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Beyond Liquidity: New Uses for Developing Asia's Foreign Exchange Reserves

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Beyond Liquidity: New Uses for Developing Asia's Foreign Exchange Reserves

Donghyun Park

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**BEYOND LIQUIDITY:
NEW USES FOR DEVELOPING ASIA'S
FOREIGN EXCHANGE RESERVES**

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FOREWORD

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ABSTRACT

Developing Asia's foreign exchange reserves have grown explosively since 2000. Evidence indicates that a substantial part of the region's reserves are now surplus to what is required for traditional liquidity purposes. There is consequently a growing consensus for managing such surplus reserves more actively. The notion that surplus reserves should be used to pursue higher returns is not only politically popular but economically sound. Nevertheless, it is critical to note that developing Asia's reserves are not free fiscal assets. Unlike the reserves themselves, the income from investing those reserves does represent a fiscal dividend for the government. This and other factors suggest that the first-best use of developing Asia's surplus reserves is to invest them abroad with the goal of maximizing risk-adjusted returns, subject to the government's broad guidance. The resulting expansion of fiscal space will help the region's governments tackle the huge long-term developmental challenges still facing the region.

I. INTRODUCTION

Since the Asian financial crisis of 1997–1998, developing Asia has run a sizable, sustained, current account surplus with the rest of the world, transforming the region into a globally significant net exporter of capital. Central banks rather than the private sector have largely intermediated these surpluses. Indeed, the private sector has been the recipient of modest capital inflows. As a consequence, regional foreign exchange reserves have seen explosive growth since about 2000.

With no let-up in accumulation, there is a growing conviction that the region's central banks may now have more than enough reserves to meet conceivable emergencies and contingencies. The idea that "excess reserves" or reserves above those required for liquidity purposes should be more actively invested is gaining appeal. Parking resources in liquid foreign currency assets that offer little additional value either in terms of self-insurance or in terms of lowering the probability of future trouble has significant opportunity costs. By raising the returns on these "fallow" assets, the argument runs, future fiscal space will be expanded, thereby creating the potential to help accelerate development.

In practice, the size of the potential fiscal dividends from more active management of foreign exchange assets will depend on a wide range of factors. Indeed, estimating the size of the pool of reserves that are excess to liquidity requirements is not itself straightforward. Also, the potential stream of fiscal resources will depend on investment performance, which is susceptible to many influences, for example, once the safety of high-grade, short-term investments in reserve currency assets is left behind, there are no guarantees. But opportunities will also be influenced by the choices that developing Asian countries will make with regard to their fiscal objectives, and the design of and operation of their investment vehicles.

External factors will also be important. Commercial investments in foreign jurisdictions must necessarily adhere to local policies, regulations, and laws. Though these may curtail opportunities, their overall scope and impact is also likely to depend on the practices and reputation of the investor. A basic principle is that investors and hosts are more likely to gain, if commercial considerations are paramount. This is likely to have implications for the legal personality, form, governance, as well as investment strategy of any sovereign investment agency.

At a narrower level, the ability to generate fiscal dividends will depend on the internal capabilities of the investment agency. Factors such as skills and experience of staff, incentives, and the effectiveness of management and reporting and control systems will matter. For new funds and those that are still on the drawing board, there is an interesting range of experiences, both inside Asia and internationally, to draw on, but experience underlines the importance of learning by doing.

The central objective of this paper is to explain the context within which developing Asia could use its foreign exchange assets in new ways so that these can contribute more effectively to the region's growth, development, and welfare. Although so called sovereign wealth funds (SWFs) have

generated considerable political discussion, the approach here focuses on the *economic* opportunities that they can create. The purpose here is to help the region's policymakers and interested readers to better understand the various conceptual and practical issues associated with spending or investing foreign currency assets, with a view to promoting national economic development.

Section II presents stylized facts about the trajectory of developing Asia's reserves. Developing Asia's appetite for foreign exchange reserves mirrors wider trends in the developing world, and is only marginally more accentuated. For most countries, the buildup of reserves reflects current account surpluses and foreign exchange market intervention. For a small number of countries, natural resource wealth and buoyant commodity prices have primed reserves. Though from time to time capital inflows have played their part in reserve accumulation, they have been the dominant source of reserves only for India. This section explains important concepts that underpin reserves and links reserves to notions of national wealth and fiscal resources.

