Board of Governors of the Federal Reserve System

International Finance Discussion Papers

Number 633

February 1999

Why Has China Survived the Asian Crisis So Well? What Risks Remain?

John G. Fernald and Oliver D. Babson

Why Has China Survived the Asian Crisis So Well? What Risks Remain?

John G. Fernald and Oliver D. Babson*

Abstract: China's strong growth in the midst of the Asian crisis is striking. We explore features of China's financial system that helped insulate it from the crisis, and then try to assess whether China has avoided crisis or simply deferred it. We argue that regardless of whether the Asian crisis resulted from weak fundamentals or from "country runs" by investors, it is not surprising that China has survived so far. In a market-oriented system, pressures generally force rapid adjustment when institutions are, or are perceived to be, insolvent; these mechanisms do not operate fully in China. In addition, China's external accounts remain strong. Even in the absence of capital controls, the strength of these external fundamentals would plausibly preclude a self-fulfilling "country run" on China. Whatever their other effects, capital controls may have played a role in preventing Chinese financial institutions from borrowing excessively abroad, and hence may have helped keep China's external fundamentals strong. Clear risks remain for China's outlook.

* The authors are, respectively, economist and research assistant in the International Finance Division of the Federal Reserve Board. Please address correspondence to John Fernald at Stop 20, Federal Reserve Board, Washington, DC 20551, or fernaldj@frb.gov. We thank numerous colleagues for helpful comments, particularly Sally Davies, Hali Edison, Peter Hooper, Steve Kamin and John Morton. We also thank Nick Lardy, Prakash Loungani, Hunter Clark, and Bruce Richardson for comments on an earlier draft.

Introduction

Given the apparent collapse of many of the "Asian miracle" economies in 1997 and 1998, China's continued strong growth performance is striking. In this paper, we ask why China has performed so well, focusing on aspects of China's financial system that may have helped insulate it from the crisis so far. As of early 1999, clear risks remain. We discuss some of these risks, trying to assess whether China has avoided crisis or simply deferred it.

In 1998, China's growth rate of 7.8 percent was its lowest rate since the early 1990s. However, most economies in Asia showed negative growth, not robust positive growth. Table 1 gives a sense of China's relatively strong performance. Economies are ranked according to the first column, which shows the change in GDP growth from 1995-96 to 1998-99 (based on Consensus Forecasts for 1998-99). The table also shows various salient characteristics for these economies. The characteristics are for 1996, and hence are not affected by the crisis. In the first column, China and Taiwan clearly stand out for their strong performance, with growth declining less than 3 percentage points.[1] The median slowdown, in Singapore, was 7-3/4 percent, and the "frontline economies" suffered double-digit declines.

To understand why China has so far avoided crisis, one must first assess why the crisis was so severe elsewhere. Explanations tend to emphasize either weak fundamentals in the affected countries, or else a "run" by financial participants on economies in the region.

In terms of fundamentals, a clear lesson of the crisis is that it is dangerous for a country to have weak, poorly regulated banks making policy loans to inefficient, over-leveraged state enterprises—a reasonable description of China. Some commentators argue that China's financial system looks at least as bad, and perhaps far worse, than those of other regional economies (see, for example, Lardy 1998a, b). Weak banking systems are a particularly important problem if the banking system is large relative to the economy. As indicated by the second column of Table 1, the size of China's banking system is similar to that in the rest of Asia. In particular, the median ratio of bank loans relative to GDP was 93 percent in Malaysia, almost identical to the ratio in China. Nevertheless, despite the large banking system, and despite the prevalence of bad loans and other institutional weakness, we argue that these problems need not lead to imminent crisis in China. In a market-oriented system, pressures generally force rapid adjustment when institutions are, or are perceived

[1] Section I notes some of the concerns about the quality of Chinese statistics. Even if statistics were particularly biased in 1998, China's performance would still likely look relatively strong compared with other Asian economies.

to be, insolvent; these mechanisms do not operate fully in China. For example, banks can continue to operate regardless of balance-sheet weaknesses, because of the government's support.

In contrast to these weak internal fundamentals, China's external accounts look favorable compared with the rest of Asia, as shown by columns (3) to (5). China runs current account surpluses (about 1 percent of GDP in 1996, but closer to 3 percent in 1997 and 1998), and total debt relative to reserves was lower than in most Asian economies. Measures of short-term debt relative to reserves look particularly favorable for China, as shown by column (5).[2]

Suppose the crisis in Asia reflects runs by creditors. Sachs and Radelet (1998), for example, argue that "financial panic" by investors—essentially, the Diamond-Dybvig (1983) model of rational bank runs applied to countries—played an important role in Asia. For example, financial markets may be subject to multiple equilibria if short-term debt exceeds short-term assets, since it then becomes rational for an individual creditor to "flee" from a borrower if other creditors are fleeing as well.[3] China's capital controls are sometimes cited as a reason for China's strong performance in the crisis, on the grounds that they prevented a destabilizing speculative attack on the Chinese renminbi. However, the strength of China's external fundamentals would plausibly preclude a self-fulfilling "country run" on China.

We make a different argument for the potential role of China's capital controls in contributing to stability: Regardless of their other (often adverse) effects, capital controls prevented Chinese financial institutions from borrowing excessively abroad, and hence helped keep the external fundamentals strong.

Clear risks remain for China's economy moving forward. As we discuss, financial market indicators suggest an increased risk premium associated with China. This increased risk premium is likely to lead to reduced capital inflows. To the extent that reduced inflows include foreign direct investment (FDI), reforms also become difficult, since FDI provides an important source of financing for the more dynamic non-state sector.

Given China's strong balance of payments position and substantial foreign reserves, it is unlikely that external pressure on the currency will, in and of itself, provoke a crisis. However, growth could slow sharply,

---

[2] To obtain consistent data across countries, we measure short-term debt from creditor data, using short-term bank claims by BIS reporting banks.

[3] See the discussion in Sachs and Radelet (1998), page 5.

perhaps reflecting continued declines in exports and non-state investment, an overhang of inventories, and widespread consumer unwillingness to spend. Foreign investors could become less willing to invest in and lend to China—because of rising uncertainty about the economy and about the viability of Chinese financial institutions—reducing investment further.

Chinese authorities appear aware of the risks, but the problems are inherently difficult. China is attempting to balance conflicting concerns—a desire for short-run stability and growth (which tends to slow reforms) versus a need for long-run improvements in the allocation of resources (which requires that reforms move forward). This tension was apparent in 1998. Growth slowed in the first half of the year, and as a result, investment by state firms rose sharply in the second half of the year, financed by lending from state banks. Hence, China appeared to have slowed the pace of enterprise and bank reforms, certainly compared with the pace announced at the beginning of the year. Nevertheless, some reforms continued. For example, China announced that the People's Bank of China (PBOC) would be restructured by the end of 1998 with the establishment of nine branches that cut across provincial lines, and also ordered the Communist Party, state ministries, and the army to end their involvement in business.

Section I discusses recent economic developments in some detail. Section II discusses why China has avoided crisis so far. Section III assesses the likelihood and implications of slowing capital inflows. Section IV explores risks facing China over the next few years. Section V concludes.

I. Recent Economic Developments

As shown in the top panel of Figure 1, real GDP growth slowed steadily from 1992 through the first half of 1998. In the second half of 1998, however, official statistics indicate that GDP growth reversed its recent declines. For all of 1998, GDP was 7.8 percent higher than a year earlier, with output in the fourth quarter about 9 percent higher than a year earlier.[4] Industrial production growth also reversed recent declines in the second half. In the context of the collapse of many of the "Asian miracle" economies, China's continued strong growth performance is striking.

[4] China's annual GDP growth figures were released on December 30, following China's tradition of reporting annual statistics before the end of the year. They are likely subject to revision.

Another indicator of China's stability amidst the Asian crisis is the strength of its currency, the renminbi. China's nominal exchange rate vis-a-vis the U.S. dollar—the solid line in the lower left panel—has been virtually unchanged since early 1995. The stability of the nominal dollar rate contrasts with the sharp appreciation of China's trade-weighted real exchange rate, shown with the dotted line.

China's large foreign exchange reserves have helped insulate it from the worst effects of the crisis. The solid line in the lower right panel shows the sharp rise in total foreign reserves (less gold) since 1994, as China's central bank accumulated foreign exchange to offset pressure for a nominal appreciation. At the end of 1998, China had about $149 billion in total reserves less gold (including about $145 billion in foreign exchange). The growth in foreign reserves has slowed since late 1997. However, reserves began increasing again at the end of 1998. This increase presumably reflects primarily revaluations stemming from substantial yen appreciation in October.[5] The increase may also reflect the effects of new controls aimed at stemming capital flight. For example, authorities have ordered state enterprises to repatriate offshore holdings of foreign exchange and have tightened inspection of trade documents.

Given China's reserves, its sizeable external debt remains manageable. China reported external debt of $130 billion in mid-1998. In other Asian economies, it turned out after the crisis began that actual external debt was much larger than authorities had thought. (For example, according to a Reuters report from December 30, 1997, the South Korean government estimated in early December 1997 that Korea's end-November total external debt was $116 billion; by the end of December, the government had raised that estimate to $157 billion.) Chinese authorities have also become concerned about unreported external debt.[6] One very large discrepancy is in external bank liabilities. At the end of 1997, for example, Chinese statistics indicated external

[5] The currency composition of China's reserves is not generally announced publically; however, according to a newspaper report in late 1998 (*Ta Kung Pao* 1998b), the proportion was about 62 percent U.S. dollars, 11 percent Deutsche marks, 8 percent yen, and 19 percent other. Suppose that yen have a weight of 8 percent. The yen value of the dollar fell (i.e., the yen appreciated) from 135 at the end of September to 116 at the end of October. This revaluation should have increased the value of China's $141 billion in foreign exchange holdings by about $1.8 billion. This compares with an actual increase of 2.6 billion that month. We thank Hunter Clark for emphasizing this point to us.

[6] See, for example, *Ta Kung Pao* 1998a and Reuters (1999a).

debt to foreign banks of $40.3 billion, compared with bank claims on China from BIS statistics of $89.9 billion.[7]

However, even using the larger BIS number for bank claims, China's debt remains moderate. The dotted line in the top right panel shows estimated gross nominal external debt, which was only about $180 billion in mid-1998. From the BIS statistics, less than $35 billion of this debt was short-term debt to foreign banks as of mid-1998. BIS statistics also show that gross bank lending to China fell in the first half of 1998.

Net exports have remained strong, although this primarily reflects weak import growth. China reported a trade surplus of almost $44 billion in 1998, with the value of exports roughly constant and the value of imports falling several percent. The top panel of Exhibit 2 shows the seasonally adjusted quarterly level of total Chinese exports and imports. Exports have declined steadily since the first quarter of 1998, reflecting weak demand from Asia and the real appreciation of China's currency. Imports remained relatively flat in 1998, with moderate declines over the year. China's current account surplus amounted to more than 3 percent of GDP in 1997, and is likely to be around the same level in 1998.

The bottom panel shows year-over-year growth in China's exports to various regions of the world. Until late 1997, export growth to all regions tended to move together, although export growth to Japan, shown in the dotted line, remained weak throughout 1997. In early 1998, the data show a clear divergence between continuing strong export growth to the United States and Europe—shown by the thick solid and thick dotted lines—and negative growth to Japan and the rest of Asia. Export growth to Asian economies appears to have bottomed out in the third quarter of 1998, but export growth to the United States and Europe also appears to have weakened.

