Policy Options for Managing Capital Inflows in Emerging East Asia

1. Introduction

Recent surges in foreign capital inflows and asset price hikes have become major concerns for the large emerging East Asian economies.[5] Capital inflows, especially to financial markets, have increased pressure on currencies to appreciate, enhanced already abundant liquidity in the region, and contributed to the rise in asset prices. However, the current state of capital inflows is quite different from the situation before the 1997/98 Asian financial crisis. Capital inflows have not led to a rise in domestic demand as they did before 1997. Most East Asian economies are running large current account surpluses and capital inflows are mostly sterilized by central banks. The resulting huge accumulation of foreign exchange reserves leaves these economies far better able to deal with potential financial shocks than in 1997.

Surging capital inflows, however, impose a significant challenge to the region, as inflationary pressures build and world interest rates continue to rise. Given that financial market stability is critical to macroeconomic management, capital flows have become a significant factor affecting policy decisions in these emerging East Asian economies. Policy options are limited because of the increasing conflicts between domestic and external objectives.

This chapter examines the effects of surges in capital inflows (portfolio inflows in particular) on exchange rate appreciation and asset price inflation to shed some light on the elements that can comprise an appropriate policy mix to mitigate risks associated with these inflows.

Section 2 briefly summarizes and explains trends in capital flows to the region. Section 3 discusses the effects of these on exchange rates and asset prices, and summarizes empirical findings. And in Section 4, options that could comprise a macroeconomic policy mix are discussed.

[5] The large emerging East Asian economies are People's Republic of China (PRC), Republic of Korea (Korea), and the four ASEAN economies of Indonesia, Malaysia, Philippines, and Thailand (ASEAN-4).

2. Recent Trends in Capital Flows

In general, the past few years have been characterized by strong balance of payments surpluses and substantial reserve accumulation in emerging East Asia.

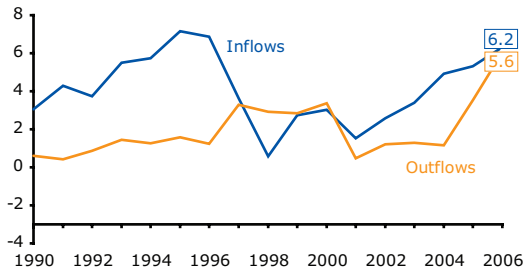
For the six large emerging East Asian economies, aggregate reserves nearly tripled from $528 billion in 2002 to $1.5 trillion in 2006, rising from 21.2% of aggregate gross domestic product (GDP) to 34.8%—perhaps more than adequate for macro-prudential needs. Excluding the People's Republic of China (PRC), reserves climbed at about the same pace as nominal GDP and remained at 22.7% of GDP. While large current account surpluses remain an important source of inflows, capital account balances have become more significant, reaching 3.8% of GDP in the six economies in 2004, before easing to 0.6% last year—as capital outflows have increased as well. If the PRC is excluded from the total, the capital account balance was 1.0% of GDP in 2006 (Table 11).

Table 11: **Balance of Payments** (% of GDP)

	2000	2001	2002	2003	2004	2005	2006
ASEAN-4							
Current Account Balance	5.2	4.0	3.9	4.7	3.3	2.2	5.2
Capital and Financial Account Balance	-4.7	-3.1	-0.9	-1.4	0.6	-0.2	-0.3
Errors and omissions, net	-0.4	-0.3	-0.1	-0.8	0.1	-1.2	-0.4
Reserves excluding gold (- = increase)	-0.5	-0.3	-2.3	-2.5	-4.1	-1.3	-5.9
Korea, Rep. of							
Current Account Balance	2.4	1.7	1.0	2.0	4.1	1.9	0.7
Capital and Financial Account Balance	2.4	0.5	1.1	2.3	1.1	0.1	2.1
Errors and omissions, net	-0.1	0.6	0.0	0.0	0.4	0.0	-0.3
Reserves excluding gold (- = increase)	-4.6	-1.6	-2.1	-4.2	-5.7	-2.5	-2.5
China, People's Rep. of							
Current Account Balance	1.7	1.3	2.4	2.8	3.6	7.2	9.5
Capital and Financial Account Balance	0.2	2.6	2.2	3.2	5.7	2.8	0.4
Errors and omissions, net	-1.0	-0.4	0.5	1.1	1.4	-0.7	-0.5
Reserves excluding gold (- = increase)	-0.9	-3.6	-5.2	-7.1	-10.7	-9.2	-9.4
Total							
Current Account Balance	2.6	1.9	2.4	3.0	3.6	5.1	6.9
Capital and Financial Account Balance	-0.3	1.0	1.4	2.1	3.8	1.7	0.6
Errors and omissions, net	-0.6	-0.1	0.3	0.5	0.9	-0.7	-0.4
Reserves excluding gold (- = increase)	-1.7	-2.5	-3.9	-5.6	-8.3	-6.3	-7.3

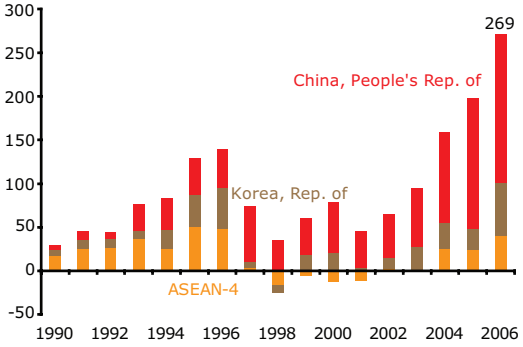
Sources: *International Financial Statistics* (IMF), *World Economic Outlook Database* (IMF), *Regional Economic Outlook* (IMF), and CEIC.

Figure 34: **Emerging Asian Economies—Gross Capital Inflows and Outflows**
(% of GDP)



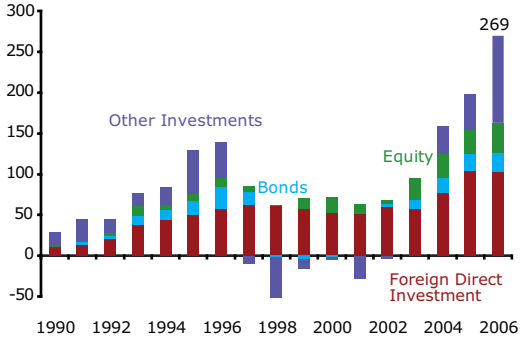
Sources: *International Financial Statistics* (IMF), CEIC, and *World Economic Outlook Database* (IMF).

Figure 35: **Emerging Asian Economies—Trends in Gross Capital Inflows**
($ billion)



Sources: *International Financial Statistics* (IMF) and CEIC.

Figure 36: **Emerging Asian Economies—Composition of Gross Capital Inflows**
($ billion)



Sources: *International Financial Statistics* (IMF) and CEIC.

The balance of payments surplus of the PRC has grown significantly in recent years. Before 2004, the capital account surplus was usually larger than the current account surplus; in 2005 and 2006, however, the current account surplus began to dominate net external inflows. In the Republic of Korea (Korea), while the capital account surplus remained strong, the current account surplus narrowed markedly after 2004.

The ASEAN-4 economies were more heterogeneous, with the aggregate capital account moving into surplus only in 2004. In Indonesia, estimated total external inflows in 2006 strengthened to 4.1% of GDP, substantially higher than the previous 2 years—when they were marginal or negative. In Malaysia, total external inflows slowed sharply after 2004, as the capital account went into deficit. Total external inflows to the Philippines in 2006 were the strongest since 1999, primarily due to a rising current account surplus—largely due to strong growth in worker remittances (10.9% of GDP in 2006). In Thailand, total external inflows rose significantly to 3.1% of GDP in 2005 with strong growth in both current and capital account surpluses.

Driven by both domestic and external factors, gross capital inflows—with portfolio inflows increasing in share—reached a record $269 billion in 2006 in the large emerging East Asian economies, nearly twice the size of the previous 1996 peak.

As a ratio to GDP, however, gross capital inflows to the six emerging economies were about 6.2% of GDP in 2006, nearly back to the 6.6% average level in the mid-1990s (Figure 34).[6] The PRC has been the dominant destination for gross capital inflows since 1993, with its share among the large emerging East Asian economies rising from 16.9% in 1992 to 63.2% in 2006 (Figure 35).

The change in the composition of gross capital inflows since 1997 is also significant. While foreign direct investment (FDI) remains a major component, portfolio inflows have increased substantially since 2002—particularly in ASEAN-4 and Korea, where the share of portfolio inflows moved above half (to 57.0%) in 2005 (Figure 36). This is an important change from before 1997,

[6] Gross capital inflows are defined as the sum of total inflows from foreign direct investment, portfolio investments, and other investment transactions by nonresidents. Regional aggregates are simply the sum of respective components of individual economies.

when the largest component was "other investments" (mainly short-term debt)—one of the root causes of the financial crisis. Gross inflows in other investments, however, rose significantly in 2006 in the PRC and Korea. It is also important to note that portfolio flows have become large relative to the size of domestic capital markets in several of these economies, as this carries a potential direct impact on asset prices—both on the way in and on the way out.

There are various external push factors driving capital inflows to the region. Until recently, a key cyclical factor has been that global financial market conditions were characterized by low interest rates, ample liquidity, and low volatility. This encouraged a search for yield—financed in part by carry trades especially yen carry trades (estimates in value vary from $80–500 billion)—that compressed risk premiums in most emerging markets. Although the underlying cyclical trends are beginning to unwind, there is a chance they may recur, especially as longer-term push factors behind these investments are leading toward greater global and regional financial integration. These longer-term drivers include a greater tendency for international investors to diversify holdings across a wider set of asset classes—as well as the greater ability to do so given continuing advances in information technology and innovation in financial market instruments. Intraregional portfolio flows may have also been growing rapidly in recent years.[7] In addition, an increasing number of institutional investors—including insurance companies, pension funds, and hedge funds—are investing in emerging markets.

There are also important internal pull factors in East Asia's emerging markets that have encouraged inflows. Economic fundamentals have improved significantly, as can be seen in the improvement in sovereign risk ratings—in particular, the region is seen as less vulnerable to currency crises than in the late 1990s. In fact, another pull factor is that there is a palpable perception among investors that at least some East Asian currencies are undervalued. Combined with active sterilized reserve accumulation—leaving interest rates possibly higher than otherwise—this becomes a further inducement to speculative investment. Also, many countries have liberalized regulatory requirements on foreign portfolio inflows. The small but growing

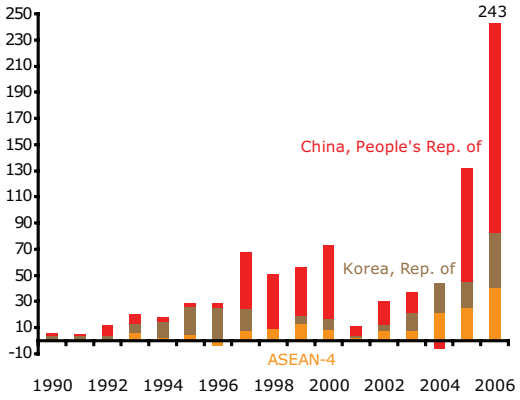
[7] Bilateral capital flows data are unavailable for the large emerging East Asian economies. According to the International Monetary Fund's *Coordinated Portfolio Investment Survey*, bilateral portfolio investment flows between either Singapore or Hong Kong, China and the six economies have increased significantly in recent years, though the bilateral flows among the six remained small.

presence of domestic institutional investors is helping deepen markets, further encouraging cross-border flows. And finally, financial sector reforms across the region have enhanced financial market infrastructure and improved corporate and financial institution governance.

Gross capital outflows from the large emerging East Asian economies have also increased extremely rapidly in recent years, reaching a record $243 billion in 2006 (5.6% of GDP), more than nine times the level in 1996.

Among the large emerging East Asian economies, the PRC was responsible for about half of the gross capital outflows in the past 2 years, followed by Korea and Indonesia (Figure 37).[8] While "other investments" accounted for about a half of gross outflows from 2003 to 2005—and were still about 25% in 2006—portfolio outflows rose substantially to $143 billion in 2006 as PRC and Korean banks bought large amounts of nonresident debt securities (Figure 38).

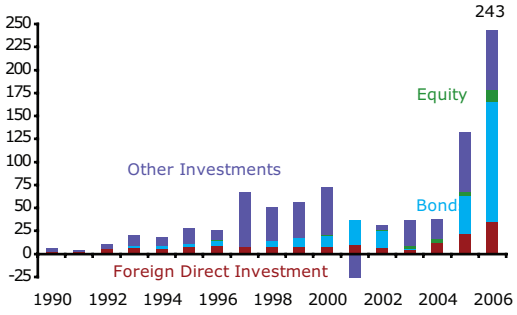
Figure 37: **Emerging Asian Economies—Trends of Gross Capital Outflows**
($ billion)



Source: *International Financial Statistics* (IMF) and CEIC.

Greater opportunities for both institutional and private investors to invest overseas have expanded capital outflows. FDI outflows have increased as Asian firms move to establish global supply and sales networks. In Korea, FDI outflows have increased as the country's leading automobile and electronics firms expanded production overseas. PRC outward FDI has also grown rapidly. In 2006, PRC announced measures to give individual investors greater access to foreign assets. The Qualified Domestic Institutional Investor scheme—expanded in May 2007—allows domestic institutional investors to invest in foreign capital markets. Korea also encourages more domestic private investment abroad through mutual funds.

