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China: A Stabilizing or Deflationary Influence in East Asia? The Problem of Conflicted Virtue

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Abstract:

Rapidly growing Chinese exports are middle-tech—and increasingly high-tech—manufactured goods. China runs a huge and growing bilateral trade surplus with the United States, and the position of Japan has changed radically from being a net exporter to China in the 1980s and most of the 1990s to being a net importer today. China's smaller East Asian industrial competitors such as Taiwan, Korea, and Singapore face fairly difficult readjustment problems. However, China is a huge importer of primary products and industrial raw materials and runs large import surpluses with the ASEAN group.

On the macroeconomic side, China has been a stabilizing influence. While maintaining sustained fast growth and exchange rate stability at 8.28 yuan per dollar since 1994, China has largely avoided, and thus dampened, the business cycles of its East Asian trading partners.

But there are potential clouds on this horizon. Since 1995, China has run with moderate multilateral trade surpluses coupled with large inflows of foreign direct investment. The resulting balance-of-payments surpluses have led to a rapid buildup of liquid dollar claims on foreigners—both in official exchange reserves and, less obviously, in stocks held privately or in China's nonstate sectors. This increasing private dollar overhang leads to what we call the syndrome of "conflicted virtue." If there is no threat that the renminbi will appreciate, private portfolio equilibrium for accumulating and holding both dollar and renminbi assets can be sustained.

However, foreigners, particularly Japanese, are upset with China's "excessive" mercantile competitiveness. They are urging China's government to appreciate the renminbi—and show greater future exchange rate flexibility, which could lead to repetitive appreciations. The result would be severe deflation throughout China's economy and a zero-interest liquidity trap—as in Japan, when forced into repeated appreciations of the yen from the 1980s into the mid 1990s.

F15, F31, F33

1. Introduction

These days, even the most casual retail shopper must be impressed by the incredible proliferation of "made-in-China" labels on items from apparel to bicycles to toys, and to almost any middle-level electronic or mechanical gadget. From 2000 into 2003, China was the only truly booming part of the world economy. But this surge in exports provokes outcries in the older industrial economies that Chinese goods are too cheap. Is China the engine of growth or an economic threat in Asia?

In section 2, we sketch the broad dimensions of China's trade-led industrial expansion since 1980. We then consider China's monetary and exchange rate policies for accommodating this remarkable growth. Of course, when a large country like China grows unusually rapidly, industrial readjustment—sometimes quite painful—is inevitable in some neighboring countries.

But has Chinese growth made the East Asian macroeconomy less stable in a cyclical sense? In section 3, we examine this issue empirically by looking at China's exchange rate policy and its own macroeconomic instability.

Since 1990, China's economic growth has been nurtured by large inflows of foreign direct investment (FDI), and since 1995 these have been coupled with trade surpluses—leading to substantial balance-of-payments surpluses overall. Is this financial regime sustainable?

In section 4, we develop the idea of *conflicted virtue* that applies to international creditor countries that cannot lend in their own currencies. We compare China's to Japan's earlier experience with conflicted virtue. Japan has a much longer track record of running balance-of-payments surpluses and building up liquid dollar claims on foreigners, both through its high growth phase before 1990, and then in its subsequent deflationary slump and zero interest liquidity trap of the late 1990s. Domestic monetary policy is then rendered ineffective for reflating the economy; see McKinnon and Ohno (1997) and Goyal and McKinnon (2003) on the foreign exchange origins of Japan's liquidity trap.

China's foreign exchange problem is uncomfortably similar to Japan's, yet it differs in some important respects, specifically in the huge inflow of foreign direct investment. In section 4.2, we give alternative estimates of the build up of liquid foreign assets, both government and private, in China—and then discuss whether this increasing "overhang," mainly dollars, is sustainable.

2. China's Trade and Transformation since 1980

China's economy is now huge. Although in terms of GDP per capita China still remains far behind the industrialized countries, because of its large population China has become the world's sixth largest economy. Today its nominal GDP (in US dollars) is larger than Italy's and is just slightly smaller than the GDP of France (Figure 1). If GDPs were compared at exchange rates reflecting purchasing power parities, i.e., after adjusting for price differences in the respective economies, China would rank even higher.

Notwithstanding the already significant size of China's economy, a record of sustained high real growth rates portends an increasing impact on the world economy in general and that of East Asia in particular. With an average real GDP growth rate of almost 10 percent per year since 1980, the wakening giant is catching up fast (Figure 2). For the last two decades, China has outperformed the (average) 2.7 percent growth rate of its ailing neighbor Japan and of its more robust neighbor the United States, which had only a 2.9 percent growth rate. Despite criticism about the accuracy of official real GDP data, few doubt that China has become the world's most dynamic economy.

[Figure 1 and Figure 2 about here]

The country's trade performance reflects its growth dynamics. Exports plus imports are now equal to about 48 percent of China's GDP (15 percent in 1982). Although production for the large domestic market was the main driving force in the first decade of China's transition to a market economy, production for export—and consumption of imports—now adds great momentum to the fast output expansion. As shown in Figure 3—which plots Chinese, Japanese and US exports compared to the base year 1980—Chinese exports have expanded much faster than those of Japan and the United States. This process has accelerated since the early 1990s and today China has become the world's sixth largest exporting nation—likely to surpass France, the UK, and probably even Japan within few years (Figure 4).

[Figure 3 and Figure 4 about here]

Before 1994, China showed no sustained tendency to run trade surpluses: the net current-account balance was sometimes positive and sometimes negative (Figure 5). Since 1995, a more persistent tendency toward current-account surplus, of the order of 1 or 2 percent of China's

GDP, seems evident. But the net current-account numbers are erratic, and there is no strong presumption that China will continue to run trade surpluses multilaterally.

[Figure 5 about here]

Much more definite is the rapidly increasing *bilateral* trade surplus China is now running with the United States. It rose from virtually nothing in 1985 to more than $90 billion in 2002—exceeding even Japan's ongoing (but not increasing) surplus with the US of about $70 billion. Figure 6 shows China's and Japan's bilateral trade surpluses since 1980 as a proportion of American GDP. Just as striking is the sharp decline in Japan's large bilateral surplus with China in the 1980s to a sizable net deficit by 2001 (Figure 7).

[Figure 6 and Figure 7 about here]

An alternative way of measuring these dramatic shifts in China's geographic trade patterns is by considering bilateral trade as a proportion of total trade—as shown in Table 1. As one might expect from its huge multilateral current account deficit, the United States has become China's most important export market. Although in 1980 only 5.4 percent of Chinese exports went to the US, in 2001 the percentage had risen to 20.4 percent, with a probable tendency to rise further. At the same time, reflecting economic stagnation, the weight of Japan as an export market for China and as a source of imports into China has declined. Indeed, Chinese imports from Japan fell from 26.0 percent of total imports in 1980 to just 12.2 percent in 2001. Table 1 shows similar declines in the relative importance of the rest of the world (ROW) mainly Europe, although it is fairly balanced on both the import and export sides.

[Table 1 about here]

Given China's bilateral trade surpluses with the United States and Japan, from which country is it a net importer? While smaller East Asian countries by and large maintained their relative position as export markets, they have jointly become China's most important provider of imports, bypassing the US, Japan, and ROW. China's imports from its smaller East Asian neighbors (EA_1 in Table 1) rose from 6.2 percent of overall imports in 1980 to a remarkable 40.9 percent by 2001. Collectively, the smaller East Asian countries now run trade surpluses with China—which are more and more becoming their engine of economic growth. The fast integration of China into the East Asian production system displaces (in a relative sense) the

dependence of the smaller economies on exporting directly to the more mature industrialized countries, i.e., US, Japan, and ROW. More and more, China is dominating direct exports from East Asia to the United States and Europe.

In summary, a new geographical pattern in China's foreign trade has emerged. Exports are driven by strong import demand from the United States and, to a lesser extent, from Japan. China's smaller neighbors are an increasingly important input source for the fast growing Chinese economy. Although Japan and Europe are still important sources of foreign direct investment into China, their share of East Asian trade in general—and of China's in particular—is in decline.

The remarkable transformation in the commodity composition of China's trade over the last two decades is consistent with these geographical changes in the overall trade-balance statistics. In the early 1980s, Chinese commodity trade showed the characteristics of a developing country. Exports were largely agricultural products, raw materials and basic manufactures (Table 2). Imports were predominantly sophisticated manufacturing products such as machinery and transportation equipment (Table3).

Table 2 also shows that Chinese exports have shifted away from agricultural products and raw materials to manufacturing. In 1985, the year for which data first became available, agricultural products (14.9 percent) and raw materials (35.6 percent) accounted for about half of Chinese exports. Basic manufactures (leather, wood, paper, textile yarn, iron and steel, nonferrous metals, etc.) and chemicals were another 21 percent.

Today the composition of Chinese exports shows the characteristics of an industrialized country. In the year 2001 the combined weight in exports of agricultural products (4.9 percent) and raw materials (4.9 percent) has fallen to less than 10 percent. The percentage of basic manufacturing products including chemicals has remained much the same, while the share of machines, transport equipment, and miscellaneous manufacturing goods (clothing and accessories, precision instruments, photo and optical equipment) has risen to almost 70 percent.

The commodity composition of imports also shows marked changes, but more or less in the opposite direction. Table 3 shows the rising share of raw material imports from 8 to 18 percent of total imports, and some decline in imports of basic manufactures, as China's own middle-tech industries have taken off. China looks more and more like an industrialized country and less like an agricultural developing one. Although average per capita income in China remains much lower than in the older industrial economies, the gap is narrowing. And China's recent accession to the WTO will likely reinforce these trends.

[Table 2 and Table 3 about here]

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3. China's Stabilizing Macroeconomic Role in East Asia

The impact of China's middle-tech industrial growth on other East Asian manufacturing countries has been considerable, often resulting in difficult adjustments for them. Higher-tech countries such as Japan and Korea can resolve the problem, in part, by moving further upstream. Others must seek less obvious ways to find their comparative advantages in exporting—where the China market itself is becoming increasingly important. Mercantile complaints from the industrial world—including Europe, Japan, and the United States—about "unfair" Chinese competition are commonplace. However, China's large size and rapid economic growth make substantial industrial restructuring in other manufacturing economies inevitable, no matter what the nature of the WTO's trading rules or the exchange rate regime might be.

Nevertheless, in some important respects, China has been an important stabilizing influence on the East Asian economy overall. Consider the cyclical stability of the smaller East Asian economies—Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand. Let us denote these countries collectivity by EA_1. At the macroeconomic level, let us investigate China's impact on the stability of these EA_1 countries.

3.1. The Exchange Rate Regime

A key aspect of the East Asian macroeconomy is the propensity of countries in the region (except for Japan) to informally peg their exchange rates to the US dollar in noncrisis periods (McKinnon 2001). For the developing countries of East Asia, this "fear of floating" is rational economically—as shown by Calvo and Reinhart (2002) and by McKinnon and Schnabl (2003a). And since 1994, China has kept the renminbi stable at 8.28 yuan per dollar.

Of course, during the great crisis of 1997-98 when the currencies of the debtor economies—Indonesia, Korea, Malaysia, Philippines, and Thailand—were attacked, they had to suspend their dollar pegs—and deep overshooting depreciations of their currencies of 50 percent or more followed. To try to preserve their international competitiveness, even the smaller net creditor countries, Singapore and Taiwan, allowed their currencies to depreciate by 10 to 15 percent—although they did not have to do so. And the Region's major creditor country, Japan, saw the yen depreciate by more than 30 percent from mid-1996 to mid-1998.

The cross-country spillover effects of such devaluations among closely connected trading partners, who are also mercantile competitors in third markets, was enormous. Although largely inadvertent, these beggar-thy-neighbor devaluations imposed severe deflationary pressure on the

dollar prices of goods and services traded in the region (McKinnon 2001). Fortunately, China did not devalue despite a loss of mercantile competitiveness against its neighbors and despite severe internal deflationary pressure (discussed in Section 3.3 below.) That China and Hong Kong withstood the foreign exchange storm and maintained their exchange rates lessened the exchange depreciations of the others—and quickened the pace at which the other currencies (except for the Indonesian rupiah) could recover much, although not all, of their pre-1997 dollar values. The steep regional downturn of 1997-98 was thereby ameliorated.

