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**The Chinese Conundrum:
External financial strength, Domestic financial weakness**

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China's banking system is widely acknowledged to have significant weaknesses. Those weaknesses predate China's current investment boom. They clearly did not prevent an enormous expansion of bank credit over the past few years. China's investment boom coincided with a surge in domestic savings, intermediated in part through the banking system. Consequently, China's investment boom was accompanied – unusually -- by an increase in China's current account surplus. This paper tries to examine the potential risks created by China's recent investment boom by comparing developments in China since 2001 with the Asian economies that boomed in the mid-1990s. There are both obvious parallels between China now and the Asian emerging economies in the 1990s, and obvious differences. Both yield clues about the nature of the risks now facing China.

Most severe banking crisis in major emerging economies – at least recently – have coincided with a currency crisis. Many such crises, particularly in Asia, had their roots in an expansion of bank credit which drove up domestic demand and often generated a real estate boom. This surge in domestic demand often generated significant current account deficits. In some cases, those deficits were financed by short-term debts denominated in foreign currency. When external creditors – or domestic residents -- lost confidence in the country, its currency collapsed. The falling currency increased the real value of foreign currency denominated debts. Firms with weaker balance sheets could no longer get access to credit – if they could pay at all. Banks faced bankruptcy as a result of rising non-performing loans (NPLs) without a costly government bailout. The crisis countries (advised by the IMF) typically raised domestic interest rates to defend the currency, further adding to the distress of the financial system.¹

These stylized facts do not fit all recent crises. Argentina, for example, slipped into a deep crisis in 2001 after a slump in bank lending that coincided with Argentina's broader economic slump after 1999. Its slump stemmed from the deflationary pressures generated by an overvalued peso in the context of Argentina's currency board arrangement. Yet they do capture the basic dynamics of many recent emerging market crises, particularly crises driven not by a large expansion of private credit (as in the "Asian tigers") rather than excessive government borrowing, an overvalued currency and extensive liability dollarization (Argentina).

China does not fit the stylized facts that emerged out of the "Asian crisis" any better than Argentina or, like Argentina, it shares only some of the characteristics of the Asian countries on the eve of their crisis. As in Asia, credit to the private sector has expanded rapidly. Reforms to China's financial system have in many ways made China banks more like the banks in the Asian "tiger" economies before 1997. Chinese banks no longer just finance moribund state firms; they increasingly finance real estate development, residential mortgages and many dynamic, export-oriented (though often still state-owned) firms as well. Yet unlike the Asian tigers, rapid credit growth has not generated domestic inflation or led the real exchange rate to appreciate.

¹ See among others, Artera and Eichengreen, 2002; Kawai, Newfarmer and Schmukler, 2001 and Roubini and Setser, 2004.

If anything, China's inflation rate has tended to be lower than its trading partners. China has run a current account surplus throughout its recent credit boom. Its reserves, according to the IMF's Chief Economist, are now large enough to protect against anything short of the apocalypse. They exceed China's short-term debts by a factor of six to seven and its total external debt by a factor of almost three. As a result, China has few of the external vulnerabilities that marked the Asian tigers despite a comparable credit, real estate and investment boom.

That is the Chinese conundrum: extraordinary domestic financial weaknesses and extraordinary external financial strength. This paper will argue that China's external strength is unlikely to protect it from a domestic banking crisis. However, the trigger that leads to a new generation of bad loans in China almost certainly will differ from the triggers of the Asian crisis. China simply is not vulnerable to a sudden withdrawal of external credit. A domestic run is a bigger risk, but even that risk is manageable. Rather China's banking system – like China's overall economy – is very exposed to a global slowdown that reduced China's capacity to support its growth with continued strong export growth. An economic slump is likely to coincide with a banking crisis. Chinese banks have financed too much capacity chasing too little demand – excess capacity that will eventually give rise to a new generation of bad loans.

There is no realistic way the government of China can avoid picking up the bill not only of the 'legacy' bad loans from the 1990s but also for a new generation of bad loans from the post-2002 credit boom. The challenge will be to prevent the surge in bad loans likely to accompany a slowing Chinese economy from generating self-reinforcing dynamics that add to the downturn.

This paper is structured as follows:

The first section reviews the Asian tiger economies, focusing on the surge in bank credit that preceded their 1997-98 twin banking and currency crises.

The second section compares and contrasts the Asian tigers with China, arguing that recent reforms in the Chinese banking system have made the Chinese banking system more like the banking systems of the Asian tigers before their crises even if China lacks their external vulnerabilities. Chinese banking system not only is in far worse shape than official data indicate, but also owes much of its current appearance of health to the recent lending boom. If a relatively small share of the loans extended in the current lending boom turn bad, the health of the banking system will start to look bad fast.

The third, concluding, section speculates about potential triggers for a Chinese banking crisis.

Section 1: Asian crisis countries

The Asian tigers that encountered severe crises in 1997-98 shared several important characteristics. All were marked, to varying degrees, by:

- A surge in credit to the private sector.
- Real estate or stock market booms, often fueled by the expansion of credit;
- Weak regulatory structures for the financial system;
- In comparison to other emerging economies, large and generally bank dominated financial sectors;
- Persistent – and in the case of Thailand, quite large – current account deficits;
- Balance sheet weaknesses; external deficits often were financed with short-term foreign currency denominated debt, creating a large stock of short-term claims that had to be rolled over. Malaysia is something of an exception: it relied more on FDI and less on debt to finance its (at times quite large) external deficits.

Graciela Kaminsky (1999) summarizes these weaknesses well:

The pouring of international lending in the 1990s led to a surge in domestic credit and skyrocketing stock and real estate prices in basically all countries in East Asia. The boom in credit did not result in a consumption boom but in what is now widely viewed as “excessive” investment and a deteriorating current account. This time around, however, the deterioration of the financial sector was far more reaching because [of] the deepness of financial markets in Asia With the economies so debt ridden, mostly at very short maturities and in foreign currency, it is no wonder how seemingly mild adverse external shocks could have crystallized into a worst case scenario of a brutal currency crisis.

China today is also marked by a surge in private creditor, a real estate boom, weak bank regulation and a large, bank-dominated financial sector. Consider the data in table 1. But China also lacks both a current account deficit and the balance sheet weaknesses associated with financing external deficits with short-term debt. Nonetheless, exploring the financial weaknesses of the Asian tigers can help to understand some of the risks facing China’s banks today.

Table 1. Economic indicators. Adapted from Lindgren et al (1999) with additional data from Radelet and Sachs (1998). Data on China from World Bank (2005). 2005 forecast for China’s current account surplus comes from the author.

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 ² |
|--|------|------|------|------|-------|--------------------|
| Thailand | | | | | | |
| Real GDP | 8.2 | 8.5 | 8.6 | 8.8 | 5.5 | -0.4 |
| Inflation | 4.1 | 3.4 | 5.1 | 5.8 | 5.9 | 5.6 |
| Current Account/ GDP | -5.5 | -5.0 | -5.4 | -7.9 | -7.9 | -1.9 |
| Budget deficit/ GDP | 2.5 | 2.0 | 2.0 | 2.5 | 1.0 | -1.6 |
| Broad money growth | 15.6 | 18.4 | 12.9 | 17.0 | 12.6 | 16.4 |
| Bank credit to the private sector/ GDP | 72.2 | 79.8 | 90.9 | 97.5 | 100.0 | 116.3 ³ |

² Short-term debt to reserves for mid-1997 (eve of the crisis)

³ The combination of a large fall in many Asian currencies, extensive foreign currency denominated debt and in Thailand’s case, a severe slowdown that started in mid 1997 and thus impacted on overall 1997 GDP growth led reported credit to GDP ratios to spike upwards at the tail end of 1997.

| | | | | | | |
|--|--------|-----------------|--------------------|------------------|----------------|----------------|
| Claims on private sector | 98.4 | 110.8 | 128.1 | 142.0 | 141.9 | |
| Growth rate | 24.8 | 26.3 | 31.2 | 26.0 | 13.7 | |
| ST debt/ reserves | 0.77 | 0.88 | 1.06 | 1.15 | 1.21 | 1.45 |
| Indonesia | | | | | | |
| Real GDP | 7.2 | 7.3 | 7.5 | 8.2 | 8.0 | 4.6 |
| Inflation | 7.5 | 9.7 | 8.5 | 9.4 | 7.9 | 6.6 |
| Current Account/ GDP | -2.2 | -1.5 | -1.7 | -3.3 | -3.2 | -3.0 |
| Budget deficit/ GDP | -1.2 | -0.7 | 0 | 0.7 | 1.2 | -0.7 |
| Broad money growth | 22.6 | 21.2 | 21.8 | 26.7 | 27.0 | 27.4 |
| Private sector credit/ GDP | 45.5 | 48.9 | 51.9 | 53.5 | 55.4 | 61.0 |
| Claims on private sector | 49.5 | 48.9 | 51.9 | 53.7 | 55.8 | |
| Growth rate | 11.4 | 25.5 | 23.0 | 22.6 | 21.4 | |
| ST debt/ reserves | 1.65 | 1.66 | 1.76 | 2.01 | 1.87 | 1.71 |
| Korea | | | | | | |
| Real GDP | 5.1 | 5.8 | 8.6 | 8.9 | 7.1 | 5.5 |
| | 6.2 | 4.8 | 6.3 | 4.5 | 4.9 | 4.4 |
| Current Account/ GDP | 1.3 | 0.3 | -1.0 | -1.9 | -4.7 | -1.8 |
| Budget deficit/ GDP | -0.5 | 0.6 | 0.3 | 0.35 | 0.3 | 0.3 |
| Broad money growth | 14.9 | 16.6 | 18.7 | 15.6 | 15.8 | 14.1 |
| Bank credit to the private sector/ GDP | 53.3 | 54.2 | 56.8 | 57.0 | 61.8 | 69.8 |
| Claims on private sector | 110.7 | 121.3 | 128.8 | 133.5 | 140.9 | |
| Growth rate | 19.6 | 21.8 | 21.6 | 19.2 | 17.0 | |
| ST debt/ reserves | 1.56 | 1.45 | 1.57 | 1.66 | 1.99 | 2.05 |
| Malaysia | | | | | | |
| Real GDP | 7.8 | 8.3 | 9.3 | 9.4 | 8.6 | 7.7 |
| Inflation | 4.7 | 3.5 | 3.7 | 3.4 | 3.5 | 2.7 |
| Current Account/ GDP | -3.8 | -4.8 | -7.8 | -10.0 | -4.9 | -5.1 |
| Budget deficit/ GDP | 0.1 | 0.5 | 1.45 | 1.3 | 1.1 | 2.6 |
| Broad money growth | 18.1 | 23.8 | 15.8 | 18.2 | 23.7 | 9.6 |
| Bank credit to the private sector/ GDP | 74.3 | 74.1 | 74.6 | 84.6 | 89.8 | 100.4 |
| Claims on private sector | 11.4 | 113.3 | 115.0 | 129.6 | 144.6 | |
| Growth rate | | 12.1 | 16.5 | 29.7 | 28.9 | |
| ST debt/ reserves | | | 0.33 | | 0.41 | 0.62 |
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| China | | | | | | |
| Real GDP | 8.0 | 7.5 | 8.0 | 9.3 | 9.5 | 9.0 |
| CPI inflation | 0.4 | 0.7 | -0.8 | 1.2 | 3.9 | 2 |
| Current account/ GDP | 1.9 | 1.5 | 2.9 | 3.2 | 4.3 | 7.5 |
| Budget deficit/ GDP | -3.6 | -3.1 | -3.4 | -2.8 | -1.5 | -2.0 |
| Broad money growth | 12.3 | 14.4 | 16.8 | 19.6 | 14.6 | 15 |
| Private sector credit/ GDP | 124.5% | 117.7% -6.8% | 136.0%/ (15.5%) | 147.7% (8.6%) | 150.2% 1.7% | 155.6% 3.6% |
| Claims on private sector | | | | | | |
| Growth rate | 13.8 | 11.9 | 15.8 | 20.1 | 16.0 | [x] |
| ST debt/ reserves | 0.08 | 0.19 | 0.17 | 0.19 | .17 | |