Figure 38: **Emerging Asian Economies—Composition of Gross Capital Outflows**
($ billion)



Source: *International Financial Statistics* (IMF).

Nevertheless, many governments still control or heavily regulate outflows because of concerns about potential capital flight and financial stability in general. In emerging East Asia, capital is often transferred out through banks, while overseas investment by private investors is restricted. Yet, outflows can be an important countervailing mechanism to large inflows. Without a freer outflow channel, large capital inflows would simply become official exchange reserves, further expanding domestic liquidity.

[8] Gross capital outflows refer to total resident investment abroad including FDI, portfolio, and other investments.

On balance, gross capital outflows have more than offset inflows, leading to a marginal decline in net capital flows over the past 2 years.

After reaching a record level of $121.9 billion in 2004, net capital inflows have fallen and remain below the pre-crisis average as a ratio to GDP.[9] While net capital inflows to the PRC continued to surge—accounting for 90.0% of aggregate net inflows to the six economies over the past 5 years—net inflows to Korea have only recently approached the pre-crisis level. ASEAN-4 economies only had a positive net inflow in 2004.

There have been net repayments of official debt among the ASEAN-4 since 2001—causing net outflows in other investments (mainly bank-related) to increase significantly. As a result, the overall composition of net private capital inflows shifted toward larger net portfolio and FDI inflows and larger net credit outflows. Similarly, in Korea, net capital inflows were mainly due to net portfolio inflows, and net inflows in other investments were usually negative or small before 2005 due to debt repayments. This is in sharp contrast to the mid-1990s when equity flows were tiny and debt financing was the most important type of capital inflow to the region. In 2006, however, net inflows in other investments to Korea surged to $40 billion, resulting in a net capital inflow of $18 billion despite net portfolio outflows of $18 billion. Net capital inflows to the PRC remain dominated by net FDI inflows, though the recent estimates show that net outflows in portfolio investments have increased dramatically in 2006, leaving net capital inflows in 2006 much smaller than in the past few years.

The shift in composition of net capital inflows to the region may lead to higher variability, as experience shows that FDI has been the least variable type of capital flow, while bank loans vary most with portfolio flows closely following. In addition, as stock and bond market depth and liquidity increase, there is evidence that the volatility of FDI and debt securities flows may also increase.[10]

[9] Net capital inflows are gross capital inflows minus gross outflows.

[10] See Albuquerque, Rui, 2003, "The Composition of International Capital Flows: Risk Sharing Through Foreign Direct Investment", *Journal of International Economics*, December, pp 353–83.

There are both similarities and differences among these trends compared with emerging Europe and emerging Latin America.[11] All three regions have had growing total external inflows over the past few years. They are all making net official debt repayments but are seeing larger private capital inflows. Net private capital flows to emerging Europe are roughly the same magnitude as those to emerging Asia, but they are dominated by rapidly growing FDI and net private creditor inflows. Net portfolio equity inflows to emerging Europe have been much lower than those inflows to emerging Asia. For Latin America, net private inflows were smaller with the trend less clear. Emerging Europe is seeing large and growing net private creditor inflows, while the portfolio equity share of 2006 net private inflows is far smaller in emerging Europe and Latin America than in emerging Asia. The critical point is that—with smaller market capitalization and weaker fundamentals—equity prices in both emerging Europe and emerging Latin America have shown much stronger gains and higher volatility than in emerging Asia.

3. Capital Inflows, Exchange Rates, and Asset Markets in Emerging East Asia

Given the different composition of capital inflows and outflows, analyzing "gross" rather than "net" inflows is more relevant, as they directly affect the domestic economy and asset markets—posing major challenges for macroeconomic management.

The links between capital inflows, credit expansion—lending booms with capital liberalization—and adverse macroeconomic consequences are not new in emerging East Asia. One of the root causes of the 1997/98 Asian financial crisis was excessive capital inflows followed by sudden outflows.[12] The recent surge in gross capital inflows to the large emerging East Asian economies—and portfolio inflows in particular—has coincided with rapid appreciation of asset and currency prices. At the same time, the risk of increased global financial market volatility has

[11] This paragraph relies on the January 2007 issue of *Capital Flows to Emerging Market Economies*, Institute of International Finance. Emerging Europe includes the Russian Federation, Turkey, Ukraine, and six eastern European countries. Emerging Latin America includes Mexico and the large South American countries. Emerging Asia includes India in this instance. All 2006 figures are estimates. Source: iif.com

[12] See, for example, Krugman, P., 1998, *What Happened to Asia*, http://web.mit.edu/krugman/; Mishkin, F. S., 1999, "Lessons from the Asian Crisis," *Journal of International Monetary and Finance*, 18 (4), pp.709–723; and Sachs, Jeffrey D. and Woo, W.T., 2000, "Understanding the Asian Crisis," in Sachs, Jeffrey D. and Klaus Schwab ed., *The Asian Financial Crisis: Lessons for a Resilient Asia,* MIT Press.

the potential of leading to sharp asset price corrections in these economies. The recent bond market sell-off may be a signal that ample global liquidity is starting to evaporate, which in turn could lead to a sudden reversal in capital flows.

Large capital inflows have pressured currencies to appreciate.

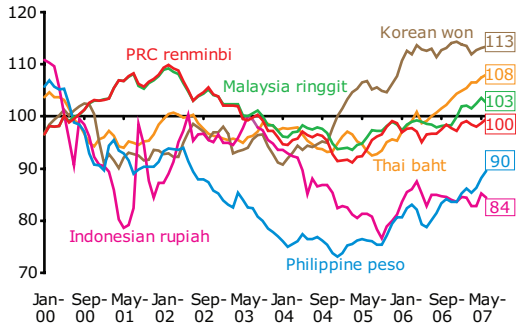
Regional exchange rates have tended to appreciate against the US dollar despite official intervention (Figure 39)—the degree varying by economy because of differences in (i) the magnitude of total external inflows, (ii) the degree of exchange rate flexibility, and (iii) the extent of official intervention. There were occasional sharp movements where nominal exchange rates are more flexible. The Thai baht, for example, appreciated sharply beginning in late 2005 following a pronounced turnaround of the 2005 current account deficit, a surge in "other investment" inflows, and a resumption of equity inflows from renewed confidence following the brief disruption caused by the September 2006 coup d'etat. The Philippine peso has also strengthened on the back of strong remittance growth and larger private capital inflows, triggered by improved fundamentals and the ensuing favorable sentiment.

Even in economies where currencies are tightly managed, inflow-associated appreciation pressures can ultimately feed into higher inflation if sterilization is not perfect, and thus, exchange rates appreciate in real terms. In general, real effective exchange rates in the large emerging East Asia economies have appreciated since 2004 regardless of exchange rate regime (Figure 40). Real appreciation was typically higher than nominal appreciation, reflecting higher consumer price inflation than their trading partners.

Official foreign exchange intervention, despite extensive sterilization, increased domestic money supply.

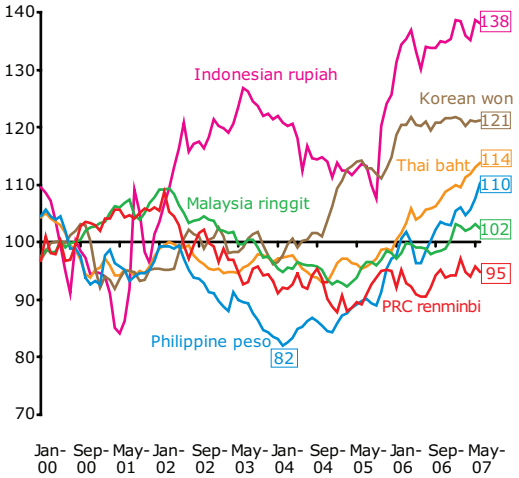
With managed exchange rate regimes, monetary authorities often intervene in the foreign exchange market to offset appreciation pressure from surges in capital inflows, which results in reserve accumulation and increases in domestic money supply. Only under a flexible exchange rate without official intervention would a surge in capital inflows immediately lead to currency appreciation, largely without altering domestic monetary conditions.

Figure 39: **Nominal Effective Exchange Rate**[1] (broad indexes, 2000 = 100)



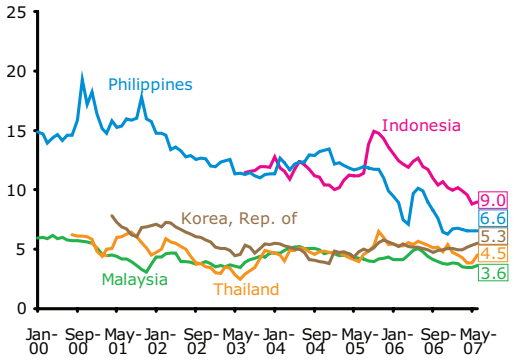
[1] Weighted average of a basket of 51 bilateral exchange rates adjusted by relative consumer prices. The weights are derived from manufacturing trade flows. An increase is an appreciation.
Source: Bank for International Settlements.

Figure 40: **Real Effective Exchange Rate**[1] (broad indexes, 2000 = 100)



[1] Weighted average of a basket of 51 bilateral exchange rates adjusted by relative consumer prices. The weights are derived from manufacturing trade flows. An increase is an appreciation.
Source: Bank for International Settlements.

Figure 41: **10-Year Government Bond Yields** (% per annum)



Source: Bloomberg.

Foreign exchange reserves in these economies have grown rapidly, especially in the PRC (Table 12). Despite extensive sterilization, money supply has also expanded sharply in some economies. Partly due to low world interest rates and capital inflows, long-term interest rates in these economies have also declined or remained low in recent years (Figure 41). This rapid growth in money supply and falling domestic interest rates has been behind the sharp rise in asset prices in these economies.

Stock prices have soared in the region since 2003.

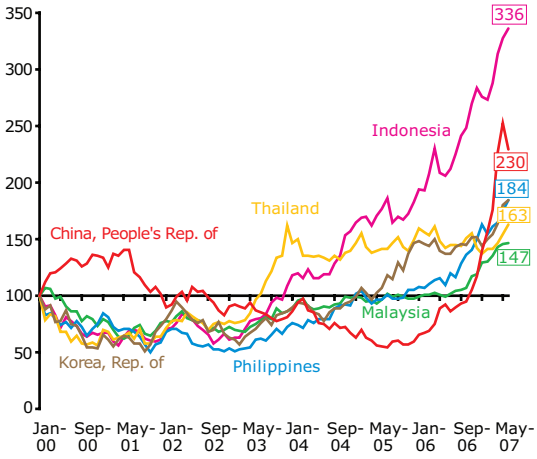
While the rise in stock market indexes has been steady in Indonesia, Korea, Philippines, and Malaysia, stock prices in the PRC began to soar in late-2005 and continued their surge through June 2007 (Figure 42). These increases may have also contributed to falling bond yields in these economies (see Figure 41). Most foreign portfolio investment flows into stock markets, partly because emerging East Asia has relatively less developed local currency bond markets—and they are less open to foreign participation. However, as stock prices rise, expected returns on equities drop and bonds become more attractive to local investors, who bid up bond prices, lowering bond yields.

Table 12: **Change in Foreign Reserves and Money Supply (M2)** (y-o-y, %)

	1999	2000	2001	2002	2003	2004	2005	2006
Indonesia								
Change in Foreign Reserves	16.4	7.8	-4.4	13.7	12.9	0.0	-5.6	24.1
Change in M2	11.9	15.6	13.0	4.7	8.1	8.1	16.4	14.9
Malaysia								
Change in Foreign Reserves	19.7	-7.4	4.2	13.0	31.4	50.3	6.0	17.6
Change in M2	13.7	5.2	2.2	5.8	11.1	25.4	15.4	16.6
Philippines								
Change in Foreign Reserves	43.1	-1.4	2.9	-1.1	2.4	-3.9	21.4	25.7
Change in M2	19.3	4.8	6.9	21.0	4.2	10.2	10.3	21.4
Thailand								
Change in Foreign Reserves	18.2	-6.0	1.1	17.6	8.0	18.5	4.2	28.8
Change in M2	2.1	3.7	4.2	2.6	4.9	5.4	8.2	6.0
Korea, Rep. of								
Change in Foreign Reserves	42.4	29.9	6.9	18.1	28.0	28.2	5.7	13.6
Change in M2	5.1	5.2	8.1	14.0	3.0	6.3	7.0	12.5
China, People's Rep. of								
Change in Foreign Reserves	5.7	6.7	28.1	35.0	40.2	50.6	33.7	30.1
Change in M2	14.7	15.4	14.4	16.9	19.6	14.5	16.7	16.9

Source: *International Financial Statistics* (IMF).

Figure 42: **Composite Stock Price Indexes[1]—ASEAN-4, People's Republic of China, and Republic of Korea** (end-of-month, January 2000 = 100, local index)



[1] Weekly averages of Shenzhen (People's Republic of China), JCI (Indonesia), KLCI (Malaysia), PCOMP (Philippines), SET (Thailand).
Source: OREI staff calculations based on Bloomberg data.

Real estate prices in the region have also increased markedly since 2000 in most large emerging East Asian economies.

Land and housing prices have also surged in most large emerging East Asian economies.[13] In Indonesia and Thailand, land prices have risen by about 180% since 2000 despite significant volatility. In the PRC, Korea and the Philippines, housing prices have gradually increased since 2000 by a similar magnitude of 40%. The only country that did not show a big increase was Malaysia, where land prices in 2006 were only about 10% higher than in 2000.

