



## What if China revalues its currency?

China's economy, imports and exports are booming. Foreign exchange reserves are accumulating. These are the consequences of market reforms, and a perceived favourable investment climate by foreigners. They are also the result of a large fiscal stimulus and the maintenance by authorities of a fixed exchange rate with the US dollar. United States leaders have called on the Chinese to revalue their currency. So far the Chinese have resisted. The effects of revaluing the currency are not as obvious as it might seem, especially for third countries, because of a variety of offsetting factors.

China has emerged as a major engine for world markets.<sup>1</sup> For example, from 2000–02 it accounted for all of the world's growth in demand for aluminum, copper and steel. China's trade has grown enormously. Last year, it displaced the United States as Japan's largest source of imports.

Low priced manufacturing exports from China are alleged to be placing pressure on manufacturing jobs elsewhere in South-east Asia, and in the United States. Policymakers in the United States, quick to blame others for the loss of manufacturing jobs at home, suggest that China's pegging of the nominal exchange rate is giving it an artificial level of export competitiveness.

Booming Chinese exports to the United States are, erroneously argued by some, to be part of the problem of the sizeable United States current account deficit — allegedly a source of instability in foreign markets. A revaluation of the Chinese renminbi (RMB), it is claimed by some, would lead to less pressure on manufacturing production in the United States and help correct world imbalances such as the large United States current account deficit. It would, so the argument goes, obviate the need for China to accumulate vast holdings of low-yielding United States securities — money that could be better invested in the Chinese economy.

Some of these claims are difficult to substantiate in most plausible empirical models. In practice there will be more at work than just a change in the relative price of Chinese goods on world markets. In this issue of Scenarios we examine China's willingness to revalue its currency, which is mostly a reflection of what is in China's interests. Also, we quantify the impact of a Chinese revaluation on China and what it might mean for third countries. In so doing, we highlight the role of China in the region today and the role it might play in helping international

### Key points

- An appreciation of the order of 10 per cent would take a lot of the heat out of the Chinese economy.
- The real exchange is already appreciating.
- There would be almost no change in China's current account since the savings- investment balance changes little.
- There are few aggregate implications for other countries — the income effects offset the price effects.

#### ECONOMIC SCENARIOS

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<sup>1</sup> For a good account of China as a new engine for growth see Garnaut, R. and Song, L. (eds) 2003, *China: New Engine of World Growth*, Asia Pacific Press, Canberra.

## Using these scenarios

Nobody can foretell the future. If they could, they wouldn't tell you about it. These scenarios are not predictions or forecasts. To make profitable investments from this information you also need to decide how likely the events portrayed here are, and what is already priced in the markets. The value of this material is in the insights it offers into the economic effects of various possible events.

coordination of macroeconomic policy for favourable world economic growth outcomes. The major insight from the modeling framework used in this report is that exchange rates matter, but the ultimate impact of changes in exchange rate depends critically on the underlying cause of the exchange rate change and the extent to which a change in a nominal exchange rate can persistently alter underlying real exchange rates.<sup>2</sup>

## What's behind China's need to revalue

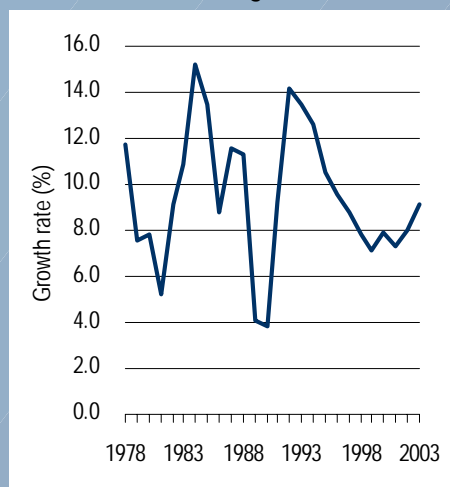
Not everyone agrees that the Chinese RMB should be revalued. For example, a panel of thirty experts debating this issue in *The International Economy*<sup>3</sup>, were divided on the issue. But China's large current account surplus despite a large inflow of foreign direct investment, and China's large accumulation of foreign reserves all point to an under-valued nominal exchange rate. Critical to this analysis is to understand why China's exchange rate might be under-valued? In other words, what has happened in the Chinese economy that, were it not for the pegged currency, the exchange rate would appreciate? Different underlying causes of the tendency for China's currency to appreciate will have a different bearing on the effects of a currency appreciation and how long those effects might last. Further and substantial trade liberalization will introduce pressures for a depreciation over time.

