Preliminary

East Asia's Role in Resolving the New Global Imbalances

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I. Introduction

The world economy hangs in a precarious balance. United States current account deficits as a percent of GDP have grown from 2% in 1997 to 4% in 2002 to 6% in 2005, and they are forecasted to keep growing. Until 2002, the lion's share of these deficits was financed by private capital inflows. Since then, however, private inflows have fallen and foreign central banks have funded 40% of America's external deficits. It is doubtful that massive U.S. borrowing financed by foreign monetary authorities can be sustained. If America's net external debt continues along its present trajectory, it will asymptote to 120% of GDP. As Obtsfeld and Rogoff (2004, 2005) discuss, few countries have accumulated this much foreign debt without experiencing a crisis. If foreign central banks stop channeling resources into low-yielding U.S. Treasury bonds, the value of the dollar would tumble. This could produce a large correction in the U.S. trade deficit. Such a correction could destabilize the global economy, given the role that the U.S. has played as an engine of growth.

Trade surpluses in emerging East Asia and Japan have been an essential counterpart of the huge U.S. external deficits. Regional surpluses with America account for 40% of the total U.S. deficit (see Table 8).

Figure 1 shows the regional distribution of the world sum of surpluses or deficits. The U.S. deficit accounts for 70% of the world sum of current account deficits, implying that America absorbs 70% of net available global saving. In contrast, East Asian surpluses account for almost half of the world sum of current account surpluses, implying that the region provides almost half of the net global saving available to world capital markets. Thus, if the global economy is to be rebalanced, East Asia will have to play a significant part in the adjustment process.

The contours of the adjustment process are clear. First, the U.S. should increase domestic saving (S) relative to investment (I). Second, East Asia should increase I relative to S. Third, these changes in I and S will necessarily be accompanied by exchange rate depreciations of the U.S. dollar and appreciations of East Asian currencies in order to accommodate external adjustments and to simultaneously help individual countries maintain external and internal balance.

For East Asia there are several advantages to coordinated as opposed to unilateral exchange rate appreciations against the dollar. First, since 54% of East Asian trade is intra-regional, a joint real appreciation against the dollar would cause effective exchange rates (EER) in the region in the region to appreciate by less than half as much. The fact that the EER in Asia would increase by less than half as much implies that the recessionary impact would be attenuated and more likely to be correctable by macroeconomic and structural policy measures. Second, the region is characterized by efficient production and distribution networks, with higher skilled workers in countries like Japan, Korea, and Taiwan producing intermediate goods and shipping them to China and ASEAN for assembly by lower skilled workers and re-export to the rest of the world. Stable exchange rates within the region would provide a steady backdrop for these regional production and distribution networks. Third, by reducing exchange rate volatility, stable intra-regional exchange rates can continuously increase FDI flows and hence encourage FDI-trade linkages. Fourth, policy coordination can prevent unpleasant outcomes such as “beggar-thy-neighbor” policies or “free-rider” problems that might arise because economies in the region are not only trading partners but also competitors in third markets.

It may thus be desirable for the region to coordinate the next round of exchange rate realignments relative to the dollar. As manifested by the first East Asia Summit in Kuala Lumpur this December, countries in the region are determined to embrace further economic integration. This inaugural summit is an ideal venue to pursue policy dialogue in the area of exchange rate coordination in order to facilitate the resolution of the current global imbalances and promote further integration in East Asia.

The next Section analyzes the nature of the new global imbalances. Section III examines the sustainability of these imbalances. Section IV considers policies that can help to rebalance the global economy. Section V concludes.

II. The Nature of the New Global Imbalances

The new global current account imbalances have emerged since 1997-8. Simultaneous U.S. saving-investment deficits (Figure 2) and East Asian saving-investment surpluses (Table 1) arose due to serendipitous and mirror-imaged patterns of capital flows and business cycles.

A. U.S. Current Account Deficits

The U.S. imbalances in the late 1990s were driven by a domestic investment boom. Investment as a share of GDP averaged almost 3 percentage points higher over the 1997-2000 period as compared with the 1990-1996 period (Figure 2). Businesses invested heavily in information and communication technology. This in turn lowered production and management costs and increased total factor productivity (TFP) (Bailey, 2003). TFP growth between 1995 and 2000 averaged 1.13% per year, after growing

only 0.38% per year between 1973 and 1995. This increase in productivity growth lifted real rates of return. The NASDAQ Stock Index, for instance, rose 200 percent between January 1995 and its peak in March 2000. The Standard & Poors' 500 and the Dow Jones Industrial Average both rose more than 100 percent over this period.

Soaring stock prices in the late 1990s and soaring housing prices in the early 2000s raised spending relative to income and reduced private saving as a share of GDP. Econometric estimates indicate that a one hundred dollar increase in private wealth increases spending by about six dollars.[1] The U.S. aggregate stock market capitalization equaled about 100% of GDP in 1997 and more than doubled by 2000. As the U.S. economy entered a recession in 2000-1, the Fed lowered the federal funds rate from over 6% to 1%. This raised housing prices. Housing wealth in 2000 also equaled about 100% of GDP, and it increased by 50% over the next five years. As Greenspan (2003) discusses, these increases in wealth raised consumption and reduced saving.

Until 2001 fiscal policy had nothing to do with the decline in national saving in the U.S. Unlike in the 1980s, the initial deterioration of the trade balance in the late 1990s was associated with an improving budget balance and even with budget surpluses until the second half of 2001. Since the U.S. recession of 2000-01, however, large U.S. budget deficits have reappeared due to expansionary Keynesian fiscal policy and increased military expenditures. The fiscal balance shifted by nearly 6% of GDP between 2000 and 2004, moving from a surplus of 2% to a deficit of 4%.[2] As Figure 2

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[1] See Belsky and Prakken (2004) and the references contained therein. Belsky and Prakken also present data on changes in stock market and housing wealth over the last 40 years.

[2] The Congressional Budget Office reports that 1.4% of this shift was due to cyclical factors.

shows, this deterioration in the fiscal balance was the proximate cause of the decline in national saving and the resulting further deterioration of the current account deficit after 2001.

Figure 3 shows the relationship between the current account deficit in the U.S., net capital inflows, and the real effective exchange rate (REER) of the dollar between 1997 and 2004. The Figure shows that when private capital inflows exceeded the current account deficit, the dollar tended to appreciate. In fact, the REER appreciated more than 20% between the first quarter of 1997 and the first quarter of 2002. Since then, however, private inflows have almost always been less than the current account deficit. This has contributed to the 17% drop in the real value of the dollar between the first quarter of 2002 and the fourth quarter of 2004.

B. East Asian Current Account Surpluses

While the U.S. experienced an investment boom and a swing to current account deficits beginning in 1997, East Asia experienced the opposite. The 1997-98 Asian Financial Crisis can be characterized as a capital account crisis that could develop even in the presence of sound macroeconomic fundamentals.[3] Short-term foreign bank loans that had been attracted by "miraculous" macroeconomic performance in East Asia exited rapidly and in massive quantities. In Thailand the reversal of capital flows between 1995 and 1998 amounted to 16.8% of GDP and in Indonesia the change between 1996 and 1998 amounted to 13.4% of GDP (see Yoshitomi *et al*., 2003).

Local banks and firms were badly exposed to these outflows. Before the crisis

[3] In sharp contrast, a conventional current account crisis can occur only when fundamentals are weak.

they had borrowed short-term in dollars and invested long-term in domestic real estate and manufacturing projects. There was thus a double mismatch (i.e., both a currency and a maturity mismatch) on their balance sheets. When the capital outflows caused local currencies to depreciate, banks' and firms' liabilities soared in domestic currency terms and their balance sheets were decimated. As domestic balance sheets deteriorated, financial intermediation was destroyed and investment spending by borrowers plummeted. This occurred not just because the intermediation system had become dysfunctional but also because the prolonged debt repayment process (including the restructuring of balance sheets and the shedding of excess capital) deprived firms of new investment opportunities.

Table 1 shows that, while saving as a share of GDP has more or less remained stable in Asia, investment relative to GDP has fallen and remained low. The result has been large current account surpluses, standing in sharp contrast to current account deficits in crisis-hit economies before 1997. Real GDP growth rates fell from their "miraculous" pre-crisis levels of around 8% to 5 or 6% after the crisis subsided.

Figure 4 shows exchange rates in emerging East Asia. Asian exchange rates initially collapsed by 50 percent or so due to the massive reversals of private capital flows associated with the capital account crisis. Afterwards they remained about 20% on average below their pre-crisis levels. Low exchange rates have helped to keep Asian current accounts in surplus after the crisis subsided.

The more or less similar pattern of stable saving, weaker investment, and depreciated exchange rates has also been seen in non-crisis Asian countries such as Singapore and Taiwan. Investment as a share of GDP plummeted in these countries after the crisis, causing the current account balances that were already in surplus before

the crisis to improve further after the crisis (Table 1). In addition, exchange rates in these non-crisis countries are substantially lower now than before the crisis.

Under strong pressure for currency appreciation in recent years, East Asian central banks have kept exchange rates low by intervening in foreign exchange markets and purchasing U.S. securities. Official holdings of U.S. assets by foreign central banks between 2002 and 2004 have increased by more than $700 billion out of a cumulative U.S. current account deficit of $1.65 trillion (see Figure 5).

Emerging East Asian central banks in both the crisis-hit countries (Indonesia, Korea, Malaysia, the Philippines, and Thailand) and other countries (China, Singapore, and Taiwan) have accumulated foreign exchange reserves for the following reasons: 1) To be prepared for another capital account crisis characterized by massive reversals of short-term capital that can trigger both a currency collapse due to the drain on foreign reserves and a banking crisis due to the sharp increase in external liabilities on the balance sheets of banks and firms; and 2) To maintain competitive exchange rates in order to sustain the export-oriented thrusts of their economies.

Japan has also accumulated reserves through foreign exchange market intervention, although for a different reason. It has sought to fight price deflation by preventing the yen from appreciating too much. It resorted to this only after having exhausted traditional Keynesian fiscal and monetary policy remedies as the public debt/GDP ratio approached 200% and short-term interest rates became zero after 2001.

The next section considers whether the current global arrangement, with the U.S. running current account deficits that are financed largely by Asian central banks, will prove sustainable.

III. The Sustainability of the New Global Imbalances

The shortfall of saving relative to investment in the U.S. has caused it to borrow trillions of dollars from private investors and Asian central banks. A question of particular moment is whether the current equilibrium will remain stable, or whether the world economy will have to pass through a possibly painful adjustment process.