Evidence from econometric analysis also confirms that capital inflows—portfolio inflows in particular—added to appreciation pressures and increased asset prices over recent years in the large emerging East Asian economies.

The effects of gross capital or portfolio inflows on asset prices and exchange rates are examined in panel vector auto-regression (VAR) models (Box 3). The empirical findings confirm the significant effects of capital flows on real exchange rate appreciation and asset price inflation. Other factors, such as the recovery from the 1997/98 Asian financial crisis, improved financial governance, better economic fundamentals, higher domestic liquidity, and stronger earnings in exports have boosted investor confidence, also may have contributed to the real exchange rate appreciations and asset price surges.

4. Macroeconomic Challenges and Policy Options

How to maximize the benefits of using capital inflows to enhance economic growth—while minimizing risks—is a key challenge facing the large emerging East Asian economies.

Capital inflows can help finance domestic investment and contribute to long run economic growth. Foreign portfolio inflows provide a better opportunity for local capital market development by providing increased liquidity and price recovery mechanisms.

[13] Land price data were provided by Maria Bautista of Bank for International Settlements and were compiled by Jones Lang La Salle Research. Housing prices for Korea are obtained from the Bank of Korea website, and housing prices for the PRC and rental prices for the Philippines are from CEIC.

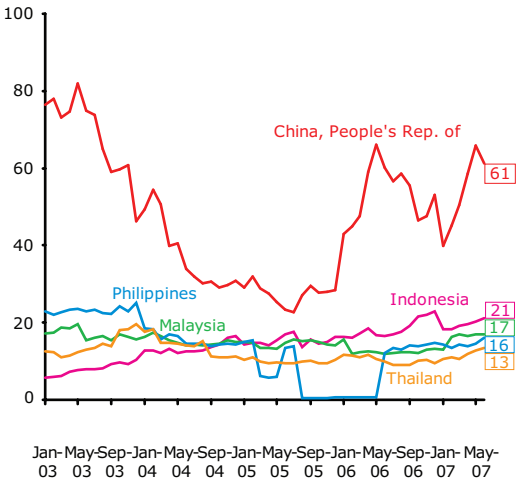
Moreover, more capital inflows encourage domestic markets to adopt more internationally-accepted practices and standards in the financial systems.

The risks large capital inflows pose, however, are also apparent: capital flows could reverse suddenly, for example, with huge implications to asset prices and general macroeconomic conditions. Another concern is the possibility of a rapid unwinding of yen-carry trades. The recent bond market sell-off may signal a drop in global liquidity. Should any panic occur, investors tend to rush for the exits. There is also evidence that gross capital flows have become more volatile.[14] Assets managed by institutional investors are growing with greater reliance on hedge funds—which can leave a market abruptly.

Surges in portfolio inflows and asset prices have also raised concerns on asset bubbles. As yet there are no clear general indications that equity prices are excessive relative to earnings, except possibly in the PRC (Figure 43). As world monetary conditions continue to tighten and global liquidity continues to dry up, re-pricing risk could raise volatility and at least temporarily halt current bull markets.

The large emerging East Asian economies are using a variety of policy measures to address surging capital inflows—in addition to managing the already large current account surpluses—including foreign exchange market intervention and sterilization, prepaying foreign debt, encouraging capital outflows, tightening credit growth by hiking lending rates and reserve requirements, and improving financial market regulation and supervision. As the region's economies continue to expand and inflationary pressures may mount, the conflict between domestic and external policy objectives is becoming more acute, limiting policy options. Therefore it is best to adopt an appropriate package of policies that addresses basic macroeconomic problems complicated by large capital inflows and asset market issues derived in part from large capital inflows.

Figure 43: **Price Earnings Ratio[1]—ASEAN-4 and People's Republic of China**



[1] Weekly averages of JCI (Indonesia), KLCI (Malaysia), PCOMP (Philippines), SET (Thailand), and Shenzhen composite indexes (People's Republic of China).
Source: Bloomberg.

[14] See *Regional Economic Outlook: Asia and Pacific*, International Monetary Fund, April 2007.

- ***Enhance Exchange Rate Flexibility***

Flexible exchange rate regimes enhance monetary autonomy—allowing authorities greater freedom to manage fluctuations in monetary aggregates resulting from changes in capital flows.

The effects of capital inflows can be different under floating or fixed exchange rate regimes. Real exchange rate appreciation pressures may rise in both cases, but the adjustment can be more direct and less costly under a floating regime. With a fixed exchange rate, the adjustment occurs primarily through higher inflation, as capital inflows stimulate domestic activity. Under a more flexible currency regime, nominal currency appreciation also contributes to the adjustment. In addition, the nominal exchange rate appreciation may discourage capital inflows by reducing asset returns in foreign currency terms. Although the real exchange rate tends to be more volatile under a flexible exchange rate—because the nominal exchange rate tends to vacillate more than the price level—the effects may be less important where there are larger and deeper financial markets. An increase in the degree of exchange rate flexibility enables authorities to better deal with surging capital inflows and to mitigate any adverse effects.

Before the Asian financial crisis, most East Asian currencies were largely pegged to the US dollar. Since then, emerging East Asian economies have adopted flexible exchange rate regimes to varying degrees—from the limited flexibility in the PRC and Malaysia to the floating regimes in Indonesia, Korea, Philippines, and Thailand.

The external imbalances in some large emerging East Asian economies—indicated by large external flows and the accumulation of foreign exchange reserves—are clearly unsustainable in the longer term. It is important for economies with highly managed exchange rate regimes to prepare to move toward more flexible systems—historically, more than half the shifts to floating regimes have been disorderly and have led to crisis. A deep and liquid foreign exchange market, a coherent intervention policy, an appropriate alternative nominal anchor, and strong fiscal policies, institutions and banking systems are important prerequisites.[15] Arguably, it may be preferable to introduce greater exchange

[15] See Eichengreen, B., 1999, Kicking the Habit: Moving from Pegged Rates to Greater Exchange Rate Flexibility, *Economic Journal* 109, Conference Papers, pp C1-C14; and Duttagupta, R., G.,Fernandez, and C. Karacadag, 2005, Moving to a Flexible Exchange Rate: How, When, and How Fast?, *Economic Issues* 38, International Monetary Fund.

rate flexibility during a period of net capital inflows—the resulting appreciation would be contractionary, reducing excess demand and dampening speculative bubbles. The exchange risk associated with greater flexibility can also moderate capital inflows. Moreover, a higher level of exchange rate variability will encourage the private sector to hedge foreign exchange exposures, reducing financial vulnerability.

- ***Monetary policy response needs to strike a balance between domestic and external objectives***

When capital inflows contribute to already booming domestic demand and surging asset prices, the central bank may consider tightening monetary policy. There is wide debate over whether monetary policy should target asset prices, and the consensus in many developed countries is that it should not, as long as the inflation outlook is not affected. It also depends on the relative costs of monetary tightening. If it is perceived that asset price booms could increase the probability of adverse macroeconomic development occurring, preemptive monetary policy tightening may be required. For example, considering the potential inflationary pressure from asset price appreciations, Korea tightened its monetary policy in 2006 by raising the official interest rate and the average reserve requirement ratio. Since 2003, the PRC also responded to asset price surges in both real estate and the stock markets using a series of measures, including increasing interest rates and the reserve requirement ratio.

While monetary tightening can help reduce money supply and prevent asset prices from rising excessively, it is a limited policy option—as higher interest rates could induce more capital inflows, adding pressure on liquidity expansion and exchange rate appreciation; also, higher bank reserve requirements can have an adverse impact on the banking sector.

On the other hand, in an environment of a benign inflation outlook and sluggish domestic demand, the central bank may lower interest rates in the hope of reducing capital inflows and exchange rate appreciation by making interest arbitrage less attractive. This is likely to be one of the motives behind the 150 basis point cut by the Philippine central bank (Bangko Sentral ng Pilipinas) on 12 July and the 25 basis point cut by the Bank of Thailand on 18 July. Cutting interest rates, however, may further boost liquidity and therefore asset prices. Inflationary pressures may also increase due to higher domestic demand.

- ***Be cautious with fiscal policy response***

Subject to long decision lags, fiscal policy has a limited role in managing volatile and unpredictable capital flows; sound fiscal policy, however, is important when capital inflows surge and more so as a cushion when capital flows reverse.

The government may tighten fiscal policy to ease some of the expansionary effects of capital inflows, which would also limit inflation and relieve the appreciation pressure on the real exchange rate. Fiscal tightening tends to place downward pressure on interest rates, further reducing incentives for capital inflows. However, the long decision lags of fiscal policy adjustments constrain its viability as a policy tool against very volatile and unpredictable capital flows. By the time a fiscal contraction is implemented, the surge in capital flows might have subsided—or reversed—in which case any fiscal contraction could make things worse.

Sound fiscal policy, however, is important when capital inflows surge—to offset their expansionary impact—and more so as a cushion when capital flows reverse. In general, most large emerging East Asian economies have had balanced fiscal positions for decades. The average budget deficit in these economies since 1998 is a mere 1.6% of GDP. In the Philippines, which had the highest budget deficit among the group, the government effectively consolidated the fiscal deficit to 1.1% of GDP in 2006. Malaysia is currently highest with a 2006 budget deficit of 2.6% of GDP in 2006. The other large emerging East Asian economies have maintained either lower budget deficits or, in Thailand, a slight surplus.

Fiscal policy responses can also be useful in addressing speculative problems in asset markets bolstered by large capital inflows. Certain tax policies have been used to target specific asset markets effectively. Over the past few years, the PRC has introduced a series of measures to stabilize the real estate market, including a new land use tax applying to construction on unused land or newly converted from agriculture, a higher capital gains tax on residential properties sold within 2 years of purchase, and a land value-added tax from property development enterprises. Most recently, PRC authorities raised the stamp duty on share trading from 0.1% to 0.3%, in an attempt to reduce

"speculative behavior." The result was dramatic, with the Shanghai Composite Stock Index falling by 15.3% in the 4 days following the announcement. This policy could also be highly contractionary, as tax revenue from share trading could reach 1% of GDP should recent trading volumes continue. Although the measure may be viewed as against the trend toward financial market liberalization, the move may eventually discourage excessive speculation—an important source of short-term volatility in PRC stock markets. Recently, the PRC has also cut the tax on interest income from 20% to 5% to help stem funds flowing from bank deposits into the stock markets.

- ***Liberalize capital outflow***

To help offset surges in capital inflows, most large emerging East Asian economies could further liberalize restrictions on capital outflows to encourage both direct investment abroad and promote fund-type portfolio investments overseas.

Capital controls can, in principle, decrease excessive amounts of unproductive forms of capital inflows. In addition, under a tightly-managed exchange rate, they can allow monetary policy greater independence. While capital controls may sometimes reduce real appreciation, they do not generally reduce the volume of net inflows.[16] Also, they can increase domestic financing costs, distort business decision making, and reduce market discipline. Capital controls are also difficult and costly to enforce, and may ultimately prove ineffective when the private sector discerns ways of circumventing the controls, by, for example, over-invoicing imports and under-invoicing exports.[17]

While Korea has removed nearly all restrictions, PRC, Indonesia, Malaysia, Philippines, and Thailand control capital flows in various ways. Compared with other emerging markets in Latin America, for example, the restrictions in large emerging East Asian economies are more stringent and restrict capital outflows more than inflows—a response to the capital flight experienced during the Asian currency crisis. In December 2006, to prevent the Thai baht from excessive appreciation, authorities imposed a foreign capital reserve requirement requiring a deposit for capital inflows,

[16] See Magud, Nicolas and Carmen M. Reinhart, 2006, *Capital Controls: An Evaluation*, NBER Working Paper 11973.

[17] See Kristin J. Forbes, 2005, T*he Microeconomic Evidence on Capital Controls: No Free Lunch*, NBER Working Paper 11372.

deducting from the deposit for short-term withdrawals. However, capital has continued to flow into the economy, suggesting that restrictions on capital flows do not necessarily curb capital inflows. As a stopgap measure, however, they may mitigate a sudden reversal in direction of capital flows.

To help offset surges in capital inflows, most large emerging East Asian economies could further liberalize restrictions on capital outflows. In addition to seeking more opportunities for direct investment abroad, several large emerging East Asian economies (for example, the PRC and Malaysia) promote authorized fund-type portfolio investments overseas for domestic retail investors, given the relatively high risks involved in investing in overseas markets. Korea has introduced a temporary tax exemption on capital gains and is easing regulations—such as relaxing the acquisition limit on the purchase of overseas real estate for both financial institutions and individuals. Still, an increase in capital outflows would not reduce the direct effects of gross capital inflows on domestic asset markets. Authorities should be prudent in removing restrictions on capital outflows since they may aggravate the effects of any reversal in capital flows.

- ***Strengthen financial market regulation and supervision***

Strengthening financial market regulation and supervision allows authorities to improve the efficiency and effectiveness of institutions and enhance financial sector stability—and therefore could play a role in dampening bubbles.