The continued strong output performance is surprising. Sectors other than public investment appear weak: consumer demand (reflecting uncertainty associated with reforms), non-government investment (reflecting lack of financing), and the external sector. The adverse shock to the external sector alone appears likely, in an accounting sense, to have contributed directly almost 3 percentage-points less to growth in 1998

---

[7] The BIS has two reports: locational (reported on a quarterly basis), and consolidated (reported on a semi-annual basis). The locational BIS bank claims on China exceed the consolidated BIS claims. The main differences are that the locational numbers are unconsolidated (and hence subject to some double-counting, presumably small for China) but also include activity in offshore banking centers such as Hong Kong (very important for China) and Singapore of banks headquartered outside the 18 countries that report for the consolidated BIS statistics. Given the importance of Hong Kong, we use the locational numbers.

than in 1997.[8] The recovery in growth appears to reflect substantial increases in investment in infrastructure and by state enterprises, including strong inventory investment. Nominal state investment in 1998 was 22 percent higher than a year earlier; most of the increase was in the second half, since investment rose only 11 percent in the first half. (State investment in 1998 accounted for 27 percent of GDP). The increase in investment by state enterprises appears to have been financed by substantially faster third-quarter lending by the four major banks. Hence, the increase in growth appears to be at the expense of previously announced enterprise and bank reform.

Of course, given the strong forces for a continuing slowdown, numerous observers have also questioned the reliability of the output data,[9] particularly given the clear political commitment to an 8-percent growth target. Given long-noted problems with Chinese statistics, most analysts tend to interpret Chinese statistics as indicating trends, even if levels (or even levels of growth) are uncertain. The concern now is that the "biases" in the statistics are not constant, so that the economy might be continuing to weaken despite the recent reported upturn in growth.

Such mismeasurement need not reflect intentional manipulation by authorities in Beijing. First, local authorities may respond to political targets for growth by feeding the center incorrect information. For example, in December 1998, press reports quoted Premier Zhu Rongji's skepticism about local figures—in particular, only one province or region had failed to meet the national 8 percent growth target. The ability of central statisticians to control for this misreporting may be limited. Second, a lot of data is not collected at all, or is inadequately collected. Even in developed economies, statistical agencies find it difficult to keep pace with structural change; China's transformation since 1978 dwarfs the pace almost anywhere else. In particular, data on the non-state sector remains poor, so statistics are likely to miss fluctuations over time in non-state

---

[8] Exports were about 20 percent of GDP in 1997, while imports were about 15 percent. In 1997, exports grew 21 percent and imports grew 3 percent; in 1998, exports were roughly unchanged and imports fell about 4 percent. Hence, in 1998, exports contributed about 4 percentage points (0.2· 21 percent slower growth) less to output, while the import slowdown added about 1 percentage point (0.15·7 percent slower growth), for a net accounting subtraction of about 3 percentage points. (The trade figures are nominal dollar values, but no deflators are easily available.)

[9] See, for example, "The Chinese Economic Puzzle; Bond Offering Raises Questions About True Growth Rate," *Washington Post*, December 10, 1998, pB01; "China's Dismal Statistics," The *Economist*, January 9-15, 1999; and "China vows to improve accuracy of statistics," Reuters, January 14, 1999.

.

activity. Hence, if state units expand production (as they apparently did in 1998), the aggregate statistics are likely to show an increase in activity, regardless of what happened elsewhere in the economy.

II. Why has China survived so well?

Understanding China's resilience requires some understanding of why the crisis was so virulent elsewhere. Although the underlying cause or causes remain controversial, explanations tend to fall into one of two broad categories: (1) weak fundamentals in the affected countries, or (2) multiple equilibria. This section argues that neither explanation would lead to an imminent crisis in China. In a market-oriented system, pressures generally force rapid adjustment when institutions are, or are perceived to be, insolvent; these mechanisms do not operate fully in China. Hence, despite serious fundamental weaknesses in Chinese enterprises and financial institutions, a crisis need not develop. In contrast to the weakness of internal fundamentals, China's external accounts remain strong. Even in the absence of capital controls, the strength of these external fundamentals would plausibly preclude a self-fulfilling "country run" on China.

Weak fundamentals. Perhaps the most common view is that the crisis reflects fundamental macroeconomic and microeconomic weaknesses in the most affected economies. Externally, large short-term external borrowing—especially when used to finance current account deficits—left the economies vulnerable to capital flow reversals. Domestically, inadequately supervised and capitalized banks made excessively risky loans to poorly governed firms.[10]

The story is typically some variant of the following (the emphasis differs across analysts, and not all aspects of the story are relevant for every economy in Asia). Widespread moral hazard existed because financial institutions were poorly regulated and companies had little accountability to shareholders. As a result, corporations borrowed heavily to invest in risky projects, financed by loans from banks who, in turn, borrowed excessively (and unhedged) from abroad. At the same time, foreign creditors were willing to lend large amounts to banks and corporations in these economies: The region had a strong track record for economic performance, and the borrowers were often state-owned banks and corporations who, the lenders thought, had implicit or explicit sovereign guarantees. Hence, risky investments were financed through excessive leverage, and especially through excessive short-term unhedged external borrowing.

---

[10] See, for example, IMF Staff (1998), Goldstein (1998), and Krugman (1998).

These fundamental weaknesses left economies vulnerable to crisis from several directions. First, consider external pressures. The large short-term external borrowing—especially when used to finance current account deficits—left the economies dependent on sustained short-term capital flows. If these flows slowed or reversed for any reason (for example, because of changes in monetary policy in industrial countries, changes in perceptions of the riskiness of these loans, or a "run" on the country of the type discussed in the next subsection), then the economy and the currency were vulnerable. Reversal of inflows contributed to slower growth of the real economy as a result of the need to reduce current account deficits; the reversal also contributed to downward pressure on the exchange rate peg, which might prove to be unsustainable. A substantial depreciation, in turn, weakened banking systems because of the unhedged currency exposure.

Second, consider domestic forces. Poor supervision of banks, particularly those with inadequate capital, led to excessively risky bank lending. If the risks turn out badly, then banks might find themselves without enough capital to make new loans, or even insolvent. In addition, excessive leverage by corporations meant that if risky or speculative projects (office buildings and other real estate investments, say, or a high-tech chip factory) did not pay off, then firms might not have sufficient cash flow to pay workers and suppliers, let alone to repay their creditors. If they could not repay loans, then bad loans in the banking sector again would contribute to a banking crisis.

Are these considerations relevant for China? The external considerations are probably not of great concern to China, since external debt is relatively small in proportion to GDP: As noted earlier, China's short-term external bank debt relative to reserves is among the lowest in Asia. We return to these external considerations in the next subsection when we consider speculative attacks and the role of capital controls in China.

Domestically, however, it is often argued that China looks very similar to some of the frontline crisis economies, with poorly regulated banks making policy loans to inefficient, over-leveraged state enterprises.[11] The PBOC has undertaken a widely publicized campaign to improve financial supervision and the operations of the banking system. In the meantime, however, Chinese banks continue to operate with an enormous overhang of bad loans. In January 1999, for example, People's Bank of China Governor Dai stated that more than 20 percent of bank loans are nonperforming, although he argued that only 5 to 6 percent of loans are

[11] See, for example, Lardy (1998a, b), Business Week (1998), Rennie (1998), and Harding (1998).

unrecoverable; Western observers generally estimate that the proportion of nonperforming and unrecoverable loans may be far higher.[12]

In most Asian economies, policymakers' post-crisis concern with banking-sector health reflects not only long-run concerns about the allocation of capital, but short-run concerns as well. In particular, poor bank health can lead to a "credit crunch," as banks reduce lending even to viable non-financial firms. This credit crunch exacerbates the real effects of the crisis. For example, banks may lose the funding base (deposits) with which to make loans; and even if they have the funding, they may not have adequate capital to make loans. In addition, creditors (depositors and foreign lenders) may lose confidence in financial institutions, leading to fund withdrawals or even bank runs.

These short-term concerns are probably not relevant for China: Banks can and will continue to lend even if loans go bad.[13] That is, it is unlikely that in order to restore their "profitability," Chinese banks will be forced to cut back on other loans. First, it is fairly clear that the Chinese government continues to guarantee bank deposits—which are, after all, primarily held in state banks. Hence, depositors continue to have faith in the banking system, and the deposit base remains sound.

Second, if a severe credit crunch begins to impinge on the real economy, Chinese authorities can in essence order the banks to lend. In the first quarter of 1998, for example, bank loans grew particularly slowly amid reports that banks were concerned about loan quality, and amid reports of a credit crunch; in the second half of the year, loans grew very quickly amid reports of new loans to state enterprises in order to maintain growth. In other words, despite substantial moves in recent years to make the banking system more competitive and commercially oriented, neither the Chinese authorities nor anyone else believes the banking system is fully commercially oriented, or operates independently from the government. Hence, Chinese banks can continue to operate even with substantially negative net worth.

Would Chinese banks operate more soundly if they had adequate capital? The U.S. savings and loan problem highlighted the moral hazard problems of financial institutions with low net worth and access to

---

[12] For coverage of People's Bank Governor Dai Xianglong's comments on the need for improved supervision see, for example, O'Neill (1998) and Reuters (1999c).

[13] The paragraphs that follow draw on Fernald, Edison, and Loungani (1998).

deposit insurance. In 1998, Chinese authorities announced a 270 billion renminbi ($33 billion) program to recapitalize the banks.

Nevertheless, it is advisable to plug the holes in a bucket before trying to fill it with water. Before Chinese banks can operate on a fully commercial basis, China needs to reduce the need make policy loans (through enterprise reform), provide banks with experience and skill in assessing loans on commercial grounds, and ensure that banks are transparent and accountable. These are necessary—but obviously difficult—steps before Chinese policymakers can successfully recapitalize the banks or otherwise try to solve the underlying problems of inherited bad loans of the banking system. Chinese authorities certainly appear to recognize the need for these steps, and have made substantial progress in recent years in training bankers and examiners and in increasing the accountability of banks.

But progress is inherently slow. Suppose, for example, that Chinese banks were successfully recapitalized so that they would meet capital adequacy standards under the best of accounting systems. Key enterprises would still need loans to pay wages and pensions. In principle, the government could move these quasi-fiscal operations onto the official budget. However, financial instruments (including taxes but also bond markets) remain underdeveloped, so such a move is likely to happen later rather than sooner. In addition, inherent incentive problems could remain. In the United States, there were clear incentives for the *owners* of poorly capitalized savings and loans to engage in risky behavior; more capital would have mitigated these incentives. For Chinese banks, however, the issue is the incentives faced by bank *managers* (rather than owners). Individual managers may continue to have incentives to make loans to, say, friends or powerful politicians.[14]

In sum, there are no magic bullets for China's weak financial system. China faces the very difficult task of sequencing, that is, of trying to move from having a non-commercial banking system where market mechanisms do not fully work, to having a viable commercial banking system where incentives are appropriate. The transitional stage—where controls have been lifted but incentives remain inappropriate—holds clear

[14] China has undertaken a high-publicity anti-corruption campaign. One feature of this campaign is its focus on the financial sector, evidenced by the arrest of several high-profile business and bank executives. See, for example, Dow Jones (1999a, b) and Faison (1999).

dangers, as was evident in the Asian crisis economies.[15] China's approach is to try applying pressure for reform throughout on the system—for example, pushing ahead with sales of small and medium sized state enterprises, telling banks that they are responsible for any new bad loans, and cleaning up balance sheets. But each step causes dislocations or problems that need to be addressed, as suggested by the apparent backtracking in some areas in 1998. Moreover, in a system with numerous distortions, the theory of the second best tells us that eliminating any single distortion need not improve the functioning of the system. Hence, one should not expect any quick panaceas or progress.