A. The Sustainability of U.S. Current Account Deficits

A stable equilibrium in the balance of payments is one that can be sustained over the long run, but how can we make this definition operational? One perspective is that there is a fundamental equilibrium when private capital inflows are sufficient to finance current account deficits over the cycle (see Williamson, 1983). In the U.S. net capital inflows have averaged almost 3% of GDP between 1997 and 2004, implying that deficits of the current level (6% of GDP) are clearly unsustainable by Williamson's (1983) criterion. In general, deficits exceeding 2-3% of GDP could be hard to sustain over the long run.

Another way to evaluate the sustainability of external borrowing is to examine the evolution of the stock of net foreign debt relative to GDP. As Gramlich (2004) discusses, one criterion for stability is that the stock of debt converges to a stable value relative to GDP.

The steady state net external debt/GDP ratio (n*) can be written as:

(1) $n^* = c/ (g-r)$

where c is the current account deficit relative to GDP, r is the nominal interest rate, and g is the nominal growth rate of the economy.

Paradoxically, while U.S. net external debt relative to GDP has increased to 25%, net investment income earned by U.S. citizens from abroad has exceeded net investment income paid by U.S. citizens to the rest of the world by almost $25 billion over the last year. This has occurred because U.S. assets abroad are largely in the form of equities (including FDI), while U.S. external liabilities are largely in the form of fixed income assets (including Treasury bills purchased by foreign central banks). U.S. investors thus receive the equity premium accorded to riskier assets (Obtsfeld and Rogoff, 2005).

Because net investment income does not cause U.S. external liabilities to grow, Forbes (2005) ignores the interest rate when calculating the steady state debt/GDP ratio n*. Using equation (1) assuming a nominal growth rate of 5% and an interest rate of 0%, she finds that if the current account deficit dropped to 2% of GDP and stayed there, net external debt would rise from its current level of 25% of GDP and converge to 40% of GDP (2%÷5%). If the current account deficit dropped only to 3% of GDP and stayed there, external debt would converge at 60% of GDP (3%÷5%). If the current account deficit remained at its current level of 6% of GDP, external debt would reach 120% of GDP (6%÷5%). This is problematical because, as Obtsfeld and Rogoff (2005) note, few countries have reached a level anywhere near to this without experiencing a crisis.

Furthermore, is it realistic to assume that interest rate effects remain benign? At some point foreign investors may grow unwilling to hold an ever increasing share of their wealth in the form of U.S. bonds (see Gramlich, 2004). They would then demand a risk premium (i.e., a higher interest rate) to hold U.S. bonds. This would happen *a fortiori* if investors feared that the dollar would depreciate. If net investment income

became negative and thus the net interest rate r on the debt became positive, then the steady state debt/GDP ratio would exceed 120% of GDP assuming current account deficits remained at 6% of GDP. If r equaled 2%, then even a current account of 3% of GDP would imply a steady state debt/GDP ratio of 100% (3%÷(5%-2%)). If r exceeded the growth rate of the economy, then the external debt/GDP ratio would grow without bound unless the current account were in surplus.

Since the external debt is denominated in dollars, the U.S. could repudiate it through inflation. However, as seen in the 1970s, inflation can be devastating for financial markets and the macroeconomy.

In sum, U.S. net external liabilities are on a dangerous trajectory. If sustainability is determined by comparing current account deficits with net private capital flows, it would be unwise to assume that a current account deficit exceeding 2.5% of GDP would represent a long run equilibrium. If sustainability is determined by calculating the steady state stock of external debt relative to GDP, it would again be imprudent to assume that a current account deficit above 2.5% of GDP would be stable since even this level implies that net external liabilities would equal at least 50% of GDP (or higher if interest rate effects cease to be benign). Thus the U.S. current account deficit should fall by a minimum of more than 3% of GDP from its current level of 6% of GDP.

We next consider whether there are limits to East Asian central banks' accumulation of foreign reserves, which constitutes another sustainability issue of the current global imbalances on top of the primary sustainability issue of U.S. current account deficits discussed above.

B. The Sustainability of Reserve Accumulation by Asian Central Banks

All East Asian economies, except Vietnam and the Philippines, have run substantial trade and current account surpluses over the last five years (Table 2). The average trade surpluses for Japan, Thailand, China, and South Korea ranged from 2.4 to 3.6 percent of GDP per annum. The average trade surpluses for Indonesia, Malaysia and Singapore were particularly large, averaging respectively 12%, 22.4%, and 22.7% per year. In addition to sizable current account surpluses, China and South Korea also ran sizable financial account surpluses, implying that net capital flows were positive. In the case of China, net FDI inflows between 2001 and 2004 averaged nearly $50 billion, almost twice as large as her average current account surplus.

Reflecting large current account surpluses or large basic balance surpluses, foreign exchange reserves in the region are now substantial due to heavy intervention in the foreign exchange market. As a percentage of GDP, Singapore and Malaysia top the list with foreign exchange reserves of 95% and 40% of GDP, respectively, at the end of 2004. In terms of absolute size, Japan and China top the list with reserves of $824 and $610 billion, respectively, at the end of 2004.

Particularly after 2003 the scale of reserve accumulation and the flexibility of exchange rate management have varied. For example, in 2004, China increased its foreign exchange reserves by $206 billion. In contrast, the reserve buildup was less pronounced in South Korea and Thailand, both of which allowed some appreciation of their currencies. The Korean won appreciated by 23 percent against the US dollar from the end of 2002 until May 2005. The Thai baht appreciated 11 percent over the same period. In Thailand, the moderate reserve accumulation was the result of the country rapidly repaying its external debt.

Ceteris paribus, foreign reserve accumulation increases base money and hence creates excess liquidity in the banking system. This in turn increases the money supply and exacerbates inflation. To offset this, central banks often engage in sterilization policies. Sterilization involves selling government bonds or central bank bills to keep the monetary base unchanged or increasing in a controlled manner and to mop up excess liquidity in the banking system. For example, in China at the end of 2004 outstanding PBoC sterilization bonds amounted to RMB974.2 billion or about 7.1 percent of GDP (Table 3).

A straightforward measure of the degree of sterilization policy is the net change in domestic assets over the net change in foreign assets on central bank balance sheets. According to this benchmark, in 2003 Thailand and China did not engage in any sterilization operations at all while South Korea and Malaysia sterilized 92-93 percent of the increase in base money due to foreign reserve accumulation. In 2004, however, Thailand sterilized 39 percent of the increase, China 54 percent, Korea 78 percent, and Malaysia 95 percent (Table 3).

Sterilization policy has so far been largely successful in controlling money supply growth and inflation (Tables 4 and 5). Money supply growth rates have been moderate except for in Malaysia. Malaysia's M2 growth shot up from around 10 percent in June 2004 to close to 25 percent in March 2005 on an annual basis. China's M2 growth was held down in 2004 due to the "Window Guidance" policies by the authorities to contain economic overheating by targeting excessive and wasteful capital formation and speculative activities in selected sectors (e.g., the urban real estate market). Consumer price increases throughout the region have remained about 3 percent or below (Table 5). However, since 2003 producer prices have increased more quickly

in Malaysia and Thailand. This may presage a future rise of consumer prices.

Carrying costs of sterilization policy, or the yield differentials between Asian sterilization bonds and U.S. Treasury securities, narrowed substantially in Korea in 2005 and turned negative in China, Malaysia, and Thailand. Before this, carrying costs were positive so that all four countries incurred interest income losses in 2003-04 (Figure 6). Spreads were positive and averaged about 150 to 200 basis points in Korea, Malaysia, and China over the last two years. The costs of sterilization in terms of interest income losses were estimated at about one half of one percent of GDP for Korea and Malaysia in 2003 and 2004. For China and Thailand, these costs were negligible in 2004. With the 200 basis point rise in the federal funds rate since mid 2004, carrying costs have turned negative in China, Malaysia, and Thailand and fallen substantially in Korea in the first quarter of 2005.

Although yield differentials are now negative, there are still several problems associated with sterilization operations. First, so long as the U.S. dollar tends to depreciate and so long as monetary authorities in the region continue to purchase U.S. Treasury securities, they will have to sterilize the associated base money increases without end. Such sterilization policies may fail in the long run because the large increase in the stock of central bank bills or government securities will eventually drive up domestic interest rates, thus attracting further capital inflows and defeating the purpose of sterilization. Second, the large liquidity in the form of excess reserves in the banking system beyond required reserves could lead to excessive credit expansion in the future. This is particularly worrisome in China because its excess reserve ratio has reached 5.3 percent of total deposits compared with its 7.5 percent required reserve ratio. Third, some capital account liberalization measures designed to encourage capital

outflows will also make the existing capital control regimes less effective, leading to de facto capital account liberalization. This will be hazardous for countries with fixed exchange rate regimes because it may undermine the autonomy and effectiveness of monetary policy. Fourth, the practice of accumulating Treasury securities and sterilizing these purchases results in an inefficient allocation of scarce resources. There are better ways at present to allocate resources in order to stimulate demand than by relying on export expansion. These include using fiscal and structural policies to build infrastructure and remedy economic deficiencies in ways that would benefit the non-tradable sector. Such domestic absorption increasing policies, however, will have to be accompanied by exchange rate appreciations or expenditure-switching policies in order to simultaneously achieve internal and external balance.

IV. Resolving the New Global Imbalances

A. The Effects of a Dollar Depreciation and of IS Corrections in the U.S.

The current arrangement is thus likely to prove unsustainable. As discussed in Section III A, the present scale of the U.S. current account deficit is not sustainable and hence the dollar will have to depreciate and U.S. domestic absorption will have to grow more slowly than U.S. domestic production (i.e., GDP). Would such a depreciation help to resolve the global imbalances? If so, how much of a dollar depreciation would be needed.

The effect of a dollar depreciation on the U.S. current account balance is influenced by price and income elasticities for U.S. exports and imports. These have

been estimated by Chinn (2005a, 2005b, forthcoming) in a series of valuable studies using cointegration techniques (see Box 1). He and other researchers have uncovered several stylized facts:

1) Price elasticities for U.S. exports in real terms are precisely estimated and are between 0.68 to 0.84.

2) Price elasticities for U.S. imports in real terms are not statistically significant unless computers and oil are excluded. These amount to 15% of total imports. If they are excluded, price elasticities for the remaining 85% of imports are statistically significant but low. They range from 0.29 to 0.49.

3) The sum of the export and import price elasticities just barely exceeds one (1.15 if we use the midpoints), implying that the Marshall-Lerner conditions for a depreciation to improve the trade balance in nominal terms is just barely met.

4) The income elasticity of demand for U.S. exports is between 1.7 and 2.0.

5) The income elasticity of demand for U.S. imports is 2.4.

6) The Houthakker-Magee effects (i.e., the finding that income elasticities for U.S. imports substantially exceed income elasticities for U.S. exports) are still present in the estimates. The difference in the income elasticities, however, appears to have fallen since Houthakker and Magee's original work in 1969.