If the primary policy concern is excessive asset price inflation, relevant markets can be monitored closely by supervisory agencies for signs of instability, imbalance, or especially deterioration of a financial institution's asset quality. Any concerns can then be addressed using regulatory measures directed at specific asset markets. This is more effective if a large source of funds flowing into asset markets derives from domestic agents. In general, a more targeted approach can reduce the chance of unintended macroeconomic effects of broad-based monetary, fiscal, or exchange rate policies—or even capital controls. The banking sector should be closely monitored for exposure to speculative investments in equity and real estate markets, and these can be reduced through selective imposition of higher reserve

requirements, higher down payment requirements for real estate purchases, or higher reserve margins for equity investments. However, effective financial market regulation and supervision requires substantial human capacity and strong institutions. One of the factors that helped Singapore and Hong Kong, China survive the real estate fallout prior to the Asian crisis—and thus minimizing damage to their economies—was relatively strong bank regulatory frameworks and supervision. The authorities were also able to act decisively to contain the adverse effects when the bubbles burst.

5. Conclusion

The best course in managing large capital flows may be to make judicious use of the available policy options, but at the same time resist the temptation to overreact to temporary trends—thus minimizing unintended distortions in domestic markets.

There appears to be no magic solution to effectively manage surges in capital flows or any associated excessive increase in asset prices. Each policy option has its merits and shortcomings.

An appropriate package of policies may be to allow greater currency flexibility (in economies with tightly managed exchange rates, capital inflows may also provide an opportunity to introduce more flexible regimes with least costs), to communicate clear and stable monetary and fiscal policies where inflationary pressures are contained and economic expansion remains on track, and to step up efforts to address potential asset bubbles through regulatory and supervisory agencies.

Although the specific mix of appropriate polices will vary with individual economic conditions, greater efforts to ensure transparency with financial markets is essential to avoid overly speculative or rumor-driven activity.

Box 3: **Capital Inflows and Asset Prices: Econometric/Empirical Analysis**

Panel vector auto-regression (VAR) models can be used to assess empirical effects of capital inflows on asset prices.[18] VAR is an econometric model used to capture the evolution and the interdependencies between multiple time series. All the variables in a VAR are treated symmetrically by including for each variable an equation explaining its evolution based on its own lags and the lags of all the other variables in the model. VAR models are useful to document empirical facts and the effects in a model are dynamic in nature. Furthermore, a panel framework, which pools data for different economies into one model, could overcome the shortcomings of a short sample period. The empirical results presented in this box shows that a surge in gross capital (or portfolio) inflows would significantly affect asset prices and lead to real exchange rates to appreciate. Stock and land prices would rise, but increases in land prices are more delayed.

The basic model has five quarterly variables: real GDP, price levels, stock prices, land prices, and gross capital inflows (as a ratio to trend GDP); the first four are in logarithms.[19] Real GDP and price levels are included to control for the factors that can affect the asset prices through channels other than foreign capital inflows; individual fixed effects are included to control for the factors that affect the asset prices in individual countries. The data for five selected emerging East Asian economies: Indonesia, Republic of Korea, Malaysia, Philippines, and Thailand from 1999 to the first quarter of 2006 are used to estimate the following reduced form panel VAR:

$$y^i_t = c^i + B(L)y^i_{t-1} + u^i_t ,$$

where c^i is a 5x1 constant matrix, $B(L)$ is a matrix polynomial in the lag operator L, u^i_t is a matrix of shocks with a variance/covariance matrix of Σ, y is the variables listed above and i = 1 to 5.

A recursive assumption on the contemporaneous relation among variables was used.[20] Real GDP and prices are assumed to be contemporaneously exogenous to other financial variables since real economic activities and the aggregate price level respond to changes in economic conditions sluggishly but the financial sector reflects all the information immediately. Capital inflows are assumed to be contemporaneously exogenous to asset prices.[21]

Simulating the estimated model can show the responses of gross capital inflows, stock prices, and land prices to a typical shock in capital inflows in a 10 quarter horizon (Figure B3.1). A typical capital inflow shock is characterized as an increase of about 4% of trend GDP. The increase in capital flows disappears quickly in the second quarter but lasts for more than two years with about 0.5% of trend GDP. In response to this surge in capital inflows, stock prices rise by 2% for three quarters. Land prices also increase by about 1% on impact, and rise further with the effect peaking at 1.5% three quarters after the shock. It is interesting to note that after a surge in capital inflows, stock prices tend to rise immediately as capital inflows (particularly portfolio inflows) directly hit the stock market. Increases in land prices are more delayed, which may be explained by a spill over effect.

An extended model with the inclusion of real effective exchange rates is estimated to show the effect of surging capital flows on real exchange rates (Figure B3.1). After a surge in capital inflows, the real effective exchange rate appreciates by 0.8% in two quarters.

Understanding the properties of the forecast errors (the differences between the model forecasts and actual values of a variable) is also helpful in uncovering relationships among the variables in the VAR model. The fluctuations in forecast errors can be decomposed—so-called forecast error variance decomposition—to see how much of total variation in asset prices is explained by shocks to capital inflows. On a two-year horizon, 7.3% of stock price fluctuations and 13.4% of land price fluctuations are explained by changes in capital inflows. These are relatively moderate numbers. The estimation period, however, does not include most recent dates when asset price appreciation accelerated and serious concerns on capital inflows emerged. The contribution of capital inflows to asset price fluctuations is likely to increase if the recent dates are included.

The effects of portfolio inflows have also been examined. The results are qualitatively similar, although the effects tend to be weaker in general mostly because the size of the typical shocks to portfolio inflows is smaller than that of the typical shocks to capital inflows.

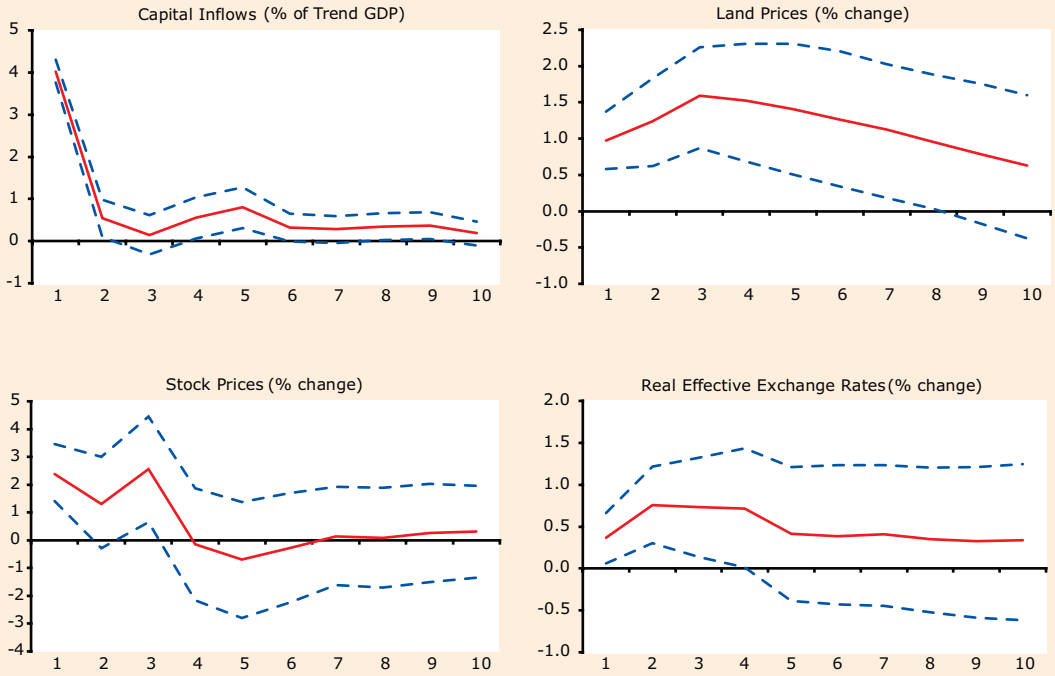
[18] For the details of the empirical analysis, see Kim, Soyoung and Doo Yong Yang, 2007 "The Impact of Capital Inflows on Emerging Asian Economies: Is Too Much Money Chasing Too Little Good?", mimeo, Asian Development Bank.

[19] Stock prices are obtained from Bloomberg, land price data for Malaysia, Thailand, and Indonesia are provided by Maria Bautisca of Bank for International Settlements; housing prices for Korea are obtained from the Bank of Korea website and housing rental prices for the Philippines are from CEIC; all the other data are from *International Financial Statistics*, published by the International Monetary Fund.

[20] For details, see Sims, C.A., 1980, "Macroeconomics and Reality", *Econometrica*, 48, pp.1-48.

[21] In order to make this assumption more reliable, the data on stock prices are constructed as the end of period value.

Figure B3.1: **Responses to a Typical Shock in Gross Capital Inflows** (solid lines are the responses, and the dash lines are one standard error bands)



Source: OREI staff calculations.

Emerging East Asian Banking Systems—Ten Years after the Crisis

1. Introduction

The Asian crisis was a twin crisis. Initially, it struck as a currency crisis—when the Bank of Thailand (BOT) sold its foreign reserves forward to protect the baht's value as investment capital was withdrawn. BOT was finally forced to let the currency float, resulting in large, rapid currency depreciation. Contagion made it a regional crisis, affecting Indonesia, Republic of Korea (Korea), Malaysia, and Philippines as well. But the underlying structural problems—weaknesses in bank balance sheets, together with currency and maturity mismatches—severely exacerbated the ensuing downturn and led to widespread bank insolvencies, creating a more deep-seated banking crisis.

There have been many changes in emerging East Asian[22] banking systems since the crisis, including (i) major restructuring through bank consolidation; (ii) resolution of nonperforming loans (NPLs) through asset management companies (AMCs); (iii) fresh capital injections, widening ownership structures—including foreign ownership; (iv) movement into new business lines, including an increase in household lending and investment banking; (v) the strengthening of prudential regulatory and supervisory oversight to increase transparency and adapt to changing conditions in regional and global financial markets.[23]

Still, while banking systems have largely recovered, problems remain. For example, bank lending to private business in much of the region continues to be subdued and many regional bank credit ratings are still relatively weak.

This chapter analyzes key features of emerging East Asian banking systems 10 years after the 1997/98 crisis—what has been done in terms of reforms and restructuring, and what the future holds for

[22] In this chapter, emerging East Asia includes People's Republic of China (PRC); Hong Kong, China; Indonesia; Republic of Korea (Korea); Malaysia; Philippines; Singapore; and Thailand.

[23] Extensive reviews of the reform efforts can be found in various issues of the IMF *Global Financial Stability Report*, various issues of the *Asia Economic Monitor*, and Ghosh, Swati R., 2006, *East Asian Finance: The Road to Robust Markets*, World Bank.

further banking system development.[24] It also considers how the risks faced by regional banking systems may have changed since the crisis and how resilient they may be to potentially adverse shocks to the macroeconomic or financial environment.

The analysis is subject to four important caveats.

(i) It examines national banking systems rather than individual banks. In some countries in the region, for example, Indonesia, Philippines, and Thailand, a number of somewhat weak banks operate alongside stronger and larger institutions, and this is obscured to some extent by the use of indicators of banking sector performance weighted by (bank) asset size.[25] A focus on size-weighted indicators is warranted to the extent to which large banks are usually most relevant for systemic risk.[26] Arguably, however, the overall efficiency of a banking system also depends on its smaller and medium-sized banks; in some circumstances, these may also pose systemic risk.[27]

(ii) Officially reported indicators are used for bank profitability, asset quality, and capital positions. Even when accurately measured, these are rough estimates at best for determining bank soundness—which fundamentally depends on other qualitative factors such as a bank's risk management system and the strength of supervisory and regulatory regimes. This shortcoming is alleviated to some extent through the use of forward-looking market indicators, such as bank share prices and credit ratings, which presumably take these latter factors into account.

(iii) Individual national banking systems are reviewed and presupposes a relatively low degree of bank integration across the region. Even though foreign commercial bank presence and

[24] Numerous studies of regional financial systems have been undertaken or are in process. This chapter draws on a recent Bank for International Settlements (BIS) study of emerging market banking systems and, in particular, Turner, Philip, 2007 ,"Are Banking Systems in East Asia Stronger," *Asian Economic Policy Review* 2.

[25] Many of the indicators are asset-weighted means or medians of banking sector performance.

[26] Systemic risk refers to the risks faced by a banking or financial system as a whole and differs from the risk faced by individual financial institutions. See Schinasi, Garry J., 2006, *Safeguarding Financial Stability: Theory And Practice*, IMF.

[27] For example, there is systemic risk if large banks maintain exposures to smaller and medium-size banks on the interbank market. Such exposures, of course, are netted out when considering total banking system exposure as against the rest of the economy.

intraregional capital flows increased over the past 10 years,[28] most national banking systems in the region remain "local"—with the notable exceptions of Singapore and Hong Kong, China.

(iv) Only institutions classified as commercial (or deposit taking) banks are included. In much of the region, these institutions have been increasingly branching out into new investment banking-type activities. This blurring of types of financial institutions raises issues when "bank" performance is compared. Differences in performance can reflect differences in the importance of various activities across institutions and over time.

The organization of the chapter is as follows: Section 2 examines key changes in the structure, ownership, and activities of regional banking systems—including supervisory and regulatory regimes—over the past 10 years; Section 3 analyzes the operational efficiency, profitability, and soundness of these banking systems; Section 4 considers market soundness indicators of regional banking systems to help determine whether recent subdued bank lending implicitly signals continued weaknesses in the region's banking systems; Section 5 examines how the systemic risks faced by banking systems may have changed since the crisis and the robustness of recently reported improvements in banking sector performance. Some tentative answers to the issues raised are posited in the final section.

2. Structural Changes in Regional Banking Systems

The 1997/98 Asian financial crisis stressed the urgency for creating sound and transparent mechanisms to intervene in troubled financial institutions; write down impaired assets and maximize recovery value; separate "good" from "bad" banks in order to facilitate new lending; and redistribute losses among various claimants.