The key common feature linking the Asian tigers on the eve their crisis and China today is the surge in credit to private borrowers. Like China, all the Asian economies had large banking systems in relation to their GDP, at least in comparison with the major emerging economies of Latin America.

Table 1 shows that the surge in bank credit was most pronounced in Thailand and Malaysia, though bank credit to the private sector was rising relative to GDP in both Korea and Indonesia as well. The modest bank credit to GDP ratio in the case of Korea is a bit deceptive, as banks accounted for only about ½ of total financial system assets in Korea (a low number by Asian standards).⁴ Credit from outside the banking system – merchant banks, insurance companies, investment trust companies and the like – was growing faster than bank credit. Lindgren et al (1999) note in the IMF’s survey of the Asian crisis: “In Korea, Malaysia and Thailand, private sector credit in nominal terms expanded rapidly during the 1990s, at an average rate of 15 to 20% compared to inflation rates of 3 to 10 percent. Total commercial bank and near-bank assets grew from between 50 and 100% of GDP to between 150 and 200% of GDP. As a comparison, deposit money banks held assets equal to 30% of GDP in Mexico, 48% in Brazil, 80% in the US, 136% in the European Union and 300% in Japan.”

The expansion of credit had a number of consequences. In Thailand, Malaysia and Indonesia, much of expansion of credit flowed into real estate. In Korea, already heavily leveraged Korean corporations took on more debt. Yet before the crisis, the banking sector in many Asian economies showed few signs of overt distress.⁵ Most banks were well capitalized. NPLs were generally low. There is an obvious parallel with China: reported NPLs are falling, in part because the rapid expansion of bank lending, and more and more banks are reporting that their capital meets or exceeds international norms.

However, the crisis brought a number of latent weaknesses in the banking and financial systems in these countries to the surface:

- Thailand’s desire to transform Bangkok into an international financial center led to the creation of the Bangkok interbank facility. However, the Bangkok interbank facility became a vehicle for funneling funds borrowed abroad into the Thai economy, not a center for offshore intermediation to rival Singapore.⁶

⁴ In Thailand commercial banks held 64% of total financial system assets, finance companies 20% and state-owned banks another 10%. Total financial assets were equal to 190% of GDP. In Malaysia, commercial banks held 70% of all “banking assets” with the remainder held by finance companies and merchant banks. Total assets – including assets of insurance companies – equaled 300% of GDP. In Korea, total financial system assets were close to 300% of GDP, but commercial banks only held 52% of total assets. Lindgren et al (1999) at 13.

⁵ Thailand is a bit of an exception, as its banking system showed signs of trouble in 1996. But even in Thailand, where NPLs were rising prior to the crisis, reported NPLs remained at manageable levels. And Thai banks reported capital adequacy ratios of around 9% through 1997. IMF (2001).

⁶ IMF (2001). From mid-1995 to the end of 1996, year over year growth in private credit exceeded 15%, or over two times the pace of GDP growth. Commercial bank lending increased by 10%, finance company lending increased by 205, and lending from the intermediaries in the Bangkok Interbank Facility (BIBF), all denominated in foreign currency, increased by 35%. For more on the consequences of the massive resulting currency mismatch, see Allen et al (2002).

- Finance companies engaged in bank-style financial intermediation – borrowing short and lending long – without being subject to the same regulation as banks. In many countries, different regulatory regimes for banks, finance companies and other kinds of financial intermediaries led to regulatory arbitrage – and faced with competition from aggressive non-banks, the banks also started to take risks. Lindgren et al (1999): “In most countries, the growing non-bank financial institutions held riskier assets and more volatile financing than commercial banks, which made them increasingly vulnerable to a decline in asset quality and to a change in investor and depositor sentiment. ... [Non-bank financial institutions] were favored by the easier licensing requirements (Thailand) and less stringent regulations, including lower capital requirements (Korea and the Philippines) than those applied to commercial banks. Merchant banks in Korea and finance companies in Thailand were the first to face liquidity shortfalls.”
- Regulatory standards – particularly for the reporting of non-performing loans – were lax, and in many countries, even lax standards were not enforced.
- Banks in all Asian Tiger economies – but particularly in Indonesia and Korea⁷ – had close ties to non-financial firms. Korean chaebol were overly-leveraged, but many were also formidable competitors in many global markets. Indonesian conglomerates were nowhere near as advanced. In Korea, a history of “policy lending” – where the government channeled credit to the Korean Chaebol – had created strong ties between the banks, the government and the Chaebol, but the banks were generally not formally owned by the Chaebol.⁸ In Indonesia, many private banks were little more than (often poorly capitalized) funding arms for local conglomerates. Limits on exposure were ignored.
- Little attention was paid to the growing foreign currency exposure of the banking system. Regulation that limited the size of the open foreign currency position of the banking system did not limit the banks ability to match foreign currency borrowed from abroad with a local loan denominated in foreign currency. In many countries, such foreign currency loans were used to finance domestic real estate investment (Thailand) or local firms with local currency revenues (an Indonesia taxi company), leaving the banks exposed to large losses in the event of a currency depreciation even though they had matched their foreign currency liabilities with foreign currency loans

Common external weaknesses: current account deficits financed by short-term external debt.

All the Asian crisis countries ran significant current account deficits. But there is little doubt that the deficits were far larger in Thailand and Malaysia than in Indonesia and

⁷ Lindgren et al (1999)

⁸ Lindgren et al (1999) at 13: “in Korea a single ownership limit of 4 percent meant that banks were owned by a diverse group of individuals, while in Thailand, despite a similar rule, several of the large banks were owned or controlled by family groups. Similarly, in Indonesia, Malaysia and the Philippines, banks were owned or controlled by corporate conglomerates.”

Korea. Thailand stands apart even from Malaysia as a result of the size and persistence of its current account deficit. Thailand's crisis was easy to anticipate; the real surprise came from the impact the Thai crisis had on the rest of the Asian tigers. In both Thailand and Korea the banking system (along with finance companies) intermediated most foreign currency borrowing. In Indonesia, however, firms generally borrowed directly from the international banking system. International banks – correctly – worried about the health of Indonesia's banks; they preferred to lend directly to Indonesia's leading firms.

Differences among the Asian economies.

Despite the common links across the different Asian crisis countries, each country had unique strengths and weaknesses and in many ways each country experienced a different kind of crisis than the other Asian "crisis" economies.

Korea clearly had too much short-term debt relative to its reserves. The liberalization of Korea's capital account had been particularly poorly sequenced: its regulatory regime had favored short-term external borrowing intermediated through Korea's banking system and had discouraged FDI and long-term borrowing. As a result, almost all of Korea's external debt was short-term. Yet Korea also had run smaller current account deficits than the other Asian crisis economies and its overall external debt remained modest relative to its export capacity. Korean Chaebol were clearly over-leveraged, but many of the Chaebol also were quite competitive. Korea had important structural weaknesses, but those weaknesses were smaller than in Thailand or Indonesia. Its crisis more closely resembled a run stemming from a shortage foreign exchange reserves than was the case in the other Asian economies.

Thailand was in many ways the quintessential Asian crisis economy: it had the largest current account deficit, the most short-term foreign currency denominated debt, the biggest credit boom and the biggest real estate boom. Indeed, its short-term external debt – scaled to its GDP – exceeded the total external debt of Korea. Much of that short-term debt had been used to finance investment in the Bangkok property market. Thailand entered into the crisis with too much external debt, not just too much short-term external debt. The ferocious deleveraging of Thailand's economy after its crisis explains why its recovery from the crisis was slower than in Korea (Roubini and Setser, 2004).

Malaysia had large current account deficits and had experienced a huge credit, real estate and stock market boom. But Malaysia also severely restricted the ability of Malaysian banks and firms to borrow in foreign currency. Most of its current account deficit was financed by foreign direct investment. That helped to keep its short-term debt to reserves levels low, and allowed Malaysia to avoid turning to the IMF.

Indonesia ran a smaller current account deficit than Thailand and Malaysia. Going into the crisis, its currency was thought to be less undervalued. It also experienced a smaller credit boom. However both the large, unhedged foreign currency exposure of Indonesia

firms and the exceptionally close ties between Indonesian banks, Indonesian firms and the Indonesian government proved particularly destabilizing. .

Once the rupiah started to fall, firms with large foreign currency debts needed to hedge against further falls in the value of their currency. That added to pressure on the rupiah. Most Indonesian banks were owned by one of the conglomerates that dominated the local economy. Many conglomerates were owned by ethnically Chinese business interests that had formed a close alliance with the President (Chua, 2002); other leading businesses were owned directly by the family of President Suharto, Indonesia's aging, autocratic President. The close ties between Suharto, his family and Indonesian firms and banks also proved to be a source of instability, not stability. Foreign banks had lent to the "best" local firms prior to the crisis – firms that were often tightly tied to Suharto's regime. Once Suharto's rule started to look shaky, they had strong incentives to reduce their exposure to firms linked to Suharto. Moreover, any political change threatened their privileged position of Indonesia's existing elite. To hedge their fortunes against the risk of political change, they started to pull their funds out of local banks and shift them abroad, adding to the pressure on the rupiah.

The tight ties between Indonesia's political and business elite also presented the international community with a dilemma. The IMF, the World Bank and the US treasury did not want to "bailout" the corrupt status quo. But few at the time realized the extent to which any change to the status quo threatened to undermine domestic and external confidence in Indonesia's economy.