The story behind China's growth and tendency to revalue is one of rising productivity and high returns on capital, which is attracting foreign investors. Foreign direct investment, mostly in the country's manufacturing capabilities, is running at US\$60 billion per year. China is seen as politically stable with a vast pool of low-cost workers to draw on. Higher levels of productivity are due to the introduction of new technology as China 'catches up' with the West and the redeployment of resources in more productive areas of the economy. The latter is the result of market reforms by the government, including trade liberalisation upon joining the WTO<sup>4</sup>.

The combination of higher productivity and lower risk premia has seen large numbers of unemployed or underemployed rural workers put to work and high domestic savings invested in physical capital. High economic growth has been the result. Although there is debate about the reliability of official Chinese statistics<sup>5</sup>, annual GDP growth has averaged 9.4 per cent from 1978 (the start of economic reforms) to 2002 (chart 1).

There are many effects from higher productivity and lower country risk. First, there is an income effect leading to rising consumption, rising imports and rising domestic demand for exportable goods and competing pressure on resources for domestic use versus exports. Second, there are price effects. More competitive domestic production as a result of productivity rises encourages more exports and fewer imports. Whether

### 1 China's economic growth



Source: China Statistics Yearbook 2002, *China Statistics Bulletin* 2004, *People's Daily*, 21 January 2004.

### 1 APG-Cubed

The version of the model used here is APG-Cubed Version 55n, which is the same as 53n, but with the reaction function of Asian central banks spelt out on page 3 included.

To see a full description of the model, either follow the links on this website or directly access [www.msgpl.com.au](http://www.msgpl.com.au)

<sup>2</sup> See McKibbin, W. and Sachs, J.D. 1991, *Global Linkages: Macroeconomic Interdependence and Cooperation in the World Economy*, The Brookings Institution, particularly chapter 6 on 'Alternative policies to correct global trade imbalances'.

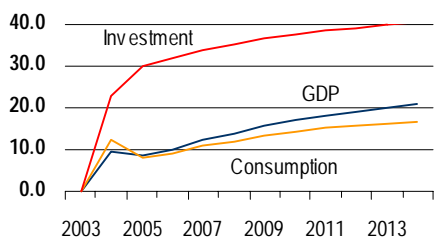
<sup>3</sup> 'Is the Chinese currency, the renminbi, dangerously undervalued and a threat to the global economy?', *The International Economy*, Spring 2003, p.25-39.

<sup>4</sup> See McKibbin, W. and Woo, W. T. 2004, 'The Consequences of China's WTO Accession on its Neighbours' forthcoming in *Asian Economic Papers*, MIT Press.

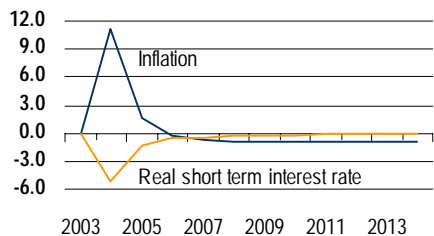
<sup>5</sup> See Rawski, T.G. 2001, 'What's Happening to China's GDP Statistics', *China Economic Review*, 12(4) as an example of criticism of the reliability of official data.

**CHART 2: CHINA WITH PRODUCTIVITY GROWTH AND REDUCTION IN COUNTRY RISK UNDER A FIXED EXCHANGE RATE**

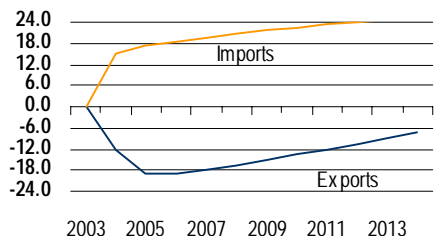
Real GDP, consumption and investment (per cent deviation from baseline)