Multiple Equilibria. A second view of the Asian crisis, most clearly associated with Sachs and Radelet (1998), is that the Asian crisis reflects financial panic, akin to self-fulfilling bank runs on the affected economies. China is often cited as an example of a country using capital controls successfully and avoiding a destabilizing currency attack.[16] China's controls take various forms, including restrictions on foreign borrowing by Chinese entities, restrictions on portfolio outflows by Chinese citizens and inflows by foreigners, and a ban on futures trading in the renminbi. (Note that a major reversal in capital flows—an apparent panic—need not reflect a situation of multiple equilibria. It may reflect informational revelation: The fundamentals of these economies are in bad shape.)

Did controls spare China from speculative pressure on the renminbi? Perhaps. Without a freely accessible onshore futures market,[17] it is difficult to speculate against the future value of the renminbi, and controls on outflows make it harder for Chinese investors to convert their renminbi if they expect the currency to weaken. Without these controls, it seems likely that many investors would have tried to invest abroad for precautionary reasons.[18]

---

[15] For a discussion of sequencing, see Johnston (1999).

[16] See, for example, Lardy (1998a) and Joseph Stiglitz, "Second-Generation Strategies for Reform for China," address given at Beijing University July 20, 1998. Available at: http://www.worldbank.org/html/extdr/extme/jssp072098.htm

[17] As discussed below, there is an offshore non-deliverable forwards market in Hong Kong, where all transactions take place in U.S. dollars, based on the underlying value of the renminbi. Given the non-convertibility of the underlying currency, the existence of the NDF market does not bring much pressure onto the renminbi.

[18] Of course, that capital account liberalization improves opportunities for risk diversification is one of its important benefits. Eichengreen et. al. (1998) provide a comprehensive review of the benefits and potential costs of capital account liberalization, arguing that "...with appropriate safeguards, orderly

However, it is worth noting that China's external fundamentals are more favorable than in most Asian economies. As noted earlier, China runs sizeable current account surpluses, its external debt is relatively low, and, in particular, short-term external debt is manageable (less than a quarter of reserves). Multiple-equilibria models of speculative attacks generally allow multiple equilibria only in cases where fundamentals are worse than some threshold. Hence, even if the Asian crisis reflects "runs" on countries, it seems plausible that China would not have been subject to such a run.

Capital controls could well have contributed indirectly to financial stability, however, by keeping China's fundamentals strong. Chinese financial institutions suffer moral hazard problems that are at least as severe as those in other countries: Financial institutions are inadequately regulated and supervised, and they bear little responsibility for losses. Had they been allowed full access to international capital markets, they would have sought to borrow far more from abroad than was optimal from a social perspective. (Until the October 1998 GITIC default, discussed in Section IV, foreign lenders generally considered Chinese borrowers to have implicit or explicit guarantees from the state and were therefore willing to lend large quantities at favorable rates). Hence, regardless of their other effects, capital controls could have helped keep China's external fundamentals sound, and hence arguably played an important role in sparing China the worst aspects of the crisis.

III. Prospects for Continued Capital Inflows

China has survived well so far. Nevertheless, Chinese officials as well as foreign financial market participants continue to express concerns about China's vulnerability. China receives enormous gross inflows of foreign capital, primarily in the form of FDI,[19] although bank lending is also substantial (as suggested earlier by Figure 1). The first part of this section assesses indicators of foreigners' perceptions of China. The evidence suggests that foreign investors appear to require a greater risk premium than before the crisis. The

---

and properly sequenced capital account liberalization and the broader financial liberalization of which it is part are not only inevitable but clearly beneficial."

[19] Anecdotal evidence suggests that some of China's FDI is disguised lending, done to evade capital controls. First, some FDI contracts specify fixed dividends that look a lot like interest payments. Second, Chinese firms sometimes circumvent the severe restrictions on foreign borrowing by establishing subsidiaries in Hong Kong, who borrow from international markets and then undertake FDI in China. Conceptually, both of these examples are closer to being debt than to being FDI.

second part of this section argues that a fall in foreign investment makes reforms more difficult at the margin, since FDI is an important source of financing for the non-state sector.

Actual inflows of FDI were above $45 billion in 1998, virtually unchanged from 1997. The sustained strength of FDI is somewhat surprising, given that about 80 percent of it comes from Asia. At a minimum, it seems likely that gross and net inflows will grow more slowly in the future than they have in the past; given continued economic weakness in Asia, and, given the post-crisis increase in the risk premium associated with almost all Asian economies including China, the level of inflows could even fall sharply.

FDI inflows rose at an average annual rate of 28 percent from 1983 to 1997, with a standard deviation of 27 percent (measured as log-changes). A two-standard deviation fall in the growth rate implies a $10 billion fall in inflows, to about $35 billion in 1999. Such a decline amounts to only about 1 percent of GDP, and is modest relative to the overall favorable balance-of-payments situation. Nevertheless, it would imply lower investment and growth in the non-state sector, in turn making it more difficult to transfer resources out of the state sector.

A. Evidence of China Risk: Several measures of "China risk" show an increased China risk premium since the crisis began in mid-1997.

Stock prices: The top panel of Figure 3 shows stock indices in Shanghai and Hong Kong.[20] China has separate classes of shares for domestic residents (so-called A shares) and foreigners (B or H shares). Foreigners cannot buy the domestic-only shares; domestic residents can neither purchase the foreign-only shares, nor, given China's capital account restrictions, generally invest legally in assets abroad. The Shanghai foreign shares have sometimes tracked the domestic shares, sometimes the Hang Seng, and sometimes neither. From late 1996 until October 1997, the foreign and domestic Shanghai shares (the dashed and solid lines) generally tended to move together. (Although not shown, domestic and foreign share prices in Shenzhen generally move similarly to their counterparts in Shanghai.)

Following sharp declines in the Hong Kong stock market in October 1997, Shanghai foreign share prices followed the Hang Seng down. Indeed, in the second half of 1998, Shanghai foreign shares have

[20] This subsection draws heavily on Fernald and Rogers (1998). See Fernald and Rogers for an expanded discussion of the market, and additional references.

underperformed relative to the Hang Seng. Domestic share prices, by contrast, remained largely unaffected by the crisis and as of early 1999, were close to their October 1997 levels. Since the dividend stream is the same for the foreign and domestic classes of shares, the most plausible interpretation for the divergence is an increase in the return required by foreign investors. This increase in returns could reflect an increase in the risk-free real rate, an increase in the risk premium, or both.

An even more striking way to see this divergence is to look at the average relative price paid by foreigners in the three markets, shown in the bottom panel. Although at times there have been wide differences across markets—for example, Hong Kong shares in 1994 and 1995 traded near parity—by mid-1998, foreigners in all three markets typically paid less than one-fifth the price paid by Chinese residents for the corresponding share. China thus contrasts with most markets with investment restrictions, where foreigners pay a premium.

The most plausible reason for the pricing difference is that Chinese investors' have a lower required rates of return, reflecting their lack of access to alternative investments. The main alternative is bank deposits, since financial markets remain poorly developed and Chinese capital controls make it difficult to invest overseas. Bank deposits tend to pay interest rates below world levels. In addition, Chinese investors may have a low equity premium, because stocks offer one of the few opportunities available to diversify their investments at all.

As noted earlier, the Asian financial crisis appeared to raise the risk premium demanded by foreign investors. Fernald and Rogers (1998) estimate how much required returns must have widened, given data on earnings-price ratios and dividend-payout ratios in China. In particular, they calibrate the standard Gordon (1962) pricing formula, which says that $P=D/(r-g)$, where P is the price, D is the current dividend, r is the investor's expected return, and g is the growth rate of dividends. Everything except r is the same for foreign and domestic investors.

Fernald and Rogers rearrange this formula to show that the difference in expected returns is:

$$r_{Foreign} - r_{Domestic} = \left(\frac{D}{E}\right)\left(\left(\frac{E}{P}\right)_{Foreign} - \left(\frac{E}{P}\right)_{Domestic}\right)$$

The dividend-payout rate D/E for listed stocks averaged about ½ from 1993 to 1997. The 1997 peak in relative prices was around one-half (larger in Hong Kong, smaller in Shanghai). With earnings-price ratios of about 0.05 for foreign shares and 0.025 for domestic shares, this equation implies that the difference in expected

returns was only about 1-1/4 percent. By mid-1998, the earnings-price ratios had risen to about 0.1 for foreign shares and 0.025 for domestic shares, implying a difference in expected returns of 3-3/4 percent. Hence, the Asian crisis widened the difference in expected returns by about 2-1/2 percentage points.

This equation does not tell us whether domestic required returns fell, or foreign required returns rose. However, domestic share prices changed little while foreign share prices fell sharply. Hence, much of the movement presumably reflected an increase in the foreign required return.

Other Financial Market Evidence: The top panel of Figure 4 shows renminbi prices from the offshore non-deliverable-forward market. This market offers one direct (though somewhat illiquid, and hence imperfect) way to hedge renminbi exposure, and prices may reflect either expected currency depreciation, or a currency risk premium. Until Hong Kong's stock market crashed in late October, the forward premium remained relatively small at all horizons. The forward premium then widened sharply, and widened further in December and January. Since then, pledges by Chinese leaders not to devalue contributed to the narrowing of premiums. However, premiums remain quite wide, suggesting continuing perceptions of China risk.

Finally, the lower right panel shows the widening of the yield spread between Chinese sovereign debt and U.S. Treasuries, using a dollar-denominated Chinese government bond due in 2006. The spread widened from under 100 basis points to a high of around 400 basis points in September 1998. In early December, spreads stood at around 230 basis points. If anything, this spread is probably artificially narrow: Trading in this issue has tended to be limited, and press reports suggest that Chinese banks and other institutions may often purchase the bonds, and help keep the yield relatively low.[21] Consistent with this interpretation, in mid-December, China successfully launched a $1 billion global issue with a somewhat wider spread of 288 basis points over Treasuries. This spread, though wider than the spread shown in Figure 3, remains low relative to that for other emerging markets. Nevertheless, it is more than 200 basis points wider than the spread before the Asian crisis.

B. What Role Does Foreign Investment Play in Enterprise Finance? Given the apparent increase in China's risk premium, reduced capital inflows seem likely. Of course, China does not rely on foreign capital in a

[21] "Roadshow Kicks Off for an International Bond Offering," *Asian Wall Street Journal*, December 7, 1998 (Weekly edition), page 3.

macroeconomic sense. That is, China has a current-account surplus and hence is a net exporter of capital (taking the form, especially, of central bank purchases of U.S. Treasuries and other foreign exchange assets). Therefore, if foreign investment such as FDI declines, China can in principle offset the direct effect on domestic investment by reducing its investments abroad (e.g., by converting its investments in U.S. Treasury bonds into investments in, say, factories in China).

Nevertheless, foreign direct investment has played an important role in improving China's economy. One direct benefit of FDI is that foreign firms provide new products, improved technology, and examples of a "reengineered" employer-employee relationship (see Rosen 1999).

A second, indirect benefit of FDI is the support it provides to the dynamic non-state sector. Gross inflows of foreign capital allow the non-state sector to bypass domestic intermediated channels, and hence allow profitable investments that otherwise would not be made. As a result, slowing FDI would tend to make enterprise restructuring more difficult. Downsizing SOEs requires destroying existing jobs and laying off workers, which is socially and hence politically much easier if new jobs are being created.