Chinn (2005) concludes based on these estimates that a depreciation of the dollar, if not accompanied by a decrease in expenditures in the U.S. or an increase in expenditures in the rest of the world, would be unlikely to substantially reduce the US trade deficit.

Obtsfeld and Rogoff (2000, 2004, 2005) reach the same conclusion using a multi-country, intertemporal, general equilibrium model. They state that most theoretical and empirical models (including theirs) indicate that a 10% depreciation of the dollar would be associated with a reduction in the U.S. current account deficit of around 1% of GDP. They thus argue that reducing the current account imbalance to a sustainable magnitude would require not just a dollar depreciation but also a change in the level of expenditures (e.g., a decrease in consumption in the U.S.).

In order to help resolve global imbalances, the U.S. should seek to increase national saving relative to investment. This point is reinforced by Figure 2, which shows the real effective exchange rate of the dollar. After the 17% depreciation from 2002:I to 2004:IV, the dollar is close to its long run average, indicating that the exchange rate in 2005 is not greatly misaligned. Nevertheless, the current account deficit equals 6% of GDP.[4] This implies that trade imbalances are being driven by shortfalls of saving relative to investment in the U.S. and not by an overvalued exchange rate.

There are two policy steps that the U.S. can take to adjust domestic absorption. First, it should seek to curtail speculative excesses in the housing market. As explained in Section II A, housing prices on average have increased 50% in the U.S. over the last 5 years. Belsky and Prakken (2004) report that this increase in housing wealth has increased consumption by a substantial amount. Alan Greenspan (2003) also underscores the importance of housing equity in explaining the recent decrease in private saving. Continued interest rate increases by the Fed could have a salutary effect

[4] Even the core current account deficit, excluding recently increased oil imports, equals 5.5% of GDP.

by checking the currently unsustainable rise in housing prices in the U.S. Second, the U.S. can reduce its budget deficit. As explained in Section II A, increases in the budget deficit were the proximate cause of the large drop in national saving relative to investment after 2001 (see Figure 2). A decrease in the budget deficit could help to close this saving-investment gap.

Such I-S rebalancing policies would be consistent with further depreciations of the dollar in order to reduce the current account imbalances. A 30% depreciation of the dollar accompanied with I-S adjustment policies in the U.S. would go a long way towards reducing the presently unsustainable U.S. current account deficit of 6% down to a sustainable level of about 2.5% of GDP. In this paper we thus take as a working hypothesis that the dollar should depreciate by 30%[5]

B. Unilateral and Joint Appreciations in Asia

1. The Effects of a Unilateral RMB Appreciation

The Bush Administration has persistently demanded that China unilaterally revalue its currency. However, it is not clear whether such demands are in the global interest (resolving global imbalances) or in China's own interest. The difference between the two becomes clear when we consider the effects of a unilateral RMB appreciation.

Park (2005) and Kamada and Takagawa (2005) have used structural macroeconomic models to estimate how a revaluation of the RMB alone would affect

[5] However, this is not our projection, nor can anybody predict the timing or speed of a dollar depreciation. The 30% depreciation of the dollar is taken as a plausible hypothesis for conducting policy analysis.

trade balances in China and the U.S. Park, using the Oxford Economic Forecasting model, found that if China revalued by 30% while other Asian countries kept their exchange rate regimes constant the global Chinese current account balance would decline by $45 billion dollars compared with an initial surplus of $32 billion in 2004. In sharp contrast, the global U.S. current account deficit would fall by only $12 billion compared with a deficit of $650 billion in 2004.[6] Thus the effect of a unilateral RMB appreciation on the U.S. deficit would be trivial according to this model. Kamada and Takagawa, using the Asian Economy Model, found that, if China revalued by 30% while other countries kept their exchange rate regimes constant, the global Chinese trade surplus would fall by 1.5% of GDP (as compared with her present deficit of 4% of GDP in 2004) and the aggregate U.S. trade deficit would fall by 0.1% of GDP. Since the aggregate U.S. trade deficit will reach almost 6% of GDP in 2005, the effect of an RMB appreciation alone on the U.S. deficit would be trivial according to this model also. These results are obtained basically because U.S. trade with China accounts for only 4% of total U.S. exports and 13% of total U.S. imports, although the U.S. bilateral trade deficit of $160 billion with China accounts for one quarter of the U.S. global deficit of $650 billion (see Table 8).

These simulation results indicate that it is necessary to distinguish between two possible reasons for revaluing the renminbi. One is to reduce the large U.S. external deficit and the other is to help China manage its external accounts. The evidence discussed above indicates that a unilateral RMB appreciation would not accomplish the first goal and that what is necessary instead to reduce the U.S. deficit to sustainable levels is a multilateral depreciation of the dollar combined with strong U.S. policy

[6] Park assumed that the Malaysian ringgit revalued by half as much as the Chinese RMB.

initiatives to correct its IS imbalances.

In this context it is very important to note that, whereas the U.S. bilateral deficit with China equaled $160 billion in 2004, China's global trade surplus in 2004 was $32 billion. This suggests that China's bilateral trade surplus with the U.S. is largely offset by China's trade deficits with other countries. This implies that it is necessary to consider China's trade structure in the context of global trade when discussing the new global imbalances and China's role in resolving them. We now turn to this issue.

2. Triangular Trading Patterns in East Asia

Table 6 indicates the high degree of economic interdependence in East Asia, with intra-regional trade accounting for 54% of the area's total trade. In addition, the region is characterized by intricate production and distribution networks, and by what Yoshitomi *et al.* (2003) call "triangular trade patterns." [7] Higher skilled workers in countries like Japan, Korea, and Taiwan produce sophisticated technology-intensive intermediate goods and ship them to China and ASEAN for assembly by lower skilled workers. The finished products are then exported to the rest of the world. Table 7 shows that 55% of China's total exports are such processed exports and that 41% of China's total imports are for processing and subsequent re-export. Out of this 41%, three-fifths (24%) come from East Asian NIEs and Japan. In contrast, less than one-tenth (4%) of these imports of sophisticated intermediate goods for processing comes from the U.S. and the EU. As already stated, China's exports of processed final goods are sold throughout the world, implying that the Chinese bilateral surplus with the U.S.

[7] As Gaulier et al (2004) discuss, FDI flows in East Asia have played an important role in strengthening the international production networks, reducing costs, and transferring technological know how.

would remain large even if China's global surplus disappeared. The lion's share of these processed exports is from FDI enterprises. Such trade-FDI linkages have established production-distribution networks in East Asia that are based on vertical intra-industry trade (VIIT).

This VIIT differs both from the exchange of final goods emphasized by traditional trade theory for vertical inter-industry trade between the North and the South (e.g., between capital goods and apparel) and for horizontal intra-industry trade between the North and the North (between two differentiated types of automobiles). As Fukao *et al.* (2002) discuss, the production processes of an industry (e.g., the electronics industry) has been split into fragmented production blocks that can be located in different countries and the new VIIT is driven by differences in factor endowments in the fragmented production blocks between developing, emerging, and developed economies in the region. VIIT has led to large efficiency gains and helped make the East Asian region the manufacturing center of the world.

As discussed above, China's imports for processing represent a large share of China's imports from the rest of Asia. Therefore, a unilateral appreciation of the RMB would not affect China's global trade surplus much and, as Greenspan (2005) discusses, a RMB appreciation alone would reverse to some extent these East Asian trade networks without affecting overall U.S. exports and imports much. Chinese value added in such processed exports is small (20 percent or so) compared with the cost of intermediate goods imported from the rest of Asia. These observations suggest that if the rest of Asia appreciated their currencies along with China, the effects on the global U.S. deficit would be larger.

3. The Effects of a Joint Appreciation

How would a joint appreciation of all East Asian currencies against the dollar affect the global imbalances? This is an easier case to consider analytically than the case of a unilateral RMB appreciation since it would stabilize mutual exchange rates among economies in the region and thus not disrupt the terms of trade between regional trading partners.

As discussed above, a rule of thumb derived from existing studies indicates that a 10% drop in the U.S. multilateral exchange rate would reduce the U.S. current account deficit by about 1% of GDP, implying that a 30% reduction in the dollar would be needed to decrease the U.S. external deficit from its current unsustainable level of 6% of GDP down to 3%. In this case the global U.S. current account deficit would fall by $350 billion from its present value of $700 billion. If the reduction in the U.S. deficit were distributed proportionately by region, the East Asian surplus with the U.S. would fall by $150 billion from its current level of $300 billion.

The following policy implications can be drawn from the results reported in this Section. First, U.S. demands that China revalue the RMB would not resolve the U.S. global external deficit. Second, even if China's global trade surplus is reduced or eliminated, the U.S. bilateral trade deficit with China will remain large due to the established triangular trading patterns in the world economy. Exchange rate policy should be assigned to resolving the global but not the bilateral imbalance of a nation, as we all know. Third, a joint appreciation in East Asia would be beneficial not only because it would not disrupt the terms of trade between regional partners engaged in the well established production-distribution networks but also because it would help to reduce the aggregate U.S. current account deficit.

4. Complementary or Competitive Trade Relations in East Asia

One practical problem is that, because Asian countries compete with each other both domestically and particularly in third markets, they may not follow regional partners in an exchange rate appreciation. Bénassy-Quéré and Lahrèche-Révil (2003) report results from a gravity model indicating that if one Asian country's exchange rate appreciates by 10% relative to other Asian countries' exchange rates, that country's exports to third markets will fall by 8% (see Box 2). Eichengreen *et al.* (2004) report results from a gravity model indicating that an increase in China's exports to third markets tends to reduce the labor-intensive consumption goods exports of other Asian countries. They also find that faster growth in China increases the capital goods exports of other Asian countries. Relatively more developed East Asian countries export large amounts of capital and intermediate goods, while relatively less developed countries in the region export large amounts of consumer goods. These results thus imply that there is essentially a complementary relationship between China and developed Asia in sophisticated intermediate and capital goods and largely a competitive relationship between China and less developed Asian countries in labor-intensive consumer products.[8] Of course, there is a complementary relationship between China and MNCs located in ASEAN that export sophisticated technology-intensive parts and components there for processing.

All in all, elements of competition exist in any international trading market and

[8] If we consider trade in intermediate goods, there tends to be a complementary relationship between China and all of Asia. On average, 30% of imports into China from East Asia are intermediate goods. This ratio is lowest for Hong Kong at 20% and highest for the Philippines at 60%.

hence fear of losing competitiveness relative to other Asian economies may prevent them from allowing their currencies to strengthen alone. This may explain the unwillingness of some countries in the region to allow unilateral appreciations of their currencies. There may thus be a role for policy coordination in the next exchange rate realignment in East Asia.