Section 2: China

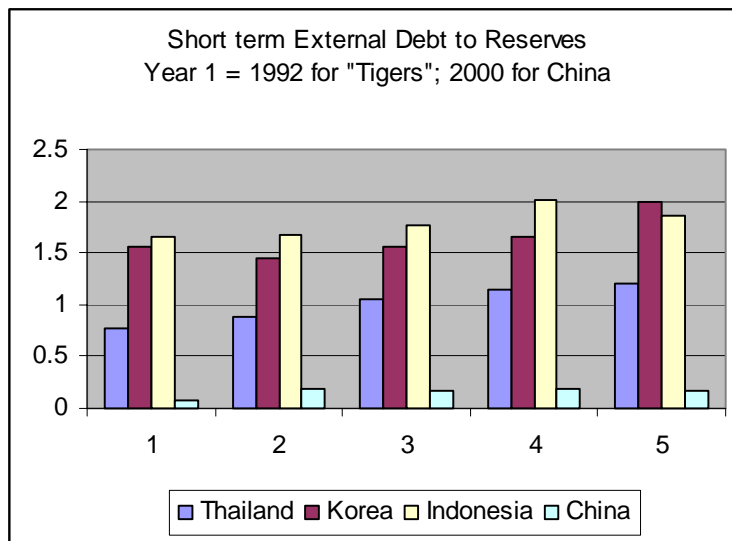
China shares some – but clearly not all – of the vulnerabilities of the Asian "tigers" before their crisis. Broadly speaking it has similar internal vulnerabilities, but a completely different external position.

As in the Asian tigers, the recent surge in lending has come in the context of a bank dominated financial system with important structural weaknesses. Many of those weaknesses were the legacy of past lending booms, which had left the banks with an enormous stock of "legacy" bad loans.

However, China's domestic boom has not generated an appreciation in the real exchange rate. Apart from a brief period in late 2003 and early 2004, China's inflation rate has stayed low. As Table 1 shows, it was well below the inflation rates of the Asian tigers and it was often below the level of the US. Moreover, after 1995, the dollar appreciated v. other industrial economies, adding to the real appreciation generated by inflation in the Asian tiger economies. Since 2002, however, the dollar has depreciated v. most other major currencies. Since China has long pegged the renminbi to the dollar (at a rate of 8.28 RMB to the dollar until recently) the dollar's depreciation led China's real exchange rate to depreciate significantly between 2002 to 2004.

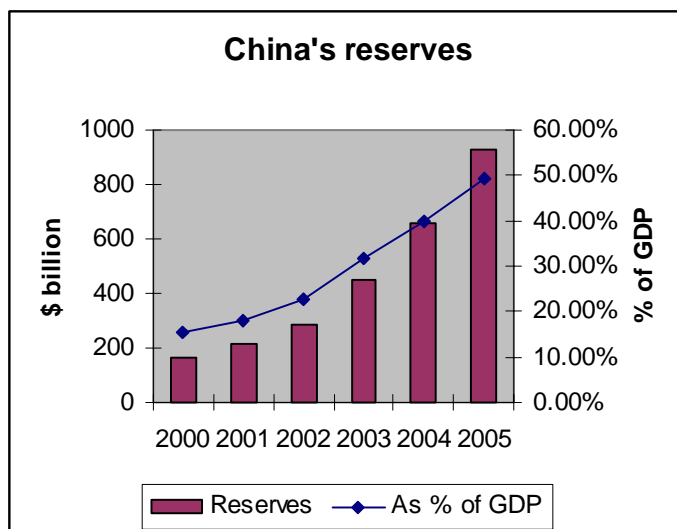
China's current account has remained in surplus even during the peak of its credit boom. China's short-term external debt, while rising, remains modest. China's reserves are immense. China consequently has none of the external balance sheet weaknesses of the Asian crisis economies – as Chart 2 shows, China's short-term debt to reserves ratio is simply nothing like that of the Asian tigers.

Chart 2. Short-term external debt v. reserves: Asian crisis economies 1992-1997 v China 2000-2005



That largely reflects the fact that China's reserves are immense, relative to its GDP as well as relative to its reserves (Chart 3).

Chart 5. China's reserves. 2005 forecast.



Since China has little external debt and since its currency is more likely to appreciate than to depreciate, foreign currency denominated debt poses few risks to the balance sheets of Chinese firms and banks. This is a key difference between China and the Asian crisis countries – and for that matter, a key difference between China and the Latin crisis countries as well. The Asian crisis economies that got into trouble often had large foreign currency debts relative to their reserves, and the real burden of those foreign currency debt ballooned after the collapse of their pegged (or heavily managed) exchange rate regimes.

Indeed, in many ways, China's balance sheet exposure is the opposite of that of most emerging economies. Private financial institutions in the Asian tigers had large exposure to a currency depreciation; private Chinese banks do not have comparable exposure. The central banks of Asian tigers faced the risks associated with holding too few reserves; China's central bank, conversely, is faces the risks associated with holding too many reserves. Specifically, China's central bank faces large "balance sheet" risks from a currency appreciation. China's central bank has dollar (and euro) denominated assets, while its liabilities – including the sterilization bonds issued to limit the expansion of the money supply associated with the surge in China's reserves – are denominated in domestic currency. Consequently, an increase in the renminbi's value would increase the (dollar) value of the central bank's liabilities while the value of its assets stayed constant. The potential scale of these "paper" losses is large enough that the central government will have to recapitalize the central bank at some point (Roubini and Setser, 2005).

China's banking system also is indirectly exposed to a rising in the renminbi. Chinese private firms that have domestic currency debt and foreign currency revenues also potentially could see the real value of their debts rise in the event of a currency appreciation. That in turn could generate problems in China's banking system – just as currency depreciation led to problems in Thai and Indonesian banks, as firms with foreign currency debts and domestic currency revenues could not repay their loans, currency appreciation could lead to problems in Chinese banks who have lent to exporting firms.

These potential weaknesses are worth exploring in a bit more depth, starting with the risks created by the recent surge in the Chinese banks' renminbi-denominated loans.

Surge in bank credit

Banking deposits are the dominant form of household saving in China, and bank lending is the main source of external financing for Chinese firms.⁹ At the end of 2004, bank lending stood at around 140% of GDP, and the bank deposit base was 185% of GDP. By comparison, bond market capitalization was about 20% of GDP (\$300 billion) and equity market capitalization was less than 10% of GDP (\$150 billion). Bank lending provided

⁹ Retained earnings are a very important source of financing as well. The World Bank (2005) recently estimated that retained earnings are equal to about 20% of China's GDP.

\$350 billion in financing to 2003, and a bit less -- \$300 billion -- new financing in 2004.¹⁰ By comparison, corporations raised only \$4.5 billion in the bond market and \$16 billion from the sale of “A” shares on the Shanghai and Shengzen exchanges in 2004. In the first quarter of 2005, banks accounted for an amazing 98.8% of all business financing apart from retained earnings.¹¹

The surge in bank credit started in 2002 and accelerated in 2003, as charts 3 and 4 show. It came after several years of slow growth in bank lending. The banks consequently entered the boom with lots of liquidity and plenty of lending capacity. In 2003, to the surprise of the Chinese authorities, “flight” capital started to “come home” in a big way, providing additional funding to help fuel the lending boom. The PBoC initially did not sterilize majority of these inflows (Goldstein and Lardy, 2004), so the surge in reserves in 2003 led to a surge in money growth and bank lending.

Chart 3: Money growth and lending. From Jonathan Anderson (2005)

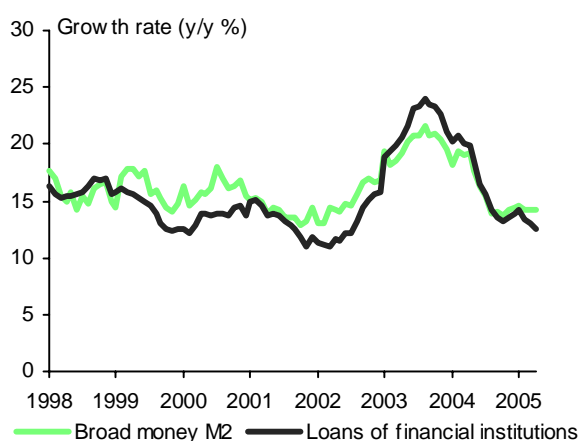
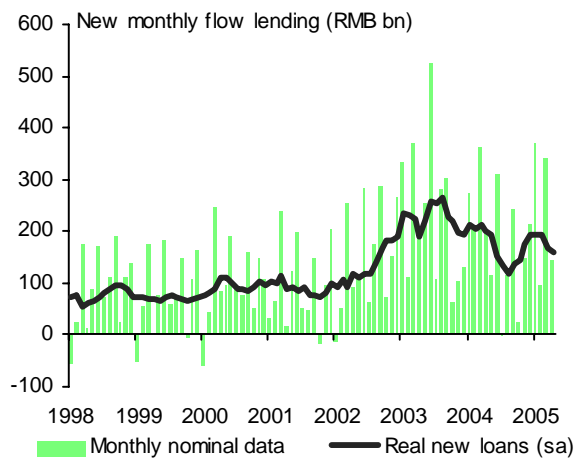


Chart 4. Flow Lending. From Jonathan Anderson, UBS

¹⁰ Different data series produce slightly different results: the IMF data indicates a \$288 billion expansion in 2004, and a \$334 billion expansion in 2003.

¹¹ Richard McGregor, “China looks to Banks for 99% of all Financing,” *Financial Times*, 29 May 2005.



In the spring of 2004, the PBoC introduced administrative controls to limit the pace of the increase in bank credit and stepped up its efforts to the exceptionally rapid growth of China's reserves. As a result, the close link between rising reserves, money growth and the increase in bank lending was severed (Green, 2005). However, the slowdown in bank credit should not be overstated. The ratio between bank credit and GDP was already high, and since lending continued to grow faster than GDP, China's bank credit to GDP ratio has continued to increase.¹²

The combined increase in bank lending in 2003, 2004 and 2005 is likely to top \$900 billion – an enormous increase for an economy of China's size. This increase in bank lending also large relative to the banking system's end 2002 stock of outstanding credit (\$1630 b) and particularly large in relation to the bank's end 2002 stock of performing loans. By some independent estimates almost 40% of all loans at the end of 2002 were not performing. Consequently, the banks basically doubled their stock of performing loans during the credit boom; new loans typically don't go bad immediately.