Once the crisis struck, bankruptcy procedures required strengthening in a number of economies. In view of the sheer scale of the banking crisis, it also underscored the potentially important

[28] Unfortunately, reliable information on the size and distribution of intraregional bank flows is unavailable. Many believe that these flows likely remain small, however. See Lee, Jong-Wha, 2006, "Patterns and Determinanats of Cross-border Financial Asset Holdings in East Asia", mimeo, and IMF, 2006, *Global Financial Stability Report*.

role of "extraordinary" measures to deal with systemic crises, including centralized official AMCs; appropriately implemented blanket deposit guarantees; and injections of official capital when private sources were not available. Most significantly, however, given the major costs of the crisis, the experience underscored the importance of strengthening regional financial systems and reducing their vulnerability to future crises.

Given this backdrop, the restructuring of regional banking systems over the past 10 years has centered around five main elements: (i) banking sector consolidation; (ii) resolution of nonperforming assets; (iii) fresh capital injections from official and private sources; (iv) new lines of banking business; and (v) strengthening of prudential regulation and supervisory oversight.

The relative importance of the five elements has varied across economies and over time. In the case of the crisis-affected countries, banking sector consolidation, resolution of nonperforming assets, and fresh capital injections were critical in the period immediately following the crisis. In Indonesia, Korea, Malaysia, and Thailand substantial restructuring and consolidation took place relatively quickly as a number of troubled financial institutions—banks and nonbanks[29]—were closed or merged with healthier institutions; official and private AMCs were established or strengthened to assist in resolving impaired assets; and official and private capital was injected into the banking sector.[30] Even without a banking crisis, the PRC has also undertaken substantial restructuring over the past 10 years, mainly in dealing with NPLs and the need for fresh capital,[31] as has the Philippines. Most emerging East Asian economies—including Hong Kong, China; Malaysia; Philippines; Singapore; and Thailand—adopted master actions plans directed at financial sector strengthening and reform. Thus, a key feature of much of the recent financial sector restructuring across the region has been the key role played by governments.

[29] In the case of Korea, a number of merchant banks were also closed, while in Thailand, a large number of finance companies were closed.

[30] For a discussion and evaluation of the different approaches, see Adams, C., R. E. Litian, and M. Pomelearno eds., 2001, *Managing Financial and Corporate Distress: Lessons from Asia*, Brookings Institution Press, Washington D.C.

[31] This was in response to long-standing weaknesses in the PRC banking system and commitments to financial services liberalization associated with entry into the World Trade Organization.

- **Banking sector consolidation and concentration**

Since the crisis, there has been significant consolidation in emerging East Asian banking systems.

With the closing down and/or merger of troubled banks with stronger institutions, the number of banks has declined, possibly resulting in further concentration of banking systems.[32]

With the notable exception of the PRC—where bank concentration has traditionally been very high—there has been some increase in concentration in many regional banking systems over the past 10 years (Table 13). Not all indicators, however, point unambiguously in the same direction.[33] Increases in concentration have occurred not only in some of the crisis-affected countries, but also in the relatively mature banking systems of Singapore and Hong Kong, China, where the increases appear to reflect consolidation among medium-to-larger size banks. These appear to have been induced by competition rather than bank weaknesses. Conversely, in the crisis-affected countries, consolidations have largely reflected a truncation of the tail-end of bank distribution, as a number of relatively small and weaker banks were shut down or merged with other institutions. Notwithstanding the recent increase in banking sector concentration in the region, it does not appear excessive when measured against international norms.[34] Indeed, to the extent to which banking systems in the region had too many small—and poorly regulated—banks before the crisis, the subsequent consolidations may have improved efficiency and lowered risk.

[32] In addition, many economies have increased the minimum amount of capital required to establish a bank, in addition to the required prudential capital ratios—some above international standards—that have also been applied in many economies in the region.

[33] This is not entirely unexpected, reflecting the fact that the various concentration measures focus on different dimensions of concentration and different ranges in the distribution curve of banks.

[34] Ghosh (2006) op. cit., Turner (2007) op. cit., and "The Banking System in Emerging Economies: How Much Progress Has Been Made?" BIS Papers No. 28 (August 2006).

- **Resolution of nonperforming loans**

NPLs have declined significantly across the region since the crisis. However, using wider definitions of distressed loans—such as including restructured loans—some banking systems still have significant NPL exposure.

The percentage of impaired assets is now relatively low in Hong Kong, China; Korea; Malaysia; and Singapore, because banking systems in these economies all have strong fundamentals (see Table 4b). Thailand's NPL ratio is relatively stable, with slow NPL resolution and some lingering vulnerability to recurrent problems in restructured loans. In the PRC, faster NPL disposal and rapid growth of new loans contributed to the continued decline in NPL ratios through the first half of 2006. However, with relatively weak loan quality controls, banks remain vulnerable to the emergence of new NPLs. In Indonesia, NPLs are once again falling after the recovery from the 2005 financial mini-crisis. However, the high ratio of compromised assets leaves banks vulnerable to further instability. And in the Philippines, where asset quality is improving, banks nonetheless retain relatively high levels of distressed assets.[35]

- **Fresh capital injections from public and private sources**

To shore up crisis-affected banks, fresh capital injections from public and private—including foreign—sources helped begin restore confidence in affected banking systems.

The trend of gradually reducing public sector ownership of banks was interrupted following the crisis, when substantial numbers of crisis-affected banks received capital injections from governments, particularly where private capital was "scarce."

Many of these public capital injections—either as part of the consolidation process or as loans from central banks—have been reversed (see Table 13) through equity sales to the private sector,

[35] Indicators of impaired assets, estimated by major credit rating agencies, continue to be significant elsewhere in the region. For example, Standard & Poor's (S&P) estimates end-2005 nonperforming assets at 25% of total loans in PRC, 20% in Thailand, and 10% in Malaysia. Source: S&P, 13 September 2006, *Asia 1997 Retrospective: Today's Banks Likely to Survive Stress Scenarios*, www.standardandpoors.com.

Table 13: **Changes in the Structure of the Banking Sector**

	Number of Banks			Average Size of Assets ($ billions)			Median Size of Assets ($ billions)		Concentration Ratio: Assets of Top Three Banks (%)		Concentration Ratio: Assets of Top Five Banks (%)		Average Foreign Ownership in Top 10 Banks (%)		Average State Ownership in Top 10 Banks (%)	
	1997	2002	2004	1997	2002	2004	1998	2004	1997	2004	1998	2004	1997-99	2004	1997-99	2004
China, People's Rep. of	86	129	135	10.2	13.6	18.0	...	...	73.2	61.0	...	...	0.02	3.2	96.4	89.7
Hong Kong, China	361	224	208	0.8	1.2	1.3	3.3	5.0	29.7	53.4	...	...	63.1	66.5	0.0	0.3
Indonesia	222	142	134	0.5	0.6	0.7	0.2	0.8	...	42.2	29.0	59.1	0.0	16.7	73.8	51.3
Korea, Rep. of	16	11	8	17.8	43.6	79.5	16.7	61.9	50.7	50.6	70.1	60.1	12.2	21.3	37.2	5.8
Malaysia	36	26	25	2.7	3.8	4.8	1.9	7.4	22.8	33.1	53.3	70.7	15.9	26.2	10.9	3.5
Philippines	51	24	24	1.0	1.6	1.7	0.4	1.3	29.6	29.4	41.6	51.5	11.3	9.0	7.8	5.8
Singapore	152	120	113	0.7	1.0	1.2	2.2	0.8	75.6	91.8	...	...	8.3	15.6	0.0	4.0
Thailand	16	13	12	10.6	8.3	11.1	4.4	13.4	47.4	47.8	51.5	69.0	8.1	11.7	1.3	29.3
United States	9060	7798	7532	0.4	0.6	0.7	1.4	2.2	17.3	30.3	...	...	0.0	3.2	0.0	0.0

...= not available

Sources: *International Financial Statistics* (IMF) and World Bank.

but sizable amounts remain in Indonesia and Thailand. In the case of the PRC, capital injections continue but, at the margin, the share of privately-owned banks has been increasing and partial reduction of public equity in banks has begun.[36]

Since the crisis, there has been a significant increase in foreign capital injections and thus participation and ownership in emerging East Asia's domestic banking systems. Foreign ownership in banking systems has grown significantly in the PRC and Korea, two markets that were relatively closed in the 1990s.

- **New Lines of Banking Business**

One significant development over the past 10 years—and a challenge banking systems will increasingly face—has been the significant growth of household lending and investment banking.

While the mature banking systems of Singapore and Hong Kong, China were already engaged in household lending before the crisis, since 1997 the trend has moved into Korea, Malaysia, and

[36] See ADB, *Asia Economic Monitor* (December 2006) for information about recent capital injections in the PRC through initial public offerings. See also Ghosh (2006) op. cit., and BIS (2007).

Table 14: **Bank Household Lending** (% of total commercial bank loans)

	Housing		Other Consumer		Business	
	1998	2004	1998	2004	1998	2004
China, People's Rep. of	...	...	...	...	...	...
Hong Kong, China	...	...	...	...	...	...
Indonesia	5	6	7	18	34	31
Korea, Rep. of	9	33	18	17	69	47
Malaysia	18	28	8	16	64	45
Philippines	...	...	...	...	...	...
Singapore	...	...	...	...	...	...
Thailand	7	10	3	6	71	68

...= not available

Source: Turner, Philip. "Banking Systems in East Asia: Ten Years Later." BIS. October 2006.

Thailand; and, to a lesser extent, the PRC (Table 14).[37] In most economies, the bulk of household lending has been mortgage related, although unsecured lending (including credit card finance) has grown significantly in several economies. Korea had a credit card crisis in 2004, requiring authorities to step in (Box 4). Household lending has been particularly significant in Malaysia and Korea where it is now broadly in line with the longer-term household lending shares of Singapore and Hong Kong, China.

Traditionally, commercial banks have concentrated on the core business of providing relatively illiquid loans to businesses and households, financed by liquid deposit liabilities. While this remains dominant in emerging East Asian banking systems, there has been an increasing number of banks moving into investment-banking activities—especially in Hong Kong, China; Korea; and Singapore.

The extent to which banking systems have been taking on investment banking-type businesses can be gleaned by looking at income diversification—captured by the income diversification index (IDI), which assumes a value of zero when a banking system derives income from a single source and a value of unity when income is equally split between lending and investment banking-type activities (Table 15). While most banking systems in emerging East Asia still rely, not surprisingly, on income from traditional banking, the importance of investment banking income has generally increased and is relatively high in many economies.

[37] In several countries, including Korea, nonbank financial institutions initially were the major players in the household (notably credit card) market. See Ghosh (2006) op. cit.

Box 4: **Lessons of the Republic of Korea's Credit Card Crisis**[1]

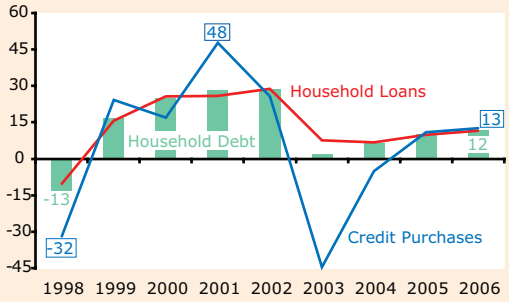
After the Asian financial crisis, borrowing by the Republic of Korea's (Korea's) suffering corporate sector was sluggish, while a perception of higher risk left banks more reluctant to lend to firms. At the same time, the government sought to boost domestic demand by easing monetary policy and expanding domestic credit; banks and credit card companies dramatically increased their lending to households (Figure B4.1). Household debt rose rapidly in 1999, reaching 70% of GDP in 2002. Credit purchases grew strongly, and the rapid household credit expansion saw consumption rise 6.7%, lifting GDP growth to 7.0% in 2002.

Higher credit card purchases and loans from banks and the credit card companies accounted for the largest part of the household credit expansion. The government had rapidly eliminated regulations on credit card companies and provided tax incentives for credit card purchases. During 1999–2002, credit card issuance increased by 28% per year on average, and credit purchases rose by 82%. However, credit reporting infrastructure at the time was quite limited in terms of customer bases and types of data collection, and information on household credit ratings was not shared appropriately across different financial institutions.

Financial deregulation and easier monetary policy boosted credit card business, while credit card companies relaxed issuance standards to increase market share, issuing to just about anyone who applied. Credit cards per worker increased from 1.8 in 1999 to 4.6 in 2002. The credit card boom was certainly not sustainable. By 2003 8% of the population was delinquent on credit card payments, turning 34% of the assets of credit card companies (about 3% of GDP) bad. The rescue plan for the most severely impaired LG card company alone amounted to $4.5 billion, in which state-run Korea Development Bank played a leading role. The plan included the suspension of LG card bond trades, debt-equity swaps and an injection of new capital by the LG group.

The credit card crisis was closely associated with overall banking sector problems for the following three reasons. First, in a number of cases, credit cards were issued by a subordinate division or an affiliate of banks. Most bank-affiliated credit card companies in trouble were forced to merge into the banks, which eroded banks' profits. Second, banks not only provided loans to credit card companies but also purchased bonds issued by them. When credit card companies had difficulty repaying debt, the banks were in trouble as well. Third, credit card companies effectively acted as banks by providing cash loans, without careful inspection of credit history, to low-credit graders who could find no other sources. Most turned bad.