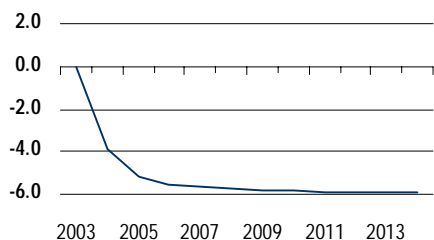
Interest rates and inflation (percentage point deviation from baseline)



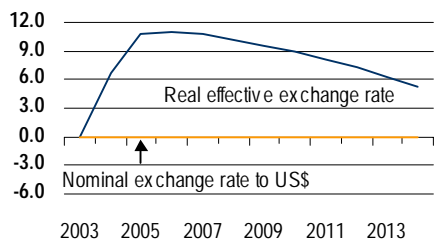
Exports and imports (per cent deviation from baseline)



Current account (per cent of GDP change from baseline)



Exchange rates (percentage point change from baseline)



the income effects outweigh the price effects is an empirical question and can only be addressed by a quantifiable economywide model. The model version used here is APG-Cubed Version 55n (see box 1).

To peg the exchange rate to the US dollar, authorities have to intervene and purchase foreign exchange — hence the accumulation of holdings of US foreign exchange reserves, held mostly as low yielding US government securities. But what matters for China is their real effective exchange rate — the weighted effect of all exchange rates with countries that China trades, expressed in real terms. The exchange rate regimes of other countries also potentially matters.

### Exchange rate regimes of other Asian economies

The effects of a Chinese revaluation against the US dollar will also depend on what other Asian economies, with whom China either competes or trades with, are also doing. Different exchange rate regimes by other Asian economies will have different outcomes under different scenarios.<sup>6</sup> In this paper, it is assumed other Asian economies are either: floating with domestic monetary policy following a modified Henderson-McKibbin-Taylor rule<sup>7</sup> for the short term nominal interest rate which depends on the lagged nominal interest rate; a weight on the gap between actual and desired inflation; a weight on the gap between actual and potential growth (Japan, Korea, Taiwan and Singapore); are pegged to the US dollar (Hong Kong), or they run some hybrid of a managed currency which is the same as the modified Henderson-McKibbin-Taylor Rule but also with a weight on changes in their currency relative to the US dollar, (Malaysia, Indonesia, Philippines and Thailand).

### The scenarios

Two scenarios are used to demonstrate the potential impact of a Chinese revaluation. First we stylize the factors driving a real appreciation of the Chinese currency. It is important to understand these factors before analyzing a nominal revaluation. Then we look at the result of a revaluation and how the revaluation changes the underlying factors. The scenarios are:

1. A rise in economic growth in China caused by higher productivity growth and a favourable change in country risk. The extra productivity is in both labour (2 per cent higher productivity growth for 30 years) and capital (4 per cent productivity improvement in the capital goods producing sector for 30 years). The country risk is modelled as a fall in country risk of 1 per cent. These changes occur under a fixed nominal exchange rate to the US dollar.
2. A ‘one-off’ appreciation by Chinese authorities of the nominal exchange rate against the US dollar of 10 per cent in 2004.

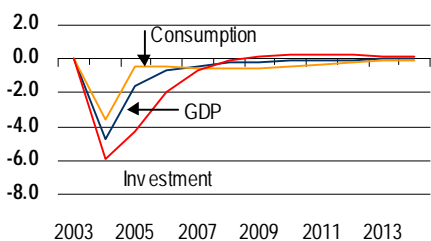
<sup>6</sup> For an analysis of the differences various exchange rate regimes might make for Asian economies under various shocks, see McKibbin, W. and Le, H.G. 2002, ‘Which exchange rate regime for Asia?’, revised paper prepared for AJRC, CCEER conference on Future Financial Arrangements in East Asia, Beijing, March, 24–25.

<sup>7</sup> See Levin, A., Wieland, V. and Williams, J. 1999, ‘Robustness of Simple Monetary Policy Rules under Model Uncertainty’ in Taylor, J. 1999, *Monetary Policy Rules*, University of Chicago Press.