Real estate boom

The PBoC recently estimated that "property" lending accounts for about 15% of the total stock of renminbi-denominated bank loans at the end of 2004. Real estate lending grew

¹² For a review of studies that have attempted to identify early warning indicators for banking crises, see Demirguc-Kunt and Detragiache (2005). These studies are hampered by the enormous diversity among different banking crises. The banking systems of emerging Asia (in 1997-98) and Argentina and Uruguay (in 2000-2002) shared a common vulnerability – extensive foreign currency denominated liabilities and assets in the context of pressure for the exchange rate to depreciate. But macroeconomic and credit conditions were very different in the Asian than in the Latin crisis countries. Many studies have found that real exchange rate appreciation is leading indicator of banking crises, perhaps because of the close link between currency crises and banking crises in at least some instances. Other studies have found a correlation between low GDP growth, high real interest rates and high inflation and banking crises. This suggests that China – with a currency depreciating in real terms, strong GDP growth, low real interest and low inflation – is at little risk of a crisis. Demirguc-Kunt and Detragiache (2005)'s review does provide one note of caution: "high lagged credit, which may capture a credit boom, is significantly and positively correlated with the probability of crises in all specifications."

faster than total lending in both 2003 and 2004. Moreover, as Tamara Trinh (2005) of Deutsche Bank notes, the banks are doubly exposed to the real-estate sector. They lend both to China's real estate developers, and to the "consumers" of real estate through the mortgage market.

As in the Asian tigers, rapid credit growth fueled a broad-based real estate boom. Real estate prices rose rapidly, particularly in coastal cities and especially in booming Shanghai. China's central bank reports real estate prices increased by between 14-15% in 2004 and by over 12% in the first quarter of 2005. The expansion also fueled a construction boom, as rising investment in residential real estate contributing to the overall surge in investment. As a share of GDP, investment in residential real estate is higher in China than in the US, which itself has experienced a real estate boom.

It is sometimes argued that real estate is a "sure thing" in China, given the large rural population that is likely to migrate to urban areas over the next twenty years. That argument does not stand up to close scrutiny. Both Thailand and Indonesia still had a large rural populations in 1997. Yet the real estate boom in Thailand and Indonesia still led to a real estate bust. It is possible to overland and overbuild even in a growing market. In Bangkok and Jakarta, the supply of commercial real estate increased by between 500 and 800% between 1990 and 1997 (Caprio, 1998). If China builds the real estate needed to meet the demand for real estate in 2015 in 2005, real estate prices could still fall.

Bank dominated financial sector.

China's banking sector is far more dominant than the banking sectors of the Asian tiger economies; alternative sources of financing are particularly poorly developed in China. In many ways, China's bank-dominated financial system resembles Indonesia's bank-dominated financial system before its crisis more closely than it resembles the more-developed financial system of Thailand, Malaysia or Korea. In both China and Indonesia, state banks account for a large share of total deposits – though state banks clearly play a larger role in China now than in Indonesia before its crisis. Lending from the four large Chinese "state commercial banks" is equal to about 80% of China's GDP – more than the total stock of credit extended by Indonesia's banking system before its crisis. Indeed, China's "big four" state commercial banks (SCBs) are larger than the banking systems of almost all other emerging economies.

Moreover, the chief competitors to China's big state commercial banks are other banks, not lightly regulated not-quite-a-bank financial institutions. Lending from "joint stock commercial banks (JSCBs) – often owned by China's local authorities, though private investors sometimes also hold stakes¹³ -- has grown particularly rapidly since 2002. The third tier of the financial system – city banks – are often also owned by local authorities.

¹³ HSBC has a large – 20% -- minority stake in one JSCB, the Bank of Communications; the ownership structure of many JSCBs is rather murky.

These new banks – Joint stock commercial banks (JSCBs) in particular – generally are considered to be more willing to lend to private firms than the state commercial banks. The rapid expansion of their lending book is often presented as evidence that China’s banking system has changed, and no longer serves as just as a mechanism for funneling Chinese savings to money-losing state enterprises.

That characterization has a grain of truth. The rapidly growing JSCBs are less likely to make mistakes of the state commercial banks (SCBs) in 1990s. Indeed – as Jonathan Anderson argues, the SCBs are also trying to avoid repeating their 1990s mistakes. They are lending less to China’s state-owned enterprises (SOEs). Anderson estimates lending to SOEs accounts for only 35-40% of all new lending, less than their 50% share of the stock of all loans. Consequently, the banking system’s exposure to SOEs is declining over time. Moreover, the SOEs that are getting loans are no longer the “iron rice bowl” dinosaurs of old. Over the past few years, the least profitable SOEs have been shut down. The remaining SOEs are profitable on a cash-flow basis and some are competitive, export-oriented firms in their own right.

However, the Asian tigers did not get into trouble lending to money losing state enterprises, but rather by financing over-investment, whether over-investment in the local real estate sector by local entrepreneurs, or over-investment by large private firms such as the Korean chaebol. The new, more commercial, rapidly growing Chinese financial system might avoid the mistakes of Chinese banks in the 1990s, but repeat the mistakes of other Asian banking systems.¹⁴

A weak banking system

The specific weaknesses of China’s current banking system warrant further discussion. Weaknesses include:

The legacy of past lending booms remains on the banks’ balance sheet

In the early 1990s, bank lending grew like mad, mostly to state-owned enterprises, with generally disastrous results. Goldstein (2004) notes that roughly 40% of the loans made in past Chinese lending bubbles ended up as NPLs. Anderson (2005) has estimated that 70% of the loans made in 1992 and 1993 failed to perform. A large fraction of these bad loans remain on the banks’ balance sheet.

In broad terms, the bank’s balance sheet can be cleaned up in one of two ways. The government can finance a recapitalization, whether by buying bad loans from bad banks at an above market price or by providing an injection of funds to the banks after they

¹⁴ Watch consumer lending pick up rapidly as soon as western banks are allowed into China. The opportunity to build a credit card franchise seems to be the bait that may prompt western banks to invest in China’s big four despite their manifest weaknesses. The margins on credit cards are particularly juicy in a market where banks can fund themselves locally at 2.25%. Competing with Chinese banks to lend to Chinese firms is far less attractive: commercial lending is a competitive business and western banks would face extensive competition.

write down their bad loans.¹⁵ Alternatively, the government can let largely state-owned banks use their ongoing profits to finance the write-down of past bad loans.

China has used both approaches. \$168 billion (1,400 billion RMB) in bad loans were taken off the banking system's books in 1999 and given to four asset management companies.¹⁶ Additional state funds were injected into the banking system in 2003, 2004 and again in 2005, in part through the transfer of \$60 billion of the People's Bank of China's (PBoC) foreign currency reserves to three of the four state commercial banks. The state banks have also been encouraged to use ongoing profits to workout past bad loans, as a combination of low deposit rates and a surge in new lending has dramatically increased the profitability of China's banking system. In banking systems with a large fraction of NPLs, the spread between deposit and lending rates matters less than the ratio between the deposit rate and the lending rate. If the ratio between the deposit rate and the lending rate is large enough, the banks earn more than enough on their performing loans to pay their deposits even if a large fraction of the bank's loans do not perform (Anderson, 2005).

The "spread" between China's low deposit rate (deposits interest rates are currently capped at 2.25%) and its reference lending rate (now 5.56%, though the banks can charge a bit more -- the average lending rate in 2004 was around 6.5%) is not unusually large, but since deposit rate is particularly low, the ratio is quite large. Gordon Orr (2004) notes: "the government regulated interest rate spread between deposits and loans gives these banks an enormous margin, one of the largest in the banking world, and they are using it to write off bad debt. Regulators understand the importance of this interest rate spread, which will remain in place for several years."

However, these attempts have not cleaned up the full legacy of past "policy" lending by the state banks. Official estimates suggest that \$400 billion of "legacy" bad loans remained on the books of the state banking system at the end of 2002. Informal estimates suggest the total could be closer to \$650 billion, or around 50% of China's 2002 GDP.

¹⁵ Moving bad loans off the books of the banks is called a "carve-out" – it avoids the need for the banks to take a hit to their existing capital by transferring the bad assets to a third party. Since the banks often have liabilities to the People's Bank of China, it is relatively easy for the banks shift both their bad assets and some of the money they owe to the PBoC to a third party. In a recapitalization, a third party has to inject funds in the bank after their initial capital has been written down. There is little practical difference between a "carve out" and a formal "recapitalization" – both use state funds to improve the banks' balance sheet. See Anderson, 2005.

¹⁶ The banks generally traded their bad assets for bonds issued by the AMCs. Some transferred both their bad assets and their liabilities to the PBoC to the AMCs, leaving the PBoC with a claim on the AMC. These asset management companies have sold some of their bad loans in the secondary market, and started to slowly work out others. But recovery rates on these loans have been low. Some early recovery rates were around 30 cents, but recovery rates on even the first batch of better loans fell to 15 to 20 cents on the dollar. Indeed, it is not obvious that recovery rates have been high enough to cover the investment companies' administrative costs. Ultimately, most of the \$168 billion will have to be made up by tax payers in one way or another (Anderson, 2005).

Between \$255 billion¹⁷ (the official number) and \$385 billion (unofficial estimates) of these bad loans were on the books of the big four state commercial banks.

The large gap between official estimates and private estimates makes it difficult to know how many of those bad loans remain in the banking system. One thing is clear: the enormous expansion of bank credit in 2003 and 2004 has significantly reduced the banks' NPL ratio. Loan growth alone is on track to reduce "legacy" NPLs from 26% of all "big four" loans to about 21% in 2004 (See Table 2). Lending from other institutions has grown faster from lending from the big four, enough to bring overall bad loans in the banking system down from 25% in 2002 to 17% at the end of 2004 -- and about 15% by the end of 2005. Similarly, rapid GDP growth alone would have reduced the stock of official recognized legacy bad loans -- including bad loans that have been transferred to the Asset Management Companies -- from 45% of GDP in 2002 to 31% of GDP at the end of 2005.

These calculations ignore the banks' ability to use ongoing profits to write-offs of existing bad loans and the transfer of bad loans to the PBoC, as well as any bad loans from the recent lending boom. But they still provide a baseline for assessing how much has been done, and for understanding the data that the PBoC releases.

Since the joint-stock commercial banks are in better (current) shape than the state commercial banks, the official data indicating 13% of all loans in the state commercial banks and "joint-stock banks" were not-performing at the end of 2004 implies a NPL ratio of around 15% for the commercial banks. Simple lending growth would have reduced the state commercial bank's NPL ratio from 25% in 2002 to 20% in 2004. Getting it down further, to around 15% of total lending at the end of 2004, would imply that about a quarter of all legacy bad loans (\$65 billion) have been either written down or transferred to the PBoC. That is quite plausible. Jonathan Anderson estimates that Chinese banks wrote off \$25 billion in loans in 2003 and \$30-35 b in 2004¹⁸ out of ongoing profits. An additional \$30b (RMB 250b) of bad loans from two state banks (China Construction Bank and the Bank of China) were transferred to the central bank. That suggests a potential \$85 billion reduction of the SCB's stock of legacy bad loans, enough to bring the NPLs in the financial system down to less than \$330 billion, close to the "official" estimate.¹⁹

¹⁷ In the middle of 2003, the official number was lowered to around \$240 billion, a number that is often cited in the press. Current official estimates are even lower.