Equally important, China's and Hong Kong's steadfastness sets a precedent for a possible return to a regime of more stable regional exchange rates. Malaysia pegged the ringgit at 3.8 to the dollar in September 1998, and since then the other crisis economies have intervened massively to smooth movements in their dollar exchange rates (McKinnon and Schnabl, 2003a).

However, the East Asian exchange rate system is hardly secure. The big problem is actual and potential fluctuations in the yen/dollar exchange rate—the "loose cannon" in the regional exchange rate system. Japan's economy is still very large relative to China's, although China's is growing much faster (Figure 8); and Japan is the most important source of foreign direct investment (FDI) to other economies in the region. When the yen appreciates against the dollar as in 1986 or 1995, Japanese FDI surges and the others' exports become more competitive against Japan's. Similarly, their output growth slumps when the yen depreciates against the dollar (as in 1997-98) because FDI from Japan dries up and their exports become less competitive. Consequently, the wide fluctuations in the yen/dollar rate over the past 20 years or more have generated a synchronized, mutually reinforcing business cycle in the smaller East Asian economies (Kwan 2001, McKinnon and Schnabl 2003b). For more details on how to tether the loose cannon, see McKinnon and Ohno (1997), and Goyal and McKinnon (2003).

[Figure 8 about here]

3.2. China's Role as a Regional Stabilizer

Despite these fluctuations in the yen/dollar rate, China has assumed the role of a natural stabilizer in the increasingly integrated East Asian region. Not only has China's GDP growth been the highest in the region for the last two decades, but also it has been more stable than in any other East Asian country. Table 4 compares the coefficients of variation in the annual growth rates in GDP of the East Asian economies from 1980 to 2001. China's is the lowest, at 0.35, by a substantial margin.

[Table 4 about here]

The other East Asian countries show much greater variability in their rates of output growth—in large measure due to the strong impact of fluctuations in the yen/dollar rate. In Table 4, the coefficient of variation for EA_1, i.e., the aggregate growth in all the East Asian countries except China and Japan, shows the effect of this collective business cycle. For EA_1 alone, the coefficient is 0.49, but if China is added to EA_1 to form EA_2, the coefficient of variation drops to 0.29. China's growth rate is indeed more stable than that of the smaller East Asian economies.

Conversely, if Japan is included in the collectivity of East Asian economies to form EA_3, the coefficient of variation in collective output growth rises to 0.38 in Table 4. By this measure, high variability in Japanese GDP growth is a source of instability to the region.

What are the reasons for China's greater macroeconomic stability? First, as is generally the case for a large economy, the openness of the Chinese economy is comparatively small. While international trade (exports + imports) as a percentage of GDP ranged from 78 percent (in Indonesia) to 181 percent (in Singapore) for the smaller East Asian countries in 2000, China's trade was only 48 percent of GDP. Because of the comparatively large size of China's domestic sector, external shocks play a less prominent role in its business cycle.

Table 5 demonstrates this point econometrically. Annual output growth rates in China and in EA_1 are regressed on Japanese output growth and on the yen/dollar exchange rate concurrently, and lagged one period. China has been relatively immune to output fluctuations in its neighboring countries – as well as immune from fluctuations in the yen/dollar exchange rate. The regression coefficients are insignificant in the Chinese case, but significant for EA_1. Indeed, if the yen depreciates against the dollar by 1 percent, Table 5 shows that growth in EA_1 falls by 0.17 percent. That is, the long-run exchange rate multiplier (LRM in Table 5) is 17 percent for the smaller East Asian economies. Because China managed to smooth its own domestic output growth in the face of external exchange rate and other shocks, and because of its ongoing trade with its more vulnerable smaller neighbors, their cyclical volatility was thereby dampened.

[Table 5 about here]

3.3. The Post-1997 Keynesian Stimulus to China's Domestic Demand

However, China's stable growth can't be attributed only to the momentum of its large domestic market. Particularly during the late 1990s, macroeconomic policy—i.e., a strong peg to the dollar coupled with an effective counter-cyclical fiscal policy operating on domestic aggregate demand—contributed significantly to economic stability in China itself and for the whole region.

Let us consider China's behavior during the crisis of 1997-98 and its aftermath. China's exchange rate stabilization is not the whole story. Beginning in Thailand in June 1997 but extending to Korea in December 1997 and Japan in early 1998, depreciations in all these countries imposed strong deflationary pressure on China. Then, starting in March 1998, China took bold "Keynesian" measures to slow its internal deflation. Its "New Deal" encompassed a huge expansion of government expenditure on infrastructure and on mass residential housing. Since 1998 public works have increased by 20 percent per year. In 2001 as well as in 2002, the (announced) stimulus package amounted to $18 billion (RMB 150 billion yuan).

The Keynesian demand packages were financed by the sale of government bonds and by heavy borrowing from China's state-owned banking system in the form of so-called policy loans—which are not counted as a part of the official deficit. Excluding such loans, official yearly budget deficits rose from 0.7 percent of GDP in 1997 to 2.8 percent in 2000 and 2.5 percent in 2001—which greatly understates the true deficit if policy loans are considered to be government borrowing. This high-level of fiscal spending seems to be sustainable into the near future. At the meeting of the International Monetary Fund and the World Bank in Ottawa in November 2001, China's finance minister, Xiang Huaicheng, stated that the country would continue its proactive domestic policy to spur the economy (Fidler 2001).

Further, the fiscal expansion was facilitated by a monetary expansion. Figure 9 shows the decline in China's interbank rate from 9 percent in 1996 to 2.7 percent by the end of 2002. Although this 2.7 rate is somewhat higher than in the United States (1.25 percent) and Japan (0 percent), it is in the context of a rapid growth in China's economy, slow growth in the United States, and no growth in Japan. Indeed, in China's case, fiscal and monetary policies can hardly be distinguished. The People's Bank of China also eased the austerity policy, which had been adopted in 1993, by pressuring the state banks to extend credit for the construction industry, exporters, home purchases, and infrastructure projects as well as to the struggling state-owned enterprises. The standard lending rate fell from 10 percent in 1997 to 5.3 percent in early 2003.

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Figure 9 about here]

China's Keynesian economic policy can be evaluated from several perspectives. First, many observers have pointed out that China's murky banking sector is a considerable threat to economic stability. The lending of the state-owned banks is driven not by mere profit considerations, but also by political pressures. The central government often uses the banking sector to support unprofitable state-owned enterprises. A large percentage of bank credits might

eventually default. These nonperforming loans, which are estimated to be anywhere from 6 percent to 40 percent of GDP, could drive up the future cost of recapitalizing the banking system and thus should be considered government debt (McKinnon 1993).

Is this explicit and implicit public debt manageable? If all components of public debt (official state debt and estimated non-performing loans of the banks) are taken into account, China's public debt ratio is approximately 70 percent of GDP. Therefore, the recent anti-cyclical stabilization measures pose no substantial danger for the economy's stability. In contrast, Japanese public debt has risen to more than 140 percent of GDP, not including the cost of recapitalizing defaulting Japanese banks.

Second, the debt to GNP ratio is not the only measure of sustainability. The overall size of the financial system is equally important. In China, monetary instruments still dominate the domestic financial system. Figure 10 shows the rapid buildup of M2, currency and bank deposits, from 1978 (just before China began liberalizing) through 2002. The current ratio of M2 to GNP approaches 180 percent, which is enormous by international standards and particularly so for a developing country. Thus, China's financial system can cope with a rapid buildup of explicit and implicit government borrowing without resorting to printing money in the Latin American mode. Of course a rapid buildup of government debt cannot be sustained indefinitely. But China has a lot of financial leeway to finance changes in government expenditures without provoking a general loss of confidence in the public finances and a flight from the currency.

[Figure 10 about here]

Beyond budgetary leeway, however, *stationary expectations* about the price level, domestic interest rates, and the foreign exchange rate, are also necessary for maximum effectiveness of countercyclical fiscal policy. This theoretical point was well established in the textbook Mundell-Fleming model (1963) of how monetary and fiscal policies work themselves out in an open economy. If China had failed to stabilize its exchange rate while undertaking fiscal expansion, Mundell-Fleming predicts that the incremental capital inflows would have forced an appreciation of the RMB, thus choking off the expansion. Since 1994, China's exchange rate has been stable, since 1996 its price level has been quite stable (Figure 11), and since 1996 its deposit rates of interest converged to low levels—below 2 percent in early 2003—as if expectations of future inflation and interest rates were also low.

[Figure 11 about here]

Thus, in response to Premier Zhu Rongji's one trillion dollar multi-year program of new public expenditure beginning in March 1998, confidence (stationary expectations) that there would be no deflationary exchange rate appreciation, or a flight from yuan-denominated assets necessitating a rise in domestic interest rates, was central to the remarkable success in expanding domestic aggregate demand. The strong deflationary pressure from abroad arising out of the Asian crisis was successfully offset. Not only did this help maintain China's real economic growth, but also it ameliorated the synchronized downturns in the other East Asian economies.

The policy of fixing the reminbi/dollar exchange rate at some "traditional" level, by now 8.28 yuan per dollar, was and is central to China's emerging role as the balance wheel in the East Asian system. During a major crisis, this policy limits competitive depreciations among the smaller East Asian economies and facilitates their return to exchange stability in its aftermath. On the other hand, stationary exchange rate expectations enable countercyclical fiscal policy within China itself to be more effective—thus helping to further dampen the regional business cycle.

3.4. China's Impact on Other Countries: Deflation or Structural Adjustment?

China's rapid growth and increasingly large size is bound to cause problems of structural re-adjustment in other countries. But in a world economy with significant deflationary pressure, industrial competitors have, perhaps unsurprisingly, claimed that China is exporting deflation. Japan has been at the forefront of such complaints. Consider what the Japanese Minister of Finance Masajuro Shiokawa had to say early in 2003.

> "Before the meeting of the financial ministers of the G7 to be held in Paris this year the Japanese financial minister announced by availing himself of all occasions that he would work out a so-called program combating the global disinflation. And he would ask the other countries to jointly adopt an agreement together with Japan in order to force China to inflate the exchange rate of the people's currency just as did the western countries in 1985 to force Japan to inflate the yen by adopting the "Plaza Agreement". When the meeting of the financial ministers of the "Seven Countries Group" was going on, Masajuro Shiokawa the Japanese Finance Minister once again condemned and protested China's people's currency. […] "Too much importation of China's cheap goods has not only caused the currency constraint in Japan," he said, "but also the root-cause of the global economic depression."
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> People's Daily Internet Edition under the Title "Japan wants to have the Renminbi 'Demonized': Analysis" Internet Edition (03/12/2003)

As long as China's economy provides a major and growing market for goods from all over the world, as well as exporting to the rest of the world, China's influence on the world

economy on net balance is not deflationary *unless* China's expansion forces a monetary contraction at home or abroad. Are either or both possible?

Consider first a situation where other countries could be forced into a monetary contraction. If the world were now on a gold standard, as in the nineteenth century up to 1913, there would be a problem. Under a gold standard, China's rapid growth and demand for base money would necessarily require, and be satisfied by, a gold drain from other countries. With an inelastic supply of gold in the world economy, China's expansion certainly would impose deflation on other countries—much like the rapid growth of the United States and Germany in the late 19th century caused worldwide deflation from the 1870s to 1896.

However, for better or for worse, most of the world is on a dollar standard—with the European countries being on a euro standard. In Asia, where exports, imports, and capital flows are overwhelmingly dollar invoiced, the dollar standard predominates. Governments strive (not always successfully) to keep their exchange rates stable against the dollar. And the meta central bank for the system is the US Federal Reserve (the Fed). Fortunately, Fed Chairman Alan Greenspan has ample means to keep feeding large amounts of base money into the world system through open market operations in the United States. Thus the fact that China engages in a huge buildup of dollar exchange reserves, with Japan showing an even bigger buildup (as shown in Figure 12), need not reduce the supply of base money anywhere else.

[Figure 12 about here]

Worldwide deflationary pressure now mainly arises from the aftermath of the American bubble economy (1995-2000) and deflationary pressure in the United States, the center country. The nature of the world dollar standard makes it difficult for any country on the dollar's periphery to take independent action to re-inflate. Mired in a deflationary slump, Japan is the extreme case with its zero-interest liquidity trap being tightened by the recent (2002-03) fall in interest rates in the United States (Goyal and McKinnon, 2003). So let us hope that the Fed can pull everybody every country out without falling into a liquidity trap itself!