The top panel of Figure 5 shows an estimate of the enterprise loans going to state-owned enterprises (SOEs) and non-state enterprises (NSEs); the left panel shows these results as a share of total loans, while the right panel shows the actual quantities. Chinese statistics leave a large share of loans unallocated between either sector. We have allocated that share fairly generously to the non-state sector, so that our estimate probably overestimates the share going to the non-state sector.[22] Nevertheless, as of 1997, more than two-thirds of net bank lending went to the state sector, even though this sector accounted for only about one-quarter of industrial output (a share that has steadily shrunk over time).

The bottom panels show estimates of the sources of funds for state and non-state firms. As described in the appendix, we have followed standard flow-of-funds conventions to the extent possible. We first estimate the "uses" of funds, which equal gross investment plus accumulation of financial assets (in China, mainly

[22] In the Chinese data on enterprise lending by type of enterprise, the unallocated category accounted for about 35 percent of loans in 1997. As the appendix describes, we allocate these loans to NSEs and SOEs using their shares in output. Since SOEs are much more dependent on intermediated lending, our estimates almost surely *overestimate* the share of loans going to the non-state sector.

enterprise bank deposits). Sources of funds must equal uses of funds; internal funds, shown in white, are calculated as a residual to ensure that this equality holds.[23]

By 1997, total sources of funds were about equally divided between the state and non-state sectors (about $183 billion for state-owned enterprises and $197 billion for non-state enterprises). The panels show that both sectors rely heavily on internal funding. The state sector, shown in the left panel, relies primarily on loans for non-internal funding; bond and stock issues remain very small.[24] The non-state sector, shown in the right panel, has depended primarily on internal funds and foreign direct investment. (Internal funds include some funds illegally diverted from the state sector; see, for example, Lardy 1998b) Even with the generous estimate of lending to the non-state sector, loans account for only about a third of non-state funds.

Reducing the role of SOEs in the economy requires a massive reallocation of labor and capital, which in turn requires substantial investments in new non-state firms. FDI is a major source of financing for the non-state sector, so any decline in FDI is likely to make this reallocation more difficult. In other words, downsizing SOEs requires destroying existing jobs and laying off workers, a politically difficult step. This downsizing is easier if new jobs are being created, and the pace of job creation is likely to slow because of reductions in the financing available to the non-state sector. But since FDI is a major source of financing for the non-state sector, any decline in FDI is likely to make this reallocation more difficult.

IV. Assessing the Plausibility of Crisis

Conceptually, two broad and potentially interlinked types of "crisis" are possible: (1) an external payments crisis that leads China to devalue, and (2) a sharp slowdown in domestic growth, perhaps reflecting

---

[23] Chinese statistics report sources of financing for enterprise investments, but these statistics are less useful than the flow of funds approach. For example, suppose that a firm obtains a "working capital" loan from a bank which it uses to pay its workers, and then uses retained earnings to finance investments. The Chinese statistics would show the source of investment funds as being retained earnings. By contrast, the same firm could have chosen to borrow to finance the investment, and then paid its workers out of its earnings. The two cases are economically identical, but in the second case the Chinese statistics would show the source of investment funds as being a bank loan. In both cases, the flow of funds conventions we follow would show that the source of enterprise funds was a bank loan.

[24] We have allocated all securities issues to the state sector; a very small share of that, for which we do not have data, should be allocated to the non-state sector. Since bond and stock issues are small relative to other sources of funds, allocating some of them to the non-state sector would not affect any of our conclusions here.

domestic financial weakness. China could certainly choose to devalue even if market forces do not require it; in the near term, though, the most likely reason for such a policy choice would be concerns about the balance of payments or about domestic growth.

As of early 1999, financial markets elsewhere in Asia appeared to have stabilized somewhat. One concern is that a Chinese devaluation could spark a new round of financial turmoil; another concern is that slower growth in China could reduce demand for exports from elsewhere in Asia, thereby slowing their real recoveries.

It is not completely clear, despite widespread concern, that a Chinese devaluation would inevitably lead to a further round of destabilizing depreciations in Asia. It does seem likely that if China had devalued when emerging-market financial turmoil was particularly high (in January or August 1998, for example), then this devaluation probably would have increased financial market uncertainty and led to renewed sharp depreciations elsewhere. Nevertheless, no one thinks the appropriate policy for China is to keep its de facto nominal peg to the U.S. dollar forever. When financial markets have stabilized sufficiently, the effects on the rest of Asia would likely be relatively minor. As shown in Exhibit 1, China's real exchange rate remains about 6 percent stronger than its mid-1997 level, and more than 40 percent stronger than its first-quarter 1994 level. Some of this trend strengthening may reflect rapid productivity increases in tradeables. However, some of the post-1997 appreciation may reverse.

In any case, the timing of any adjustment is largely a political decision by Chinese authorities, and Zhu Rongji has pledged not to devalue in 1999. Given China's current account surplus (around $30 billion for 1998), continued inflows of foreign direct investment (about $45 billion in 1998), and sizeable foreign reserves, it is unlikely that any conceivable shocks will *force* a depreciation. After all, with $149 billion in foreign reserves, a sharp and continued decline in reserves is sustainable for a long time. However, policymakers could decide that any loss in reserves is unacceptable—particularly if it appears to be a symptom of deeper economic weakness. Hence, if exports (and output growth) continue to slow, Chinese exporters could successfully lobby for a devaluation. In addition, there are costs to China if traders and investors expect a depreciation in the future, since they then have an incentive to defer exports from and foreign investment in China, and accelerate imports.

A sharp slowdown in growth does remain a risk. Net exports could continue to slow, and consumption and non-state investment could well remain weak. If state investment cannot fully take up the slack, then growth could slow sharply. On the production side, reduced capital inflows could also work to slow growth. As discussed in the previous section, China's intermediated financial system directs resources largely to state-owned enterprises (SOEs) and former-SOEs. Hence, capital inflows, particularly FDI, have been an important source of financing for the more dynamic non-state sector.

The remainder of this section considers various scenarios and issues that are sometimes mentioned as causes for concern. For the most part, one can dismiss each of these individual stories. Nevertheless, it remains plausible that a crisis could develop that draws on various of the scenarios below, and which is compounded by political turmoil in China. For example, suppose that growth slows sharply in 1999, reflecting a plunge in exports and non-state investment, an overhang of inventories, and widespread consumer unwillingness to spend. Social and political pressures are mounting in response to rising unemployment and stagnating real wages. The perception that China might devalue (in order to spur exports) leads to a widening black market premium and capital flight (evading capital controls). Foreign investors become less willing to invest in and lend to China—because of rising uncertainty about the economy and about the viability of Chinese financial institutions—reducing investment further. In the face of slowing growth, steadily falling foreign exchange reserves, and lobbying by exporters, China devalues. Economic weakness could potentially lead to political infighting in China as well, thereby raising uncertainty and exacerbating all of the problems above. This scenario, though unlikely, remains possible.

Questions and Scenarios: We now discuss some of the more specific questions and concerns that have been raised by observers. Most can be dismissed fairly easily, although as noted in the previous section, they could together form individual pieces of a broader crisis.

(1) *If China's capital controls can be easily evaded, could massive capital flight put pressure on the currency and balance of payments?* Errors and omissions are, indeed, large, averaging a $17 billion outflow from 1995-1997. However, this is roughly an order of magnitude smaller than international reserves. With continuing current account surpluses and inflows of foreign direct investment, outflows would have to rise very

sharply before foreign exchange reserves began to fall substantially, and before there is irresistible pressure on the currency.

(2) *What if foreign lenders refuse to lend to Chinese entities?* In October 1998, if not before, foreign banks began reconsidering their China exposure. At that time, central government authorities closed the Guangdong International Trust and Investment Company (GITIC) because of the institution's inability to repay maturing debt obligations. Many so-called ITICs were formed in the 1980s, generally by local authorities, in order to access international credit markets. GITIC was owned by Guangdong Province and was one of China's largest non-bank financial institutions. Although the four state banks dominate China's financial landscape, accounting for almost 80 percent of financial assets, non-banks grew relatively rapidly in the 1990s and were largely unregulated. The closure of GITIC indicates that authorities may be serious about trying to crack down on financial "irregularities." However, most foreign creditors had assumed that since the ITICs were owned by governmental authorities in China, their liabilities were implicitly guaranteed—a presumption that the central government now disclaims. Hence, as of January 1999, press reports suggest that foreign banks have become much less willing to lend to Chinese entities.

Total external liabilities of ITICs are generally estimated to be about $10 billion (though the figure could turn out to be larger). Suppose concerns about repayment led foreign creditors to refuse to lend to Chinese non-banks. Even if all of these loans were short-term, the decline in capital inflows would be small compared with foreign reserves. Somewhat more serious would be the case where lenders refuse to roll over loans to other Chinese borrowers—mainly the major state banks and the government itself. Even then, as indicated by Figure 1, China would not suffer a liquidity crisis, because short-term bank liabilities amount to less than one-quarter of reserves. (Government guarantees for the major state banks still appear fairly credible; in December 1998, Moody's downgraded the long-term foreign currency ratings of most major Chinese financial institutions, but they remain investment grade.)

(3) *As China defers necessary reforms, will it become more vulnerable to a crisis?* As discussed earlier, China's weak enterprises and financial institutions probably do not pose severe short-term risks. Given the extent to which China relies on quasi-fiscal operations of the banking system to finance enterprises, China could be subject to inflation if savers withdraw funds from the banks. Nevertheless, it is probably possible for China to shift these quasi-fiscal operations onto the budget, given the low level of outstanding public debt (less

than 10 percent of GDP). That is, the government's fiscal obligations seem sustainable. Instead, deferring reforms is undesirable because of its implications for the long-term allocation of financial resources, not because it will cause a collapse in the short-term. Indeed, given China's concerns about unemployment and social stability, some deferring of reforms may even be appropriate. (Of course, it is not clear that the best way to address these concerns is renewed investment by state enterprises rather than, say, an expansion of the social safety net.)

(4) *What if the yen depreciates sharply?* In 1998, the value of the yen fluctuated widely. Although by early 1999 the yen had strengthened considerably, there were times in 1998 when market commentary suggested widespread concern that the yen might weaken dramatically. Yen depreciation harms China by reducing net exports and Japanese FDI in China. Consider net exports first. In 1997, China exported $32 billion to Japan and imported $29 billion from Japan. Suppose import and export elasticities with respect to the exchange rate are unity. Then a 25 percent depreciation of the yen (e.g., from 120 to 160 yen/dollar) would reduce exports by $8 billion and increase imports by $7 billion, for a net decline of $15 billion. Although substantial, China's current account balance would remain sizeably in surplus. (China and Japan are not major competitors in third markets, so indirect trade-competition effects are likely to be fairly small.)

Now consider FDI. If the yen depreciates sharply, then China becomes more expensive for Japanese investors. In 1997, foreign direct investment in China from Japan was $3.4 billion, less than 10 percent of total FDI and swamped by foreign reserves.

(5) *Is there chronic excess supply of goods in China?* Excess supply is often posited as a cause of "deflation," but the two are logically distinct. Conceptually, the overall level of inflation is ordinarily thought of as a monetary phenomenon, whereas chronic excess supply of some goods (steel and autos, for example) is a relative price issue.