Figure B4.1: **Household Debt in Korea**
(% increase)



Source: Bank of Korea

In response to the crisis, credit card companies tightened lending standards and cut loans, suffering prolonged balance sheet adjustments in the process. Household credit quickly shrank, and the number of bad credit holders soared to 3.7 million in 2003 (about 15% of the labor force) from 1.6 million in 1998. As a consequence, consumption fell by 1.2% in 2003.

The credit card crisis has led to financial sector reforms in the following areas:

- Early warning signals: The crisis shows the importance of early detection, the introduction of prompt corrective actions and the development of efficient exit procedures.[2] The financial supervisory service needs to continuously monitor banks' financial positions and performance. Rapid deregulation without proper oversight aggravated the Korean crisis.

- A well-functioning credit bureau system: This is needed for the financial sector to assess the risks of household lending. The credit bureau collects and analyzes individual credit history. The authority needs to require financial institutions that engage in household lending to participate in the sharing of credit history of individuals, given that adequate controls to safeguard data privacy are in place.

- Infrastructure for handling insolvency: Bad credit holders would have difficulty finding jobs, increasing unemployment and aggravating the economic impact. Bankruptcy procedures for individuals require insolvency laws and the court systems to support them. These procedures should also allow those bankrupted to start again, so long as significant moral hazard is not created.

[1] Consultant Kwanho Shin contributed to this section.
[2] See Kang, Tae Soo and Guonan Ma, "Recent episodes of credit card distress in Asia", *BIS Quarterly Review,* June 2007.

Since the crisis, all emerging East Asian economies have strengthened prudential regulation and supervisory systems governing banking systems.

The currency and maturity mismatches that arose prior to the crisis emphasized the need to improve risk management—with a view to strengthen asset quality and reduce bank vulnerability. Substantive efforts have been made to strengthen financial sector supervision and regulation. Better financial and other reporting requirements, independent audits of bank statements—now required in many economies—and much stricter conditions for establishing new banks have strengthened prudential regulation.[38] In addition, most banks in the region are now required to hold minimum capital adequacy ratios (CARs) above 8% of their risk-weighted assets in line with the Basel I accords—in fact, several economies have higher minimum CAR requirements.

Most importantly, there have been shifts in many economies toward more forward-looking, risk-based bank supervision with increased use of on-site inspections and evaluation of banks' risk management systems—in line with the 25 Core Principles for Effective Banking Sector Supervision developed by the Basel Committee in 1997 and will be applied under the revised Basel II Framework.[39]

For example, asset quality is assessed not only on the basis of repayment histories but also on the basis of factors expected to influence future repayments, to adopt prompt corrective action approaches if banks start to experience difficulties. There is relatively high compliance in Singapore and Hong Kong, China, with somewhat lower compliance in other economies in the region.

There is also a move by some authorities to adopt an integrated regulator model where all—or nearly all—financial sector supervision and regulation falls under a single body rather than under different "roofs." Korea and Singapore have adopted this approach, while it is under discussion in Indonesia and Thailand.

[38] This has occurred against the background of general efforts to strengthen corporate governance and transparency. For a fuller discussion, see Ghosh (2006) and various issues of the *Asia Economic Monitor.*

[39] See *Core Principles for Effective Banking Supervision*, BIS (2006), or http://www.bis.org/publ/bcbs30a.htm.

Table 15: **Banking Sector Securities Holdings and Activities**

	Securities Holdings (% of Total Assets)			Income Diversification Index (IDI)		Market Sensitivity Index (MSI)	
	2001	2004	2006	1998	2004	2000	2004
Hong Kong, China	15.5	19.2	20.2	0.43	0.61	5.61	7.35
Indonesia	...	20.2	24.8	0.46	0.45	1.09	3.38
Korea, Rep. of	26.2	20.8	20.2	0.65	0.61	0.10	3.61
Malaysia	13.0	10.6	9.3	0.53	0.64	7.17	5.33
Philippines	24.6	31.6	30.0	0.57	0.65	4.19	4.47
Singapore	19.0	17.1	15.9	0.40	0.41	5.74	6.38
Thailand	14.1	16.0	15.8	0.41	0.61	6.51	4.71

...= not available

Sources: CEIC, national sources, *International Financial Statistics* (IMF), and World Bank.

Finally, with the recent increase in household lending and given Korea's experience with excessive credit card lending, several economies—including Korea, Malaysia, and Thailand—have begun to implement new systems to monitor household indebtedness.[40] Monitoring housing markets has grown in several economies—such as Korea and Hong Kong, China—where concerns about run-ups in property prices have grown.[41] This has involved, among other things, the enforcement of conservative loan to valuation ratios to cushion banks from declines in housing prices and stress testing banking systems to possible sharp declines in house price (see Box 5).

3. Efficiency, Profitability, and Financial Soundness of Commercial Banks

The profitability of regional banking systems is influenced by their operational efficiency, as measured by operating costs,[42] deposit and lending rate spreads, and return on assets.

Return on assets in the region's banking systems has recovered from crisis lows, with average returns generally in the 1.0–1.5% range, broadly in line with international norms.

Particularly in crisis-affected economies, the return on assets rebound appears to reflect lower specific provisioning—deducted from earnings—as nonperforming assets have moved off bank balance sheets. In Indonesia, they remain relatively

[40] See Fitch IBCA, 2006, at http://www.fitchibca.com/corporate/locked/view_research_locked.cfm?rpt_id=248492.

[41] See discussion in the *Asia Economic Monitor,* December 2006.

[42] Operational costs do not include provisioning and are based primarily on efficiency and factor costs.

high, apparently related in large measure to the wide spreads between deposit and lending rates and relatively high returns on government securities holdings. The rate of return on bank equity is linked to the rate of return on assets by the degree of banking system leverage.[43] Even under relatively strict risk-weighted capital adequacy requirements, most regional banking systems remain highly leveraged—as seen in the large spreads between the returns on assets and equity.

However, since the crisis, unit costs have not declined very much in most of the region's banking systems.

The operational costs of any banking system depend on factors outside its control—the general level of wages and salaries—and by factors under its control—number of bank branches and staff efficiency, for example. Given the substantial restructuring since the crisis, operational costs in relation to asset size might be expected to have fallen in many regional banking systems, possibly by large amounts. Assessing the size of any cost reductions is difficult, however, given the absence of detailed bank data that would allow for the estimation of the unit cost function at different levels of production. Instead, cost inferences must be made on the basis of comparisons of unit operational costs at possibly different levels of production.[44] Subject to these limitations, for the most part unit costs have not declined very much in most of the region's banking systems since the crisis (Table 16). At the same time, data show significant remaining cost differences across the region's banking systems, with Indonesia and the Philippines in particular exhibiting relatively high costs. However, unit costs in the region's banking systems generally compare favorably with emerging market banking systems in other regions.[45]

[43] The difference between the rates of return on assets and equity is used to infer the equity capital to assets ratio.

[44] In addition, the extent to which institutions are engaged in commercial or investment banking should be examined, given that costs in the two areas may be different.

[45] See Ghosh (2006) op. cit.

Deposit/lending rate spreads remain at relatively elevated levels—especially in Indonesia, Philippines, and Thailand—though they provided an important source of income to finance bank recapitalizations.

Given the continued dominant role of traditional financial intermediation in the region's banking systems, spreads between loan and deposit remain the primary source of most banking systems' income. Spreads remain at relatively elevated levels, especially in Indonesia, Philippines, and Thailand. These relatively high spreads have provided an important source of income to finance bank recapitalizations and continue to do so, but to a somewhat lesser degree in recent years. The ability of banks to cover part of their recapitalization costs through lending spreads is, of course, not fully consistent with a competitive banking system unless there are significant weaknesses across many banks. In a very competitive system, relatively strong banks would be expected to bid away business from weak banks to the extent that the latter sought to pay low deposit rates—or charge high loan rates—in order to generate income.

Table 16: **Banking Sector Operational Costs and Profitability**

	Operating Costs to Total Assets (%)			Loan-deposit Spread (percentage points)			Return on Asset (ROA) (%)			Return on Equity (ROE) (%)		
	1998	2001	2004	1998	2001	2004	2001	2004	2006	2001	2004	2006
China, People's Rep. of	1.50	1.10	1.05	2.51	3.52	3.26	...	...	...	...	...	...
Hong Kong, China	1.20	1.18	0.85	2.23	2.68	4.97	1.23	1.50	1.50	...	18.70	18.90
Indonesia	4.03	2.30	3.20	-4.97	2.65	7.22	1.45	3.46	2.60	13.35	42.15	28.00
Korea, Rep. of	2.90	1.35	1.50	1.76	1.81	1.95	0.66	0.85	1.11	12.80	15.16	14.60
Malaysia	1.50	1.65	1.70	3.34	3.63	2.96	1.00	1.40	1.30	13.40	16.30	16.10
Philippines	3.75	3.30	3.10	4.17	3.36	3.67	0.50	1.00	1.30	3.40	7.60	11.50
Singapore	0.80	0.90	1.10	2.71	4.06	4.87	1.00	1.25	1.31[1]	...	11.80	12.40[1]
Thailand	2.75	1.90	1.80	3.41	4.59	4.46	1.31	1.25	0.77	...	15.66	8.50

[1] As of September 2006.
Sources: *International Financial Statistics* (IMF), World Bank, CEIC, and national sources.

Increasingly, the financial health of banking systems is being assessed through financial soundness indicators, and these suggest significant improvement in the soundness of emerging East Asian banking systems since the crisis.

Financial soundness indicators (FSIs) cover a range of variables including the amount of regulatory capital held in relation to risk-adjusted assets (Basel I), the quality of assets, domestic liquidity cushions, exposures to certain types of market risk—such as exchange rate or interest rate risk—and any loan concentrations in specific sectors.

Three broad sets of FSIs are computed (Table 17). The indicators fall under three categories: asset quality—NPL ratios; domestic liquidity cushions—measured by two alternative liquidity ratios; and capital cushions—Basel I ratios of regulatory capital to risk-weighted assets and the ratio of market capital to risk-unadjusted assets.[46] The FSIs suggest significant improvement in the soundness of emerging East Asian banking systems since the crisis.

- ***Substantial strengthening in asset quality has occurred across much of the region—sharp reductions in NPL ratios from crisis peaks—and increases in regulatory capital ratios.***

For crisis-affected economies, the improvement in NPL ratios for the most part reflects the near completion of provisioning for impaired assets.[47] With this, returns on assets and equity have bounced back in recent years—with less income dedicated to specific provisioning[48] and higher net income used to build up regulatory capital ratios to high levels. However, NPL ratios remain relatively high in several economies, most notably PRC, Indonesia, Philippines, and Thailand, suggesting continued weak asset quality. While improvements are encouraging, major credit rating agencies suggest that asset quality in some of the region's banking systems may be weaker than implied by official NPL estimates. Based on the standard five-way classification of bank

[46] This is derived from the spread between the reported rates of return on equity and assets.

[47] Note that NPLs represent only one measure of asset quality. Broader approaches are based on the five-way classification of loans into categories: standard, watch list, substandard, doubtful, and loss. Different specific levels of provisioning are typically required for each category.

[48] Whereas general provisioning adds to capital, putting aside funds for specific provisioning subtracts from capital.

Table 17: **Banking Sector Soundness**

	Nonperforming Loans (NPL) (%)			Capital Adequacy Ratio (CAR) (%)			Equity/Asset (%)		Liquid Assets to Total Assets (%)			Liquid Assets to Deposits and Short-term Funding (%)		
	2001	2004	2006	2001	2004	2006	2003	2004	1998	2001	2004	1998	2001	2004
China, People's Rep. of	...	13.21	7.09	...	...	...	...	...	23.83	16.46	13.24	25.47	16.17	12.25
Hong Kong, China	5.16	1.63	1.11	16.50	15.40	14.90	8.28	8.02	37.65	37.05	30.09	43.72	44.07	37.78
Indonesia	12.10	5.75	7.00	20.50	19.40	20.50	108.33	81.40	34.27	68.19	51.21	18.58	27.54	29.39
Korea, Rep. of	2.90	1.70	0.80	11.67	12.06	12.74	5.88	5.92	17.52	11.08	9.74	21.58	12.11	10.89
Malaysia	10.50	6.80	4.76	12.84	14.30	13.10	8.50	8.59	22.17	24.25	28.76	21.83	20.74	26.92
Philippines	17.35	12.72	6.01	15.30	18.70	18.50	12.90	13.16	20.92	19.82	25.50	33.75	35.00	45.42
Singapore	...	4.00	2.40[1]	18.20	16.20	15.40[1]	10.68	11.02	37.92	42.86	33.02	39.94	34.75	28.01
Thailand	10.50	10.92	4.18	13.92	13.05	14.50	4.46	8.28	18.21	33.36	23.84	21.86	21.30	19.68

[1] As of September 2006.
Sources: CEIC, national sources, and World Bank.

loans—standard, watch list, substandard, doubtful, and loss—several credit agencies argue that loans in the last three or four classifications might be higher than implied by officially reported. The continued and possibly understated high levels of NPLs—or nonperforming assets[49]—are a concern as they have continued into the current economic expansion, and in circumstances of unusually benign economic and financial market conditions. Any economic downturn could lead to the ratios rising from already elevated levels in a number of economies.