But apart from what America might do, China itself could be caught in a full-scale domestic deflation, which is monetary in the sense of being related to exchange rates much like Japan's own liquidity trap. To this potential problem of "conflicted virtue", we now turn.

4. Conflicted Virtue: The Deflationary Threat

One of the peculiarities of the dollar's role as key currency in East Asia is that creditor countries such as Japan and now China have difficulty *lending* internationally in their own currencies. When they run balance-of-payments surpluses resulting in the buildup of liquid claims on foreigners, these claims are largely denominated in dollars rather than in yen or renminbi. Why should this matter?

Currency risk, i.e., the risk that the dollar will fluctuate against the domestic currency, cumulates as these dollar claims get larger. The natural currency habitat of domestic nationals is their home currency—unless the country has an unusually flamboyant financial history of debasing the national money, as in some Latin American and African countries. But China has had a relatively stable financial history. Household consumption expenditures are in renminbi yuan, wages are paid in yuan, and claims on financial intermediaries such as banks (deposits) and insurance companies (annuities) are mainly in yuan. Unsurprisingly, households and business firms seek to accumulate most of their liquid wealth mainly in yuan, the real purchasing power of which over domestic goods and services has been quite stable.

Chinese firms and households will hold dollar assets only if there is a substantial business convenience in doing so, or the interest rate on dollar assets is higher, or they see a political need to hold dollar assets illegally offshore. The primary downside risk is for the yuan to appreciate against the dollar, and thus reduce the yuan value of their dollar assets. Depending on how sensitive domestic holders of dollar assets are to this risk, periodic runs from dollars into yuan could occur just on rumors of appreciation.

Notice that foreigners whose domestic currency habitat is dollars, or tied to the dollar, will be less sensitive. Only foreign professional speculators would go out of their way to circumvent China's remaining capital controls in order to short the dollar and go long in the renminbi if they thought it might appreciate. In contrast, most Chinese holders of dollar assets, both legally inside the system of capital controls and extra-legally outside them, are not speculators. But if they thought yuan appreciation was in the offing, they could be quite defensive about protecting their wealth positions. Thus, the potential speculative upward pressure on the yuan comes, and would come, mainly from the domestic accumulation of foreign exchange.

However, for the world economy at large, the problem is more general. Any international creditor country that cannot lend in its own currency cumulates a currency mismatch that we call

the syndrome of *conflicted virtue*.[2] Countries that are "virtuous" by having a high saving rate (most unlike the United States!) tend to run surpluses in the current account of their international balance of payments, i.e., lend to foreigners. But, with the passage of time, two things happen.

(1) As the *stock* of dollar claims cumulates, domestic holders of dollar assets worry more about a self-sustaining run into the domestic currency forcing an appreciation.

(2) Foreigners start complaining that the country's ongoing *flow* of trade surpluses is unfair, and results from an undervalued currency.

Of course (1) and (2) interact. The greater are foreign mercantilist pressures for appreciation of the domestic currency, the greater is the concern of the domestic holders of dollar assets. As runs out of dollars into the domestic currency begin, the government is "conflicted" because appreciation could set in train serious deflation ending with a zero interest liquidity trap—particularly if the domestic price level was already stable or falling slightly. But foreigners may threaten trade sanctions if the creditor country in question does not allow its currency to appreciate. Herein lies the syndrome of conflicted virtue[3].

4.1. Parallels with the Japanese Experience

The earlier Japanese experience with conflicted virtue is instructive. Postwar Japanese industrial growth—although more oriented toward such heavy industry as shipbuilding, steel, automobiles, machine tools, semiconductors, and so forth, than is China's current "middle tech" expansion—was as remarkably rapid. In the 1960s and 1970s, industrialists and trade unionists in Europe and the United States became irate with the "unfair" competition from Japan. Compounding their adjustment problems, in the 1980s Japan began to run large trade surpluses that have continued to the present day. Beginning in the 1970s but intensifying by the mid 1980s, there developed intense mercantile pressure on Japan from its trading partners— particularly the United States—to appreciate the yen (McKinnon and Ohno, 1997). And the yen rose all the way from 360 to the dollar in 1971 to peak at 80 to the dollar in April 1995.

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[2] After one of McKinnon's seminars on Japan's problems, Marcio Garcia of the Pontifico Catholic University in Rio de Janeiro suggested that this creditor syndrome be called "constructed virtue". We changed his terminology somewhat to "conflicted virtue", which connotes more of a dilemma or impasse.

[3] Notice that conflicted virtue would not arise in international creditor countries whose money is internationally accepted. Britain was the world's dominant creditor country in the 19th century, but sterling was used to denominate most British claims on foreigners—sometimes with gold clauses. Similarly, for two and half decades after World War II, the US had large trade surpluses and was the world's biggest creditor country—but its claims on foreigners were largely in dollars.

These massive appreciations failed to eliminate Japanese trade surpluses, which simply reflected Japan's high saving propensity compared to that of the United States. However, the appreciating yen did impose great deflationary pressure on Japan. In open economies, the ongoing current-account surplus is all about net saving propensities— which are not predictably affected by exchange rate changes. But how the exchange rate moves eventually determines domestic inflation or deflation.

Nevertheless, most foreign and many Japanese economists genuinely believed, and still believe, that yen appreciation should have reduced Japan's trade surpluses. To some extent, the problem was, and is, doctrinal. Economists are largely in thrall to the old elasticities model of the balance of trade where an appreciation is presumed to reduce a country's exports relative to its imports. However McKinnon and Ohno (1997, Chs 6 and 7) show that the simple elasticities approach to the trade balance is generally invalid in financially open economies—a point which was ignored by critics of Japan's exchange rate policy and is ignored now by the critics of China's policy of keeping its exchange rate stable. This false theory, combined with more immediate mercantile concerns, influenced official American policy to favor repeated yen appreciations.

Fortunately, in April 1995, the US Secretary of the Treasury, Robert Rubin, announced a "strong dollar" policy, and the end of American "arm twisting" to appreciate the yen. Even so, the yen continued to fluctuate against the dollar: 20 percent annual swings in the yen/dollar rate were and are not unusual. Thus, Japanese insurance companies, trust funds, banks, and so on, holding large stocks of dollar assets—which had cumulated to very high levels by the late 1990s—continued to see very high risk in doing so. Goyal and McKinnon (2003) show how a *negative risk premium* in interest rates on yen assets is one important consequence.

Within Japanese financial institutions, how did (does) conflicted virtue lower interest rates on yen assets relative to those on dollar assets? The liabilities of Japanese financial institutions are mainly in yen, but they hold both yen and dollar assets. If the yen/dollar rate is free to fluctuate, however, these yen-based institutions view the dollar assets as riskier. In order to maintain portfolio balance between riskier dollar assets and safer yen assets, they must see a higher yield on the former. But since the yield on dollar assets is given on world markets, the yield on yen assets is forced lower, reflecting a negative risk premium in Japanese interest rates. Thus, when American interest rates came down in the 1990s, Japanese interest rates fell toward zero.

The Bank of Japan (BoJ) responds endogenously to pressure coming through the foreign exchanges. By dramatically expanding the domestic monetary base from the mid 1990s to the present, the BoJ continually lowered interest rates on yen assets to limit the conversion of dollars into yen—and thus limit upward pressure on the yen in the foreign exchange markets. But dollar assets in private hands continued to accumulate because of Japan's ongoing trade surpluses. The result was that by the end of 1996 Japanese short-term interest rates had fallen close to zero (

Figure 9). Within this zero interest liquidity trap, the BoJ can neither reflate the slumping economy nor prevent further conversions of private Japanese dollar assets into yen. To prevent the yen from appreciating, the BoJ then enters the foreign exchange market to buy the "surplus" dollars. The result is the rapid increase in Japan's official exchange reserves seen in Figure 12.

From 2001 to 2003, the foreign pressure on China to appreciate the renminbi is uncomfortably reminiscent of the earlier pressure on Japan. Ironically, Japanese industrial and political leaders are now leading advocates of renminbi appreciation! The attempt of the Japanese Finance Minister, Masajuro Shiokawa, to "demonize" the renminbi (as quoted above) reflected a prominent segment of Japanese official and popular opinion. However, the view that China should appreciate its currency is also widespread in the Western financial press. Editorials in *The Financial Times* (3 Feb 2003) and *The Economist* (15 Feb 2003) link China's bourgeoning balance-of-payments surpluses to its fixed exchange rate. The editorials suggest that the renminbi should be appreciated discretely now; then, once China cleans up its banks, liberalizes its financial markets, and gets rid of its remaining exchange controls on capital movements, the renminbi should be floated—presumably with continual, albeit erratic, appreciation.

In resisting this external pressure, China has one big advantage over Japan. The renminbi has been stable at 8.28 yuan to the dollar since 1994—including throughout 1997-98, thereby limiting the great crisis. Thus China has not been manipulating its exchange rate—and indeed has grown into this external monetary standard in the sense that its price level has stabilized at that rate (Figure 11). In contrast, the yen/dollar exchange rate has fluctuated so much that the Japanese government's credibility in choosing any single rate at which to stabilize is more limited.

4.2. Direct Investment and the Dollar Overhang

However, in dealing with conflicted virtue, China also has a disadvantage compared to Japan. Although its multilateral trade surpluses have been relatively smaller and more recent (beginning in 1995), since 1990 China has received large inflows of foreign direct investment (FDI); Figure 13 compares them. Since 1995, China's annual current-account surplus has been about $20 to $30 billion and seems to be falling slightly—and indeed may have (temporarily?) approached zero in early 2003. In contrast, China's annual FDI inflows have been of the order of $40 billion and seem to be rising slightly—with no significant outflows of FDI.

By comparison with Japan's much larger economy, Figure 14 shows that Japan's annual current account surpluses run at about $100 billion. However, gross FDI inflows into Japan have been small, and FDI outflows —particularly to the rest of East Asia—have been very large. Subtracting outflows from inflows, Figure 14 also shows that *net* inflows of FDI into Japan have

actually been negative— at about $25 billion per year. Insofar as Japanese net FDI abroad has covered about one-quarter of its current account surplus, this part of the build up of claims on foreigners is in a somewhat less liquid form—and thus is less of an "overhang."

[Figures 13 and 14 about here]

In contrast to Japan, China's build up of liquid, mainly dollar, claims on foreigners has been much greater than its cumulative current account surpluses. The large inflows of FDI into China cumulate into a large stock of liabilities to foreign corporations—but liabilities that are very *illiquid* in the sense that they cannot be suddenly withdrawn. Because China has not run current account deficits to match the inflow of FDI, its *liquid* dollar claims—some in official exchange reserves, and some private—are growing proportionately faster than in Japan.

These foreign exchange flows can be characterized by a simple balance-of-payments identity. Let CA be the current account surplus and let FDI be net foreign inflows of direct investment. The country's capital controls were not applied to FDI inflows in the form of joint ventures with local enterprises, which became very popular. We assume that other forms of foreign capital inflows into China and FDI outflows from China were restricted, and their cumulated amounts are negligible. Let ΔOER be the change in official exchange reserves, largely US Treasury bonds; and let ΔPFA be the change in private foreign assets—largely dollar claims against banks. Then, in any one year

(1) ΔPFA = CA + FDI − ΔOER

Integrating backward to 1990 or earlier and assuming no asset valuation adjustments, we then get China's international balance sheet position.

CHINA: INTERNATIONAL BALANCE SHEET

Liquid Assets	*Liabilities and Net Worth*
Official Exchange Reserves (OER)	Cumulated Foreign Direct Investment (FDI)
Private Foreign Assets (PFA)	Cumulated Current Account Surpluses (CA)

Using data from the International Monetary Fund, Table 6 approximates each side of this international balance sheet. We can then estimate China's private and official net holdings of liquid foreign assets both directly and indirectly.

[Table 6 about here]

First, the right hand side of Table 6 provides *indirect* estimates of China's liquid foreign exchange assets. For 1990-2002, column 6 cumulates China's current account surpluses and column 7 cumulates net inflows of foreign direct investment (FDI). Column 8 sums the two so that, for example, at the end of 2002 China's net international liquid asset position is indirectly estimated to be US$589.9 billion, whereas in 1990 it was just US$24.4 billion. Because of the great growth in China's economy, the earlier numbers are very small compared to the recent ones. Figure 15 better shows the relative sizes of cumulative inflows of FDI, the cumulative current account, and cumulative multilateral trade surpluses in goods and services. Other than the early 1990s, flows of FDI into China have been substantially larger than the current account balance. And the current account surpluses themselves have been somewhat smaller than the trade balance on goods and services—the main difference between the two being transfers to foreigners.