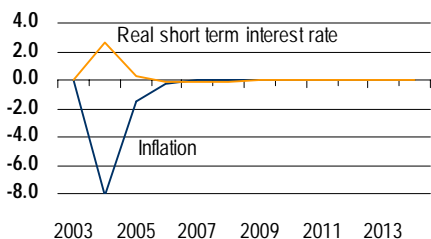


**CHART 3: CHINA WITH A 10 PER CENT NOMINAL APPRECIATION OF THE RENMINBI AGAINST US DOLLAR**

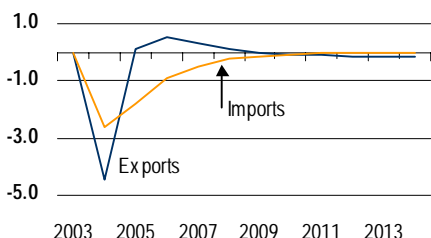
**Real GDP, consumption and investment (per cent deviation from baseline)**



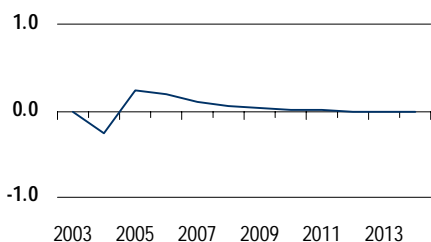
**Interest rates and inflation (percentage point deviation from baseline)**



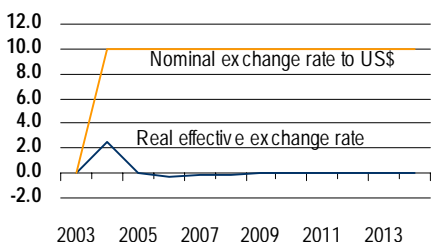
**Exports and imports (per cent deviation from baseline)**



**Current account (per cent of GDP change from baseline)**



**Exchange rates (percentage point change from baseline)**



## Pressures for revaluation of the renminbi

The results for scenario 1 are shown in chart set 2. These are expressed relative to a baseline projection, which has China growing at roughly 6 per cent per year. The higher productivity in labour and in the capital goods producing sector plus the fall in country risk gives a strong boost to the economy. Real GDP grows by 9.5 per cent in 2004 above baseline (making growth 14 per cent in absolute terms). With additional growth that means output in the economy could be 20 per cent above what it otherwise would have been a decade out. With higher productivity and lower country risk there is a large boost to investment, partly fuelled by an extra capital inflow with a current account over 5 per cent of GDP below baseline from 2005 on. Investment in 2004 is 22 per cent higher than otherwise (first panel of chart set 2). Higher incomes lead to a boost in real consumption.

The extra demand for goods and resources in the economy leads to a spike in inflation in 2004. Inflation could be 11.3 percentage points higher than baseline initially before falling away in 2005 and beyond as domestic production catches up with demand. The spike in inflation, combined with a fixed nominal interest rate causes a drop in real short term interest rates as shown in panel 2 of chart set 2. This adds a demand driven stimulus to the Chinese economy that is already experiencing a strong supply side shock. Validating this rise in inflation is the increase in money supply that results from the fixed exchange rate and accumulation of foreign exchange reserves.

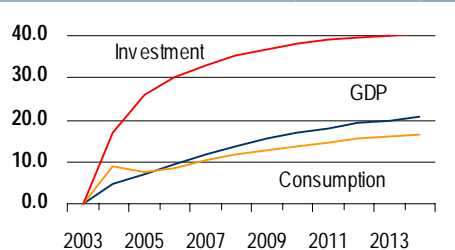
Higher domestic demand is partly met by higher growth in imports — up nearly 15 per cent above what it might be otherwise in 2004. (Actual imports to China rose nearly 40 per cent over 2003.) Beyond 2004, as the economy grows, so do imports (panel three of chart set 2). Exports by comparison also initially fall. Not only does the trade balance and current account have to worsen from what it might otherwise be to allow for the capital inflow, but initially the booming domestic economy does not have the resources to meet domestic demand and exports as well. Exports could be nearly 19 per cent below baseline in 2005 before the supply side of the economy is able to meet export demand.

A strongly growing economy, a favourable country risk change and capital inflow mean that, despite the nominal exchange rate with the US dollar being fixed, there is an appreciation of China's real effective exchange rate (panel five of chart set 2).