Section III looks at the uses of reserves and possible motives for reserve accumulation. Observing that reserves have costs as well as benefits, the section draws on the concept of "optimal" reserves to ask whether the region's reserves now exceed those that are reasonably required for self-insurance, transactions, and other purposes. Data are presented using a variety of indicators of reserve adequacy, and calculations also use more sophisticated methods that capture the interplay of multiple factors. These exercises point unambiguously to the presence of reserves that are surplus to those suggested by traditional benchmarks.

Section IV observes that "excess reserves" are not usually a fiscal resource that can be freely spent. Even where reserves have accrued through current rather than capital account surpluses, spending them in domestic currency could easily prove problematic from a fiscal and a monetary perspective, and could run counter to macroeconomic policy settings. Especially when reserves have accrued through the capital account, care must be taken to avoid uses that risk currency and maturity mismatches. Nevertheless, creative approaches to the use of surplus reserves that encourage private sector participation in domestic infrastructure projects, say through their use to underwrite guarantees, could be beneficial, provided that complementarity steps are taken to remove the constraints that raise risks, thereby ensuring that the guarantees are not called.

The idea of SWFs has attracted a lot of recent attention. In Section V, it is pointed out that the dividends earned on sovereign investments would constitute a free fiscal resource and so would provide resources that could be directed at development priorities. Drawing on lessons from existing funds, it is argued that new and nascent agencies for sovereign investment should be operationally independent and purely commercial in their orientation. These core principles should not only serve performance objectives, but should also help allay concerns that have been raised about cross-border dimensions of their operations. Key issues in the design of sovereign investment agencies are examined, as are practical issues concerning building capabilities, establishing credibility, and sequencing of strategy.

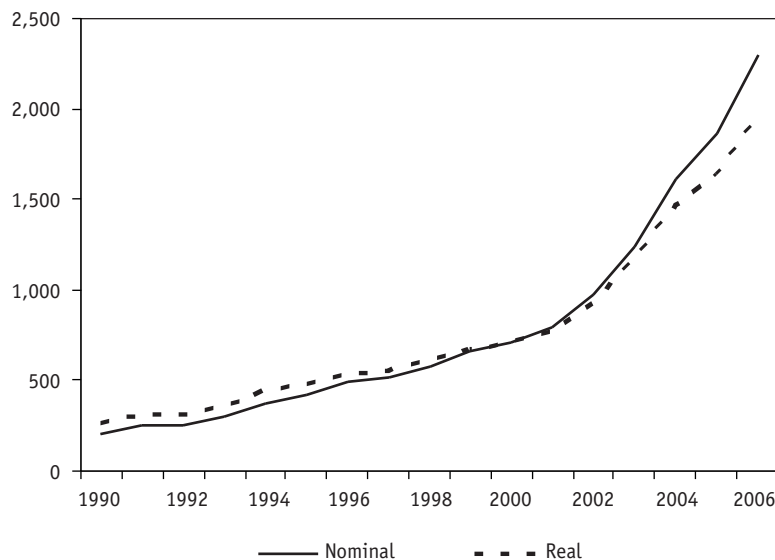
The paper ends by summarizing key findings and underlining the potential benefits of sovereign investment agencies, both in terms of accelerating domestic development and contributing to the efficiency and stability of global international capital markets. There are potential gains for the host as well as investing countries and there are points where their interests intersect. Though potential hosts have a legitimate interest in regulation, such regulation should be motivated by its economic merits and must not be used to camouflage financial protectionism.

II. ASIA'S FOREIGN RESERVES BUILDUP: FACTS, QUANTITATIVE TRENDS, AND UNDERLYING SOURCES

In this section, the region's foreign exchange reserve accumulation is examined for the period 1990–2007. The relative importance of current account surplus versus financial account surplus as the underlying source of the reserves is also explored. A basic understanding of the key facts about accumulation is essential, and will help provide context for the later analysis of reserve adequacy, and what might be done with “surplus reserves.”