- ***Capital adequacy ratios have generally risen in much of the region with the regulatory risk-weighted capital asset ratios now close to the 15–20% range in many economies[50]—well above the international 8% norm.***[51]

Relatively high capital adequacy ratios underscores the improving soundness of regional banking systems.

[49] In some economies, for example, the Philippines, the quality of bank assets by NPLs is underestimated as any previously restructured loans currently nonperforming are listed as nonperforming assets (NPAs) rather than in NPL ratios.

[50] National banking systems differ in terms of overall risk, and a case could be made for riskier systems to hold higher regulatory capital ratios; the recent trend appears to be toward convergence. For example, if the regulatory capital ratios in the mature and less risky banking systems of Singapore and Hong Kong, China, currently fall in the appropriate 15–20% range, should less mature and riskier banking systems hold higher regulatory capital ratios? No simple answer can be provided even though the issue relates importantly to how the soundness of different national banking systems is to be assessed.

[51] Many economies in the region require banks to maintain ratios above the international 8% norm.

However, the assessment of the current high levels of reported regulatory capital ratios is not straightforward.[52]

A fundamental difficulty in using regulatory capital ratios to assess banking sector soundness is related to the fact that the 8% prudential minimum is based on the assumption that risk is appropriately managed and priced. If risk is undervalued and priced by banks,[53] the first line of defense against unforeseen losses (loan pricing and profitability) will be inadequate, and the second line of defense (capital and other cushions) might need to be commensurately higher. Unfortunately, there is little systematic evidence on loan pricing across national banking systems; what anecdotal evidence there is—notably the reports of credit rating agencies—is not generally positive, especially for the banking systems of PRC, Indonesia, Philippines, and Thailand.[54] Whether current regulatory capital ratios are adequate is not clear, and the recent high ratios across the region do not provide grounds for complacency.

Unadjusted capital asset ratios—derived from the rates of return on assets and equity in different banking systems—are based on the market value of equity and make no adjustment for the riskiness of different assets as in the case of the regulatory risk-weighted capital ratios. The unadjusted ratios are generally below regulatory ratios, and in several cases, the divergence appears to be explained by the fact that the credit risk weight on sovereign claims is treated as zero in most banking systems—in line with the Basel I approach. As a result, banking systems that hold sizable claims on their own official sector—such as Indonesia—do not hold capital against the credit risk of these claims, leaving regulatory capital below market capital.

[52] Part of the difficulty relates to the way in which these ratios are calculated. Under the Basel I capital adequacy framework, regulatory capital is not measured directly by the market value of a bank, but by its historic value adjusted by retained earnings and general provisioning. In these circumstances, the amount of regulatory capital is only related loosely to the book value of a bank (the difference between the market value of its assets and liabilities), and even more loosely to its stock market value. In addition, different financial instruments—including subordinated debt and debt-equity hybrids—can be included as capital under the current framework.

[53] For example, by charging high and low risk borrowers the same interest rate.

[54] The issue here is more one of a lack of information about pricing rather than a clear indication that loans are necessarily underpriced.

4. Bank Credit Ratings, Market Values, and Risk Exposure

Market-based indicators such as credit ratings and bank share prices—and the lending behavior of banks—provide additional information on the health and soundness of banking systems.[55] Credit ratings and bank share prices, however, did not prove very reliable in the lead-up to the 1997/98 crisis. But subsequent improvements in bank transparency—and strengthened bank monitoring by ratings agencies—should help improve their information content. And, as the traditional business of banking is making loans, bank lending behavior can provide a guide as to whether and to what extent banks are "back in business," or whether they face impediments in expanding their loan portfolios.[56]

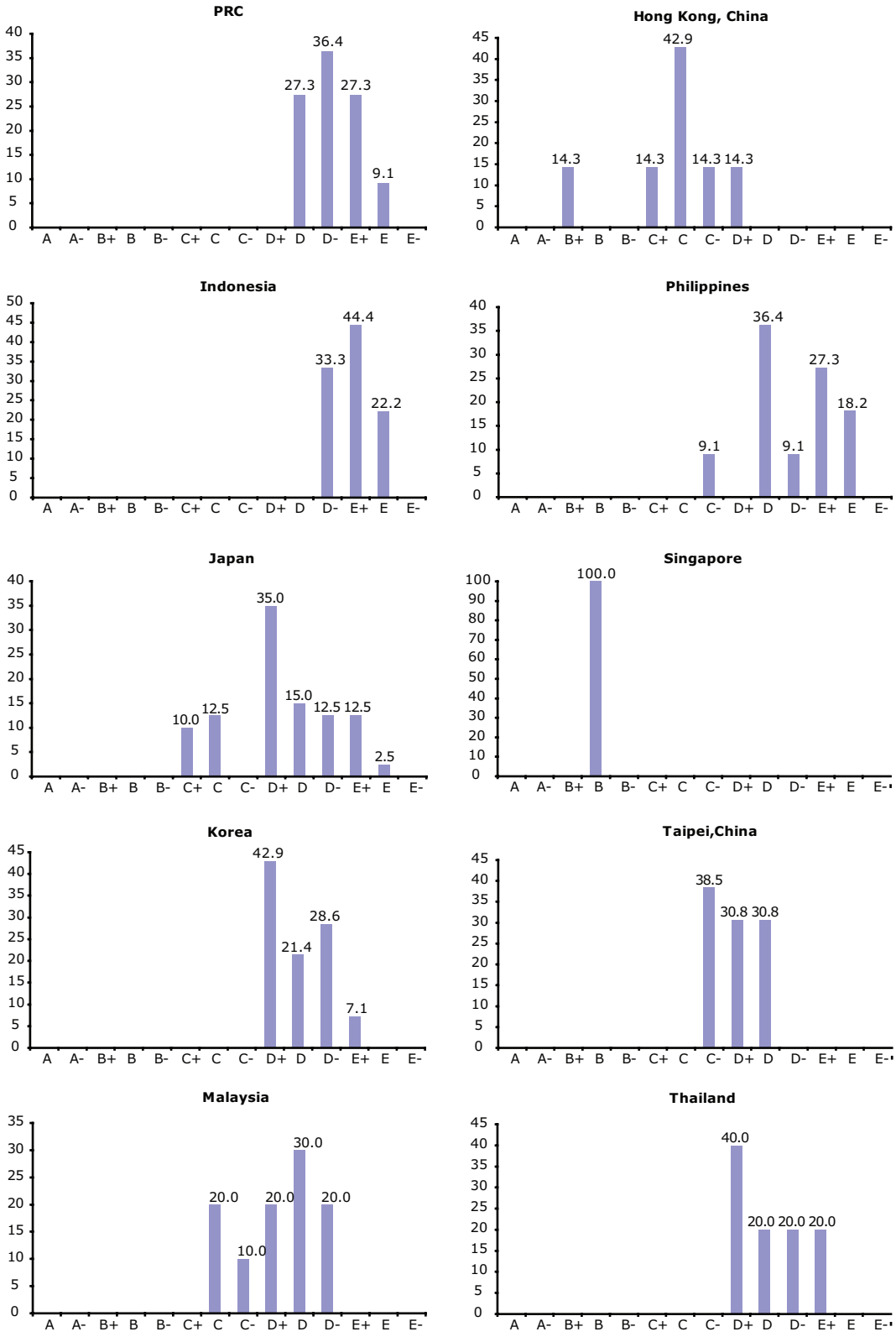
While there have been improvements in credit ratings of banks relative to the crisis lows in crisis-affected economies, most emerging East Asian banks still receive relatively low ratings.

Major credit ratings agencies assess the stand-alone strength of banks in the region on a scale from A (excellent) to E (weakest), with various gradations in between (Figure 44). While there have been improvements in ratings relative to the crisis lows in the crisis-affected economies, most of these banks still receive relatively low ratings—in the D to E range. In addition, not only are banks in crisis-affected economies generally rated below banks in Singapore and Hong Kong, China, their ratings in several cases are not very different than before the crisis. The failure of ratings to exceed pre-crisis levels is surprising given the substantial restructurings over the past 10 years. One possibility is that ratings agencies judge emerging market banks as inherently risky because they operate in more risky environments. Singapore and

[55] See Persson, M. and M. Blavarg, 2003, "The Use of Market Indicators in Financial Stability Analysis," *Sveriges Riks Bank Economic Review*, 2; and the July and December 2006 *Asia Economic Monitor*. Turner (2007) also studies market indicators.

[56] The use of market indicators is subject to a number of caveats: (i) Ratings and pricing of banks are invariably influenced by the possibility of official support in the event that a bank runs into difficulty. Major international rating agencies seek to allow for this by issuing stand-alone credit ratings, intended to measure the underlying strength of banks in the absence of support—used here. Arguably, however, the possibility of official support influences many aspects of bank operations, including the cost of funding through either deposits or the interbank market, and it is very difficult to fully adjust for its effects; and (ii) given that the largest and soundest banks in any economy are typically listed and rated, the indicators may not be a good guide to overall banking system quality, and subject to an upward bias.

Figure 44: **Bank Financial Strength Ratings**, as of November 2006 (% of rated banks)



Source: Moody's Investor Service.

Hong Kong, China are viewed and thus treated as special cases. However, other interpretations are possible.[57]

One possibility is that the overall stability of the ratings for these countries conceals implicit upgrades. If, as seems likely, pre-crisis ratings overstated bank strength in the crisis economies, a re-rating to a (more appropriately determined) but similar pre-crisis rating would be an indication of an upgrade. To some extent this appears to be the case, and is implicit to some degree when the ratings agencies explain their assessments. On the other hand, another interpretation—consistent, to some degree, with findings from other regions—is that bank credit ratings tend to lag (rather than lead) improvements in bank performance. If this is the case, continued low ratings might be a transitional phenomenon; eventually there will be upgrades provided the improvements in bank performance indicators discussed in earlier sections are sustained.

With the exceptions of Singapore and Hong Kong, China, equity prices for emerging East Asian banks have underperformed the market, and in some cases, the gap is growing.

In terms of bank share prices, the picture is not uniformly favorable (Table 18).[58] On a positive note, weakness in bank share prices relative to overall indexes has been partially reversed in Korea and Malaysia and, in Malaysia, bank share prices have recently been slightly outperforming the market. Elsewhere, however, with the exceptions of Singapore and Hong Kong, China, banks have been underperforming the market, in some cases by growing amounts. In view of the sharp run-ups in many regional equity markets in recent years, comparing bank performance against the overall market might be an excessively demanding benchmark. On the other hand, given the extensive restructuring of the banking sector in many countries and high levels of official support provided in the crisis-affected countries, a relatively stronger bank performance might be expected.

[57] The discussion here is based on Turner (2007) and various issues of the IMF *Global Financial Stability Report*.

[58] Please note that Table 18 lists "Bank share prices," while Figures 22a–b referred to on page 18 illustrate overall "Financial" stock prices.

Table 18: **Bank Share Prices**

	Bank Share Price Index (a) in Real Terms[1,2]			Bank Share Price Relative to General Share Price Index[1]			Volatility of Bank Share Price[3,4]		Regression Coefficient of (a) on General Index[4]	
	1995	2000	2005	1995	2000	2005	1995-2000	2001-06	1995-2000	2001-06
Indonesia	383.3	67.3	31.4	209.7	80.3	26.5	15.4	9.8	0.6	0.9
Korea, Rep. of	271.7	47.5	81.0	180.4	50.1	65.2	12.6	7.7	0.7	0.5
Malaysia	103.6	114.3	125.8	74.2	113.2	125.6	12.5	4.8	0.9	0.7
Philippines	215.4	91.7	67.7	113.8	114.9	84.7	8.9	6.2	0.5	0.7
Thailand	318.9	44.8	50.4	123.6	82.9	50.1	15.1	6.6	0.8	0.6
Memo item:										
United States	53.0	94.0	114.5	89.7	68.3	111.4	5.5	3.4	1.3	0.7

[1] 1995–2005 = 100; in local currency terms; annual averages.
[2] Deflated by consumer prices.
[3] Standard deviation over the whole period.
[4] Calculated based on monthly changes in the log of the index; the second column refers to data up to July 2006.
Source: Turner, Philip. "Banking Systems in East Asia: Ten Years Later." BIS, October 2006.

Over the past 10 years, the overall size of loan exposures has been reduced and the risk composition of loan books has shifted from business toward household and government credit.

Weaknesses in credit risk management, loan concentrations, and inadequate real capital cushions[59]—together with an adverse macroeconomic and financial shock—were key contributors to the severity of the 1997/98 crisis. Therefore, over the past 10 years, banks in the region appropriately have sought to strengthen management of credit risk and build up capital cushions. To varying degrees, lending in relation to bank assets has been scaled back and diversified toward the household sector, with business lending to troubled firms pared back, and holdings of "credit-risk free" government securities increased. As a result, the overall size of loan exposures has been reduced[60] and the composition of loan books has shifted from business toward household and government credit risk. Whether these changes in the size and composition of loan books on balance has increased or lowered bank risk depends on several considerations.

Based on the experience in mature economies, diversification into mortgage and non-mortgage related household lending and increased holdings of own-government official claims might be

[59] Prior to the 1997/98 crisis, capital cushions were overstated in a number of economies as a result of imperfect accounting for asset quality.

[60] In addition, some banking systems have hedged part of their credit risk through credit derivatives. Little information is available on these off balance sheet operations. See IMF, 2005, *Global Financial Stability Report*.

expected to reduce credit risk.[61] Whether these risk reductions will necessarily apply to the region is not straightforward, however. As illustrated by the Korea's credit-card problems (see Box 4), there can be "teething" problems when financial institutions move into new areas. Moreover, even mortgage lending can carry significant risks when loan to valuation ratios are not sufficiently conservative, as was the case in Hong Kong, China early this decade when property prices weakened.