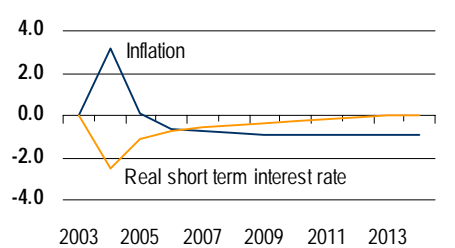
The real effective exchange rate could appreciate by just nearly 11 percentage points above baseline by 2005–06 before depreciating. The real depreciation of the effective exchange rate occurs over time on two counts. One is the need to eventually repatriate payments to foreigners for the capital inflow during the initial years. The second is that the expanded supply of China's goods on world markets than otherwise would be the case must mean lower relative prices for those goods — a real depreciation of the real exchange rate in the long run. The message of these simulations is that with a fixed nominal exchange rate there is an overheated domestic economy with a much higher initial level of inflation.

**CHART 4: CHINA WITH PRODUCTIVITY GROWTH, REDUCTION IN COUNTRY RISK AND A 10 PER CENT NOMINAL APPRECIATION OF RENMINBI AGAINST US DOLLAR**

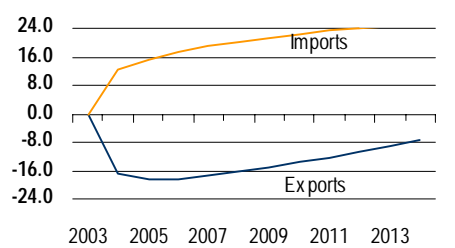
**Real GDP, consumption and investment (per cent deviation from baseline)**



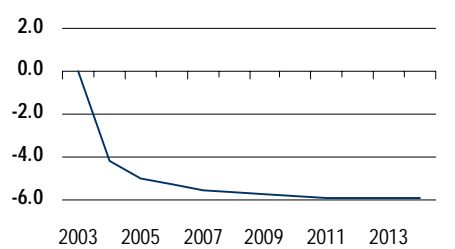
**Interest rates and inflation (percentage point deviation from baseline)**



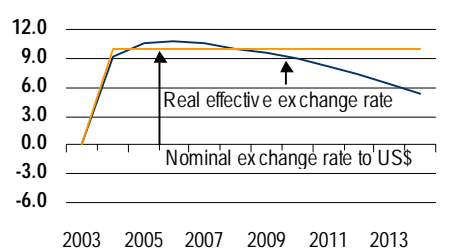
**Exports and imports (per cent deviation from baseline)**



**Current account (per cent of GDP change from baseline)**



**Exchange rates (percentage point change from baseline)**



## Effects of an appreciation

Now the experiment moves to the second scenario — a 10 per cent appreciation of the nominal exchange rate with the US dollar. These effects are shown in chart set 3.

The appreciation causes Chinese goods to be more expensive on world markets so exports fall by 4.4 per cent below baseline (panel 3 of chart set 3). The fall in exports mean aggregate demand has fallen and, with excess supply, so prices fall. The result is a fall in inflation of 8 percentage points below baseline in 2004. Real interest rates (nominal rates less lower expected inflation) must therefore rise. Short-term real rates could be 2.7 percentage points higher than otherwise, with a 10 per cent nominal appreciation.

The higher real interest rates dampen investment and consumption, which again flows through to aggregate demand. Investment could be nearly 6 per cent lower than otherwise in 2004 as a result of the appreciation of the currency (panel 1 of chart set 3).

Of interest is that imports are also initially lower than otherwise might be the case. It might be expected that the appreciation of the currency would lead to a substitution towards cheaper imports. It does, but there are two things going on that again demonstrate the need for an economywide model. There is also an income effect as output falls and income and consumption fall. This income effect outweighs the price effect with the net result being a fall of imports of over 2.6 per cent in 2004 before recovery in subsequent years (panel 3).

Notice too that there is very little change in China's current account with an appreciation (panel 4) of the currency. The reason is that China's savings–investment balance does not change much. Although there is an initial fall in investment with the appreciation as described above, there is also a fall in savings since the fall in output (income) is greater than the fall in consumption. Again, a complete model of an economy is required to trace all effects. If China's current account changes little, it must follow that there are few changes to current accounts in the rest of the world, including the United States. Effects on third countries are discussed later. First, we combine the effects of the two scenarios.