C. Exchange Rate Coordination and Possible New Exchange Rate Regimes in East Asia

1. Coordinating an Increase in Exchange Rate Levels

East Asian would benefit in several ways from coordinating a joint appreciation in the level of regional currencies (including the Japanese yen) against the dollar. First, a joint appreciation (say by 30%) could help to reduce the global U.S. trade deficit more than a unilateral appreciation by China would. Second, a concerted appreciation would keep intra-regional exchange rates constant and thus provide a stable backdrop for the regional production and distribution networks. Third, a region-wide appreciation would limit intra-regional exchange rate volatility and therefore facilitate the flow of FDI (Kiyota and Urata, 2004).[9] Fourth, an appreciation throughout East Asia would attenuate the increase in effective exchange rates for each individual country since intra-regional trade accounts for 54% of total trade (see Table 6).

[9] This article reports that exchange rate volatility deters FDI in the region.

2. The Appropriate Exchange Rate Regime for the Region

Along with an appreciation in the exchange rate level, it is necessary to consider appropriate exchange rate regimes for countries in the region. As Ito and Ogawa (2005) discuss, there are currently a variety of exchange rate regimes in East Asia. While Japan is essentially a free floater, Korea, the Philippines, and Singapore have lightly managed systems. Indonesia and Thailand have heavily managed floats. China and Malaysia have fixed exchange rate regimes. Hong Kong has a currency board. Figure 4 shows how much these and other currencies have appreciated against the dollar in recent years.

There are several advantages for China and other countries in the region in moving towards a more flexible system. First, policies designed to encourage capital outflows will make existing capital control regimes less effective, leading to de facto capital account liberalization. This will undermine the effectiveness of monetary policy for countries that have fixed exchange rate regimes. Second, it can be argued that the best time to leave a hard peg is when times are good (e.g., Frankel, 2005). At some point capital inflows typically turn into capital outflows as happened during the Asian capital account crisis, and exiting a peg when the balance of payments is in deficit can result in downward speculative pressure that undermines confidence. Thus it is better to move towards flexibility when times are good. Third, with the free entry of foreign banks and other financial institutions into China according to the terms of her WTO accession committments, capital flows will become more volatile calling for some flexibility of the exchange rate (Liu, 2005). Furthermore, if some flexibility is introduced, Chinese banks and traders can get needed experience in managing exchange rate risk and Chinese institutional infrastructure (e.g., forward markets) can develop

quickly (Prasad et al, 2005).

Emerging economies tend to be reluctant to move to more flexible exchange rate regimes because of a "fear of floating."[10] Possible misaligned exchange rates could disrupt East Asian economies that have high ratios of exports and imports relative to GDP and that are thus highly exposed to fluctuations in global trade. Furthermore, still shallow and narrow domestic capital markets in most emerging East Asian economies tend to generate highly volatile exchange rates. In addition, once a currency depreciates, currency mismatches could generate a serious capital account crisis as witnessed in East Asia in 1997. Thus countries in the region may resist moving towards greater flexibility.

One solution to this fear of floating may be to adopt a basket, band, crawl (BBC) regime, as Williamson (2001) has advocated for East Asia. He argued that focusing on a basket of currencies would help to stabilize the real effective exchange rate. He also claimed that employing an exchange rate band would be appropriate because of uncertainty about the value of the fundamental equilibrium exchange rate as well as allow for some flexibility in the face of volatile capital movements. Finally he noted that allowing the exchange rate to crawl would neutralize inflation differentials across countries so as to keep the real effective exchange rate stable, including the real appreciations caused by Balassa-Samuelson effects.[11]

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[10] As Reinhart (2000) discusses, when times are good and reserves are accumulating countries are unwilling to allow appreciations because they are concerned with a loss of competitiveness and setbacks to export diversification. When times are bad, countries are unwilling to allow depreciations because they fear that liability dollarization will lead to an exchange rate collapse. Thus countries are unwilling to move to a floating regime.

[11] The Balassa-Samuelson effect holds that a country's real exchange rate will appreciate if the productivity of its tradables relative to its nontradables is larger in other countries.

Ogawa and Ito (2002) have demonstrated that coordination among East Asian economies in moving to a BBC system would be helpful. They presented a model where countries seek an exchange rate regime that minimizes current account fluctuations. They showed how countries can decide on optimal weights to assign to currencies based on demand elasticities and export shares. These weights, however, depend in turn on the weights that neighboring countries adopt. If an important trading partner of country A adopts a dollar peg, for example, then it may be optimal for A to adopt a dollar peg also. In other words, a dollar peg may be a Nash Equilibrium. On the other hand, if A's trading partner adopts a trade-weighted currency basket, then it may be optimal for A to adopt a trade weighted currency basket also. This would also be a Nash equilibrium.

Ogawa and Ito argued that a common basket may be a better Nash equilibrium for East Asia than a dollar peg. If, because of inertia or for some other reason one country is unable to break out of a dollar peg, then a coordination failure may occur. If, on the other hand, the country is able to coordinate a managed float with its trading partner, then both countries might have smaller fluctuations in their trade balances. Thus coordination can help overcome inertia in the choice of an exchange rate regime for the region and lead to a superior Nash equilibrium. These arguments strongly suggest the importance of regionally concerted actions to change the exchange rate level and possibly the exchange rate regime.

However, specifying the appropriate exchange rate regime is beyond the scope of this paper. We will simply sketch some key issues concerning the appropriate reference rate to use in a BBC system and the appropriate band width.

It is important to consider the composition of the reference basket. There are

basically three approaches. First, Ogawa and Ito suggested a basket composed of the yen, euro, and dollar. Second, Suttle and Fernandez (2005) advocated an arrangement similar to the European exchange rate system (ERM) of the 1980s and 1990s. Third, Ogawa and Shimizu (2005) examined a reference basket calculated as a weighted average of East Asian currencies. Each of these three approaches have advantages and disadvantages.

Using a G-3 currency basket would better stabilize effective exchange rates for emerging East Asian economies in contrast to using the dollar alone. If a common currency basket with common weights for each currency were used, it would help keep intra-regional exchange rates constant in the face of extra-regional exchange rate changes. In addition, if the G-3 based reference rate were adjusted for inflation differentials, it would keep real effective exchange rates stable. This would help to prevent wide swings in exports and imports and thus to preserve production and distribution networks in the area. A G-3 basket, however, would necessarily exclude Japan. Given the important role that Japan plays in triangular trading patterns within the region, this may not be desirable.

Adopting an ERM-style system would provide stability within the region. Presumably the reference rate, analogous to the German mark under the European system, would be the Japanese yen. The drawback would be the enormous volatility of the yen/dollar rate, causing other East Asian currencies to fluctuate a lot against the dollar (Frankel, 2004). This volatility would disrupt FDI flows within the region (see Kiyota and Urata, 2004). It is also questionable whether the institutional infrastructure of countries in the region are sufficiently strong to withstand the effects of the extreme exchange rate volatility unless wide bands around the yen reference rate were

established.

Using a currency basket composed only of Asian currencies would facilitate policy coordination and the surveillance process agreed to under the Chiang Mai Initiative. Ogawa and Shimizu (2005) calculate an Asian Monetary Unit (AMU) as a trade-weighted average of East Asian currencies. The AMU can provide monetary authorities in the region with a benchmark that can be referred to when the exchange rate of a particular currency appears to be misaligned, thus inviting coordination in monetary and exchange rate policies. It can therefore allow exchange rate misalignments to be monitored along with macroeconomic policies and financial sector stability and thus facilitate the surveillance process that Ito (2001) argues is key to preventing future crises. Surveillance of exchange rate misalignments can help prevent unpleasant outcomes such as competitive devaluations and beggar-thy-neighbor policies. The drawback with an AMU basket is that some of the currencies are not convertible and therefore cannot be used for intervention purposes.

As Ito (2005) and Williamson (2005) discuss, there are still many unanswered questions concerning how to coordinate needed alterations in exchange rate regimes in East Asia. Should countries fix their currencies to a common or to individual baskets? Should the common Asian currency unit function merely as a reference rate? Should they float together? If so, should they use common or different band widths around a reference rate? More research and discussion will be needed to provide satisfactory answers to these questions.

3. The Need for a Regional Forum to Coordinate Exchange Rate Policy

In coordinating changes in the level of the exchange rate, as advocated in this

paper, a regional forum would be helpful. A realignment of exchange rate levels could perhaps be followed later by a concertation of exchange rate regimes in the region. Unlike the IMF, a regional institution could focus on the unique needs of East Asia. A regional secretariat would also be better suited to developing the needed surveillance mechanisms in the context of exchange rate coordination policies aimed at stabilizing mutual exchange rates among East Asian economies. It would be more adept at applying peer pressure when needed. Such an organization would be consistent with the region's determination to embrace further economic integration. The coming East Asia Summit in Kuala Lumpur might be the appropriate venue to begin discussing whether to institute a regional forum to facilitate cooperation and coordination in the area of exchange rate policies.

V: Concluding Remarks

The present global imbalances appear unsustainable. U.S. current account deficits exceeded private capital inflows by $700 billion over the last two years. This shortfall has been financed by foreign central banks, primarily in Asia. Asian central banks may not be able to finance U.S. saving-investment imbalances indefinitely. Massive sterilization may lead to inflationary dangers, excess liquidity in the banking sector, and the inefficient allocation of economic resources. At some point Asian currencies may have to appreciate substantially. Fear of losing competitiveness relative to Asian trading partners has thus far prevented many countries in the region from allowing their currencies to revalue. This is a classical prisoners' dilemma situation. Collective action in the next exchange rate realignment in East Asia could help to

overcome this coordination failure.

This coordination could involve first an appreciation of the exchange rate level and perhaps later a harmonization of exchange rate regimes. The appropriate regime may be a currency basket with a band. Several questions still need to be resolved, though. These include the appropriate reference rate, the width of the band, and the currencies to be included in the basket.

Coordinating exchange rate policies could help to resolve global imbalances, minimize the deflationary impact of exchange rate appreciations in East Asia, and preserve production and distribution networks in the region. The coming East Asian Summit offers an opportunity to begin pursuing policy dialogue in this area.

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Box 1. Using Cointegration Models to Estimate Export and Import Elasticities

Standard export and import functions can be derived using the Bickerdike-Robinson-Metzler imperfect substitutes model (see Goldstein and Khan, 1985):

$$im_t = \alpha_{10} + \alpha_{11} rer_t + \alpha_{12} y_t + \varepsilon_{1t} \quad (1)$$

$$ex_t = \alpha_{20} + \alpha_{21} rer_t + \alpha_{22} y_t^* + \varepsilon_{2t} \quad (2)$$

where im_t represents real imports, rer_t represents the real exchange rate, y_t represents domestic real income, ex_t represents real exports, y_t^* represents foreign real income, and all variables are measured in natural logs.