¹⁸ Anderson (2005) reports that the banks set aside \$12 billion to cover the costs of writing down \$25 billion in bad loans in 2003, and still had \$20 billion or so in profits. He expects they did something similar in 2004.

¹⁹ The government has acknowledged that the four state commercial banks had \$255-260 billion in NPLs in 2002, out of a loan portfolio of around \$950 billion. The government argues that these NPLs were reduced to \$240 billion during the course of 2003, and to around \$190 billion by the end of 2004, a reduction of about \$70 billion. The distribution of NPLs is not uniform among the state banks. China Construction Bank (CCB) is considered to be in slightly better shape than the Bank of China (BOC). Both are considered to be in better shape than the larger Industrial and Commercial Bank of China (ICBC). The Agricultural Bank of China (ABC) is considered to be in the worse shape of all -- many suspect it will never be privatized and instead will be turned into a "policy" bank.¹⁹ At the end of 2004, the CCB has \$285 billion in outstanding loans, the BOC around \$215 billion, and the ICBC around \$448 billion. Market analysts

However, official statistics overstate the overall health of the banking system. Many analysts estimate that close to 40% of all loans – both in the state commercial banks and in the financial system as a whole -- were either not performing or were “impaired” in 2002.²⁰ By 2004, the combination of loan growth plus a \$65 billion – or even a \$85 billion – bad loan write off would reduce “legacy” bad loans to around 25% of all loans. Most analysts believe that the only solution is for China’s government to write a large check to take the remaining “legacy” bad loans off the banks’ books, and another check to bailout the asset management companies. China will not be able to rely exclusively on the profits from the banks expanded lending book to cover the costs of past bad loans. Transferring reserves from the central bank to the state banks poses almost as many problems as it solves: creates a currency mismatch between the banks’ capital (in dollars) and the banks deposits and loans (in renminbi), and it leaves the central bank as the dominant owner of the country’s financial system.

No capital at risk. Rapid credit expansion in a well capitalized and well regulated banking system often generates a substantial number of bad loans. It is not clear that a banking system with perfect incentives could successfully intermediate between China’s enormous savings and its equally enormous current pace of investment. And the incentives structure for China’s banks remains far from perfect.

The state commercial banks have no real capital. Their regulatory capital hinges on favorable accounting treatment of loans that only perform so long as interest rates remain low and credit freely available. Some state enterprises can pay interest on their outstanding balance but they are unlikely to ever repay the principal on their loans. Like zombie banks everywhere, China’s state commercial banks have an enormous incentive to gamble for resurrection – indeed, the whole lending boom could be seen as one huge gamble for resurrection. If most of the new loans turn out to be performing, the banking system has a chance of lending itself into solvency. However, if a substantial fraction of the loans extended in the recent lending boom go bad, an already bankrupt system just becomes more bankrupt.

estimate that around 15%, of \$75 billion, of the CCB and BOC’s lending portfolio is impaired in some way, even after \$30 billion in bad loans were transferred to the PBoC. The \$45 billion of the country’s foreign exchange reserves the PBoC transferred to these two banks in December 2003 (\$22.5 billion each) seems insufficient to generate a positive net worth for these banks. The recapitalization of the Industrial & Commercial Bank of China (ICBC) is an even bigger challenge. \$15 billion was transferred from the central bank’s reserves to the ICBC in April 2005 and the Ministry of Finance kicked in another RMB 125 billion (\$15 billion). However, Fitch Ratings estimates the ICBC needed at least \$50 billion and UBS analysis suggests the ICBC needs around \$100 billion – it estimates that 30% of the ICBC’s lending portfolio is bad (\$134 billion) but argues that these bad loans should have a small recovery value. See Jonathan Anderson “China: Ten questions about the ICBC recap,” UBS Investment Research, 25 April 2005. The government, in contrast, reports that after the ICBC bailout, CCB, BOC and ICBC all now have NPLs below 5%.

²⁰ With rapid growth of nominal GDP and low lending rates, some firms can repay interest – particularly if they receive a bit of help in the form of new lending (so called ever-greening) even if they have no hope of ever repaying the principal.

The general moral hazard created by state banks who risk taxpayer money is augmented by difficulties controlling the activities of the local branches of the state banks, and difficulties regulating the joint stock banks and the city commercial banks. Individual bankers – who often have close ties to the local communist party or the provincial government -- have strong incentives to lend. The benefits of local lending accrue locally: a new factory that generates jobs, a local real estate boom, and more rapid local growth. Yet any losses would be born by the national government. The central government owns the big four, and the central government would almost certainly be forced to bailout locally owned joint stock commercial banks and the major city banks in crisis as well. However, the degree of effective central supervision over the activities of the local branches of the big four state banks – let alone the JSCBs and city banks -- is far from clear.

Chinese bank regulators have relied on administrative controls to reduce the rate of credit growth from very high levels to just high levels. But simply limiting credit growth – and discouraging the banks from lending to certain sectors – is not enough to assure that the banks are lending to those most likely to repay. Demand for loans at current Chinese interest rates far exceeds supply; available credit is likely to go to projects with strong political backing, not necessarily to those projects that pose the least risk to the bank.²¹ Rajan and Prasad (2005) have noted:

But financial-sector restructuring cannot be divorced from other policies. For instance, maintaining a fixed exchange rate reduces the independence of China's monetary policy. In the face of capital inflows and pressures for appreciation, the government is forced to keep interest rates low. This implies cheap, subsidized capital to banks and companies. The government then has little choice but to use administrative measures such as moral suasion to control growth in lending and investment. This is not consistent with training the banking system or state enterprises to respond to market incentives.

The banking system is if anything further away from allocating credit on the basis of price than it was a few years ago.

Connected lending. Most analysis focuses on the risks of directed lending, namely the use of the state commercial banks to make “policy loans” to maintain employment in state-owned enterprises. No doubt such policy lending continues, but Chinese bank regulators are also well aware of the associated risks. Lending to state-owned firms now accounts for a declining share of the lending of the state banks and, since the state

²¹ Anderson (2005) has a more positive impression of administration controls. He writes: “Keep in mind that in an economy with heavy state ownership and influence, the interest rate may not be best tool for macro control. For example, if regional government officials are promoting inefficient investment projects through direct pressure on local state-owned banks, then simply raising the price of credit may actually cause an adverse reaction; inefficient projects will still borrow if they are not focused on repaying the loans, while good firms and projects will be hurt by the higher cost of credit. In other words, local administrative pressures should also be met by an administrative reaction from the center, and this is precisely what we have seen in the past few years, with “window” guidance, sectoral investment restrictions and other administrative measures.”

commercial banks account for a declining share of total bank lending, a declining share of total bank lending as well. The greater risk may come from connected lending – driven by the tight ties between local governments, local banks (including the local branch of the state bank) and local firms, both state-owned firms and privately owned that have developed close ties with the local government.

In China, unlike in Indonesia and Thailand, the typical “commercial” bank is not owned by a family conglomerate, but rather by the local authorities. However, in a context where the local government owns both the local banks and stakes in a large number of local enterprises, there is substantial scope for connected lending. Commercial firms do not own the “banks,” but the state – at both the national and the local level – often owns both the banks and key firms.

No market pricing

The price of credit in China is not set by the market. The Chinese government caps the rates banks can offer depositors, and sets a minimum interest rate on the bank lending – effectively guaranteeing the banks a substantial spread so long as their loans perform.²² In practice, interest rates seem to be set to balance the needs of state owned banks and the needs of state owned firms. Lending rates cannot be too high or they would jeopardize the health of certain state enterprises, which continue to account for a large share of the total stock of outstanding loans. Deposit rates cannot be too high or they would jeopardize bank profitability, particularly in a context where many loans are not performing.

Real interest rates in China are no longer negative, but they remain very low. The 5.6% benchmark lending rate is now well above consumer price inflation, but it is only just above the current annual increase in the producer price index. While credit is more expensive in real terms than in 2003 or early 2004, it remains far cheaper than it was in say early 2002, when real interest rates were above 6%.²³ And compared to the typical emerging economy, credit in China remains extremely cheap. To take an extreme example, compare China’s 5.6% nominal lending rate in an economy with nominal GDP growth of 12-15% with Argentina’s pre-crisis 12% nominal cost of funds in the context of an economy that was shrinking in nominal terms.

Where are we? A realistic assessment of the current health of China’s banking system

China’s banking system almost certainly entered into the current lending boom with a higher level of NPLs than official has been reported. There also is little doubt that rapid credit expansion of credit has reduced the banks’ NPL ratio and that the banks have been able to use their ongoing profits -- the government assures a substantial spread between lending and deposit rates -- to write off legacy NPLs. However, the banks also probably need to provision against future NPLs. Even if Anderson and other optimists are right, and “Banks will still face new bad loans, but the relative size of the current flow NPL

²² Garcia Herrero and Santabarbara (2005).

²³ Morris Goldstein, April 2005.

problem should be orders of magnitude less than in the previous cycles” the overall level of NPLs could increase substantially. Even the fraction of NPLs that went bad in the past, doing better is not hard.

If 15% of the new loans extended since the end of 2002 ultimately go bad, that would add \$145 billion (almost 8% of China’s 2005 GDP) of bad loans to the financial system’s books – on top of the existing stock of legacy loans. If 25% go bad, the total increase would be more like \$240 billion (over 12% of China’s 2005 GDP).

Table 2. Potential bad loans in the Chinese banking system.

