 Variance decomposition based on the model estimated over 1998.1 –2002.12

ΔNFA

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	100.0	0.0	0.0	0.0
2-month	98.5	1.4	0.1	0.0
Long-run	98.4	1.5	0.1	0.0

ΔNDA

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	24.0	76.0	0.0	0.0
2-month	24.5	75.3	0.0	0.2
Long-run	24.5	75.2	0.0	0.3

ΔLog(DCR)

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	3.6	0.7	95.8	0.0
2-month	4.4	1.3	93.6	0.6
Long-run	4.7	1.4	93.1	0.7

ΔIR

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	0.1	2.2	1.0	96.7
2-month	0.9	3.4	0.9	94.5
Long-run	0.9	3.4	0.8	94.9

Table A4 Variance decomposition based on the model estimated over 2003.1 –2004.12

ΔNFA

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	100.0	0.0	0.0	0.0
2-month	98.7	0.1	1.1	0.1
Long-run	97.2	0.1	2.6	0.2

ΔNDA

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	58.3	41.7	0.0	0.0
2-month	52.4	36.8	6.9	3.8
Long-run	52.2	35.9	7.8	4.0

ΔLog(DCR)

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	3.1	10.3	86.6	0.0
2-month	6.6	8.3	83.9	1.2
Long-run	9.3	7.7	81.8	1.3

ΔIR

Periods ahead	ΔNFA	ΔNDA	ΔLog(DCR)	ΔIR
1-month	2.1	4.2	9.2	84.4
2-month	1.9	7.5	8.9	81.7
Long-run	2.0	7.9	8.9	81.2