[Figure 15 about here]

Second, the left hand side of Table 6 contains mainly *direct* estimates of liquid foreign asset holding from 1990 to 2002. Column (2) is the least ambiguous and is simply current stocks of official net foreign exchange reserves largely held with the People's Bank of China (PBC). Column (3) is the officially reported net foreign asset position of Chinese commercial banks and other financial institutions. This foreign lending arises from the surprisingly large stock of internal dollar bank deposits held by Chinese nationals. Based on data from the PBC, Figure 16 shows that, in the second quarter of 2002, these internal dollar deposits amounted to US$150 billion—with household savings deposits being substantially greater than those of enterprises.

Finally, still on the left hand side of Table 6, column 4 shows the most ambiguous item: cumulative "errors and omissions" that we have reclassified as "cumulative unrecorded capital outflows." Although seemingly arbitrary, students of international finance often classify errors and omissions this way—particularly if the country involved has controls on capital outflows. There could be unrepatriated export earnings, surreptitious transfers of money into foreign bank accounts in Hong Kong and elsewhere, and so on. At the end of 2002, these cumulative unrecorded capital outflows amounted to US$138 billion—which is larger than the officially recorded net foreign assets of banking institutions, but still smaller than the government's

20

exchange reserves. Figure 17 shows visually the evolution of these three forms of China's liquid claims on foreigners since 1990. The total of all three was US$532.6 billon at the end of 2002. Clearly, this direct estimate of China's holding of liquid foreign currency claims on foreigners can only be approximate, if only because we treated errors and omissions as if they were unrecorded capital outflows.

[Figure 17 about here]

Alternatively, by cumulating current account surpluses and inflows of FDI, total liquid dollar assets are indirectly estimated to be US$589.9 billon at the end of 2002 (column 8 of Table 6). Errors such as under invoiced exports, smuggled imports, or overstated FDI, could clearly affect these indirect estimates as well. In spite of all of this, the direct and indirect estimates of China's international foreign liquid assets seem to line up fairly closely—and have since 1990, as shown in Figure 18. So we can have some confidence that China's total liquid foreign exchange assets are between 500 and 600 billion US dollars—with about half being privately held, or at least held outside of the government's direct control, as of the end of 2002.

[Figure 18 about here]

In what sense are China's huge private sector holdings of liquid dollar assets an overhang? Clearly, if private expectations are such that the exchange rate of 8.3 yuan to the dollar will last indefinitely, then existing dollar claims—and further accumulation— can be held in rough portfolio equilibrium. GDP growth and growth in the size of renminbi bank deposits in China have been enormous (Figure 10). Thus Chinese savers could easily accommodate further parallel growth in their dollar assets. But foreign pressure to appreciate the renminbi might upset what had been rough portfolio equilibrium. A recent return flow of previously "flight capital" into China could well indicate that people are becoming less willing to hold dollar claims.

> Once viewed as a threat to the nation's economy, the movement of illicit capital in China is now tracking an unusual new pattern: flowing back into the country. For the first time, [in 2002] the nation recorded a positive number, $7.79 billion under the balance of payments category called "errors and omissions" last year…For as long as China has published such data, E&O has been negative, sometimes exceeding $10 billion annually….The E&O figure also illustrates the pressure that Beijing is under to push up the value of its currency…. Bankers say Chinese companies and individuals may want to hold more yuan just in case Beijing allows the tightly controlled currency to rise in value.
> *Wall Street Journal*, 13 May 2003. pA12. [parentheses added]

This return flow of previously flight capital is consistent with the evidence shown in Table 6 and Figure 17: cumulative unrecorded capital outflows dropped from $145.9 billion at the end of 2001 to $138.3 billion at the end of 2002. And the private sector seems to be increasingly reluctant to maintain its share of dollar holdings. Since 2000, the percentage increases in the official holding of exchange reserves have exceeded increases in private holdings. Thus pressure to switch private dollar holdings into renminbi is occurring and could increase in the future.

In order to prevent the renminbi from appreciating, the PBC must intervene in the foreign exchange market to buy the excess dollars. Failure to sterilize these interventions relieves the pressure: the domestic monetary base expands and drives down domestic interest rates relative to those on dollar assets. As long as interest rates on renminbi assets remain well above zero, such increases in the monetary base could be effective in expanding the domestic economy while slowing the growth of official exchange reserves. Nevertheless, China's build up of foreign exchange reserves in 2003 has been so massive that the government has had to sterilize much of it in order to prevent runaway increases in domestic bank credit.

Unfortunately, the appreciation threat for China is a repetitive one—similar to the earlier Japanese experience with repetitive yen appreciations. As in the Japanese case, China's surplus saving, i.e., its trade surplus, is unlikely to fall as its currency appreciates. Instead, economic growth would slow and China's price level would fall. Markets would anticipate that, once the traditional 8.28 yuan per dollar is undermined by an appreciation to say, 7 yuan per dollar, further appreciations—particularly if the renminbi were to be floated—become very likely. By the principle of open interest parity coupled with a negative risk premium, such anticipations would bid down interest rates on yuan assets toward zero. China could then find itself in a deflationary liquidity trap like Japan's: monetary policy would then become helpless to reflate the economy or to slow the conversion of private dollar assets into renminbi. (But
Figure 9 indicates that money market interest rates in China are still well above the near zero interest rates prevalent in Japan.)

5. Conclusion

China has benefited enormously from the massive FDI inflows, largely in joint ventures with domestic enterprises, that have accelerated its access to modern technology and made possible a stunning export-led surge in the economy's overall productivity. However, from a more purely financial and monetary point of view, we have emphasized the downside. By not running current account deficits of the same order of magnitude as the FDI inflows, China faces the syndrome of conflicted virtue arising from the rapid build up of a liquid dollar overhang— much of it in private or non-state hands.

What should China do? Consider three medium-term options. First, it should take policy measures to reduce—and even reverse—its current-account surplus: let imports expand more rapidly by reducing trade barriers faster than its WTO timetable requires, and eliminate special incentives given to exporters. Second, reduce the financial magnitude of the FDI inflows by

letting joint ventures finance more of their operations within China—by borrowing from Chinese banks, or by issuing more stocks and bonds domestically[4]. The absorption of foreign technology would remain as high as ever even if net financial inflows were substantially reduced. Third, while China has done a good job of expanding aggregate demand domestically, it should continue to push vigorously in this direction even if some sterilization of the domestic monetary effects of the huge build up of foreign exchange reserves remains necessary.

In the short term, however, China must face the problem of conflicted virtue and work to defuse upward pressure on the renminbi in the foreign exchanges. Expectations are all-important in determining whether or not a given exchange rate regime is sustainable. China has gone through many anxious moments in keeping its exchange rate at 8.28 yuan per dollar. To the great benefit of the East Asian region, China withstood market pressure—and a lot of bad foreign advice—to depreciate the RMB during the 1997-98 crisis. Now, after 10 years of exchange rate stability, the Chinese government should treat 8.28 yuan/dollar as its long-term "parity" rate that will be unaltered by the ebb and flow of financial events into the indefinite future.

What about the possibility of making the exchange rate regime and the system of capital controls more flexible? Indeed, what should be the meaning of "flexibility" in this context? As financial constraints on international capital flows are loosened, it is natural to allow a soft band of variation around this central rate—say from 8.2 to 8.4—in order to further devolve the clearing of international payments from the PBC to the commercial banks. As long as the PBC stands ready to intervene to drive any rate on the edge of the band back toward 8.28, and everybody assumes it will do so, then actual intervention by the PBC should seldom be necessary. In non-crisis periods, the commercial banks will act as stabilizing speculators (dealers) and take open positions in foreign exchange to nudge the market rate toward the central rate—as long as the central rate of 8.28 yuan per dollar itself is never in question.

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[4] We are grateful to Professor Lawrence Lau of Stanford University for this suggestion.

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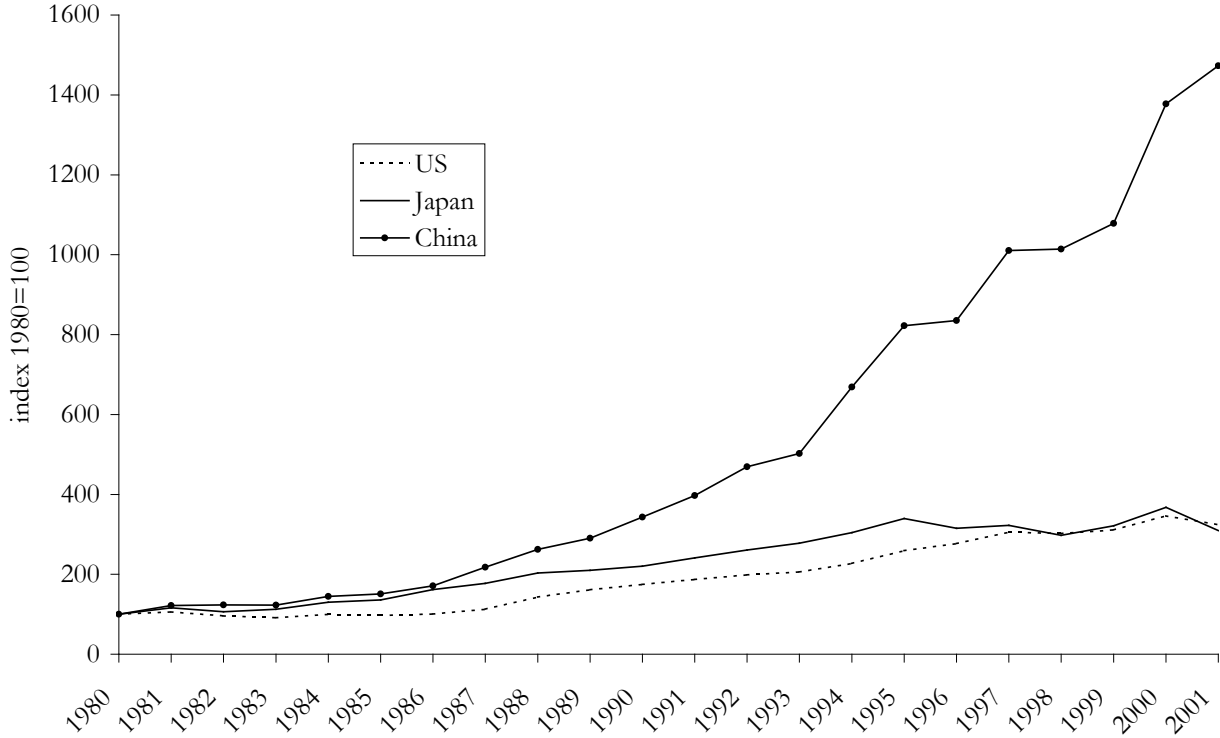
Figure 1: Nominal GDP in US Dollars (2001)
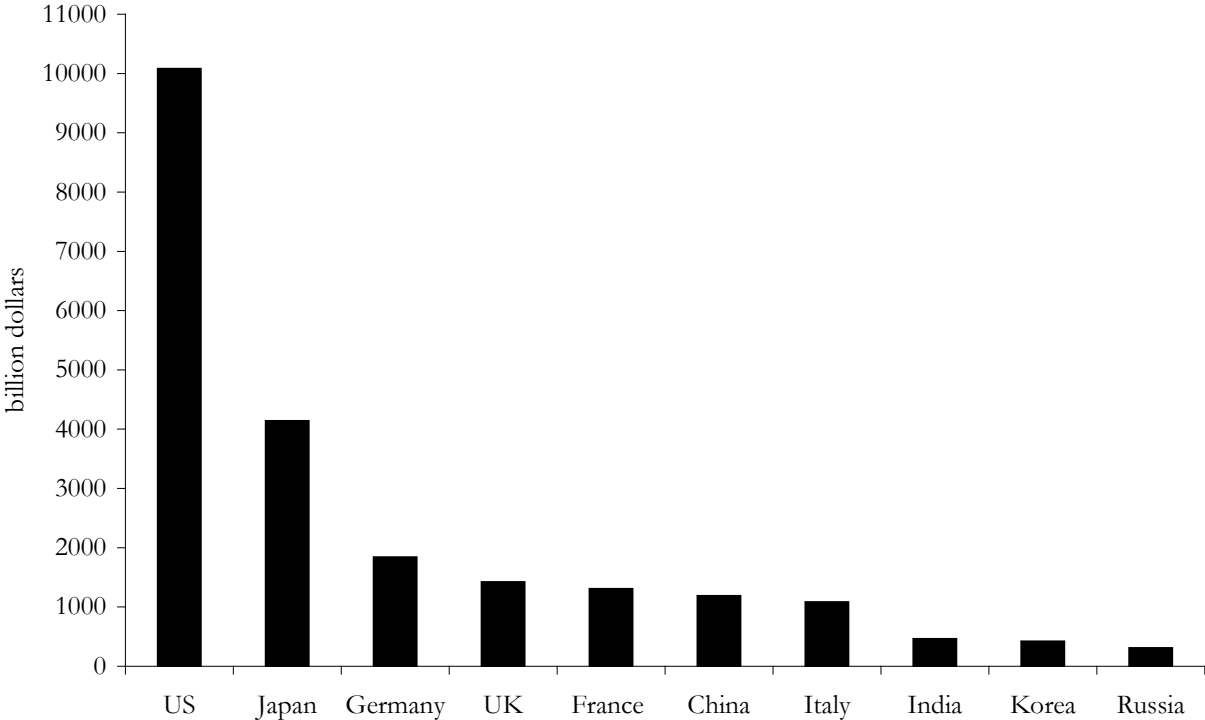
Source: IMF: International Financial Statistics.