If there is a stable long run relationship between the levels of the variables in equations (1) and (2) we say that the variables are cointegrated. To test for cointegrating relations among the variables and to estimate the cointegrating vector, equation (1) can be written as:

$$\Delta im_t = \beta_{10} + \varphi_1(im_{t-1} - \alpha_{10} - \alpha_{11} rer_{t-1} - \alpha_{12} y_{t-1}) + \beta_{11}(L)\Delta im_{t-1} + \beta_{12}(L)\Delta rer_{t-1} + \beta_{13}(L)\Delta y_{t-1} + \nu_{1t} \quad (3a)$$

$$\Delta rer_t = \beta_{20} + \varphi_2(im_{t-1} - \alpha_{10} - \alpha_{11} rer_{t-1} - \alpha_{12} y_{t-1}) + \beta_{21}(L)\Delta im_{t-1} + \beta_{22}(L)\Delta rer_{t-1} + \beta_{23}(L)\Delta y_{t-1} + \nu_{2t} \quad (3b)$$

$$\Delta y_t = \beta_{30} + \varphi_3(im_{t-1} - \alpha_{10} - \alpha_{11} rer_{t-1} - \alpha_{12} y_{t-1}) + \beta_{31}(L)\Delta im_{t-1} + \beta_{32}(L)\Delta rer_{t-1} + B_{33}(L)\Delta y_{t-1} + \nu_{3t} \quad (3c)$$

where the φ's measure the rate at which the left hand side variables respond to disequilibria in equation (1), the L's are polynomials in the lag operator, and the other variables are defined above. Similarly equation (2) can be written as:

$$\Delta ex_t = \beta_{40} + \varphi_4(ex_{t-1} - \alpha_{20} - \alpha_{21}rer_{t-1} - \alpha_{22}y_{t-1}^*) + \beta_{41}(L)\Delta ex_{t-1} + \beta_{42}(L)\Delta rer_{t-1} + \beta_{43}(L)\Delta y_{t-1}^* + \nu_{4t} \quad (4a)$$

$$\Delta rer_t = \beta_{50} + \varphi_5(ex_{t-1} - \alpha_{20} - \alpha_{21}rer_{t-1} - \alpha_{22}y_{t-1}^*) + \beta_{51}(L)\Delta ex_{t-1} + \beta_{52}(L)\Delta rer_{t-1} + \beta_{53}(L)\Delta y_{t-1}^* + \nu_{5t} \quad (4b)$$

$$\Delta y_t^* = \beta_{60} + \varphi_6(ex_{t-1} - \alpha_{20} - \alpha_{21}rer_{t-1} - \alpha_{22}y_{t-1}^*) + \beta_{61}(L)\Delta ex_{t-1} + \beta_{62}(L)\Delta rer_{t-1} + \beta_{63}(L)\Delta y_{t-1}^* + \nu_{6t} \quad (4c)$$

There are several parameters of interest in equations (3) and (4). The coefficients α_{11}, α_{12}, α_{21}, and α_{22} measure long run price and income elasticities of imports and exports. The coefficients φ_1 and φ_4 measure how fast imports and exports respond to disequilibria. Assuming that imports and exports move towards their equilibrium values these coefficients should be negative and statistically significant. The parameters φ_2 and φ_5 can be used to test whether the exchange rate is weakly exogenous.

Flood and Rose (1995) and others have argued that exchange rates are more volatile than other macroeconomic variables and disconnected from the real economy, implying that rer is exogenous in equations (1) through (4). The hypothesis that the exchange rate is weakly exogenous is equivalent to the hypothesis that the coefficients φ_2 and φ_5 equal zero. Similarly, the hypothesis that income is weakly exogenous is

equivalent to the hypothesis that the coefficients φ_3 and φ_6 equal zero. If the right hand side variables in equations (1) and (2) are exogenous, then it is possible to infer the effects of exogenous changes in there variables on imports and exports.

Chinn used Johansen maximum likelihood techniques to test for cointegrating relations among the variables in equations (3) and (4) and to estimate the parameters. He found evidence of cointegrating relations among U.S. exports, the real exchange rate, and foreign income and among U.S. imports, RER, and U.S. income. He reported that the real exchange rate was weakly exogenous in many of the specifications. He also found evidence of statistically significant long run price and income elasticities as summarized in the text.

Box 2. Using Gravity Models to Estimate Asian Trade

Gravity models have a long and successful history in international economics. They were developed independently by Tinbergen (1962) and Pöyhönen (1963). They posit that the same factors affecting the gravitational attraction between two bodies can explain the flow of trade between two countries. In physics the law of gravity states that the gravitational attraction between two objects is directly proportional to the mass of the objects and indirectly proportional to the distance between them. In economics gravity models hold that bilateral trade between two countries is directly proportional to gross domestic product in the two countries and inversely proportional to the distance between them. Leamer and Levinsohn (1995, p. 1384) state that gravity models yield "some of the clearest and most robust findings in economics."[12]

As estimated by Rose (2000) and Bénassy-Quéré and Lahrèche-Révil (2003), gravity models contain not only variables measuring GDP and distance but also variables representing other factors affecting bilateral trade. These factors include exchange rates and whether countries share a common border, a common language, or a free trade agreement.

Bénassy-Quéré and Lahrèche-Révil (2003) have estimated an imaginative gravity model that focuses on Asia. They used panel data techniques to investigate the factors affecting trade flows within 10 East Asian countries and between these countries and developed and emerging economies. In addition to traditional gravity variables, they included variables measuring the effects of changes in the level and volatility of exchange rates on intra-Asian trade and the effects of changes in the relative

[12] Quoted in Rose (2000).

competitiveness of Asian countries on trade with the rest of the world.

The model they estimated had the form:

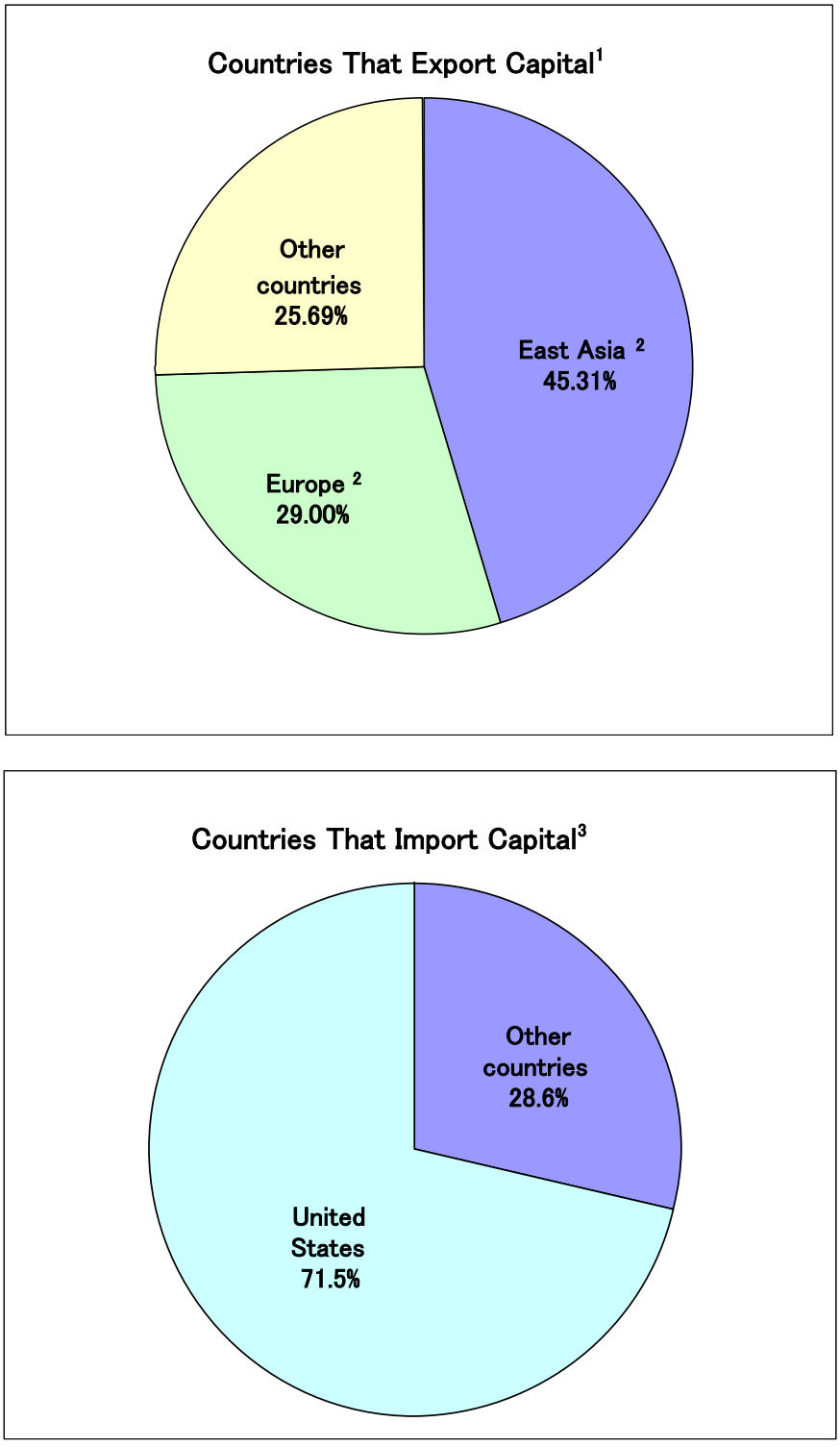
$$\ln Ex_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln DIST_{ij} + \beta_4 Asia*\ln RER_{ijt} + \beta_5(1 - ASIA)*\ln RER_{ijt} + \beta_6 Asia*VOL_{ijt} + \beta_7(1 - ASIA)*VOL_{ijt} + \beta_8(1 - ASIA)*\ln RERC_{ijt} + \beta_9 LANG + \beta_{10} BORDER + \partial_i + \Omega_j + \pi_t + \varepsilon_{ijt} \quad (1)$$

where Ex represents real exports, i and j represent countries, t represents time, Y represents real income, DIST represents the distance between the two countries, ASIA is a dummy variable equaling 1 if the country is in ASIA and 0 otherwise, RER is the real exchange rate, VOL represents exchange rate volatility, RERC is the exchange rate in the Asian exporting country relative to other Asian exporting countries, LANG, BORDER, and FTA are dummy variables equaling 1if the countries share a common language, border, or free trade agreement, respectively, and 0 otherwise, and ∂i , Ωj , and πt are country I, country j, and time fixed effects.