\$ billion

| | 2002 | 2003 | 2004 | 2005 |
|-----------------------------|---------|---------|---------|---------|
| State Commercial banks | | | | |
| Total loans | 984.9 | 1164.3 | 1252.4 | 1373.2 |
| performing loans | 590.9 | 770.3 | 858.5 | 979.2 |
| Non-performing loans | 394.0 | 394.0 | 394.0 | 394.0 |
| NPLs as % of total | 40.00% | 32.63% | 28.13% | 24.84% |
| Total loans as % of GDP | 77.80% | 82.46% | 76.04% | 73.91% |
| o/w performing | 46.68% | 54.55% | 52.12% | 52.70% |
| o/w NPLs | 31.12% | 27.90% | 23.92% | 21.20% |
| All banks | | | | |
| Total loans | 1627.3 | 1989.6 | 2303.6 | 2605.6 |
| performing loans | 976.4 | 1338.7 | 1652.7 | 1954.6 |
| Non-performing loans | 650.9 | 650.9 | 650.9 | 650.9 |
| NPLs as % of total | 40.00% | 32.72% | 28.26% | 24.98% |
| Total loans as % of GDP | 128.54% | 140.91% | 139.87% | 140.24% |
| o/w performing | 77.13% | 94.81% | 100.35% | 105.20% |
| o/w NPLs | 51.42% | 46.10% | 39.52% | 35.03% |
| AMCs | 168.2 | 168.2 | 168.2 | 168.2 |
| All NPLs | 819.2 | 819.2 | 819.2 | 819.2 |
| Total bad loans as % of GDP | 64.71% | 58.02% | 49.74% | 44.09% |
| New NPLs | | | | |
| if 15% go bad | 0.0 | 54.3 | 101.4 | 146.7 |
| if 25% go bad | 0.0 | 90.6 | 169.1 | 244.6 |

| | | | | |
|--------------------------|--------|--------|--------|--------|
| Total NPLs as a % of GDP | | | | |
| if 15% go bad | 64.71% | 61.86% | 55.90% | 51.99% |
| if 25% go bad | 64.71% | 64.43% | 60.00% | 57.25% |
| GDP | 1265.9 | 1412.0 | 1647.0 | 1858.0 |

Sources: IMF, UBS, press reports and author's own calculations

The calculations in Table 2 ignores the \$75 billion of “legacy” bad loans that have been written off out of ongoing bank profits through 2005 – so the stock of legacy bad loans is consequently probably more like \$750 billion, not \$820 billion. However, if even 15% of the loans extended over the past three years go bad, the total stock of NPLs in the banking system has still increased. The \$145 billion stock of “new” NPLs would overwhelm \$75 billion reduction in “old” NPLs. If 25% of the loans extended during the recent credit boom ultimately go bad, the absolute size of the banks’ NPL problem would be even bigger. The stock of bad loans would still be still falling relative to China’s GDP, but not by much. It would remain close to 60% of China’s GDP.

The cost of cleaning up the banks bad loans will be less than that, since the banks or AMCs should be able to recover something on the bad loans. But there is little doubt that China’s taxpayers will foot a huge bill to clean up the banking system. China’s public debt to GDP ratio –33% of GDP at the end of 2004 – is likely to increase substantially.²⁴ A low end estimate would put the stock of NPLs at around \$500 billion. Even assuming a generous recovery rate on NPLs of around 20 cents on the dollar (net of costs), the total cost to the government of cleaning up the financial system could still be close to 20% of China’s 2005 GDP. International best practice would imply issuing a bond to recapitalize the banking system, and paying a market rate on that bond -- say something close to 5%. The cost ongoing the cost of servicing the recapitalization bonds then would be around 1% of GDP, and the recapitalization bond would push China’s debt to GDP ratio up to 50% of GDP. More realistic estimates put the total current bad loans at close to 45% of GDP, and thus imply, assuming a 20% recovery rate on bad loans, a total cost of around 35% of GDP. The ongoing fiscal cost from the interest on recapitalization bonds would then be around 1.8% of GDP. And if a substantial share of the recent lending boom goes bad, the total cost could prove to be higher still.²⁵

²⁴ Alternatively, China could finance the recapitalization of the banking system by running down the government’s assets. However, the obvious asset – the reserves of China’s central banks – is not ideal for recapitalizing China’s banking system. China’s reserves are denominated in dollars. However, China’s banks largely have renminbi deposits. The poor financial health stems from the gap between their renminbi deposits and their stock of performing renminbi loans. Ideally, that gap would be filled by a performing assets that is denominated in renminbi, allowing the banks to match their renminbi liabilities (deposits) with renminbi denominated assets. Moreover, since the renminbi is likely to appreciate against the dollar over time, the renminbi value of dollar assets is likely to decline. The central bank is rumored to have an informal deal protecting the state banks from any valuation losses on the dollar reserves that they were given as part of recent recapitalization schemes.

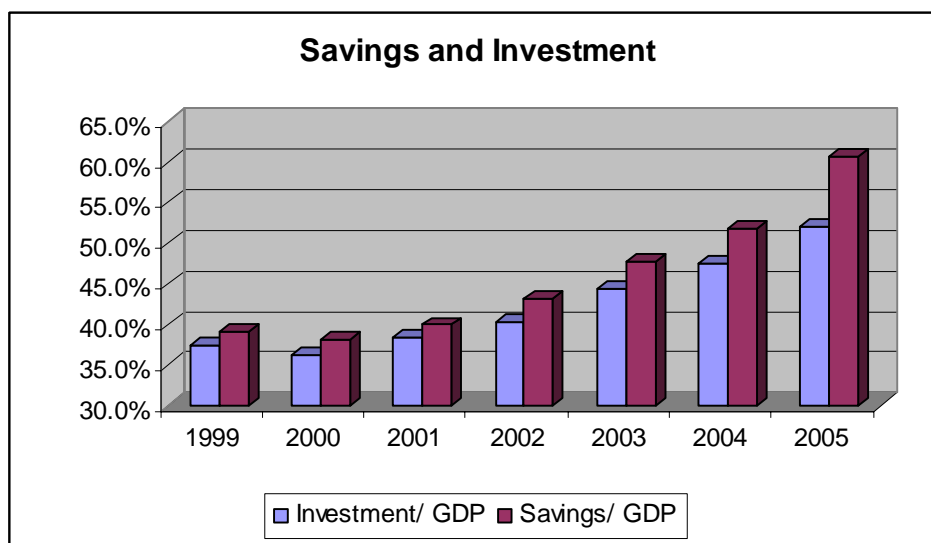
²⁵ Paying interest on recapitalization bonds and foregoing profits from the state’s equity ownership of the banking system amount to the same thing. One shows up as higher expenditure, the other as less revenue. However, to the extent China wants outside investment in the state banks, it needs the banks to be profitable and pay dividends. The state may be willing to forego profits on its investment to cover the cost

Put differently, it is likely that the cost of cleaning up China's existing legacy bad loans will be comparable, relative to China's GDP, to the cost of cleaning up the banking systems of the worst hit of the Asian Tigers. Korea's bank bailout cost around 20% of its GDP, Thailand's between 30 and 35% of its GDP and Indonesia's bailout cost a staggering 50% of its GDP – though these estimated cost may fall if the countries are able to recover more value from the portfolio of bad loans their respective governments assumed in the crisis (Hoelscher and Quintyn, 2003) .

Rock-solid balance of payments fundamentals.

China's banking sector on its own looks to have all the elements of a crisis in the makings. But China's recent credit and the associated investment boom is in many ways unusual. The surge in credit and investment did not generate a current account deficit – far from it, China's current account surplus has continued to grow. Domestic savings has increased even faster than domestic investment.

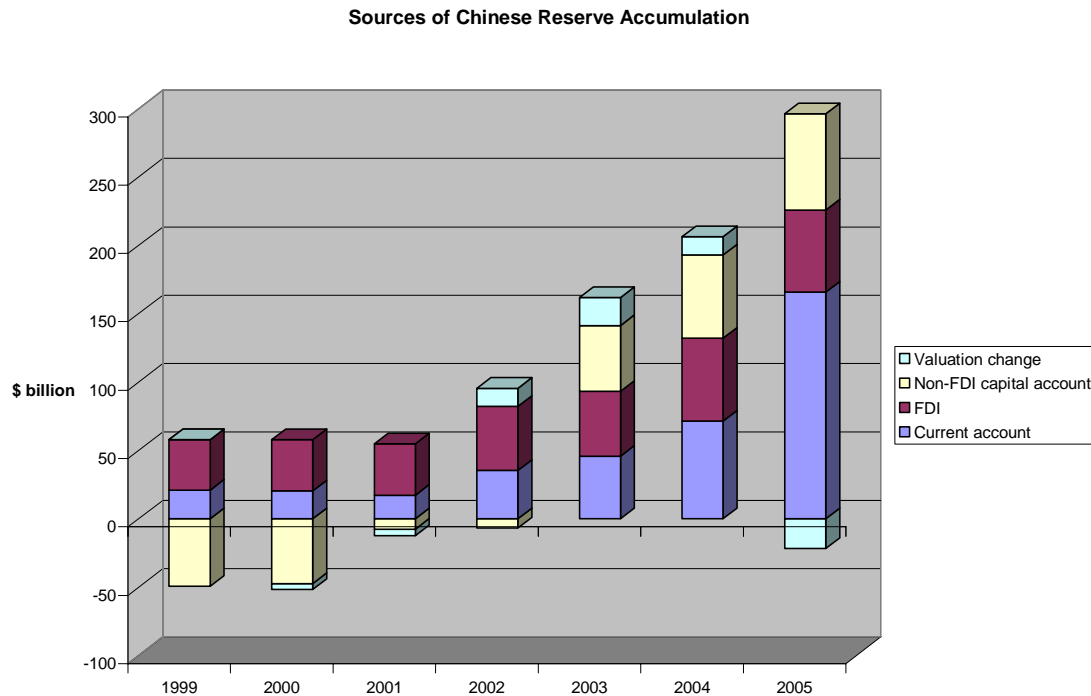
Chart 5. Savings and investment in China. World Bank data, with author's forecast for 2004 and 2005



China's current account surplus – or excess of domestic savings over domestic investment – has been captured in the growing reserves of the People's Bank of China. China also attracts substantial capital inflows, both from foreign direct investment and – after 2003 – from substantial “hot money” flows.

of old bad loans. Outsider investors are unlikely to be as kind – though with China you never know. Right now Western banks seem willing to pay heavily for minority equity stakes in still undercapitalized Chinese banks as part of a long-term strategic plan to increase their presence in the Chinese market.

Chart 6. Sources of Reserves Accumulation. Adapted from Prasad and Wei (2005), with author's forecasts for 2005.



Those inflows, in conjunction with China's own current account surplus, have generated an absolutely phenomenal increase in China's reserves. Reserves – including reserves transferred to the state banks – were about \$650 billion at the end of 2004, and are likely to reach \$925 billion at the end of 2005. Those reserves far exceed China's total external debt (\$220 billion), and are comparable in size to the sum of China's external debt and the stock of foreign direct investment in China.