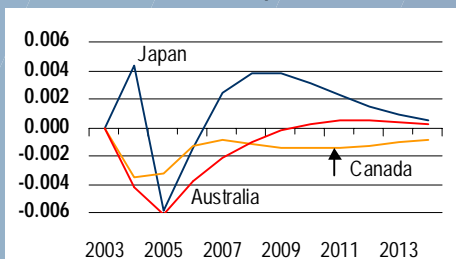
## Combined effect

The combined effects of rapid growth in China (caused by high productivity and a favourable change in country risk) and a one-off 10 per cent appreciation of their currency are shown on chart set 4. By comparing chart sets 2 and 4 it can be seen that the currency appreciation makes little difference to long-run real variables. The differences are confined to the initial years. Basically, the appreciation takes the 'heat' out of the economy and leads to lower inflation than would otherwise be the case. The real short term effects arise because prices, like wages, are not perfectly flexible in the real world and that is reflected in this model.

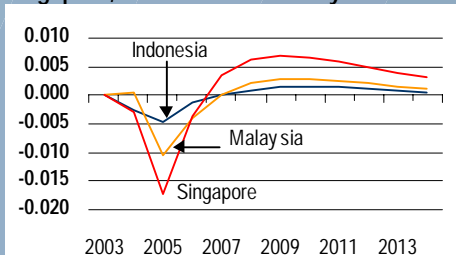
Although we have not set out to 'solve' the size of the appropriate Chinese appreciation, given our view of the world, a revaluation of the currency of the order of magnitude of 10 per cent is suggested by this

**CHART 5: NOMINAL EXCHANGE RATE AGAINST US DOLLAR WITH CHINESE RMB APPRECIATION (percentage point deviation from baseline)**

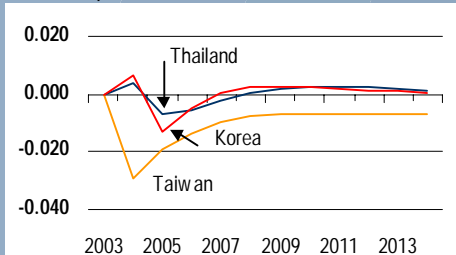
**Australia, Canada and Japan**



**Singapore, Indonesia and Malaysia**



**Thailand, Taiwan and Korea**



**2 Price effects on real exports**

To see the effect of price changes on real exports measured in different currencies, note exports to China in the first two columns of table 1 are expressed in both RMB and US dollar units. It was seen earlier that Chinese imports fell by 2.6 per cent in real terms with the appreciation. But that is using China's price level as the deflator. When expressed in US dollar terms (which is the meaningful way to talk about trade between other countries), price level changes have to be considered — that is changes in the real exchange rate matter. Hence, US exports to China fall by 1.95 per cent in RMB terms, but rise by 0.65 per cent in real US dollar terms. Given the small share of US exports to China compared to elsewhere there is only a small total effect.

analysis as sufficient to take a significant amount of heat out of the Chinese economy.

## Third country effects

Effects of a revaluation of the Chinese currency on third countries arise through the trade account and impact on capital flows. From the outset, the earlier observation that a revaluation of the renminbi has insignificant net consequences for China's current account means there are few net capital flow impacts. It was observed that the net savings-investment balance in China change little as both investment and savings fell with a revaluation. It must follow that there is little net change to China's current account.

The effects of China's 10 per cent appreciation on exports of other economies is seen in table 1. There are two things to note. First, the total changes in exports for economies are small largely due to price effects once changes in the real exchange rate are considered (see box 2). The second thing to note is the difference in exports from Taiwan compared with Hong Kong. The Taiwan currency depreciates so its exports are more competitive on export markets. Taiwan competes with China so it picks up market share. Hong Kong, however, is pegged to the US currency and does not depreciate, although it does relative to China. But Hong Kong's input costs rise with a high proportion of imports coming from China. Hong Kong loses competitiveness and exports.