They report that exchange rate changes have a significant effect on Asian exports. Using their preferred measure, they find that a 10% depreciation will directly increase Asian exports by 8%. In addition, if one Asian country depreciates it currency by 10% relative to all other Asian currencies, it will increase its exports to third markets by an additional 5%.

Figure 1. Global Distribution of Current Account Surpluses (Net Capital Exports) and Current Account Deficits (Net Capital Imports) by Region and Country, 2003

(As a percent of the world sum of current account surpluses or deficits)



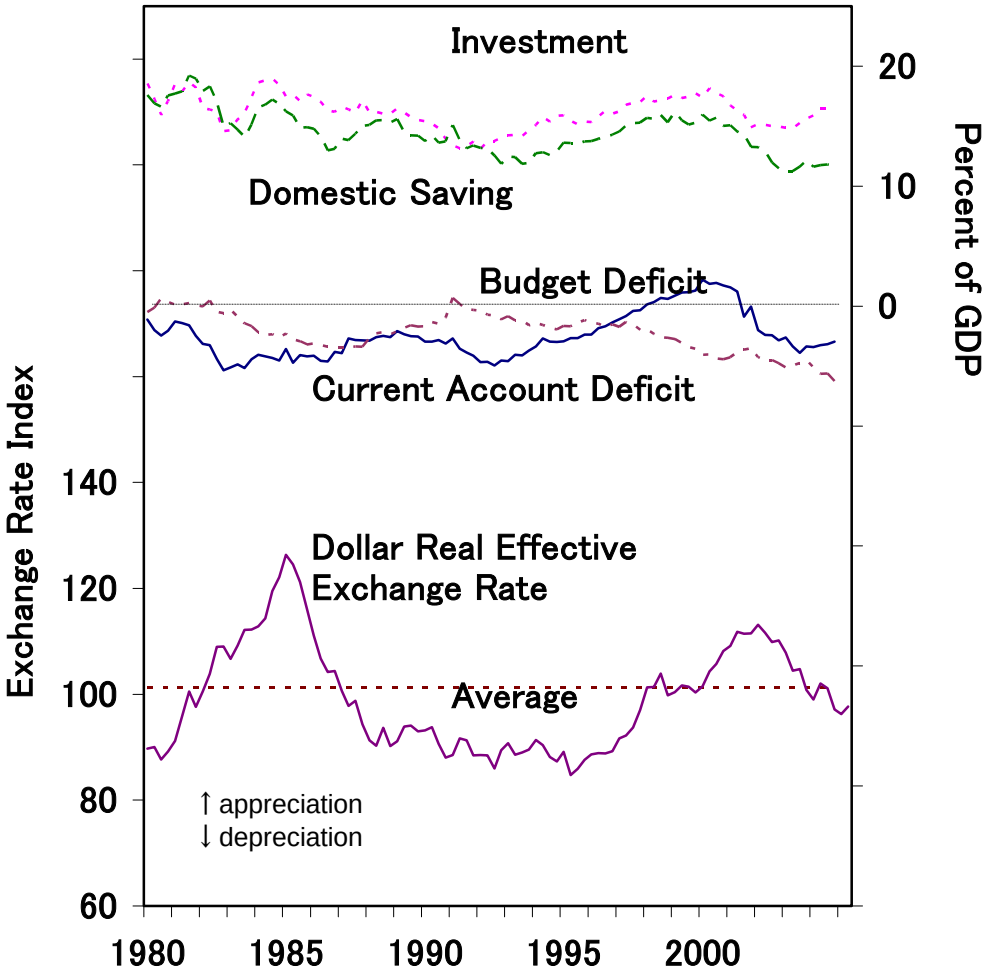
Source: International Monetary Fund,World Economic Outlook database as of March 11,2005

[1]: As measured by countries' current account surpluses (assuming errors and omissions are part of the capital and financial accounts).

[2]: East Asia includes ASEAN plus China, South Korea, and Japan. Europe includes Euroland plus other countries in Europe that are running current account surpluses.

[3]: As measured by countries' current account deficit s (assuming errors and omissions are part of the capital and financial accounts).

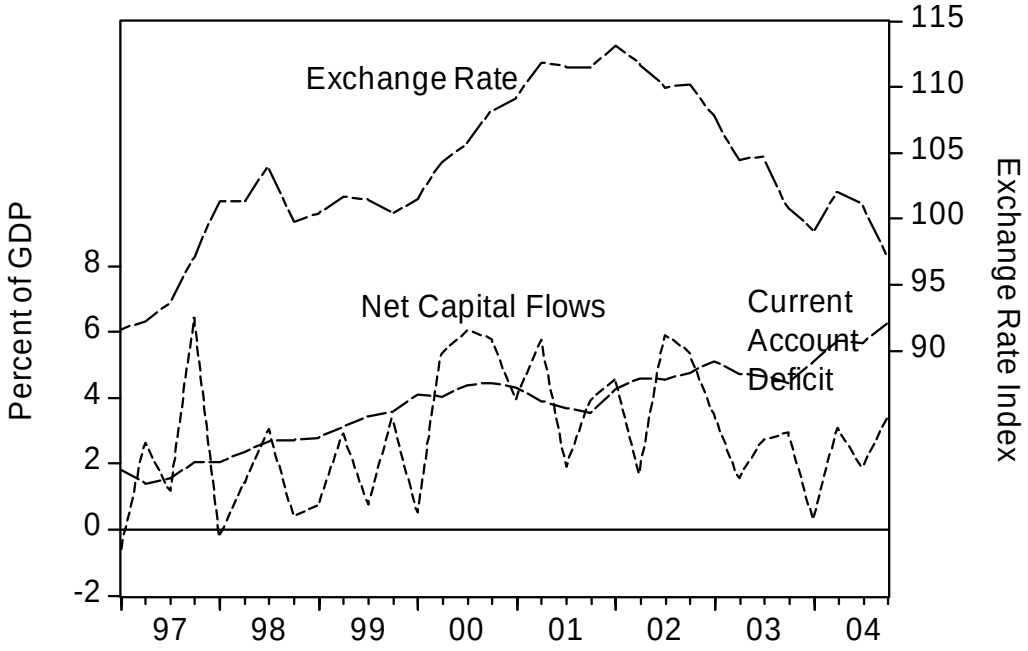
Figure 2. U.S. Investment, National Saving, Budget Deficit, and Current Account Deficit



Source: Federal Reserve Bank of St.Louis and Federal Reserve Board.

Note: The exchange rate is the Federal Reserve Board trade-weighted real exchange rate, deflated using PPIs. The dashed line represents the average exchange rate over the 1980–2004 period.The current account is measured so that a larger positive number represents an increase in the deficit.

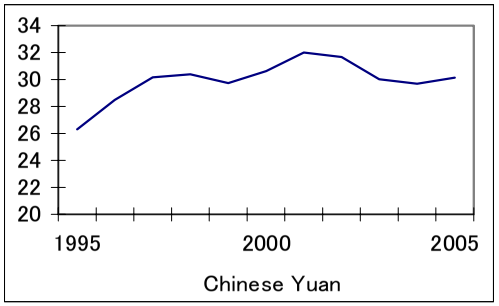
Figure 3. Current Account Deficit, Net Private Capital Flows, and the Real Effective Exchange Rate of the Dollar, 1997-2004

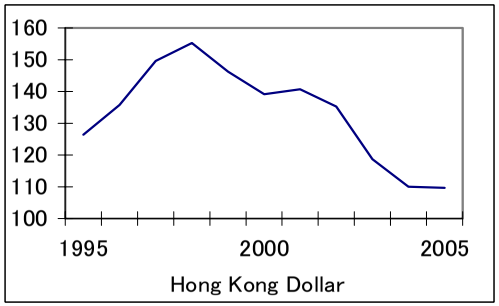


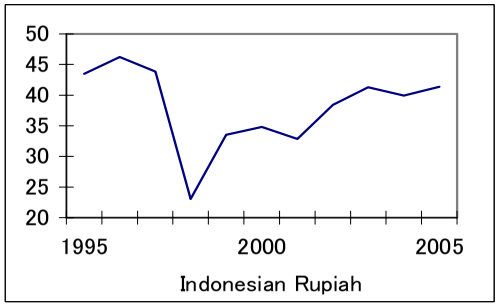
Source: Bureau of Economic Analysis and Federal Reserve Board.

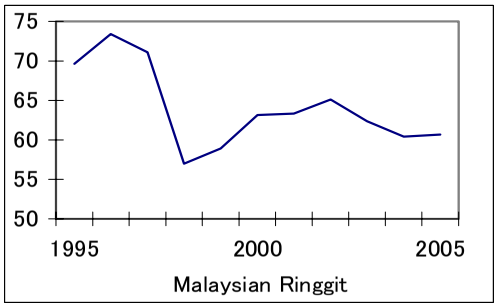
Notes: Net private capital inflows equal the difference between private inflows and private outflows in the U.S. balance of payments accounts. The exchange rate is the Federal Reserve Board broad trade-weighted real exchange rate, deflated using PPIs. The current account is measured so that a larger positive number represents an increase in the deficit. This Figure uses quarterly data while Figure 5 uses annual data.