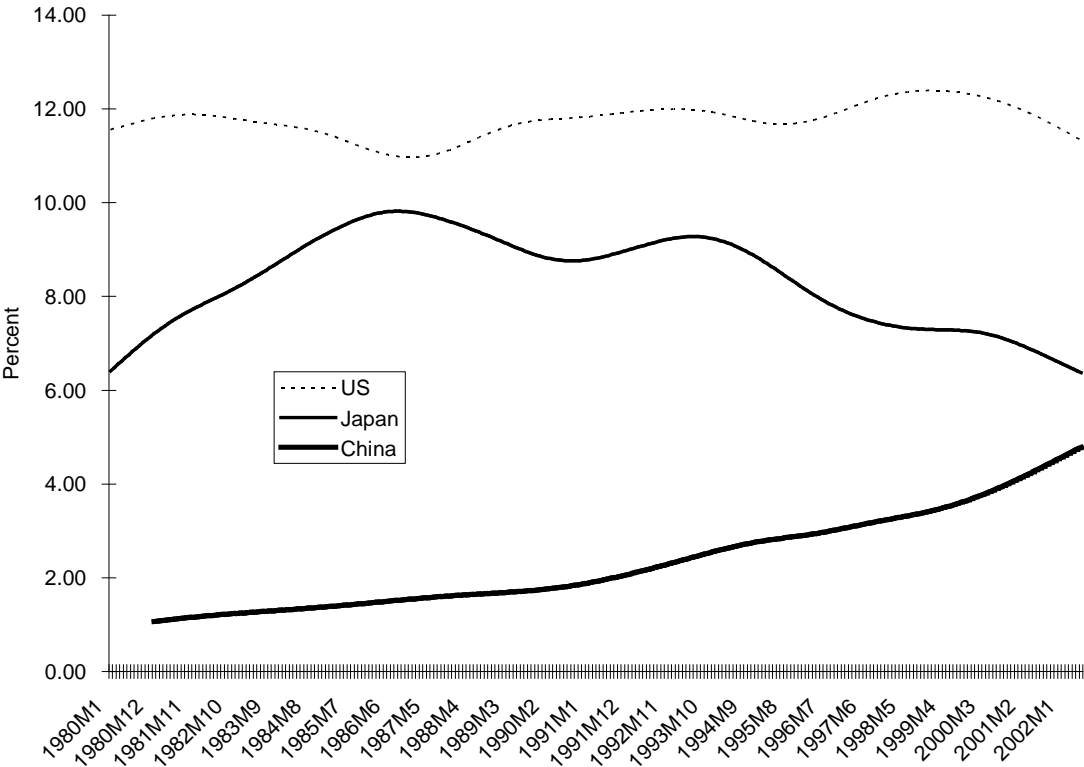**Figure 2: Real GDP Growth, China, Japan and US**

Source: IMF: IFS.

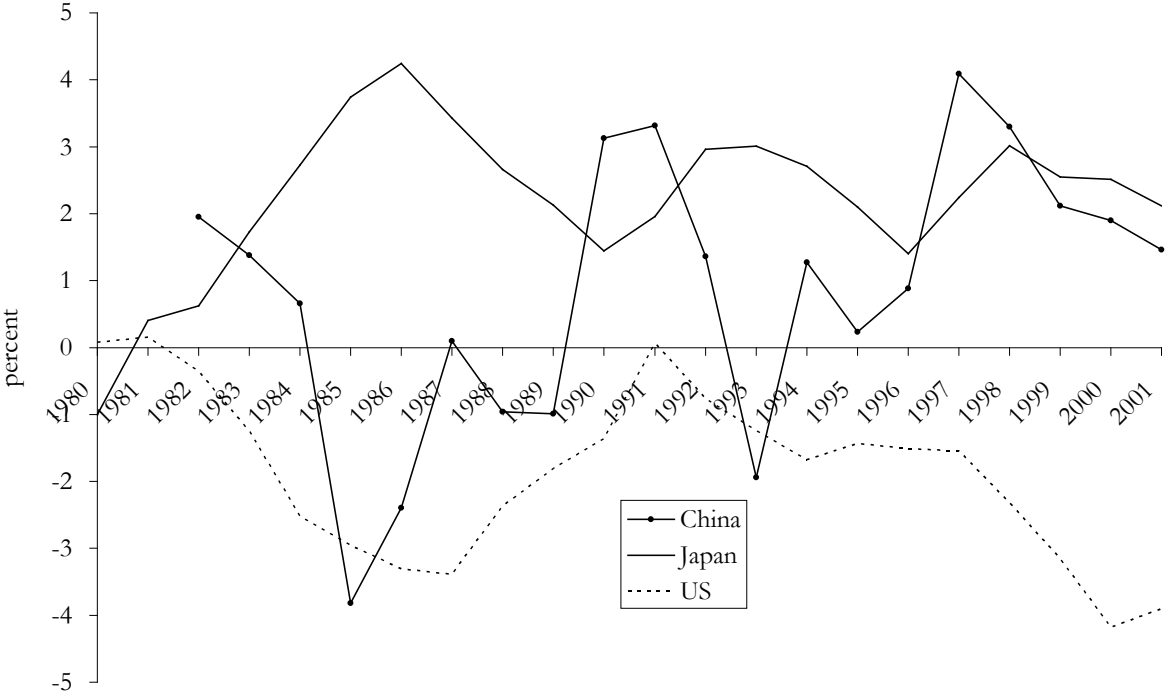**Figure 3: Nominal Exports (US Dollars), China, Japan, and US**

Source: IMF: IFS. Index 1980=100.

Figure 4: Exports Divided by World Trade, China, Japan, and US
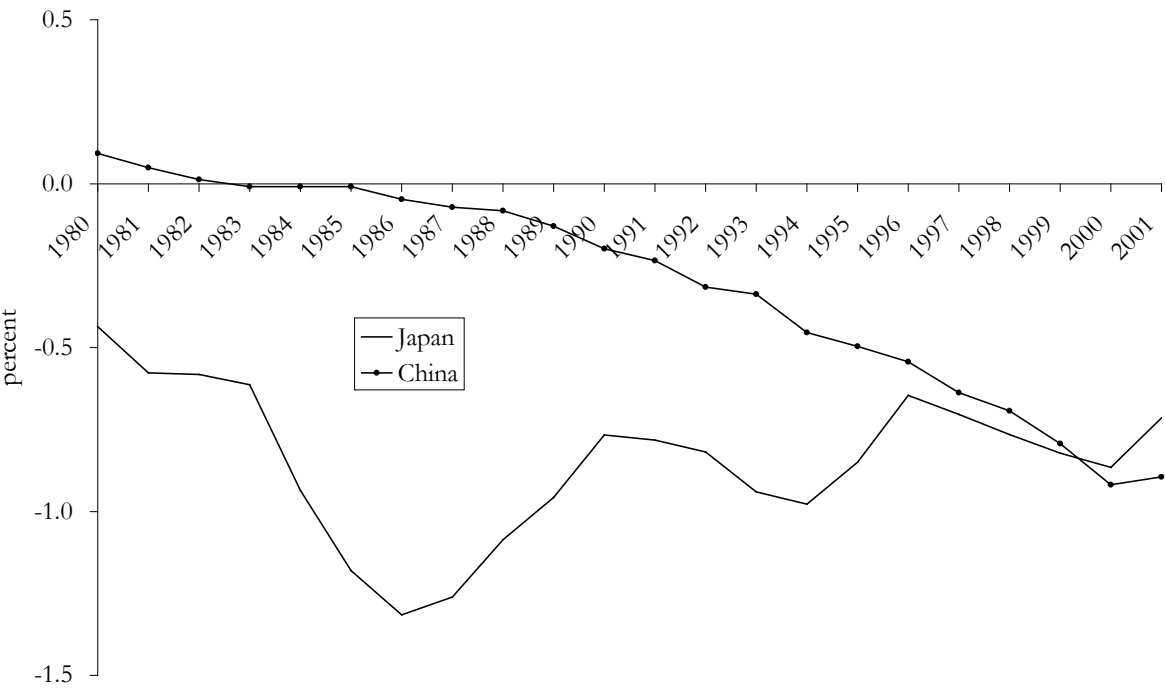

Source: IMF: IFS. Smoothed averages computed by the Hodrick-Prescott filter.

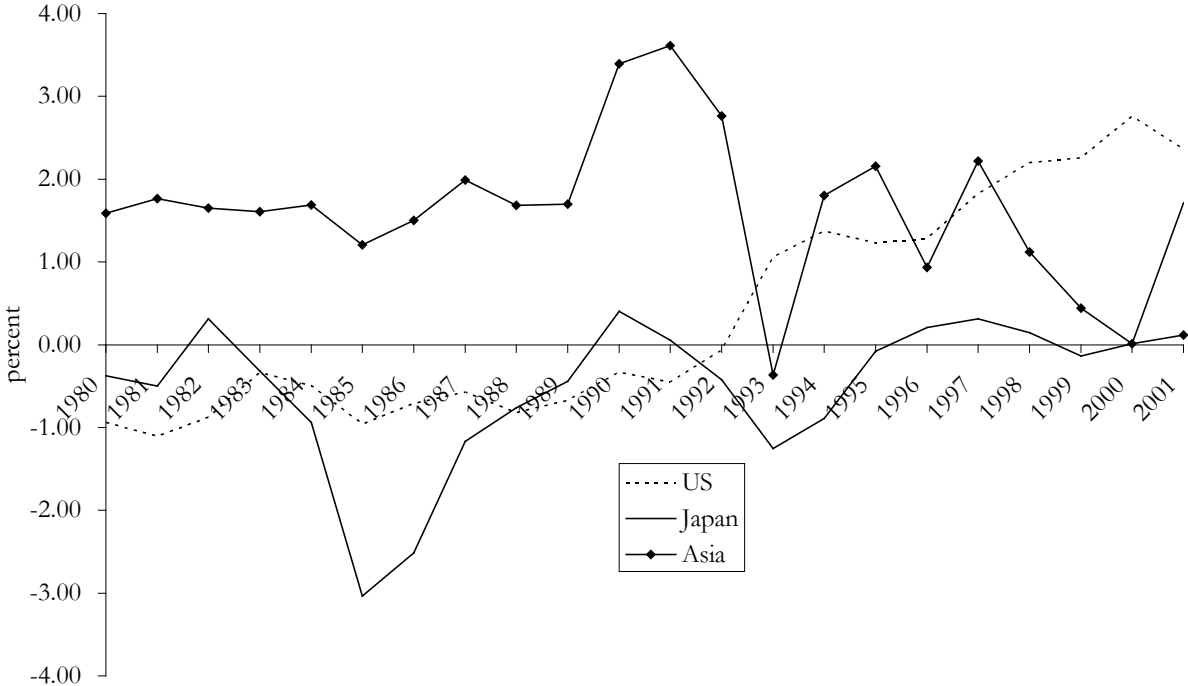**Figure 5: Current Account as Percentage of GDP, China, Japan and US**

Source: IMF: IFS.