**Table 1: Change in exports with 10 per cent Chinese appreciation against United States dollar, 2004**

Economy	Exports to China		Exports elsewhere	Total change
	RMB	US\$	US\$	US\$
Per cent deviation from baseline				
United States	-1.92	0.65	0.02	0.03
Japan	-2.71	0.07	0.00	0.00
Canada	0.15	2.75	0.00	0.02
Australia	-1.86	0.78	0.03	0.06
New Zealand	-1.12	1.50	0.04	0.07
Indonesia	-2.61	0.07	0.03	0.03
Malaysia	-0.81	1.80	-0.04	0.00
Philippines	-2.29	0.36	0.01	0.02
Singapore	-2.58	0.06	-0.07	-0.07
Thailand	0.25	2.86	-0.02	0.05
Taiwan	-2.59	0.09	0.21	0.20
Korea	-2.28	0.40	-0.01	0.02
Hong Kong	-2.77	0.23	-0.32	-0.23

With few repercussions, either on net trade or capital flows, there are few implications for other economies. The impact on Asian currencies, some of which follow a reaction function as described earlier, tend to initially depreciate but the changes are small (see chart set 5). The biggest changes are for Singapore and Taiwan that are assumed to be floating currencies.

## Implications

Given our explanation of China's growth this analysis suggests that it is in China's interests to revalue their currency of the order of 10 per cent. It

would take the current rising excess demand out of the economy. But there are many other considerations that bear on any decision to revalue the currency.<sup>8</sup> There are expectations to consider as well as the stability of the banking system. But, as Barry Eichengreen notes, the easiest time to abandon a currency peg is when capital is flowing in and the exchange rate is strong. A revaluation sooner, rather than later, may make sense.

A counter argument to a revaluation is the recent shoring up of the banking system.<sup>9</sup> Late last year some US\$45 billion in foreign exchange was injected into two of the big four state-owned banks. This recapitalisation is required given the large size of the non-performing loans of the four banks. But using foreign currency in this way, and more may follow, creates an incentive to keep the dollar-peg going.

It was seen earlier there are few implications, on balance, for third countries of a change in the nominal exchange rate. Simply, there are many offsetting factors leading to small net outcomes on trade, capital flows and growth. While non-Chinese exporters gain competitiveness relative to Chinese exporters, the weakness of the Chinese economy reduces demand for imports due to the income effect. In addition, the fall in investment in China is offset by a fall in savings, leaving the trade balance little altered and hence little implications for current accounts and world imbalances. On top of all this, the Chinese real exchange is already appreciating as the Chinese price level rises relative to that of their trading partners under a booming economy and increased money supply. Further substantial trade liberalization will introduce pressures for an exchange rate depreciation<sup>10</sup>. As other countries realise that a Chinese revaluation is no panacea for their imbalances, and that the renminbi is appreciating in real terms anyway, so calls for Chinese authorities to revalue the currency will diminish. Added to that will be the creeping awareness of the obvious point that exports of Chinese manufactured goods are changing relative prices, not the overall price level. It is not leading to global deflation. Changing relative prices do not necessarily warrant an appreciation of the Chinese currency.

In our judgement, China is not likely to revalue soon, despite the good reasons for doing so, primarily to help manage strong domestic demand pressures. The longer China delays a revaluation the less it matters because rising prices through higher inflation would cause the underlying real appreciation that China needs to address its own domestic imbalances. Even if China did revalue its currency this would have few implications for foreign direct investors. China's growth is being driven by fundamentals of returns to capital — these are the variables to watch rather than being distracted by a currency change. The major impact of a Chinese revaluation is on China itself and in particular on domestic inflation and real short term interest rates rather than changes in global trade balances.

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<sup>8</sup> See Eichengreen, B. 2004, 'Chinese currency controversies' draft paper prepared for the Asian Economic Panel to be held in Hong Kong, April 2004 for a discussion of other factors behind China's decision to adopt a more flexible exchange rate.

<sup>9</sup> The problems of China's banking system is well described in Huang, Y. 2003, 'Financial system reform: an unfinished task', in Garnaut, R. and Song, L. (eds), *China: New Engine of World Growth*, Asia Pacific Press, Canberra

<sup>10</sup> see Garnaut, 2003, op cit.

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