In autumn 1998, China has imposed price floors for major products, in an attempt to minimize price-cutting and hence, it is hoped, deflationary pressures. In a low-inflation environment, however, the main effect of price ceilings is to make relative-price adjustment more difficult. Hence, the problems of deflation—which, as discussed in the previous point, are probably not too severe in China—are compounded by increased micro-economic inefficiency.

More generally, authorities may fear that at market-determined relative prices, some enterprises will not be viable, and their closure would increase unemployment. This problem is, of course, fundamental to the reform effort itself. If China wants to delay reforms, out of concerns for employment, then some sort of subsidies may well be appropriate. It seems unlikely, however, that the appropriate way to do so is to distort relative prices.

(6) *Will deflation cause a growth slowdown?* Consumer prices have declined during 1998. In general, deflation has two contractionary effects, but these effects may be relatively weak in China. First, unexpected deflation raises the real value of debts, thereby transferring resources from debtors to creditors. If debtors have a higher marginal propensity to consume than creditors, this transfer reduces spending on goods and services. In China, however, it is unclear that the real value of a borrower's debt has a major effect on his or her activities. SOEs and other politically connected enterprises (regardless of who technically owns them), continue to operate with negative net worth. Second, expected deflation raises real interest rates for any given nominal rate, thereby reducing investment and other interest-sensitive expenditures. Major Chinese borrowers–primarily SOEs–are probably not very interest sensitive, since many of them do not repay their debts anyway.

(7) *What if widespread bank runs develop in China?* Despite the fact that banking system weakness is unlikely to result in an immediate credit-crunch, one short-term risk is that a slowdown in output and increases in bankruptcies might cause some banks to become illiquid, if interest income and new deposits cannot cover normal deposit withdrawals. Alternatively, if depositors decide to increase their withdrawals–perhaps because they lose faith in the banking system, or perhaps because they simply decide to reduce their (currently large) holdings of broad money–banks may find themselves illiquid. If the government is then forced to rescue the banks, the most accessible source of funding is the central bank. Then the government may face the undesirable choice of seeing an increase in inflation, or a substantial slowdown in growth (as banks are unable to extend new loans and are forced to call in outstanding ones).

V. Conclusions

China has so far avoided crisis, but though an economic crisis is not inevitable, clear risks remain. Hence, it remains possible that China has deferred, not avoided, the "Asian flu." Given China's strong balance

of payments position and substantial foreign reserves, it is unlikely that external pressure on the currency will, in and of itself, provoke a crisis. However, a risk is that growth could slow sharply. Such a slowdown would raise the likelihood that foreign investors become less willing to invest and lend (as the slowdown compounds lenders' post-GITIC concerns about the credit-worthiness of Chinese borrowers); bank runs would also become more likely as Chinese citizens attempt to evade capital controls and invest abroad. With weak growth and downward pressure on the currency, China might choose to devalue in an attempt to increase exports and avoid losing foreign exchange.

In such a combined scenario, how bad might things get? Growth could perhaps slow to 3 to 4 percent—far less severe than the recent output declines elsewhere in Asia, but comparable to China's post-Tiananmen "recession," when growth slowed from more than 11 percent in 1988 to about 4 percent in 1989 and 1990.

The increased downside risks to the economy make rapid enterprise and bank restructuring less likely. In general, radical reforms are costly in the short run. For example, enterprise restructuring was enormously costly in terms of output in Eastern Europe and the former Soviet Union. One can argue about whether China is, or is not, similar to those countries. But even for industrial countries, there is a substantial body of macroeconomic literature that explores the importance of sectoral shifts, suggesting that reallocations are costly in the short-term. The controversy in this literature is not whether reallocations/restructuring are costly in principle, but whether they are important in practice (they might not turn out to be a significant source of shocks to the United States, say). So macroeconomic literature suggests that a slowdown is likely in the short term, should China attempt radical restructuring.

Chinese leaders appear to find the political risks of a short-term contraction greater than the risks from a long-term slowdown in growth. Enterprise reform appears to have slowed, and banks have increased their lending to the state sector. Hence, even if China avoids a near-term slowdown, one cost of the Asian crisis for China is a slower pace of enterprise and banking reforms. Without such reforms, China's long-term prospects become worse.

Appendix: Estimating Sources of Enterprise Funding

Estimates of enterprise funding in China are limited by the availability of Chinese data. Nonetheless, we have pieced together available information to construct a rough picture of enterprise finance in China. Below, we describe the sources of our data and the assumptions we have made in reaching our estimate.

Basic Assumptions

1. Total uses of enterprise funds in a given year equal the sum of fixed asset investment and acquired liquid assets over the same period.

Essentially, enterprises use their money (net of factor payments) in two ways: to invest in fixed assets and to accumulate liquid assets. Uses of funds must equal sources of funds; what goes out of the system must have come in. Hence, fixed asset investment and liquid asset accumulation equals total enterprise expenditure which, in turn, equals total sources of enterprise funding.

2. We identify five sources of enterprise funding: internal financing (i.e., revenues net of factor payments), foreign direct investment, net issues of stocks and bonds, bank credit, and state appropriations (i.e., government fiscal subsidies).

The last four sources are considered sources of non-internal financing. We estimate internal funds as the residual of total uses of funds less total non-internal funding.

Balance sheet of Enterprise Flow of Funds

Using our basic assumptions, we construct the following balance sheet of enterprise flow of funds:

(1) Total uses of funds *(2) + (3)*
(2) Fixed asset investment
(3) Acquisition of liquid assets

(4) Total sources of funds *(1)*
(5) Internal funds *(1) - (6)*
(6) Non-internal funds *(7) + (8) + (9) + (10)*
(7) Foreign direct investment
(8) Net equity and bond issues
(9) Loans
(10) State appropriations

Data Sources and SOE/NSE Breakdown

We make several assumptions and draw data from several sources in determining the breakdown of funding between SOEs and NSEs. For each element of the basic flow of funds account above, we note both the source of the data and the method used to divide funds between SOEs and NSEs.

1. Fixed Asset Investment

Data on fixed asset investment of SOEs and NSEs were taken from the Chinese State Statistical Bureau, 1998 Statistical Abstract, and China Statistical Yearbooks.

2. Acquisition of Liquid Assets

We assume acquisition of liquid assets is equivalent to the total deposits by enterprises in Chinese financial institutions. Figures for enterprise deposits are found in PBOC "China

Financial Outlook." We assign deposits to SOEs and NSEs according to shares in gross output value. Shares in gross output value are taken from China Statistical Yearbooks and data provided by Chinese authorities. We apply 1996 output shares to 1997 and 1998 data, as figures were available only up through 1996.

3. Internal Funds

For both SOEs and NSEs, internal funds are calculated as the residual of total uses of funds (which equal total sources of funds) less external funding.

4. Foreign Direct Investment

Annual utilized FDI data are taken from the CEIC database. We assume that all FDI is directed towards NSEs.

5. Net Stock and Bond Issues

Data on net stock and bond issues for 1994-1997 are drawn from the PBOC flow of funds accounts. The 1997 figure is from the PRC State Statistical Bureau's 1997 statistical communique. We assume that all stock and bond issues are made by SOEs.

6. Loans

Loans are the most important source of non-internal funding for Chinese enterprises. Lending data are taken from PBOC "China Financial Outlook," which provides tables on the lending activities of Chinese financial institutions in aggregate and, separately, of the state banking system.[25] In 1997 the PBOC changed its methodology for measuring sources and uses of credit funds. In particular, the new methodology expanded data coverage to better reflect the activities of real estate and credit card departments within banks. Despite the change in methodology, there do not appear to be any large breaks with pre-1997 data and we assume the integrity of the time series has not been seriously breached.

Under its new methodology, the PBOC provides a breakdown of credit by borrower for short-term loans only. Fixed asset loans under the pre-1997 have been reclassified as long- and medium-term loans. These data are adequate for our analysis, as short-term loans (73 percent of all non-agricultural enterprise loans in 1997) and loans for fixed assets (22 percent of all non-agricultural loans in 1997) account for about 95 percent of all lending by Chinese financial institutions.

To determine the flow of bank credit to SOEs and NSEs we make the following assumptions:

a) All loans for "urban and township collective enterprises" and to "joint-venture, foreign, and cooperative enterprises" are made to NSEs.
b) Long- and medium-term loans (fixed asset loans under the pre-1997 methodology) and "other" loans are made to NSEs in proportion to NSE share of gross industrial output value.
c) Loans to SOEs are calculated as the residual of total non-agricultural loans less loans to NSEs.

[25] The state banking system includes the PBOC, the State Development Bank of China, the Export and Import Bank of China, Agricultural Development Bank of China, Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, China Construction Bank, Bank of Communications, CITIC Industrial Bank, and postal savings institutions.

Our second assumption likely overestimates the NSE share of bank credit. In 1997, fixed asset loans and "other" loans accounted for a little over 1/3 of total non-agricultural lending (22 percent for fixed assets and 12 percent for "other") from Chinese financial institutions. We allocate 72 percent of this to the non-state sector, and 28 percent to the state sector. The NSE share of these loans could be much lower than this method implies, suggesting that NSEs may be even more dependent on FDI and internal funds than we estimate. Nevertheless, we still find that the majority of intermediated lending goes to the state sector.

7. State Appropriations

Data on government fiscal support to SOEs are from the China Ministry of Finance. For 1998 we assume the same level of state appropriations as in 1997. State appropriations are directed to SOEs only.

References

Business Week (1998). "Can China Avert a Crisis?" March 16, 1998.

Diamond, Douglas and Phillip Dybvig (1983). "Bank Runs, Liquidity, and Deposit Insurance." *Journal of Political Economy,* 91:401-419.

Dow Jones (1999a). "China Newspaper Says 1998 Corruption Could Pass $10 billion." January 8.

Dow Jones (1999b). "Chinese Bank Executive Given 10-Year Prison Term for Corruption." January 13.

Eichengreen, Barry and Michael Mussa, with Giovanni Dell'Ariccia, Enrica Detragiache, Gian Maria Milesi-Ferretti, and Andrew Tweedie (1998). "Capital Account Liberalization: Theoretical and Practical Aspects." *IMF Occoasional Paper 172.* International Monetary Fund, Washington, DC.

Faison, Seth (1999). "China Points Finger at Culprit of the Week." *New York Times*, January 13, p. A8.

Fernald, John G., Hali Edison, and Prakash Loungani (1999). "Was China the First Domino? Assessing Links Between China and the Rest of Emerging Asia." Forthcoming, *Journal of International Money and Finance.* Working paper version available as *International Finance Discussion Paper* no. 604. Board of Governors of the Federal Reserve System, Washington, DC. Available at http://www.federalreserve.gov/pubs/workingpapers.htm.

Fernald, John G. and John Rogers (1998). "Puzzles in the Chinese Stock Market." *International Finance Discussion Paper* no. 619. Board of Governors of the Federal Reserve System, Washington, DC. Available at http://www.federalreserve.gov/pubs/workingpapers.htm.

Goldstein, Morris (1998). *The Asian Financial Crisis: Causes, Cures, and Systemic Implications.* Washington: Institute for International Economics.

Gordon, M. *The Investment, Financing, and Valuation of the Corporation.* Irwin, Homewood, IL.

Harding, James (1998). "China: Survey–Tighter Controls Increase the Pain." *Financial Times*. November 16.

IMF Staff (1998). "The Asian Crisis: Causes and Cures." *Finance and Development*, June, 35:2.

Johnston, R. Barry (1998). "Sequencing Capital Account Liberalization." *Finance and Development*, December 35:4.