**Figure 6: Bilateral US Trade Balances with Japan and China (as percent of GDP)**

Source: IMF: Direction of Trade Statistics.

**Figure 7: Bilateral Chinese Trade Balances with US, Japan and Asia (as percent of GDP)**

Source: IMF: Direction of Trade Statistics. Asia all Asian countries excluding Japan.

Figure 8: Relative Size of Japanese and Chinese GDP

$$index = \frac{real\ GDP\ China}{real\ GDP\ Japan} * 100$$
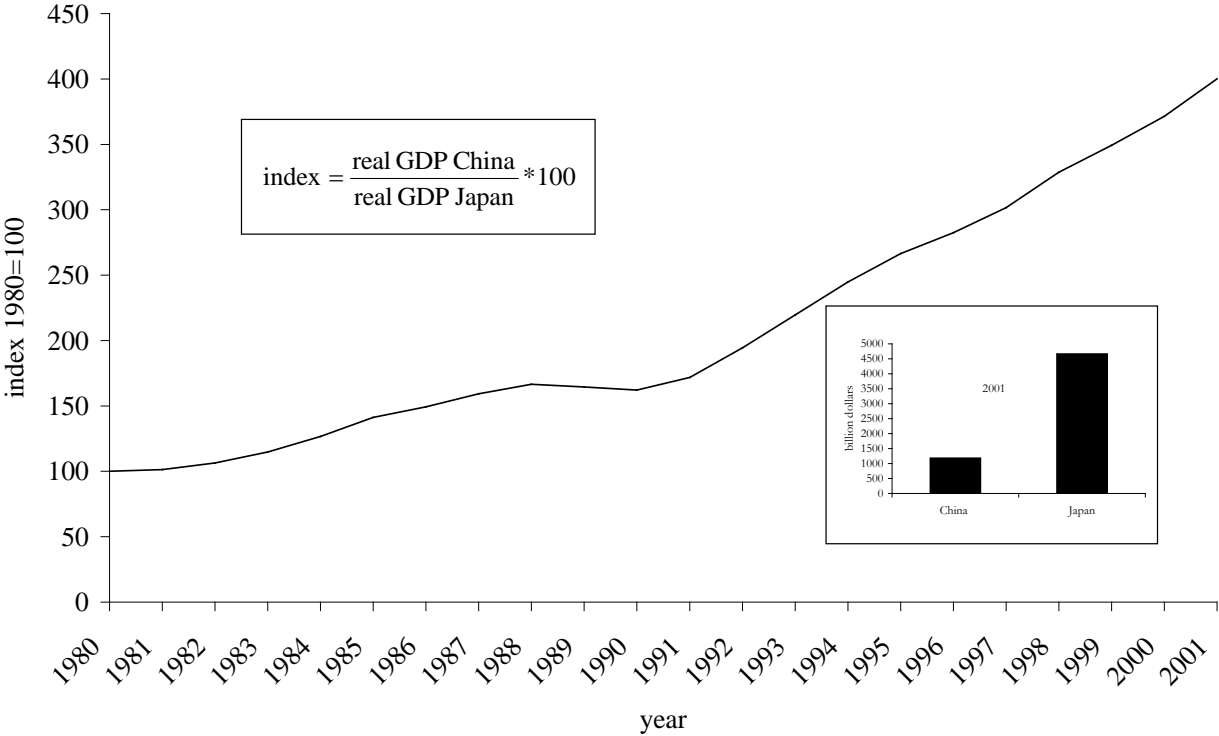
Source: IMF. Note: The base of 100 is arbitrary, and the broken line only shows China's real growth relative to Japan's and not the absolute size of the two economies.

**Figure 9: Money Market Interest Rates, China, Japan and US**
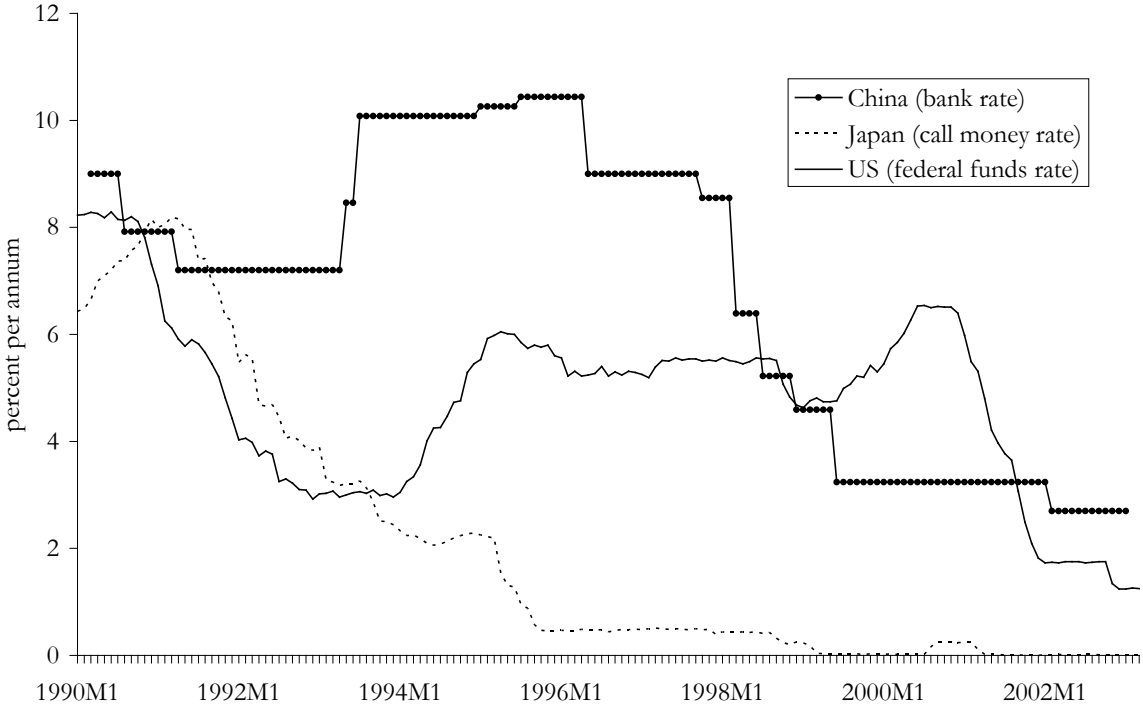
Source: IMF. Rate charged by the People's Bank of China on 20-day loans to financial institutions.

**Figure 10: Monetary Aggregates, China**
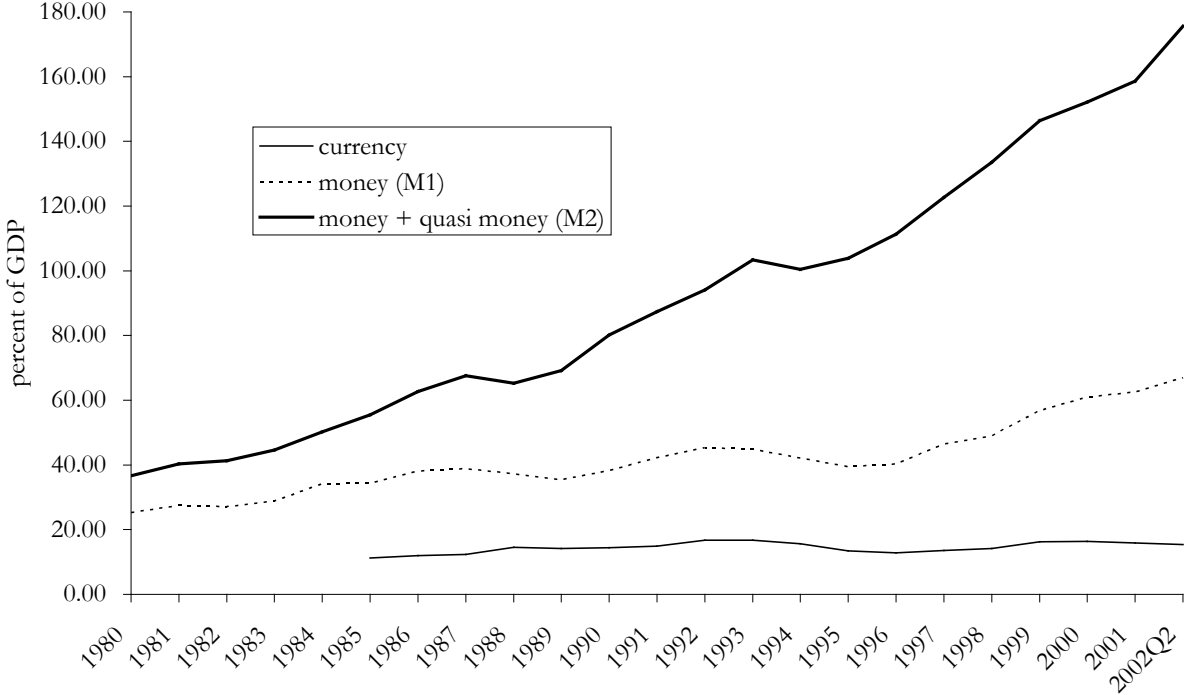
Source: IMF. Currency = currency outside the banking sector, money = currency outside the banking sector plus demand deposits other than those of the central government, quasi money = sum of time, savings and foreign currency deposits of residents other than central government.

Figure 11: Yuan/Dollar Exchange Rate and Chinese Consumer Prices, 1990 - 2003
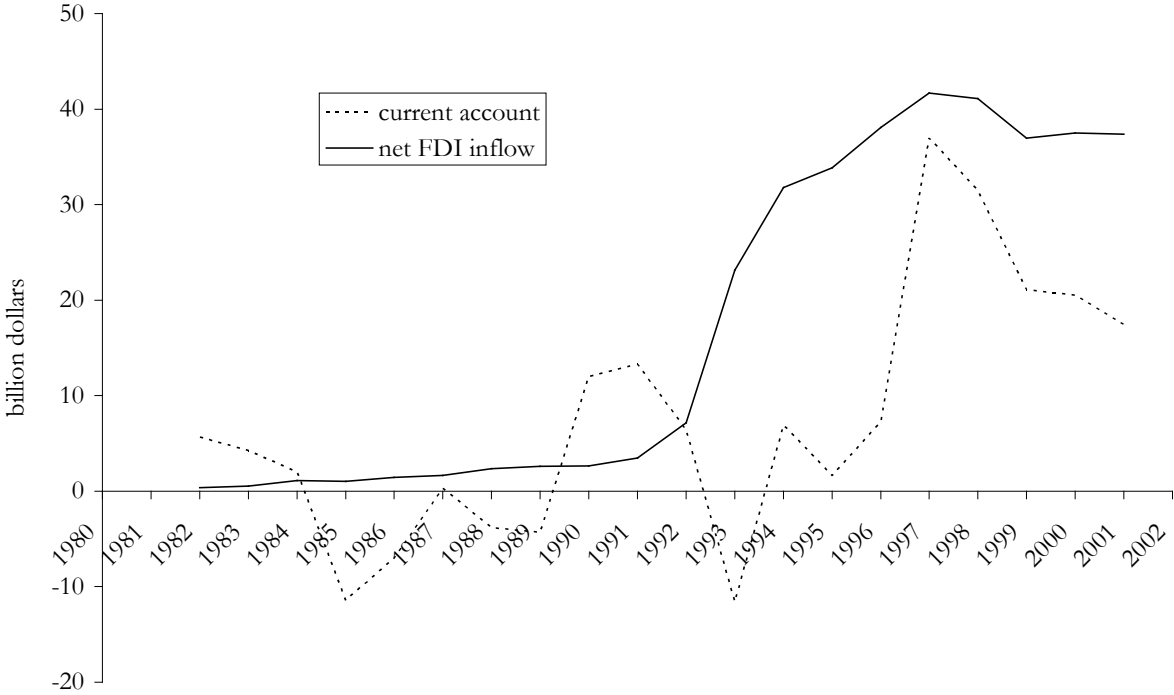
(Jan. 1990 = 100)
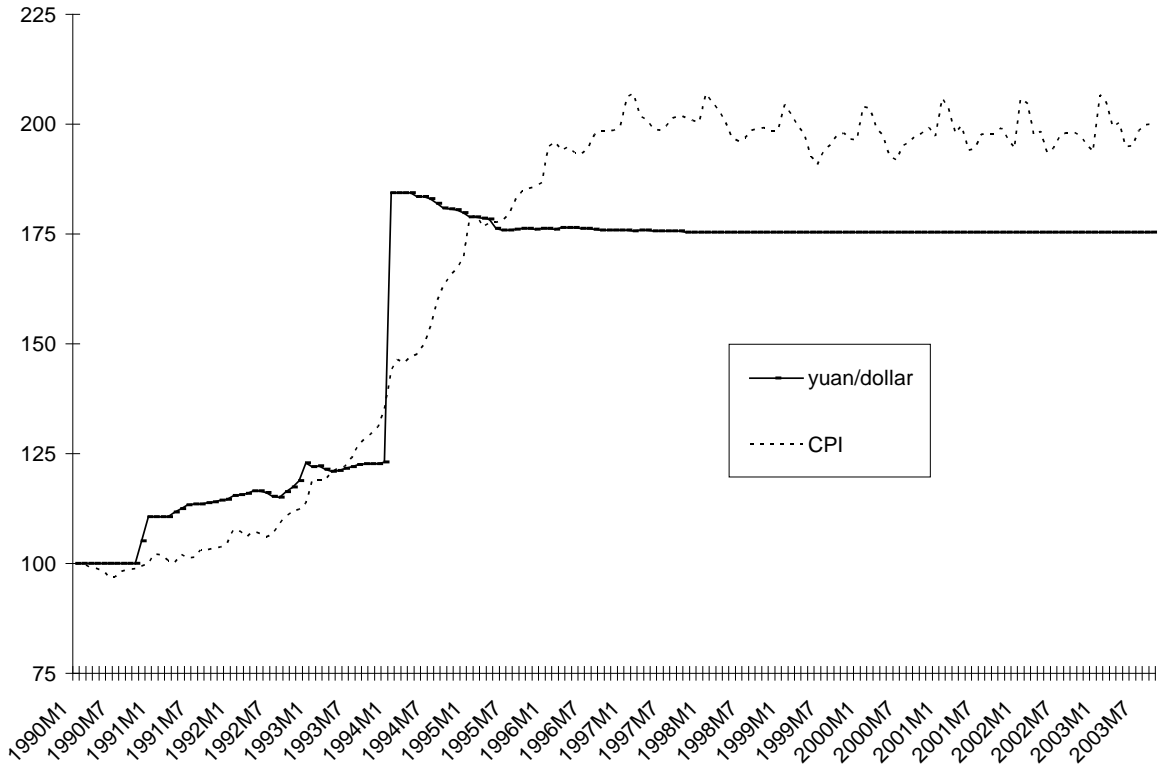
Source: IMF: IFS.