China's domestic financial system largely operates in renminbi. The domestic dollar deposits of households have been falling as Chinese citizens shift their savings into renminbi. The People's Bank of China reported that domestic foreign currency denominated deposits fell by 6%, or about \$4 billion, between November 2003 and November 2004.²⁶ Chinese firms understand that the "real" value of their foreign

²⁶ See People's Bank of China, "Foreign Currency Deposits Continued to Increase" January 2005. Rising corporate dollar deposits and growing external liabilities offset falls in household deposits. The joint external debt data published by the OECD, BIS, IMF and World Bank show China's short-term cross border bank liabilities increased by \$19.75 billion at the end of 2002 to \$38.25 billion at the end of September, 2004, and overall external bank debt rose from \$36.6 billion to \$64.8 billion. See also Eswar Prasad, Thomas Rambaugh and Qing Wang, 2005. Prasad, Rambaugh and Wang report that the Chinese banks foreign currency denominated lending (funded both domestically and externally) rose from \$81 billion in 2001 (6.9% of GDP) to \$130 billion at the end of 2003 (9.2% of GDP). Chinese data suggests this trend continued in 2004. The People's Bank of China reports a \$16.7 billion increase in foreign currency lending in the first 11 months of 2004. However, the PBoC's end-2003 stock numbers do not seem to quite match those in Prasad, Rambaugh and Wang.

currency denominated liabilities will fall with a revaluation and are happy to take out foreign currency denominated loans. But total dollar lending by Chinese banks – whether funded from household dollar deposits, business dollar deposits or external credit lines – remains modest (Prasad, Rambaugh and Wang, 2005). China’s financial system consequently lacks the “balance sheet” weaknesses that often characterize countries whose domestic citizens prefer to keep their savings in dollar denominated deposits in the local banking system (so called liability dollarization).

Moreover, the risks facing China are different than the risks facing a typical emerging economy, since China’s currency is far more likely to appreciate than to depreciate. Chinese companies taking out foreign currency denominated loans to finance local investment are not betting – as the Asian tigers did – that the currency would remain stable and that they could thus “capture” the lower interest rate on dollar denominated debt. They instead are betting that the RMB will appreciate over time, and that they will be able to repay the offshore loan with depreciated dollars.

However, China’s rock solid external position – and specifically its rapidly growing reserves and the probability of a future appreciation in the RMB -- does give rise to two other types of balance sheet risk

1) The risks associated with a rapidly growing stock of central bank sterilization bills. The risks facing the central bank is simple: at some point, it may have to pay much higher interest rates than it does now to rollover its existing stock of sterilization paper, and to place the new sterilization bills needed to prevent China’s growing reserves from generating faster money growth than the central bank desires. The banking system faces precisely opposite risk: the possibility that controls on credit growth will be used to keep interest rates on sterilization paper at current very low rates. Over time, such central bank bills will account for a larger and large share of the banking system’s total assets, and if PBoC bills continue to pay little more than the banks pay on their deposits, the banks’ profitability will decline.

It should be noted that the current low interest rate on PBoC’s sterilization bills is not a true market price. Administrative controls have kept bank lending from keeping pace with the increase in bank deposits. Since banks generally invest their spare cash in central bank sterilization bills, the lending controls generate built-in demand for PBoC debt. However, substituting a low-yielding security issued by the central bank for a loan to a Chinese firm certainly reduces the bank’s current profitability (Its long-term impact is less clear, since it is not obvious current lending rates adequately compensate the bank for the risk the loan will go bad). In effect, lending controls have pushed the costs of sterilization off the books of the central bank and onto the books of the (state-owned) banking system.

2) Overlending to the export sector in domestic currency

Firms with domestic currency revenues and foreign currency debts often face trouble in the event of a currency depreciation. The opposite is also potentially true: firms with

foreign currency revenues and domestic currency debts are at risk in the event of a currency appreciation. After an appreciation, a dollar of export earnings generates less domestic currency to repay domestic currency debts.

This risk is not entirely theoretical: China's export sector has expanded dramatically since 2000 – rising from roughly 20% of China's GDP to a forecast 40% of China's GDP in 2005. The rapid expansion of the export sector coincided with China's recent lending boom – it seems likely that bank credit financed at least part of the needed capacity expansion. However, two facts work to limit this risk. First, a sizable fraction of China's exports are the product of the “reprocessing” trade. Components are imported from abroad for final assembly in China. And even products produced largely out of Chinese components often have significant imported content. China has to import large quantities of basic industrial raw materials – iron ore, copper – to fuel its industrial sector. A revaluation would reduce the renminbi revenue stream associated with a given quantity of exports, but it also would reduce the renminbi cost of imported inputs.

Second, in some sectors, Chinese firms compete largely against other Chinese firms – not against firms located outside China. They consequently would be able to raise their dollar prices to reflect changes in the RMB/ \$. Other firms compete against firms located in other Asian economies whose currencies likely would move in tandem with the RMB. Moreover, China's government might offset any revaluation with steps to support domestic demand – helping Chinese firms offset any reduction in their “renminbi” export revenue with higher domestic sales. Many analysts believe that a 10% or larger revaluation would have a modest impact on China's export sector.

A bigger concern is that too many firms may be investing on the expectation that 30% y/y export growth will continue. That seems unlikely, no matter what happens to the RMB.. China's exports are now quite large – its goods exports will likely surpass those of the US in 2006. Over time, it will be harder and harder for Chinese exports to expand much faster than overall global trade. Moreover, as Chinese firms replace imported components with Chinese made components to cut costs – a process that is clearly underway in many sectors – Chinese firms lose the natural hedge against a revaluation provided by imported components.

Section 3 – Potential triggers for a banking crisis

Rapid domestic credit growth, few incentives for sound lending and particularly rapid growth in new sets of financial intermediaries create obvious similarities between the Chinese banking sector and the pre-crisis financial sector of the Asian tigers. However, the immediate trigger for a Chinese banking crisis is sure to be quite different than in the Asian crisis economies. China is simply not vulnerable to a sudden withdrawal of foreign credit. Any fall in external short-term credit lines could be easily financed out of China's immense reserves. The withdrawal of foreign bank credit would not lead to a devaluation, balance sheet problems from foreign currency denominated debt and a surge in NPLs.

The risks to China's banking system lie elsewhere.

The risk of a run (the liabilities side of the banks' balance sheet)

China's banks, like banks everywhere, borrow short and lend long. If depositors lose confidence in the banking system – or, more accurately, the government's capacity to backstop the banking system – they are vulnerable to a run.

This risk seems real for many of the smaller financial institutions. A local scandal – for example, the revelation that the banks had been effectively plundered by local officials – or large losses from lending to an (unprofitable) local firm could trigger a run on many of China's smaller banks. But a run on a single institution is manageable, particularly if depositors who pulled their funds out of a locally owned bank ran toward the (relatively) safety of the big four state commercial banks.

A generalized run out of the entire banking system would pose far larger problems. However, it is important to be clear. The banking system's large stock of NPLs does not guarantee a run. So long as the state stands behind the big state banks, China's depositors won't take losses on the money that they have invested in the state banking system no matter how badly the banks invest those funds. China's banks have had lots of NPLs for a long time, and that has not prevented their deposit base from continuing to grow. Nor is deposit growth simply a result of China's high savings rate and the lack of alternatives to the banking system (China's stock market in particular has performed poorly for several years). Chinese citizens with savings abroad – and access to a full range of financial assets – are currently moving their savings back into China. So long as there is a strong expectation that the renminbi will appreciate and depositors expect that the Chinese government will assure the banking system's ability to honor their renminbi deposits, they have a strong incentive to hold even relatively low-yielding renminbi deposits.

Still, so long as China's capital controls remain effective, it is hard to see how there could be a true run out of the banking system. Depositors who pulled funds out of the banks would have to place their funds somewhere, and China's capital controls assure that those funds would need to stay in China. If foreign-owned banks establish a substantial presence inside China after 2006, the depositors conceivably could run into foreign-owned banks – or into the large state commercial banks that foreign banks have now invested in. However, a huge surge in renminbi deposits would pose major problems for foreign banks, since their capacity to immediately expand their renminbi lending would be limited. If the foreign banks were willing to lend their excess renminbi to the central bank, the central bank could assure that the spare renminbi in the financial system were recycled back to weaker banks. Moreover, a flight to quality would likely prompt the central bank to allow domestic Chinese banks to offer higher interest rates on domestic deposits while foreign banks might keep keeping their deposit rates low to increase their profitability.

At least in the near term, it seems unlikely that a domestic deposit run will trigger a systemic crisis in the Chinese banking system. However, this assessment is subject to one important caveat. The run on the Indonesian banking system was triggered in part by concerns that Suharto's regime was losing its grip on power. Interest and individuals favored under the old regime started to shift their savings abroad. Small depositors who kept their savings in banks owned by "cronies" with close ties to Suharto lost confidence that the government would stand behind bad banks just because of the political ties of the bank's owners. In the unlikely event that the Chinese Communist party's grip on power in China is seriously called into question before the banking system was truly cleaned up Chinese depositors would have strong incentives to run.

Finally, while an outright run out of the banking system is unlikely, the resumption of substantial capital outflows – outflows of roughly \$50-60 billion a year were typical from 1998-2000 – certainly is possible. Such outflows would imply a substantial slowdown in deposit growth, and thus a slowdown in new lending. A resumption of capital outflows might well be combined with a shift in existing deposits from fast-growing JSCBs to more conservative state commercial banks, potentially augmenting the lending slowdown.

Triggers for a deterioration in the banks loan portfolio

The recent surge in bank lending suggests substantial vulnerabilities on the "asset-side" of banks' balance sheet. What could prompt a large share of the loans extended in the recent credit boom to go bad?

- a) A shock to Chinese real estate prices. Over investment could lead to over-supply, rising inventories of unsold (and unrented) properties, and ultimately to sharp falls in the real estate market.
- b) Over-lending to domestic industry. If too much capacity chases too little demand, prices will fall – and some of the loans made to finance the surge in Chinese industrial capacity could go bad. Make no mistake, the enormous recent surge in investment has led to an enormous increase in capacity in China. Nerys Avery reports (China's trade surplus probably widened, Bloomberg News, August 9) that steel production has increased by 50%, car production doubled and computer production tripled – all between 2002 and 2004. Industrial production now accounts for 60% of China's GDP. With investment now well over 50% of China's GDP – and still increasing at a faster rate than the overall economy -- similar increases in capacity can be projected in the future. The challenge will be finding sufficient demand to absorb all of the capacity that is likely to be brought on line in the near future.²⁷ If all the capacity that is brought on line can only be absorbed if prices fall, those who financed the expansion of capacity may end up taking large losses. The World Bank (August 2005) notes: "Another risk is that

²⁷ Jonathan Anderson argues that the rapid expansion of production between 2002 and 2004 generated economies of scale that helped firms sustain profits even in the face of rising input costs. However, going forward, as the economy cools off, firms will not be able to offset rising input costs with comparable scale economies and the intrinsic advantages of higher capacity utilization.