Krugman, Paul (1998). "What happened to Asia?" From Paul Krugman's web page, at http://web.mit.edu/krugman/www/DISINTER.html

Lardy, Nicholas (1998a) "China and the Asian Crisis." *Foreign Affairs.*

Lardy, Nicholas (1998b). *China's Unfinished Economic Revolution.* Brookings Institution, Washington, DC.

O'Neill, Mark (1998). "China: No Hurry to Make Yuan Fully Convertible." *South China Morning Post.* December 1.

Reuters (1999a). "China warns foreign banks - 'no lending without state approval.' January 14.

Reuters (1999b). "China vows to improve accuracy of statistics." January 14.

Reuters (1999c). "Full Text--China Central Bank Governor's Speech." January 27.

David Rennie, "Street Protests as Chinese are Bled of Their Savings," *Telegraph Group*, London, November 19, 1998.

Rosen, Daniel H. (1999). *Behind the Open Door: Foreign Enterprises in the Chinese Marketplace.* Institute for International Economics, Washington, DC.

Sachs, Jeffrey and Steven Radalet (1998). "The Onset of the East Asian Financial Crisis." National Bureau of Economic Research Working Paper No. 6680.

Ta Kung Pao (1998a). "China's Policy on Asian Financial Crisis -- Interviewing Dai Xianglong, Governor of the People's Bank of China." November 4, p8. Reported as FBIS document FTS19981109000541.

Ta Kung Pao (1998b). "Central Bank to Boost Euro Asset Holdings." December 13, 1998, pA2. Reported as FBIS document FTS19990101000613.

Table 1

China vs. Other Asian Economies

Selected Indicators

1996

(percent)

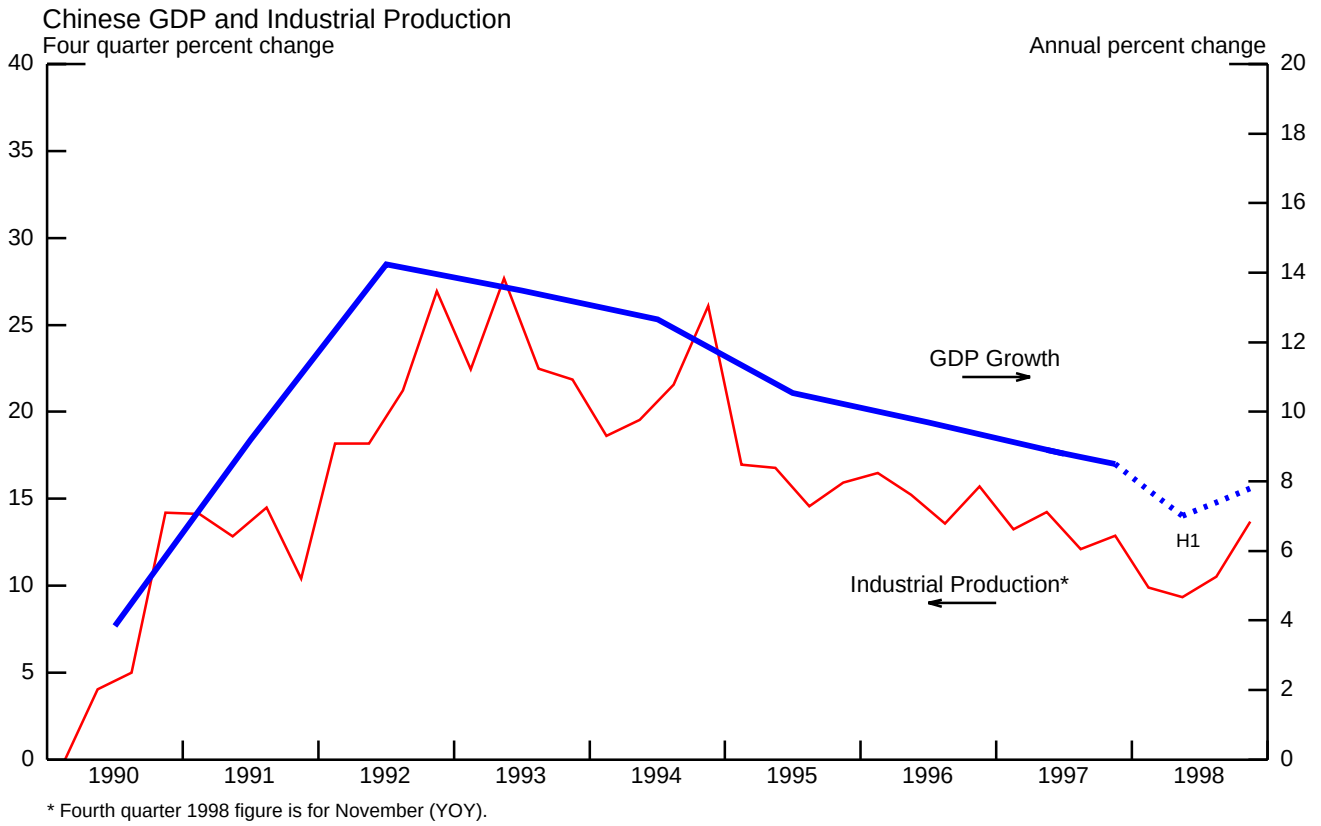
	Change in Real GDP Growth 98-99 avg minus 95-96 avg	Bank Loans/GDP	Current Account/GDP	Total Debt/Reserves	Short-term BIS Bank Claims/Reserves
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Indonesia	-17.5	55.4	-3.4	707.0	150.3
Malaysia	-12.2	93.4	-5.2	147.3	38.3
Thailand	-11.5	100.5	-8.0	240.7	50.6
Korea	-11.0	61.5	-4.7	307.6	82.9
Singapore	-7.7	96.0	15.2	..	..
Hong Kong	-7.2	162.4	-1.7	..	..
Philippines	-4.9	49.0	-4.3	410.9	24.3
China	-2.7	92.7	0.9	162.0	25.1
Taiwan	-1.2	143.7	4.0	25.6	21.4

Notes: Column (1) compares growth for the two years after the 1997 crisis to growth two years before the crisis. The remainder of the columns show indicators for 1996, and hence are not affected by the crisis itself. Debt figures for offshore banking centers (Hong Kong and Singapore) in Column (5) are not comparable with data from other countries due to the large size of external claims and liabilities: in 1996 the ratio of gross short-term commercial debt to reserves was 267.8 percent for Hong Kong and 228.0 percent for Singapore.

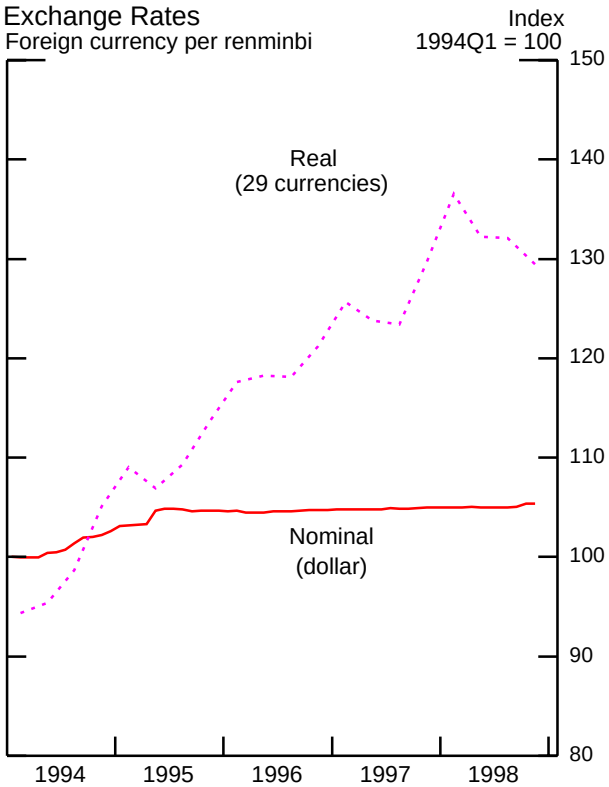
Sources: Historical GDP figures are taken from IMF International Financial Statistics, 1998 and 1999 GDP figures are taken from the 12/98 Consensus Forecast. Current Account data, column (2), are from FRB INTL databases. Bank loans data, column (3), are from IMF International Financial Statistics, as are data for foreign exchange reserves in columns (4) and (5). Total debt figures for China and Korea are from FRB databases, the remaining figures are from World Bank Global Development Indicators. Short-term BIS bank claims data, column (5), are from the BIS semi-annual survey.

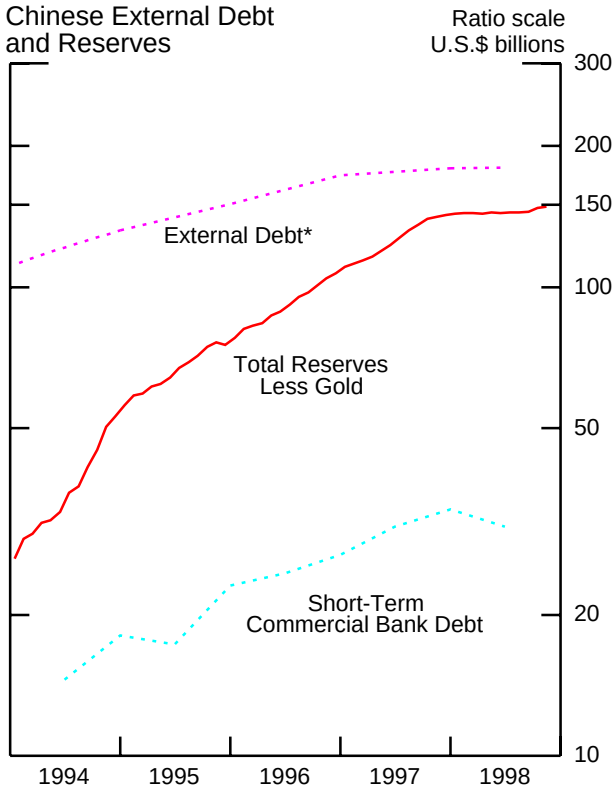
Figure 1

External Indicators and Output



* Fourth quarter 1998 figure is for November (YOY).