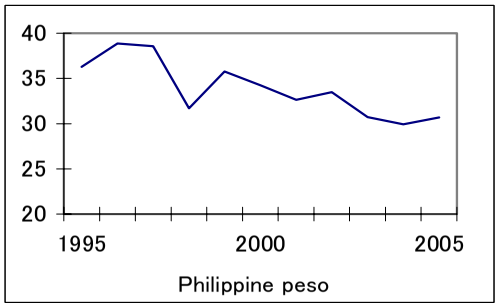
Figure4. Real Effective Exchange Rates in Asia (100 equals the purchasing power parity rate)

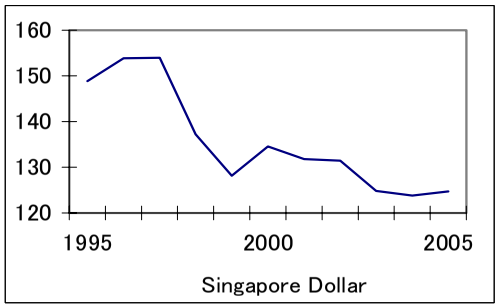


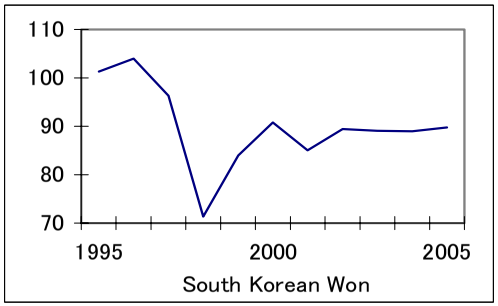


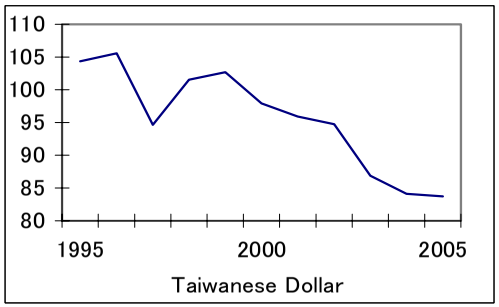


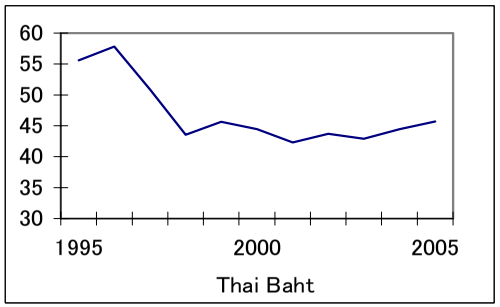












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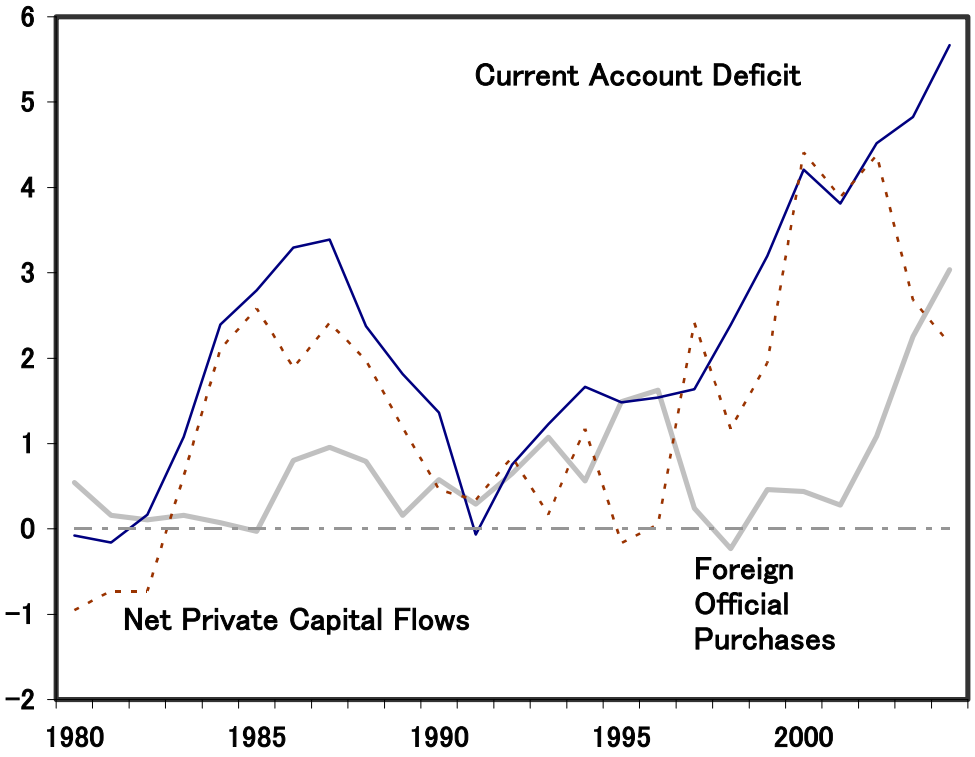
Source:CEPII-CHELEM Database

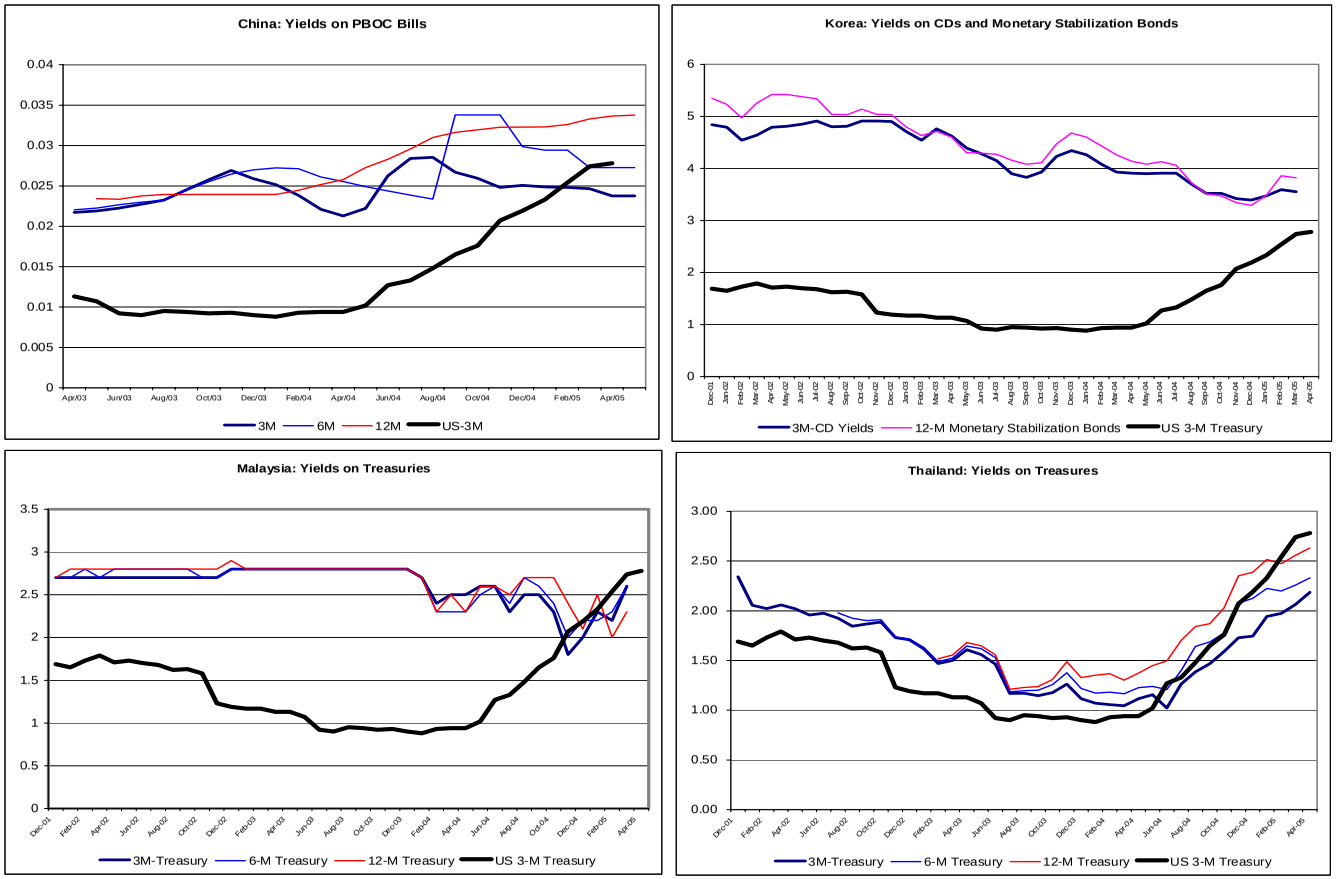
Figure 5. U.S. Current Account Deficit , Net Private Capital Flows into the U.S.,and Official Purchases of Dollar Assets by Foreign Governments



Source: Bureau of Economic Analysis

Note: This Figure uses the same raw data as Figure3. This Figure uses annual averages, however, while Figure3 uses quarterly data.

Figure 6: Yield Differentials Between the U.S. and Four East Asian Economies



Source: Datastream

Table 1. Domestic Savings, Capital Formation, and Resource Gap of East Asian Countries

(% of GDP)

	Gross Domestic Saving				Gross Capital Formation				Saving-Investment Gap			
	Pre-crisis		Post Crisis		Pre-crisis		Post Crisis		Pre-crisis		Post Crisis	
	1990	1995	2000	2003	1990	1995	2000	2003	1990	1995	2000	2003
Korea	37.2	36.5	33.9	32.8	37.7	37.7	31	29.4	-0.5	-1.1	2.9	3.4
Taiwan	27.6	25.9	24.4	23.5	23.1	25.3	22.9	17.2	4.5	0.6	1.5	6.3
Hong Kong	35.2	29.1	31.7	31.6	27.5	34.7	28.1	22.6	7.6	-5.5	3.6	8.7
Singapore	43.3	50.2	47.9	46.7	36.4	34.2	32	13.4	6.9	16.1	15.9	33.3
Indonesia	32.3	30.6	25.6	21.5	30.7	31.9	16.1	16	1.5	-1.3	9.5	5.5
Malaysia	34.4	39.7	47.2	42.9	32.4	43.6	27.2	21.8	2	-3.9	20	21.1
Phillipines	18.7	14.5	17.3	20.1	24.2	22.5	21.2	18.7	-5.5	-7.9	-3.9	1.4
Thailand	34.3	37.3	33.2	33.1	41.4	42.1	22.8	25.2	-7.1	-4.8	10.4	7.9
China	38.7	42.5	39	42.7	34.7	40.8	36.3	44.4	4	1.7	2.6	-1.7

Source: Key Indicators, ADB.