- investment is not reigned in sufficiently in industries facing potential excess supply and further pressure on profitability and prices, that this would lead to oversupply, deflationary pressures, corporate sector balance sheet problems and a new round of non-performing loans. This risk is real.”
- c) Overinvestment in China’s export sector. China’s goods exports are on track to increase from \$250 billion in 2000 to \$775 billion in 2005. Exports have doubled as a share of China’s GDP over the past five years. Even if this calculation overstates exports overall contribution to China’s economy given the large reprocessing trade, there is little doubt that China has become more dependent on exports and more exposed to the global economic cycle over time. Too many firms may be betting that 30% year over year growth in exports can continue, no matter what happens to the RMB. Yet at some point – probably in the near future – China’s export growth is likely to slow, even if China maintains its current exchange rate peg and continues to add something like 15% of its GDP or more to its reserves every year. And if sterilizing China’s huge annual increase in reserves starts to place strains on the domestic financial system, the central bank may allow RMB appreciation even in the face of an export slowdown.

All these risks stem in one way or another from the risk associated with an economy that is investing over 50% of its GDP every year, even though China’s capital stock is no longer so small that it is obvious that China can *profitably* re-invest half of its yearly domestic product. Work by some Chinese economists suggests a sharp fall off in the marginal productivity of capital, and total factor productivity.²⁸ In this dimension China looks like the “Asian Miracle” that went bust in the 1990s: high growth driven more by growth in factor inputs (notably the rapid accumulation of capital) than by growth in total factor productivity in economies with very high (excessive) rates of investment.²⁹

A shock to the asset side of the banks’ balance sheet would lead to a surge in NPLs. It might also lead to a slowdown in deposit growth – not a run per se, just a smaller year over year growth rate in deposits. Any slowdown in deposit growth would feed into a slowdown in lending growth. That slowdown could be augmented if the banks adopted more market-based behavior at precisely the wrong time. Purely state run banks could ignore rising NPLs and keep on lending despite their eroding capital base. But more commercially oriented banks might try to prevent their capital ratios from falling below international standards. Paring back loan growth, however, would add to the cyclical slowdown.

A less supportive external environment

²⁸ Hu Angang at “China’s Economic Emergence,” April 7-8, Columbia University. Professor Hu notes that the low cost of capital also creates an incentive to substitute capital for labor, and thus works against China’s attempts to create jobs for underemployed rural workers migrating to the cities.

²⁹ A busting of the investment bubble in China would not lead to the external debt payments crisis that East Asia faced in 1997-98. China has a large stock of reserves, low amounts of short term foreign currency debt, capital controls and a current account surplus. Still, the Chinese hard landing would take the form of a domestic financial crisis. The risk is that the over-extended financial system stops lending, leading to a severe credit crunch, an investment bust and a domestic recession.

China faces another potential problem. Most of the Asian tiger economies were running current account deficits, not current account surpluses, prior to their crisis. The 97-98 crisis was marked by a sharp fall in investment, no fall in savings and a surge in emerging Asia's current account surplus. That was offset by a surge in the US current account deficit, which rose from around 2% of US GDP to around 4% of US GDP. The US acted as the importer of last resort, pulling emerging Asia out of its recession.

China has run significant current account surpluses throughout its credit and investment boom. China's 2005 current account surplus is likely to top 6% of GDP – a remarkable level given China's growing need for imported oil. If investment in China were to slow while savings remained high, China's current account surplus could soar – perhaps rising to well above 10% of its GDP.

China, however, may find it more difficult to export its way out of trouble than the Asian tigers. The US currently is running a current account deficit of 6.5-7.0% of GDP. That would make it much harder – politically as well as economically – for the US to play its classic role as an importer of last resort. The US may not be able to attract sufficient external financing exists to run a current account deficit of 8-9 % of its GDP. It is not clear that Europe's economies have the capacity to act as the world's importer of last resort.³⁰

Consequently, China may not be able to rely on external demand to help if through an investment slump. This will complicate economic management in China, but it need not prove to be a disaster. China's government and its central bank have plenty to scope to take policy steps to stimulate China's domestic economy. The government's relatively low levels of debt provide plenty of scope to pick up the tab of legacy bad loans, as well as any new NPLs on the most recent credit expansion. The very low level of private Chinese consumption leaves open the possibility that strong consumption growth might offset an external shock – or an unexpected fall in investment.

Conclusion

China's current growth has been based on the rapid expansion of sectors of its economy that are already well developed: investment and exports have grown far faster than the overall economy. Yet the longer this pattern of expansion continues, the bigger the future risks. Both China's internal imbalances and the imbalances in the global economy are now becoming large. Investment and exports now account for a shocking large share of China's GDP (Roach numbers) while consumption is a very small share of GDP. China is increasingly exposed to the global economic cycle, and is increasingly vulnerable to any major slowdown in domestic investment (particularly one that is not offset by surging exports/ a fall in imports).

³⁰ A shock that led China's current account surplus to rise would not necessarily increase China's reserve accumulation. If hot money and FDI inflows stopped, China's reserve accumulation – and its capacity to finance US current account deficits -- could fall even as its current account surplus increased.

While China lacks the precise balance sheet vulnerabilities of the Asian tigers, it has other important financial vulnerabilities. China simply is not vulnerable to a roll-off of short-term external credit, or to a surge in non-performing foreign-currency loans following a devaluation. Its balance sheet vulnerabilities lie elsewhere. Balance sheet risks from currency moves lives on the books of the central bank, not the private banking system. The central bank's balance sheet is increasingly exposed both to a surge in domestic interest rates. Firms with RMB debts and export revenues could be at risk in the event of a RMB appreciation, or an export slowdown. And there are plenty of ways of getting into trouble that have nothing to do with currency risk: like any financial system after a credit boom, China's domestic financial system is exposed to the risks that a large share of the loans extended since 2002 will go bad should China's economy slow.

China consequently is not vulnerable to a replay of the Asian financial crisis, but it is vulnerable to a different set of risks – notably to a sharp slowdown in export growth, or an investment bust. China's capacity to reorient its economy to rely more on domestic consumption will likely be put to the test – along with the ability of its still developing financial system to manage the transition.

List of References

Allen, Mark, Christoph Rosenberg, Christian Keller, Brad Setser and Nouriel Roubini. 2002. A balance sheet approach to financial crises. IMF Working Paper 02/210 (December). Washington: International Monetary Fund.

Anderson, Jonathan. "China: Ten questions about the ICBC recap," UBS Investment Research, 25 April 2005.

Anderson, Jonathan. "How to Think About China, Part 3: Which way out for the banking system?" UBS Investment Research: Asian Economic Perspectives, May 2005.

Areta, C and Eichengreen B. 2002. Banking Crisis in emerging markets: presumptions and evidence" in Blejer, M and Skreb, M (editors), Financial Policies in Emerging Markets, Cambridge, MA: MIT Press.

Caprio, Gerard. Banking on Crisis: Expensive Lessons from Recent Financial Crises, WB, September 1998, Policy Research Working Paper 1979.

Chua, Amy. 2002. World on Fire: How Exporting Free Market Democracy Breeds Ethnic Hatred and Global Instability. New York: Doubleday.

Demirguc-Kunt, Ash and Enrica Detragiache. Cross-Country Empirical Studies of Systemic Bank Distress: a Survey. March 2005.

- Eichengreen, B and Rose, A. 1998. Staying Afloat when the Wind Shifts: external factors and emerging-market banking crises. NBER Working Paper no. 6370 (January 1998)
- Garcia Herrero, Alicia and Daniel Santabarbara. 2005. "Where is the Chinese Banking System going with the ongoing reform" CESifo conference paper.
- Green, Stephen. July-August 2005. Get Ready for China's Greenspan. Far Eastern Economic Review.
- Green, Stephen. April 2005. "China Money Monitor," Standard and Chartered Bank.
- Green, Stephen, July 2005. Making Monetary Policy Work in China: A report from the Money Market Front Line. Working Paper No. 245. Stanford Center for International Development.
- Goldstein, Morris. "Adjusting China's Exchange Rate Policies," IIE Working Paper 04-01, Institute for International Economics, May 2004.
- Goldstein, Morris. "The Chinese Economy: Prospects and Key Policy Issues," Institute for International Economics, April 2005.
- Goldstein, Morris and Nicholas Lardy, "China's Role in Revised Bretton Woods System: A Case of Mistaken Identity," IIE Working Paper 05-02, March 2005.
- Hoelscher, David S and Marc Quintyn. 2003. Managing Systemic Banking Crises. IMF Occasional Paper 224. Washington: International Monetary Fund.
- Kaminsky, Graciela. 1999. Current and banking crisis: the early warnings of distress. IMF working paper 99/178.
- Kaminsky, G and Reinhart, C.M. 1999. "The Twin Crises: The Causes of Banking and Balance of Payments Problems." American Economic Review, 89, 473-500.
- Kawai, Masahiro, Richard Newfarmer and Sergio Schmukler. Crisis and Contagion in East Asia: Nine Lessons. February 27, 2001.
- Lingren, C-J. Balino, TJT, Enoch, C, GuldeA-M, Quintyn, M and Teo, I. 1999. Financial Sector Crisis and restructuring: Lessons from Asia. IMF Occasional Paper 188. Washington: International Monetary Fund
- Orr, Gordon. McKinsey Quarterly, 2004 Special Edition: China today
- People's Bank of China. August 2005.

People's Bank of China. January 2005. "Foreign Currency Deposits Continued to Increase."

Prasad, Eswar, Thomas Rambaugh and Qing Wang. 2005. Capital account liberalization and Exchange Rate Flexibility in China: Putting the Cart Before the Horse," IMF Policy Discussion Paper 05/01 (January). Washington: International Monetary Fund

Prasad, Eswar and Shang-Jin Wei. 2005. The Chinese Approach to Capital Inflows: Patterns and Possible Explanations . IMF Working Paper 05/79 (March). Washington: International Monetary Fund

Radelet, Steven and Jeffrey Sachs, "The East Asian Financial Crisis: Diagnosis, Remedies, Prospects. April 20, 1998 (an initial draft was presented at Brookings Panel March 26-27, 1998)

Ragan, Raghuran and Eswar Prasad, "China's Financial Sector Challenge," *Financial Times* 10 May 2005

Roubini, N and B. Setser. 2005. China trip report. At www.rgemonitor.com

Roubini, N and B Setser. 2004. Bailouts and Bail-ins: Responding to Financial Crises in Emerging Economies. Institute for International Economics: Washington DC.

Trinh, Tamara. Discussing "Garcia-Herrero, Gavila, Santabarbara. China's Banking Reform: An assessment of its evolution and possible impact. June 2005.

World Bank (Beijing). April 2005. China quarterly update.

World Bank (Beijing). August 2005. China quarterly update.

IMF. 2004. People's Republic of China 2004. Article IV consultation – Staff Report.