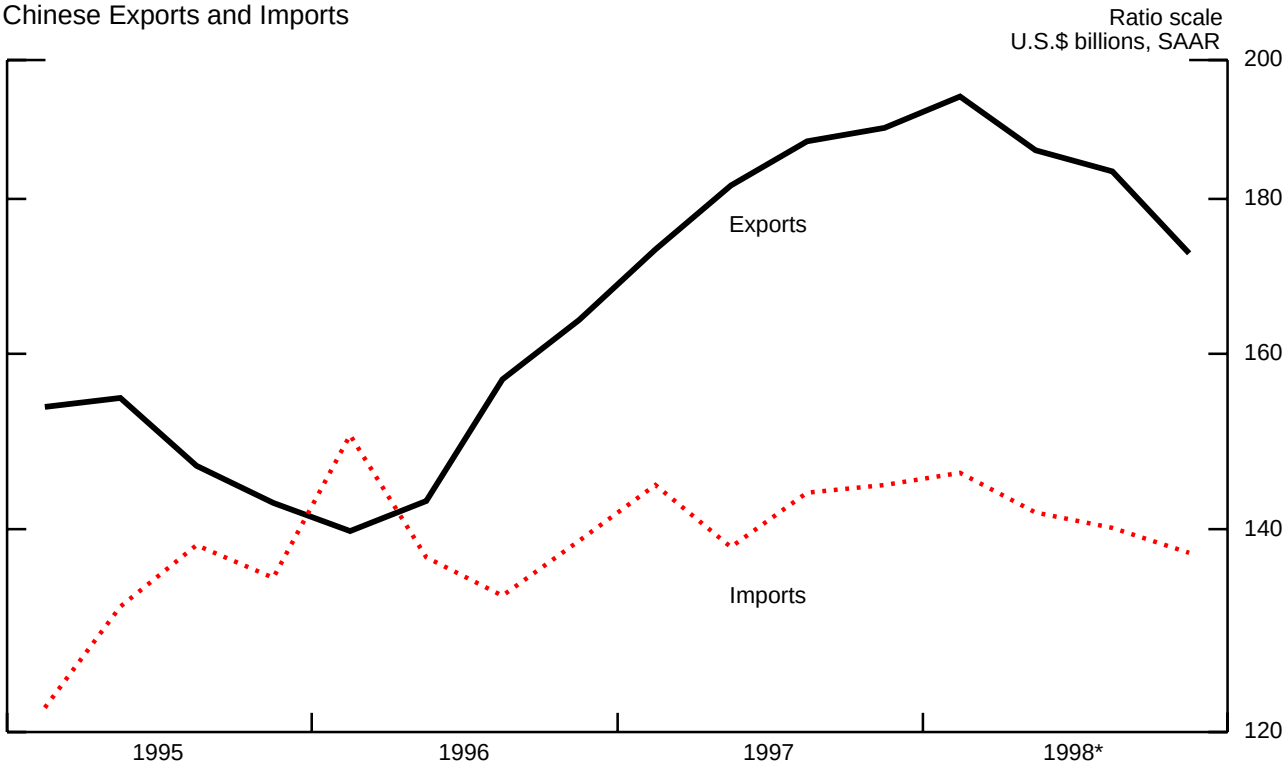


* External debt figures include bank claims on China, from BIS, which exceeded China's reported external bank debt by about $50 billion at end-1997. June 1998 figure is estimated.

Figure 2

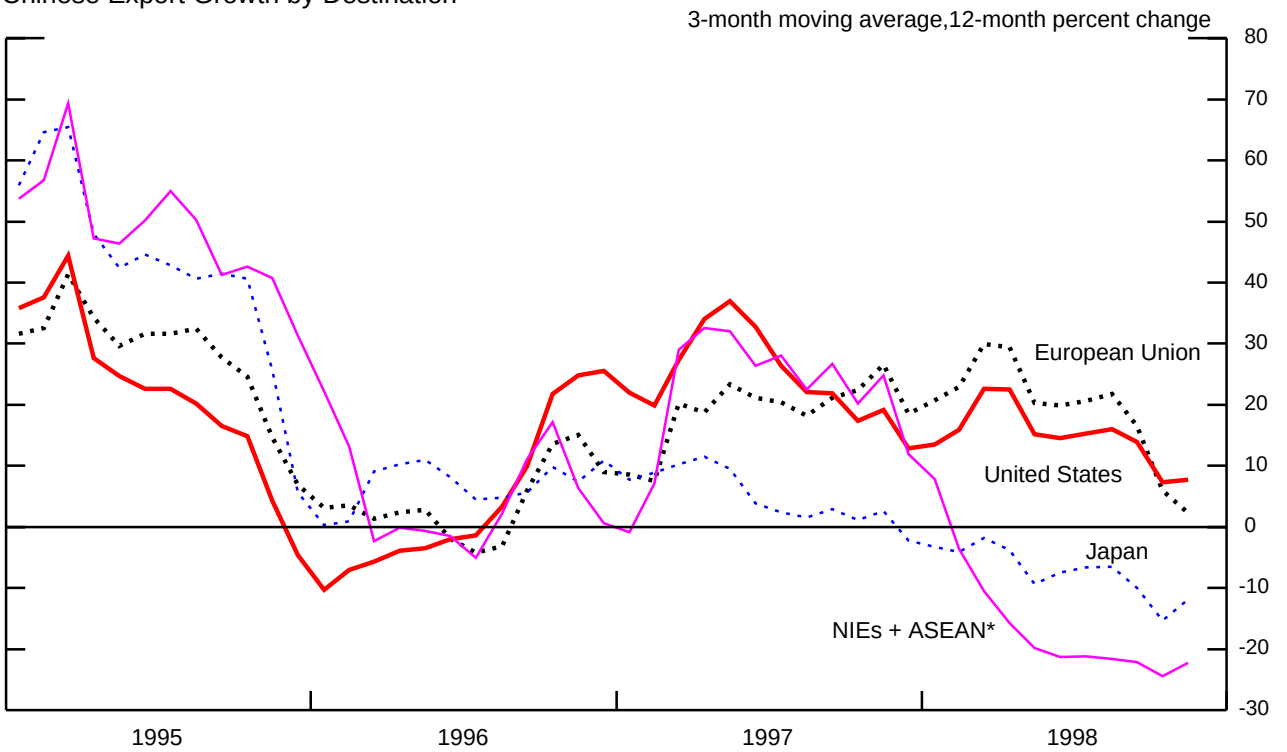
Trade

Chinese Exports and Imports



Source: IMF International Financial Statistics and Reters.

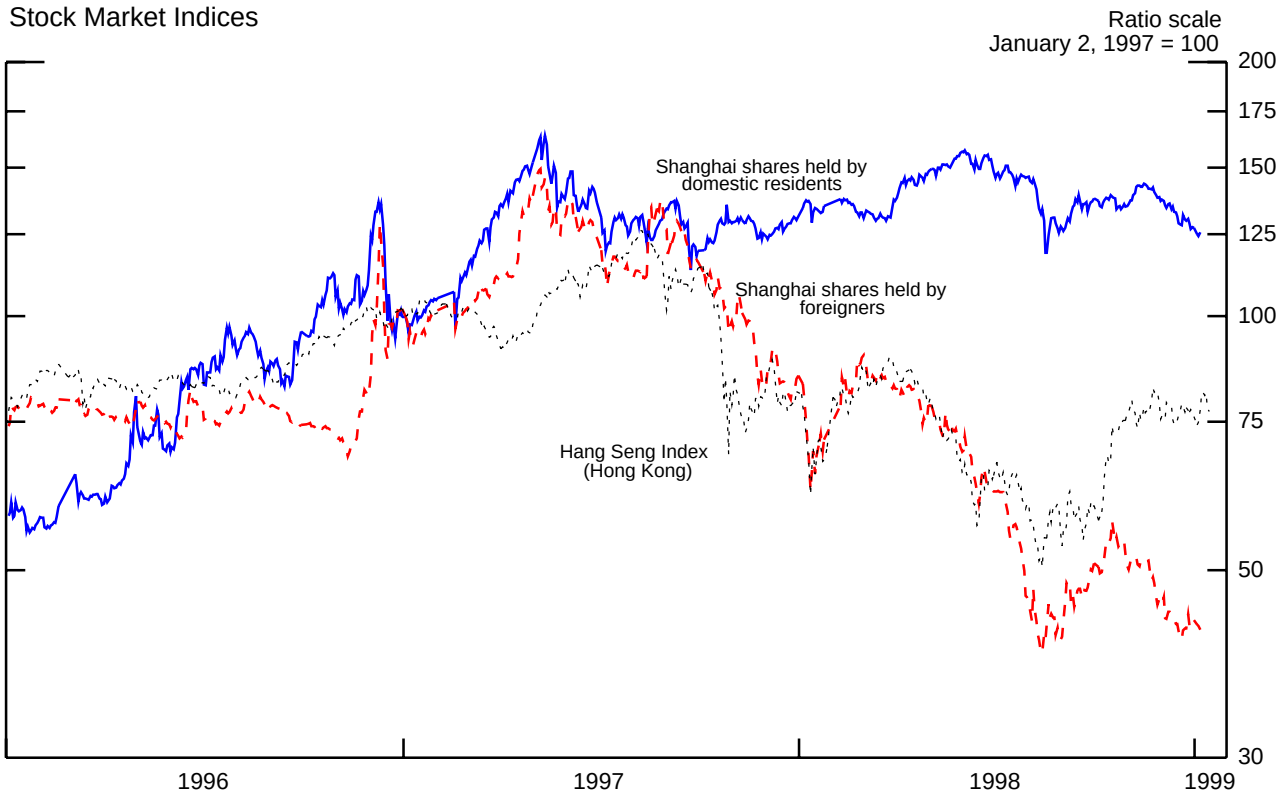
Chinese Export Growth by Destination

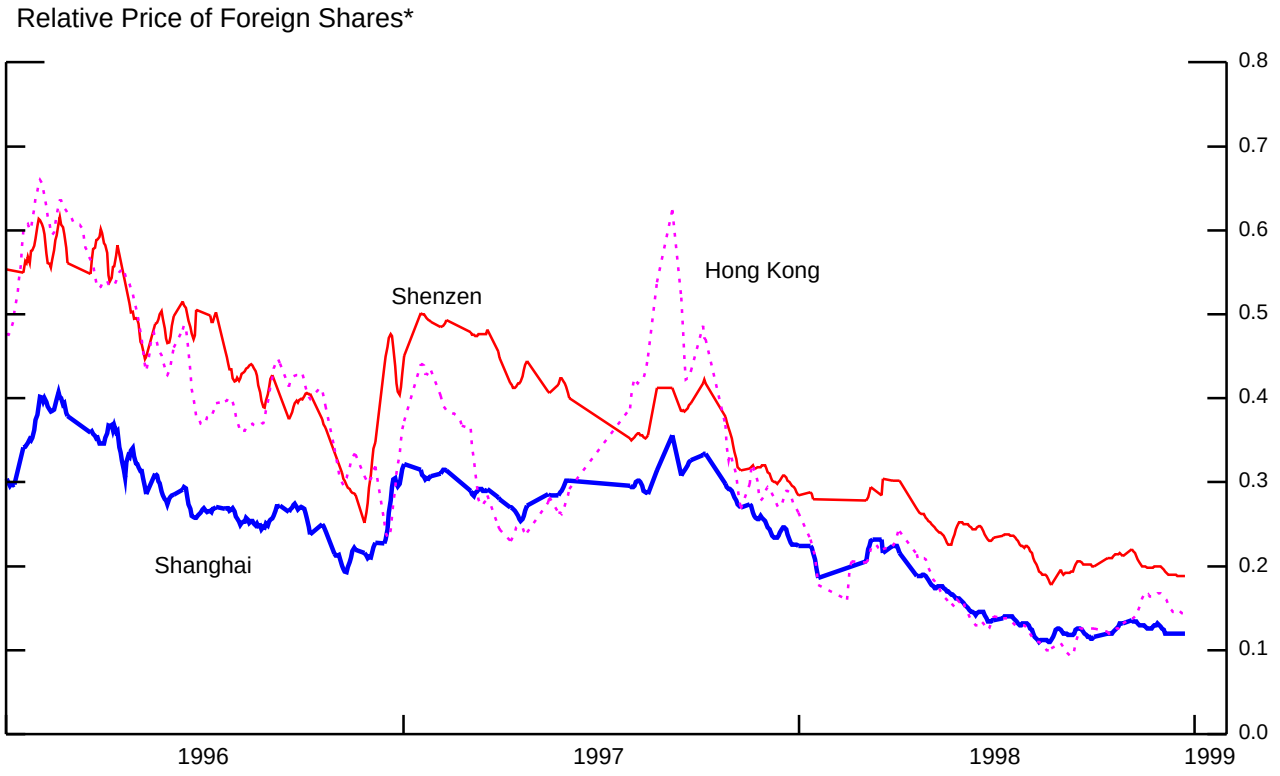


* Newly Industrialized Economies (NIEs) are South Korea, Singapore, and Taiwan. ASEAN is Indonesia, Malaysia, Philippines, and Thailand.