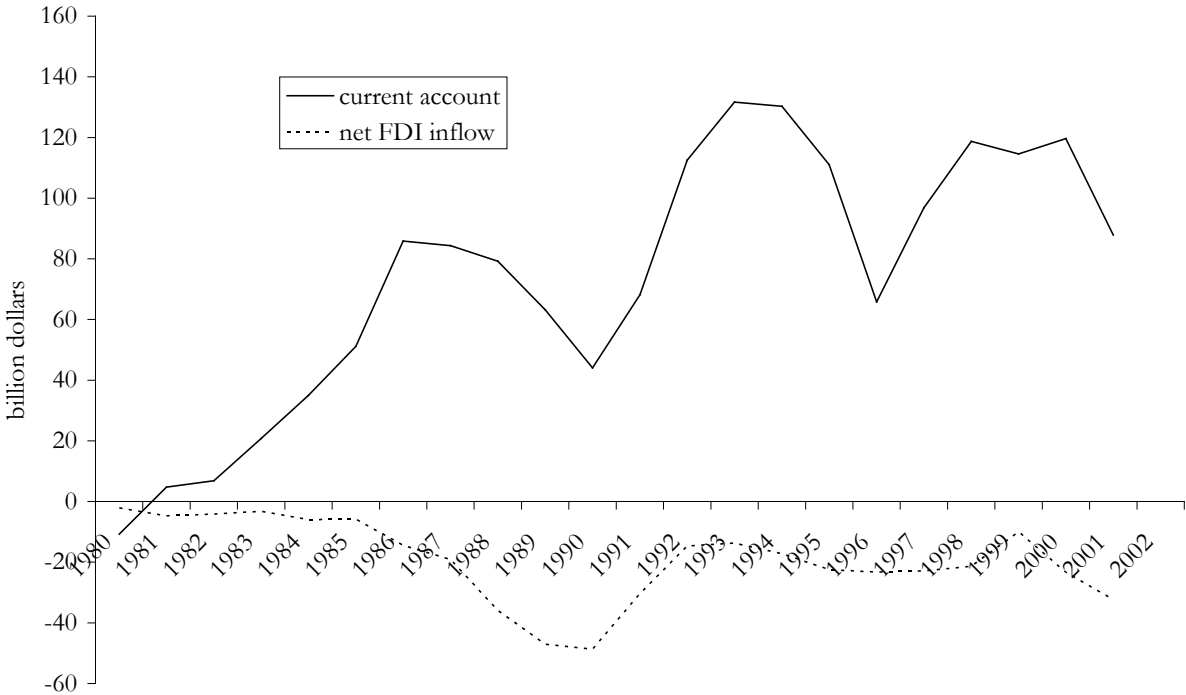**Figure 12: Official Foreign Reserves, China and Japan (million dollars)**
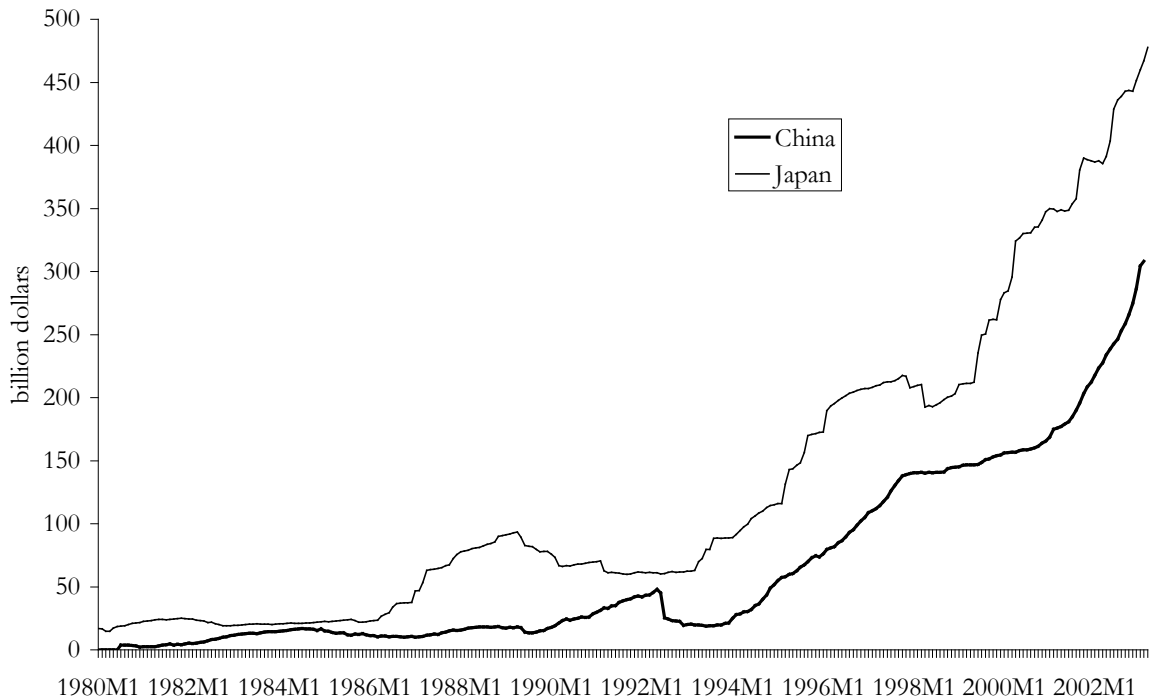
Source: IMF: IFS.

Figure 13: China: Current Account and Net FDI inflows

Source: IMF: IFS: Net FDI Inflows=Gross FDI Inflows-Gross FDI Outflows

Figure 14: **Japan: Current Account and Net FDI inflows**

Source: IMF: IFS. Net FDI Inflows=Gross FDI Inflows-Gross FDI Outflows

Figure 15 China's Cumulative Surpluses on Current Account, Trade and Net Foreign Direct Investment, 1990 - 2002
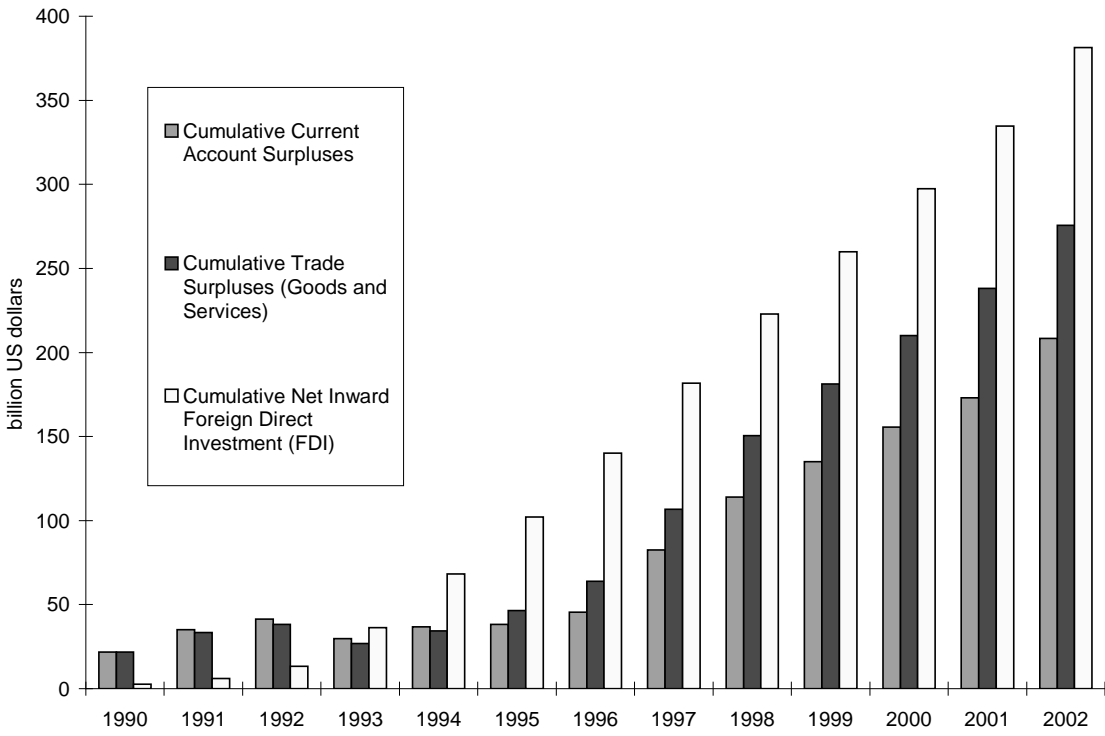
Source: *IFS*, International Monetary Fund

Figure 16 Foreign Exchange Deposits in Chinese Banking Institutions, 2002-2003
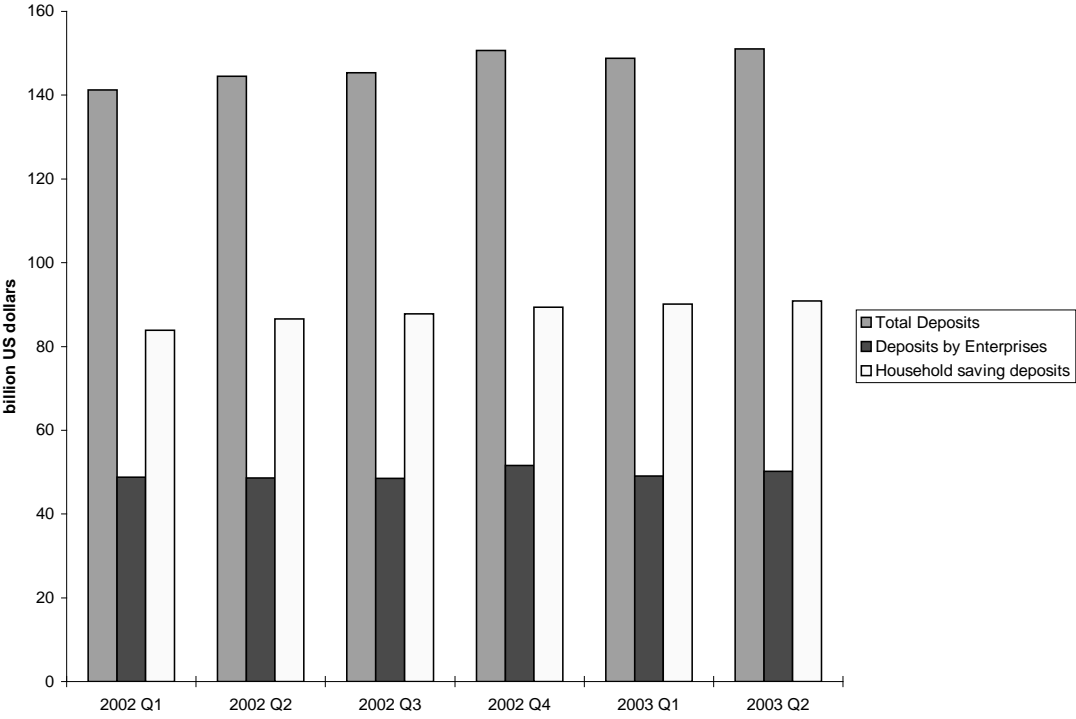
Source: *People's Bank of China*