The credit risk associated with bank lending to the business and household sectors is obviously influenced by the environment in which banks operate. The past few years have been characterized by very favorable macroeconomic and financial conditions in the region—reflected in relatively strong growth rates, low inflation, and generally low nominal interest rates. Also, the relatively low volatility of these variables—especially relative to the 1997/98 crisis—created an unusually benign environment.

The financial health of the key sectors that banks lend to has also improved relative to earlier periods (Table 19). However, significant differences persist across economies. The financial health of the household sector (as well as conditions in property markets) is becoming more significant on risks faced by banks though not generally suggestive of a significant accumulation of household indebtedness or overextension (Table 20). However, there is little information on the distribution of credit across households and the extent to which it may have been concentrated in particular income groups.[62]

On balance, the credit risk on regional banking system balance sheets might arguably be somewhat lower than before the 1997/98 crisis. Importantly, however, such an assessment is predicated on the assumption that the reduction in the overall level of credit risk associated with cutbacks in lending and the improved macroeconomic and financial environment is not offset by increasing risk associated with higher household lending and other bank activities.

[61] These latter claims receive a lower risk weighting under Basel I capital adequacy framework than claims on the business sector.

[62] Risks associated with elevated property prices are discussed in the December 2006 *Asia Economic Monitor.*

Table 19: **Non-Financial Sector Corporate Health**

Debt to equity ratio (median, %)

	1994-96	1997-2000	2001-04	2003	2004
China, People's Rep. of	46	48	56	59	62
Hong Kong, China	44	36	32	33	34
Indonesia	71	140	65	64	68
Korea, Rep. of	181	123	60	53	49
Malaysia	49	54	39	40	40
Philippines	39	61	51	45	55
Singapore	38	46	37	38	54
Thailand	94	113	58	59	47
United States	56	64	65	63	54

Interest coverage (median, %)

	1994-96	1997-2000	2001-04	2003	2004
China, People's Rep. of	4	4	4	4	4
Hong Kong, China	4	3	5	6	7
Indonesia	3	1	2	2	2
Korea, Rep. of	1	2	3	3	4
Malaysia	6	3	4	5	5
Philippines	5	1	1	1	2
Singapore	6	5	7	8	10
Thailand	3	2	6	7	9
United States	7	7	6	5	6

Return on assets (median, %)

	1994-96	1997-2000	2001-04	2003	2004
China, People's Rep. of	7	4	5	5	4
Hong Kong, China	7	4	4	4	5
Indonesia	9	4	5	4	4
Korea, Rep. of	6	5	5	5	5
Malaysia	8	3	4	4	4
Philippines	8	2	2	2	4
Singapore	5	4	4	5	6
Thailand	7	3	8	8	9
United States	8	9	7	7	8

Source: Ghosh, Swati R. *East Asian Finance: The Road to Robust Markets.* World Bank, 2006.

Table 20: **Household Sector Financial Health**

	Household Indebtedness (% of GDP)			**Non-mortgage** (% of GDP)			**Mortgage** (% of GDP)		
	2001	**2004**	**2006**	**2001**	**2004**	**2006**	**2001**	**2004**	**2006**
Hong Kong, China	60.3	58.2	52.1	10.5	10.9	11.7	49.8	47.3	40.3
Indonesia	4.3	8.2	8.5	3.1	6.4	6.3	1.2	1.8	2.2
Korea, Rep. of	25.8	35.3	40.8	11.9	13.6	15.2	13.9	21.8	25.6
Malaysia[1]	43.8	50.0	53.1	19.4	21.9	24.8	24.4	28.0	28.4
Philippines	5.8	5.2	4.2	5.0	4.5	3.6	0.8	0.7	0.6
Singapore[2]	...	51.0	46.4	...	18.0	15.4	28.5	33.0	31.0
Thailand	...	24.5	23.7	...	8.4	6.5	13.2	16.1	17.2

[1] Refers to sum of loans for personal uses, credit cards, purchase of consumer durable goods & purchase of passenger cars for commercial banks, merchant banks & finance companies; for 2006, only data from commercial banks and merchant banks are available.
[2] Refers to consumer loans of commercial banks and finance companies.
Sources: CEIC and national sources.

The key market risks currently faced by the region's banking systems are related to securities holdings and lending to the property sector, far different than prior to the crisis.

Securities holdings—with risks of capital loss in the event of sharp increases in interest rates; and lending to the property sector—related to the collateral value of housing are the major market risks currently confronting emerging East Asian banking systems.[63] For the most part, the region's banking systems have shifted the interest rate risk associated with mortgage lending to the household sector by issuing adjustable rate mortgages. In the event of financing difficulties due to a sharp rise in interest rates, the effects would be felt in the first instance by households. Faced with a severe shock, however, this risk might be shifted back to the banks if households experience difficulties servicing mortgages. Stress tests have been conducted by central banks and supervisors in the region to assess the robustness of banking systems to market risk shocks associated with increases in interest rates and/or reductions in property prices. The results of these tests provide grounds for guarded optimism (Box 5).

[63] In addition, banks face foreign exchange rate and equity price risks. These appear, however, to be small and manageable. See IMF, 2006, *Global Financial Stability Report*.

The key liquidity risks in emerging East Asian banking systems relate to domestic liquidity and to mismatches between the maturity of banks' domestic currency liabilities and assets; as opposed to the currency mismatches that existed in 1997.

Foreign currency liquidity risks associated with currency mismatches played a key role in the 1997/98 crisis. For the most part, these risks appear to have been substantially reduced across the region and economies have accumulated large stocks of international reserves to more than cover total short-term external debt.[64] In some economies, however, notably the PRC, there have been increases in onshore foreign currency borrowing and lending by domestic banks that have become a source of concern. Notwithstanding a lack of clarity about the maturity structure of these foreign currency liabilities and assets, they are not seen as large enough to pose systemic risks, however.[65]

Against this backdrop, the key risks relate to domestic liquidity and to mismatches between the maturity of banks' domestic currency liabilities and assets. As noted, most regional banking systems currently have relatively comfortable liquidity cushions related either to prudential requirements and/or heightened risk aversion. On balance, domestic liquidity risk does not appear to be very large for most regional banking systems and national authorities have the tools at their disposal to meet any liquidity shocks that might pose systemic risks.

5. The Challenges Ahead

Across much of the region, significant progress has been made cleaning up impaired assets, strengthening risk management systems, and returning banks to robust health—yet progress has been uneven and formidable challenges remain.

Much had changed in regional banking systems over the past 10 years. With extensive restructuring and reform, banking systems have experienced consolidation, previously closed systems have been opened to foreign entry and—abstracting from temporary crisis-induced nationalizations—state ownership has continued to decline. Across emerging East Asia, banks have also been moving

[64] See the December 2006 *Asian Economic Monitor.*

[65] See IMF, PRC-2006 Report, Article IV Consultation—Country Report No. 06/394.

into new areas related to investment banking and household lending, and the range of financial services and products has expanded. In addition, supervisory and regulatory systems have been upgraded and become more forward looking and risk based, and have been adapting to the new activities into which banks have been moving.

Most official indicators suggest that the health of banking sectors in the region has improved substantially from crisis troughs even though significant differences persist across countries. At the same time, however, major credit rating agencies continue to maintain relatively low ratings for many banks in the region, bank share prices have generally been underperforming the market, and significant differences persist in the health of different banking systems. In addition, bank lending to the private business sector across much of the region has been weak, and banks are not yet fully "back in business."

What should one make of these different messages? Based on the analysis, the following tentative conclusions might be drawn.

- ***Rehabilitation and restructuring is a continuing process.***

Indonesia, Philippines, and Thailand have yet to complete the rehabilitation and restructuring processes, along with the reduction of state ownership; Korea and Malaysia seem relatively far advanced in their rehabilitations; the PRC is making significant progress addressing deep-seated weaknesses in its banking system, although state ownership and control remain potential issues; Singapore and Hong Kong, China, remain well advanced.

- ***With the exception of the PRC, bank lending across the region has generally remained subdued due to a lingering and pervasive lull in business investment.***

The pervasiveness of the weakness in bank lending across the region points toward common influences. Especially in the crisis-affected economies, the weakness may to some degree still reflect limitations on credit supply as banks continue to improve asset quality and reduce risk, but the effect is probably by now relatively small. The recent growth in bond markets in the region

may have contributed to the softness in bank lending, but does not seem to be quantitatively very important in most economies. For the most part, the softness appears to reflect the pervasive weakness in business investment in much of the region. If this is the case, the slowdown in bank-based financial deepening does not necessarily signal a structural change in the role of emerging East Asia's predominantly bank-based financial systems, or pervasive banking sector weakness, but is linked to the factors accounting for the weakness in investment.

- ***Manage the risks associated with new business activities and household lending.***

Banking system robustness depends, of course, not only on the amount of risk on bank balance sheets, but importantly, also on the sizes of the capital and other prudential cushions within the system and the types of shocks to which the system may be exposed. Arguably, banking systems across the region are much less exposed to certain risks—such as a withdrawal of foreign currency liquidity—than prior to 1997. However, in moving into new business activities and household lending, they have also assumed new risks. And it is difficult to compare these with those that were important before the crisis. Moreover, the new systems have yet to be tested by a major financial or economic shock. Significant comfort is provided, however, by the relatively large prudential and other cushions that appear to have been built up across emerging East Asia's banking systems. Stress tests on many regional banking systems also provide a basis for guarded optimism, even if these tests cover only a limited range of the risks that banking systems face.

- ***The continued upgrading of governance and disclosure standards is a challenge that will continue to confront banking systems across the region, particularly as the adoption of the revised Basel II Framework begins gradually in 2008.***

Basel II describes comprehensive measures and minimum standards for capital adequacy that supervisory authorities will implement to align regulatory capital requirements more closely to the underlying risks that banks face. It also promotes a more forward-looking approach to capital supervision—one encouraging banks to identify risks they may face—both currently and in the future—with the aim of better managing those risks.

Box 5: **Assessing the Soundness of Banking Systems: Stress Tests**

A key issue in assessing the soundness of a banking system is its robustness in facing a worsening macroeconomic and financial environment and/or the risks associated, for example, with shifts into new activities. Several stress tests are reviewed in which a banking system is subject to a particular "shock" and authorities assess its ability to absorb it. Shocks can include changes in the level and volatility of interest rates, declining property prices, slowing economic growth, and exchange rate changes. Provided they are well designed, and based on the appropriate economic and financial feedbacks, stress tests are an important guide.

Several central banks or financial regulatory authorities have conducted stress tests on the robustness of their banking systems to adverse changes in the macroeconomic and financial environment. Usually, the tests are based on the following assumptions: higher interest rates (Singapore; Hong Kong, China; Thailand; Malaysia); sharp falls in real estate prices (Hong Kong, China; Republic of Korea; Thailand); and a cyclical downturn (Singapore; Hong Kong, China). The Monetary Authority of Singapore has also conducted tests assuming an upturn in volatility and widening corporate interest rate spreads. The Philippine central bank has integrated its stress testing and early warning systems to help identify emerging vulnerabilities in the banking sector. The test results usually suggest substantial robustness of banking systems in the region to the assumed shocks, albeit with differences in the extent to which earnings, capital cushions, and nonperforming loans absorb them.[1]

Notwithstanding the increased confidence in the robustness of banking systems suggested by the stress tests, there is no reason for complacency. Stress tests have two main weaknesses. The first is that the usefulness of the tests is based on the correct identification of the key risks; inevitably perhaps, the assumed shocks are the ones supervisors are concerned most about—the known unknowns—while it is frequently totally unexpected events, or unknown unknowns, that cause difficulties. Guarding against these latter uncertainties may require prudential cushions that are much larger than those required for the former risks. Moreover, in periods of rapid financial innovation and globalization, these latter uncertainties arguably tend to increase. And stress tests are typically based on the judgment that long-term historical relationships between variables apply during periods of stress—allowing for the use of these relationships. While this may be appropriate for small shocks, it may not apply when the shocks are very large, particularly if contagion occurs, as correlations across many markets may rise and be much higher than normal. In these circumstances, traditional assumptions about "all other things being equal" made in conducting stress tests may not hold.

[1] For descriptions of stress testing in these economies see: Wong, Jim , Choi Ka-fai, and Tom Fong, "A framework for macro stress testing the credit risk of banks in Hong Kong", *HKMA Quarterly Bulletin*, Dec 2006, HKMA; Nakornthab, Don, Chatsurang Karnchanasai, and Suchot Piamchol, *Bank Lending, The Housing Market and Risks: A test for financial fragility*, Bank of Thailand Discussion paper Nov 2004; Bagsic, Cristeta and Eloisa Glindro, *Modernization: A Policy Perspective*, Bangko Sentral ng Pilipinas BSP Working Paper Series, 2006; Monetary Authority of Singapore, *Financial Stability Review* (various issues); Bank Negara Malaysia, 2006, *Financial Stability Report*; Bank Indonesia, March 2007, Financial Stress Testing in Indonesia, *Financial Stability Review*; Lee, Jang-Yung, "Macroprudential Supervision in Korea: Experiences and Case Studies," Macroprudential Supervision Conference: Challenges for Financial Supervisors, seminar paper, Bank of Korea (2006).