Figure 3

Financial Indicators

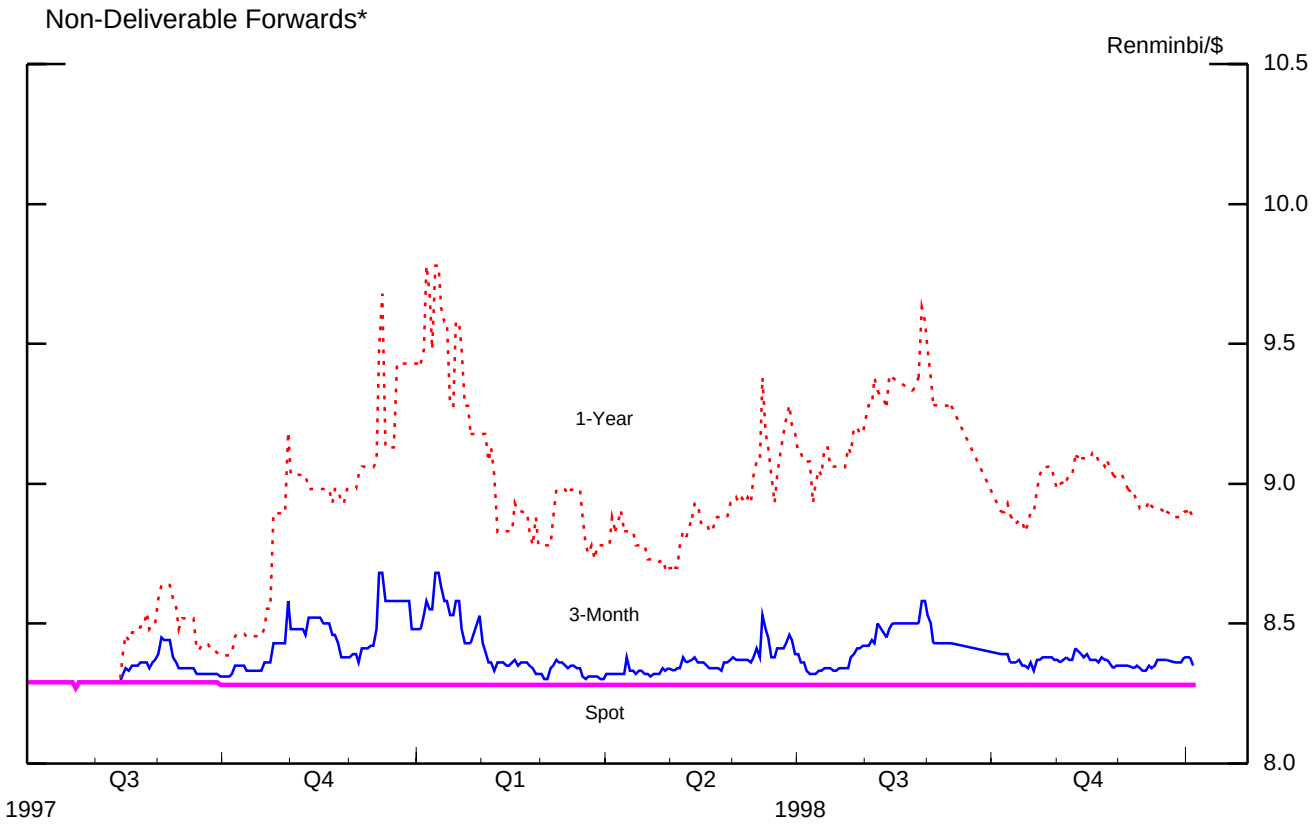




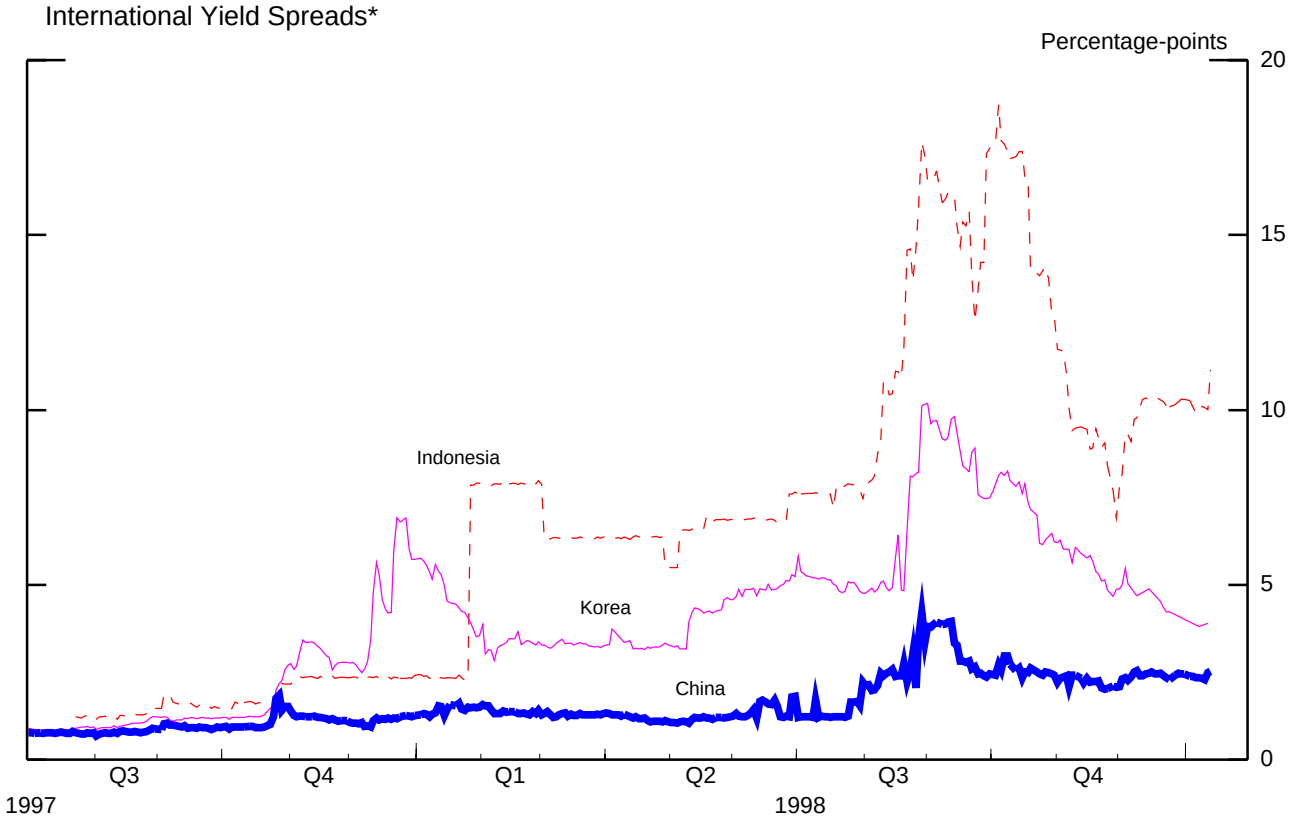
* Chart shows the average price of a foreign share (known as a B- or H-share) relative to its corresponding domestic share (known as an A-share), for companies with both classes of shares. Share prices are converted to a common currency using market exchange rates.
Source: Bloomberg.

Figure 4

Forwards and Yield Spreads



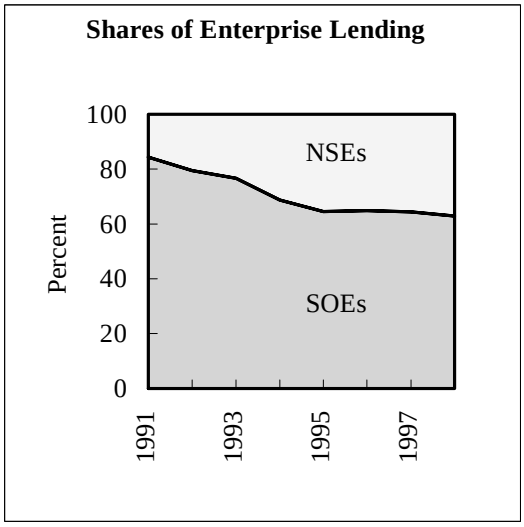
* Rates from offshore forward market, where all transactions are settled in U.S. dollars based on the value of the renminbi.

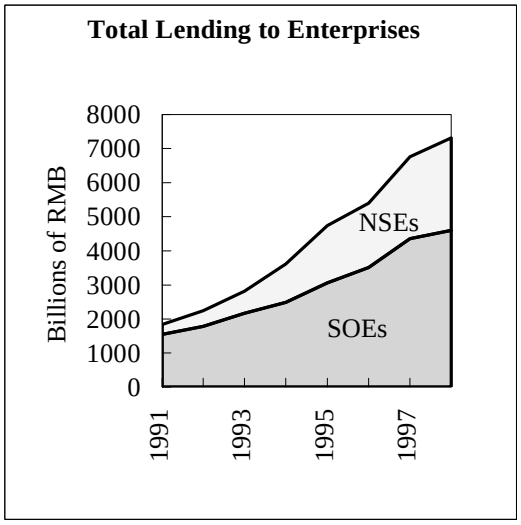


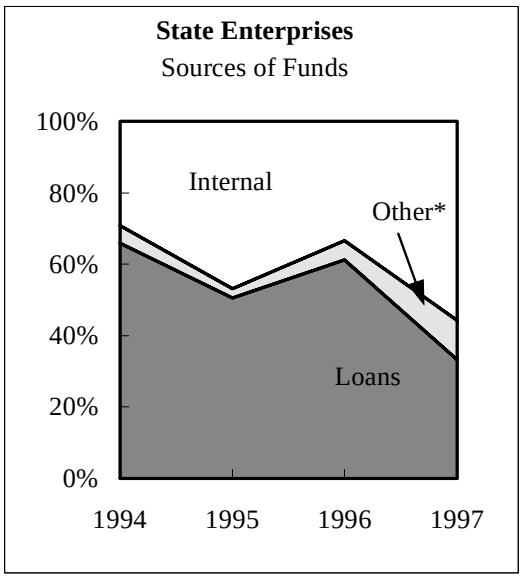
* Government bonds relative to U.S. treasuries.

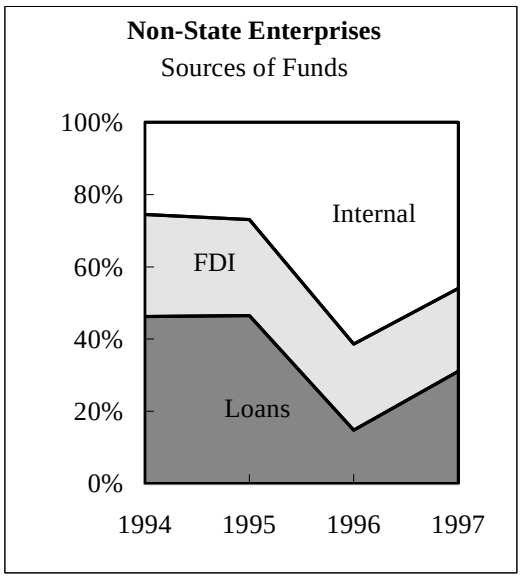
Figure 5

Sources of Enterprise Funds









* Other refers to stocks, bonds, and state appropriations.