Figure 17 China's Liquid Foreign Assets, Capital Account Estimates: 1990 - 2002

Source: *IFS*, International Monetary Fund

Figure 18 Alternative Estimates of China's International Liquid Asset Position, 1990 - 2002
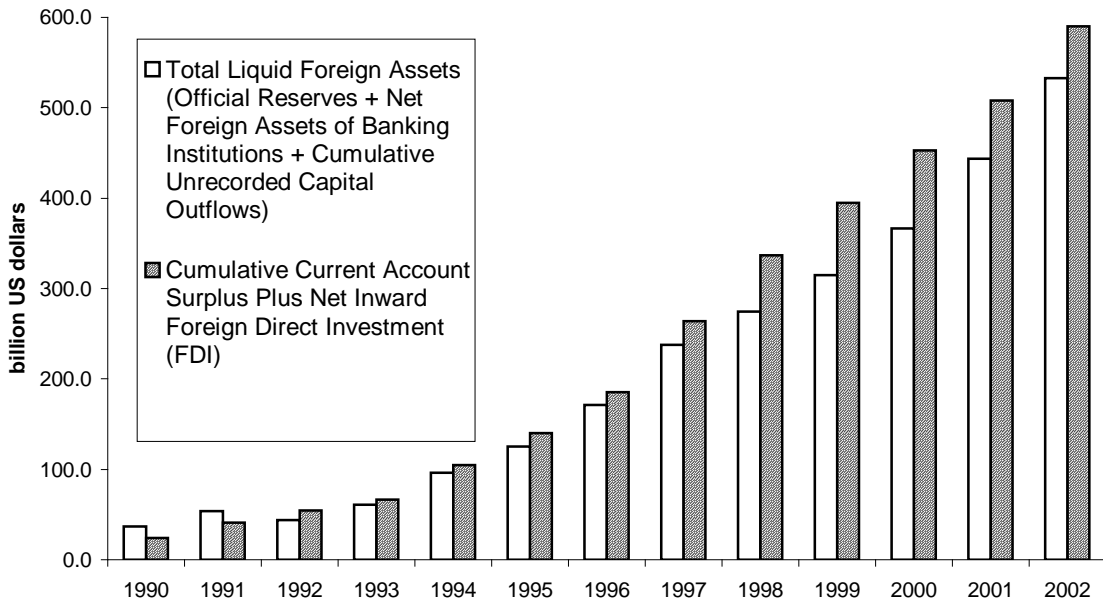
Source: *IFS*, International Monetary Fund

Table 1: Chinese Trade with Japan, US, EA1 and ROW as Percent of Overall Trade

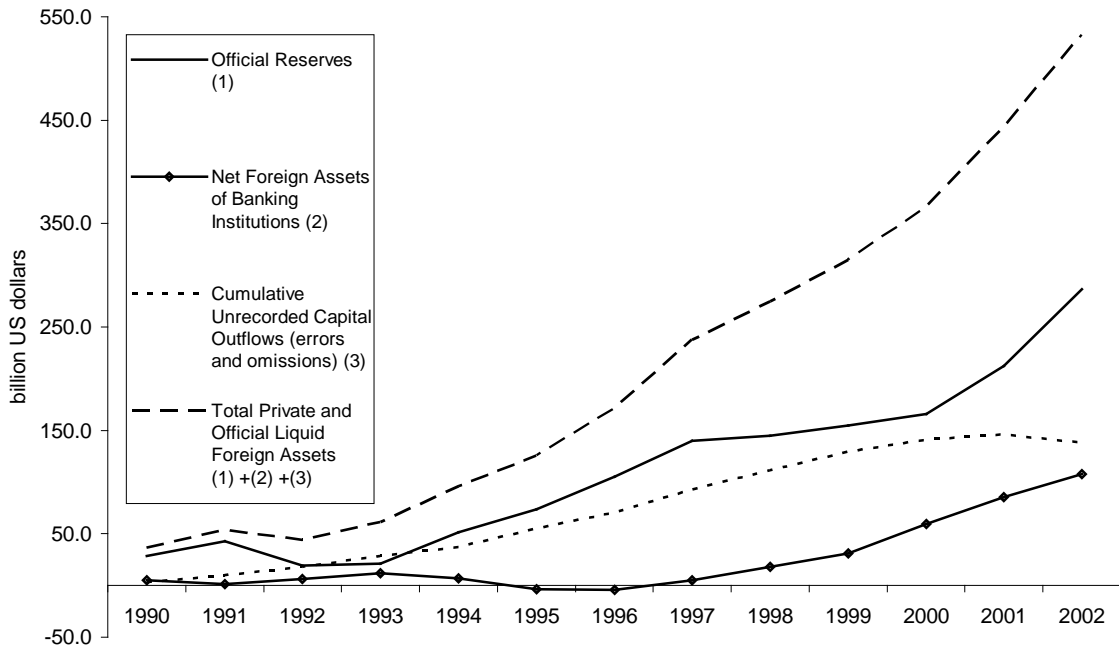|	Chinese Exports to				Chinese Imports from			
	US	Japan	EA_1	ROW	US	Japan	EA_1	ROW
1980	5.4	22.2	30.7	41.7	19.2	26.0	6.2	48.7
1985	8.6	22.3	36.4	32.8	12.2	35.7	13.9	38.3
1990	8.2	14.3	48.4	29.1	12.1	14.1	32.7	41.1
1995	16.6	19.1	36.8	27.5	12.2	22.0	32.6	33.3
2001	20.4	16.9	30.1	32.7	13.1	12.2	40.9	33.9

Source: IMF: Direction of Trade Statistics. EA_1 = Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand. ROW=Rest of the World.

Table 2: Chinese Exports by Commodity

	AP	CM	CH	BM	MT	MM
SITC	0,1,4	2, 3	5	6	7	8
1980						
1985	14.92%	35.61%	5.00%	16.49%	2.81%	12.81%
1990	11.40%	14.13%	6.04%	20.61%	17.45%	28.23%
1995	7.90%	6.51%	6.01%	22.11%	21.06%	36.11%
2000	4.92%	4.93%	4.78%	17.38%	33.08%	34.34%

Source: United Nations: Yearbook of International Trade Statistics Trade by Commodity. AP = agricultural products, CM = crude materials including fuels, CH = chemicals, BM = basic manufactures (leather manufactures, wood manufactures, paper manufactures, textile yarn, iron and steal, non-ferrous metals etc.), MT = machines and transport equipment (power generating equipment, machines for special industries, metal working machinery, general industrial machinery, office machines, telecommunication and sound equipment, electric machinery, road vehicles, other transport equipment), MM = miscellaneous manufactured goods (clothing and accessories, precision instruments, photo and optical equipment). Numbers don't sum to 100%, as goods not classified (SITC 9) are unreported.

Table 3: Chinese Imports by Commodity

	AP	CM	CH	BM	MT	MM
SITC	0,1,4	2, 3	5	6	7	8
1980						
1985	4.41%	7.99%	10.45%	27.95%	38.95%	4.52%
1990	8.62%	10.08%	12.50%	21.71%	40.33%	6.22%
1995	6.90%	11.39%	12.76%	22.06%	39.70%	5.98%
2000	2.53%	17.97%	13.23%	18.88%	40.81%	5.64%

Source: United Nations: Yearbook of International Trade Statistics Trade by Commodity. AP = agricultural products, CM = crude materials including Fuels, CH = chemicals, BM = basic manufactures (leather manufactures, wood manufactures, paper manufactures, textile yarn, iron and steal, non-ferrous metals etc.), MT = machines and transport equipment (power generating equipment, machines for special industries, metal working machinery, general industrial machinery, office machines, telecommunication and sound equipment, electric machinery, road vehicles, other transport equipment), MM = miscellaneous manufactured goods (clothing and accessories, precision instruments, photo and optical equipment). Numbers don't sum to 100%, as goods not classified (SITC 9) are unreported.

Table 4: Annual Variation in Output Growth in East Asia, 1980 – 2001

	mean	standard deviation	variation coefficient
China	9.55	3.35	0.35
Hong Kong	5.51	4.25	0.77
Indonesia	4.96	4.60	0.93
Korea	6.82	4.30	0.63
Malaysia	6.36	4.39	0.69
Philippines	2.52	3.73	1.48
Singapore	7.18	4.05	0.56
Taiwan	6.62	3.00	0.42
Thailand	5.99	4.97	0.83
Japan	2.67	1.89	0.71
EA_1	6.06	2.96	0.49
EA_2	7.46	2.13	0.29
EA_3	4.19	1.58	0.38

Data source: IMF, Central Bank of China.

Notes: EA_1 = Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand. EA_2 = EA_1 + China. EA_3 = EA_2 + Japan

Table 5: Output and Exchange Rate Effects: China versus East Asia (EA_1), 1980 – 2001

	Japan	EA_1	yen/dollar	yen/dollar$_{t-1}$	LRM	R^2adj. (R^2)
China	-0.14	-0.23	-0.10	-0.11	-0.21	-0.00
	(-0.28)	(-0.61)	(-1.17)	(-1.36)	(-1.07)	(0.19)
EA_1	0.80***		-0.12**	-0.05	-0.17*	0.50
	(3.01)		(-2.95)	(-1.92)	(-1.92)	(0.59)

Data source: IMF, Central Bank of China. Yearly data. EA_1 = Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand. LRM = long-run multiplier; t-statistics in parentheses; * significant at the ten percent level; ** significant at the five percent level; *** significant at the one percent level.

Table 6 China's Cumulative Current Account Surpluses and Net Inward Foreign Direct Investment (FDI)

in Comparison to Estimated Holdings of Liquid Dollar Assets

Year	(1) Total Net Foreign Assets (Banking Survey)	(2) Official Reserves	(3) Net Foreign Asset of Banking Institutions	(4) Cumulative Unrecorded Capital Outflows [i]	(5) Total Liquid Foreign Assets (2)+(3) +(4)	(6) Cumulative Current Account Surplus	(7) Cumulative Net Inward FDI to China	(8) Alternative Estimate of Liquid Foreign Assets (6) +(7)
1990	21.7	28.6	5.1	3.2	36.9	21.7	2.7	24.4
1991	27.4	42.7	1.1	10.0	53.7	35.0	6.1	41.1
1992	30.6	19.4	6.4	18.2	44.1	41.4	13.3	54.7
1993	38.6	21.2	11.7	28.3	61.2	29.8	36.4	66.2
1994	58.8	51.6	7.1	37.4	96.1	36.7	68.2	104.9
1995	76.5	73.6	-3.4	55.2	125.4	38.3	102.0	140.3
1996	110.7	105.0	-4.3	70.7	171.4	45.5	140.1	185.6
1997	164.8	139.9	5.2	92.8	237.9	82.5	181.8	264.3
1998	181.7	145.0	17.9	111.7	274.6	114.0	222.9	336.9
1999	205.7	154.7	31.0	129.4	315.1	135.1	259.9	394.9
2000	243.0	165.6	59.6	141.1	366.3	155.6	297.3	453.0
2001	319.1	212.2	85.4	145.9	443.4	173.0	334.7	507.7
2002	383.4	286.4	107.8	138.3	532.6	208.4	381.5	589.9

Source: *IFS*, International Monetary Fund

[i] Note: Errors and Omissions in International Payment Flows