Table 2: Balance of Payment Statistics for Key East Asian Economies (Annual Average of 2000–04)

	Crisis hit-Economis					Other Asian Economis				
DESCRIPTOR (billions of USD)	Indonesia	Korea	Malaysia	Philippines	Thailand	China	Japan	Singapore	Vietnam	USA
CURRENT ACCOUNT	6.57	13.05	10.39	4.70	7.54	37.58	125.60	20.62	-0.17	-493.93
Of which: Trade in goods	23.24	21.07	22.28	0.49	3.22	43.26	103.65	21.44	-0.68	-511.92
Trade in services	-10.51	-6.22	-2.58	-1.52	4.92	-7.32	-40.99	1.00	-0.62	56.81
Balance on goods and services	12.73	14.84	19.70	-1.04	8.14	35.94	62.66	22.45	-0.69	-455.27
Net Current transfer	1.23	-1.37	-2.63	2.31	0.98	13.66	-7.57	-1.12	1.63	-60.40
CAPITAL ACCOUNT	0.10	-1.12	0.00	-0.01	0.00	-0.05	-3.54	-1.12	0.00	-1.54
FINANCIAL ACCOUNT	-2.97	7.44	-2.51	-3.96	-5.32	46.47	-24.62	-12.61	0.72	525.85
Of Which: Foreign Direct Investment	-1.39	1.73	1.40	0.96	2.00	44.40	-24.80	3.49	1.33	-28.52
Portfolio Investment	0.82	9.29	1.03	0.24	-0.41	-0.52	-52.84	-11.28	0.00	455.56
Other Investment	-2.50	-2.47	-4.94	-5.15	-6.91	2.65	56.56	-4.65	-0.62	98.80
ERRORS AND OMISSIONS	-0.92	0.99	-0.71	-0.78	0.23	7.29	-4.79	-2.42	-0.86	-29.45
OVERALL BALANCE	2.68	21.48	7.17	-0.05	2.45	91.35	96.20	5.58	0.25	0.92
RESERVE ASSETS CHANGE(– increase)	-2.39	-21.54	-7.17	0.05	-2.45	-91.35	-96.20	-5.58	-0.25	-0.92
Total Reserves (as of end–2004)	34.72	198.18	65.41	12.98	48.50	609.93	824.26	111.50	6.22	N/A
Memorandum Items										
2004 GDP (Billions of US Dollars)	205.09	565.66	99.00	77.92	134.29	1319.83	4370.13	93.21	34.62	10634.20
Average Balance of Trade in Goods/GDP in 2004	11.79	3.61	22.41	1.14	2.48	3.25	2.36	22.74	-1.68	-4.61
Total Reserves/GDP	15.41	23.33	39.54	17.70	28.47	24.24	12.17	94.49	12.41	N/A
NER Change against US$ between 2004 and 2000 (–, Depreciation)	-5.78	-1.25	0.00	-11.14	-0.27	0.00	-0.40	2.00	-8.65	N/A
NEER Change between 2004 and 2000 (–, Depreciation)	N/A	-8.00	-6.70	-26.90	N/A	-7.96	-12.90	-4.50	N/A	-16.00
REER Change between 2004 and 2000 (–, Depreciation)	15.80	-6.00	-8.10	-17.80	0.40	-5.01	-21.50	-7.20	N/A	-13.40
Average CPI (2000–2004)	8.00	3.20	1.50	4.60	1.70	1.02	-0.40	0.82	2.52	2.56
CPI in the First Quarter of 2005	6.80	2.80	1.70	5.90	3.10	2.60	-0.20	0.20	3.70	3.05

Note: The Vietnam figures are for the period of 2000–03.

Sources: Datastream, IMF's International Financial Statistics, and Central Bank Websites.

Table 3: Estimated Economic Costs of Sterilization in China, Korea, Malaysia, and Thailand

	China		Korea		Malaysia		Thailand	
	PBOC bills		364days MSB		Government securities		2 year BOT bonds	
	RMB billion		KW tillion		MR billion		TB billion	
	2003	2004	2003	2004	2003	2004	2003	2004
Securities Outstanding used for Sterilization Purposes	388.82	974.21	105.50	142.77	130.8	154.35	242.00	312.34
Interest Income Losses (Average Spreads*Outstanding Amount)	5.33	11.19	3.35	2.90	2.33	1.58	-0.51	-2.03
Memorandum Items								
GDP (Billions of National Currency)	11739	13652	725	778	394	448	5930	6576
Central Bank Assets	6200	7866	220	253	201	285	3142	3583
Sterilization Ratio (change of Dommestic Asset /change of Foreign Asset)	0.05	-0.54	-.93	-0.78	-0.92	-0.95	0	-0.39
Interest Income Losses as a Share of GDP	0.05	0.08	0.46	0.37	0.59	0.35	-0.01	-0.03
Interest Income Losses as a Share of Central Bank Assets	0.09	0.14	1.53	1.15	1.16	0.55	-0.02	-0.06

Sources: People's Bank of China, DATASTREAM database, and web-sites of Korean, Malaysian, Thai central banks

Table 4: Growth Rates of Money Supply in China, Korea, Malaysia, and Thailand

	China		Korea				Malaysia				Thailand			
	M1	M2	M1	M2	M3	M0	M1	M2	M3	M0	M1	M2	M3	M0
2000	19.80	16.10	24.30	2.70	5.76	9.71	17.08	7.36	5.22	7.42	10.41	1.85	2.73	12.66
2001	14.03	13.66	18.65	7.04	9.46	12.00	6.37	4.04	4.69	4.34	8.39	5.51	5.71	8.03
2002	15.69	15.51	23.49	11.43	13.31	9.85	11.24	5.28	5.72	8.11	12.30	4.35	3.22	11.13
2003	19.19	19.98	6.55	7.49	8.22	4.81	10.73	8.58	8.31	9.84	14.88	2.39	3.57	11.62
2004	16.52	16.25	8.22	4.39	5.86	3.13	14.62	15.17	10.45	9.08	13.60	6.60	6.42	11.16
2005*	12.10	14.12	6.56	4.92	3.83	1.05	12.96	25.38	12.73	5.68	11.46	4.70	5.70	9.42

*Jan-March, 2005

Source: Datastream

Table 5: Annual Growth rate of Consumer, Producer, and Stock Prices in China, Korea, Malaysia, and Thailand

	China			Korea			Malaysia			Thailand		
	PPI	CPI	SHARE MARKET VALUE - SHANGHAI SE CURN	PPI	CPI	SHARE PRICES	PPI	CPI	SHARE PRICES	PPI	CPI	SHARE PRICES
2000	1.4%	1.4%	55.2%	-0.1%	3.2%	-48.8%	-3.8%	1.5%	-26.3%	3.6%	1.4%	-41.5%
2001	-5.7%	-2.2%	-17.4%	-2.6%	3.1%	23.3%	-1.9%	1.1%	1.1%	0.8%	0.7%	4.0%
2002	6.7%	1.4%	11.2%	2.7%	3.7%	-15.7%	12.1%	1.6%	-6.3%	4.9%	2.1%	12.7%
2003	1.1%	2.8%	7.9%	3.7%	3.3%	29.3%	2.6%	1.0%	21.8%	2.8%	1.3%	72.7%
2004	2.2%	-1.3%	-23.9%	4.0%	3.1%	6.6%	3.5%	2.4%	12.4%	8.2%	2.6%	-8.5%

Source:Datastream

Table 6. Intra-regional Trade Share[a](in percentage)

Regions	1980	1985	1990	1995	2000	2001	2002	2003
East Asia-15,including Japan[b]	34.7	40.2	45.6	55.5	54.0	55.4	57.3	54.0
Emerging East Asia-14[b]	21.6	29.1	36.4	43.7	43.4	45.6	47.5	44.1
NIEs-4	7.7	10.7	14.3	18.1	16.4	17.5	17.1	16.1
ASEAN-10[b]	18.0	20.3	18.9	24.1	25.7	24.1	24.4	24.0
NAFTA	33.8	38.7	37.9	43.2	48.7	49.0	48.3	46.0
European Union-15	52.4	52.5	58.6	56.8	62.2	62.1	62.4	64.4

Note:

(a) The intra-regional trade share is defined as: $X_{ii}/\{(X_{i.}+X_{.i})/2\}$ where X_{ii} represents exports of region i to region i, $X_{i.}$ represents total exports of region i to the world, and $X_{.i}$ represents total exports of the world to region i.

(b) East Asia-15 includes Emerging East Asia-14 and Japan. Emerging East Asia-14 includes the Asian NIEs(Hong Kong,Korea,Singapore and Taiwan),nine ASEAN members (Brunei,Cambodia,Indonesia,Laos,Malaysia,Myanmar,the Philippines,Thailand and Vietnam) and China.ASEAN-10 includes Singapore.

Source: IMF, Direction of Trade Statistics,CD-ROM, Kawai(2005).

Table 7. China's Processing Trade – 1993 and 2002

Imports (%)						
	World-wide	S. Korea, Taiwan, HK	Japan	EU15	United States	Rest of world
1993						
Total imports	100	28	22	15	10	25
Normal imports	37	3	8	8	5	13
Imports for processing	35	18	8	2	2	6
Others	28	7	7	6	3	6
2002						
Total imports	100	26	18	13	9	33
Normal imports	44	7	6	8	5	17
Imports for processing	41	16	8	2	2	12
Others	15	3	3	3	2	4
Exports (%)						
	World-wide	S. Korea, Taiwan, HK	Japan	EU15	United States	Rest of world
1993						
Total exports	100	29	17	13	18	22
Normal exports	47	12	10	7	6	13
Processed exports	48	16	7	7	13	6
Others	5	0	0	0	0	4
2002						
Total exports	100	25	15	15	21	24
Normal exports	42	8	6	7	7	15
Processed exports	55	16	9	8	14	8
Others	3	1	0	0	1	1
Balance of Trade (billions of USD)						
	World-wide	S. Korea, Taiwan, HK	Japan	EU15	United States	Rest of world
1993						
Balance of trade	-12.2	-2.4	-7.5	-3.5	6.3	-5.1
Normal trade	5.2	8.0	0.7	-2.0	-0.0	-1.5
Processing trade	7.9	-3.8	-1.3	4.2	9.7	-1.0
Others	-25.2	-6.6	-6.9	-5.8	-3.4	-2.6
2002						
Balance of trade	30.4	3.2	-5.0	9.7	42.7	-20.2
Normal trade	7.1	3.4	1.1	-3.1	6.7	-1.0
Processing trade	57.7	5.9	3.1	19.6	39.9	-10.9
Others	-34.4	-6.1	-9.3	-6.8	-4.0	-8.2

Source: "CHINA'S INTEGRATION IN ASIAN PRODUCTION NETWORKS AND ITS IMPLICATIONS" ByGuillaume GAULIER, Françoise LEMOINE, Deniz, NAL-KESENCI, June 2004 (China's Customs Statistics, author's calculations)

Table 8. U.S. Global Trade Balance and Bilateral Trade Balance with East Asia

Country/Region	Exports from the US	Imports to the US	Trade balance
Japan	52.2	129.8	-75.6
China	34.7	196.6	-161.9
Crisis-hit Economies			
Indonesia	2.7	10.8	-8.1
Malaysia	10.9	28.2	-17.3
Philippines	7.1	9.1	-2.1
South Korea	26.4	46.2	-19.8
Thailand	6.4	17.6	-11.2
Non-crisis Economies			
Hong Kong	15,8	9.1	6.5
Singapore	19.6	15.4	4.2
Taiwan	21.7	34.6	-12.9
Total of East Asia Including Japan	**197.6**	**497.6**	**-298.0**
U.S. Total with the Rest of the World	**818.8**	**1,469.70**	**-650.9**

Source: US Census Bureau(2005)

Note: For comparison, exports from the U.S. to Europe equaled $172.6 billion, imports to the U.S. from Europe equaled $282.0 billion, and the trade balance equaled $-109.3 billion.