Throughout the paper, foreign exchange reserves refer solely to foreign currency assets recorded on central banks' balance sheets, and exclude gold, special drawing rights, and reserve positions with the International Monetary Fund (IMF). Box 1 provides a more comprehensive discussion of foreign exchange reserves and the accumulation of reserves. Figure 1 shows that between 1990 and 2006, developing Asia's total foreign exchange reserves grew from \$203 billion to \$2,295 billion in nominal terms (\$267 billion to \$1,960 billion in real terms). The overall regional picture is one of secular growth since 1990, punctuated by a noticeable acceleration since 2000. Interestingly, the impact of Asia's financial crisis on regional foreign exchange reserves is not readily detectable for the crisis years of 1997 and 1998—but its legacy, in subsequent reserve accumulation, is unmistakable.

FIGURE 1
NOMINAL AND REAL FOREIGN EXCHANGE RESERVES OF DEVELOPING ASIA (BILLION US\$)



BOX 1

A PRIMER ON FOREIGN EXCHANGE RESERVES AND THEIR ACCUMULATION

Foreign exchange reserves have no universally accepted definition, and different countries define them differently. For its part, IMF (2001) provides the following technical definition:

Reserves consist of official public sector foreign assets that are readily available to and controlled by the monetary authorities. Reserve asset portfolios usually have special characteristics that distinguish them from other foreign currency assets. First and foremost, official reserve assets normally consist of liquid or easily marketable foreign currency assets that are under the effective control of, and readily available to, the reserve management entity. Furthermore, to be liquid and freely useable for settlements of international transactions, they need to be held in the form of convertible foreign currency claims of the authorities on nonresidents.

This technical definition thus excludes foreign currency assets that are relatively illiquid and denominated in nonreserve currencies. It also excludes assets that are held by official institutions other than the central bank.

In addition to liquidity, safety is another defining characteristic of reserves, and so assets such as equities or bonds with low credit ratings are excluded from reserves. Although in principle long-maturity assets can be safe and liquid, in practice central banks prefer assets with a short maturity, i.e., 0–3 years. Central banks' portfolios therefore typically consist of short-term government bonds or money market instruments, largely denominated in either US dollars or euros.

The point of departure for understanding how a central bank accumulates foreign exchange reserves is to look at a basic macroeconomic identity, namely the balance-of-payments identity:

$$\text{Current Account Balance} + \text{Financial Account Balance}^1 \\ = \text{Change in Foreign Exchange Reserves}$$

The above identity is true by construction. By definition, the sum of the current account balance and financial account balance must be equal to the change in foreign exchange reserves. For example, if a country has a current account surplus of \$20 billion and a financial account deficit of \$10 billion, then by definition its reserves must increase by \$10 billion. *The demand and supply of foreign exchange is equal at the prevailing exchange rate and if not, the gap is filled by adjustment in reserves.* It is conceptually useful for our purposes to rearrange the above identity as follows:

$$\text{Current Account Balance} \\ = \text{Financial Account Balance} + \text{Change in Foreign Exchange Reserves}$$

In terms of the restatement, using the previous example, one half of the current account surplus of \$20 billion is invested abroad by the private sector and the other half by the public sector. An increase in foreign exchange reserves is, in effect, a financial account deficit since reserves are purchases of foreign currency assets. To an equivalent degree, we can think of the change in foreign exchange reserves as part of a more broadly defined financial account balance.

It might be tempting to think that, since the change in reserves is by definition equal to the sum of the current and financial account balances, the level of reserves is determined mechanically by the

¹ The financial account balance used to be known as the capital account balance.

Box 1. CONTINUED.

two balances and thus is beyond the control of a country's central bank. In fact, the contrary is the case: the change in reserves is determined by the central bank's conscious and deliberate interventions in the foreign exchange market. For example, suppose an exporter from a country earns \$1 million in the United States. If the exporter keeps the dollars in a US bank account, then a \$1 million financial account deficit exactly offsets a \$1 million current account surplus. Alternatively, if the central bank buys the \$1 million from the exporter in the foreign exchange market, this will extinguish the new claims on nonresidents, and the financial account balance will be zero. The upshot is that financial account balances are dependent on the central bank's foreign current market interventions and attendant changes in reserves.

The degree of central bank intervention in the foreign exchange market and hence the speed of reserve accumulation is largely influenced by the exchange rate regime. Greater exchange rate flexibility implies less intervention and accumulation. Under perfectly fixed exchange rates, by definition, the central bank must automatically purchase the country's excess supply of foreign exchange to prevent the domestic currency from appreciating. In the previous example, the excess supply of \$10 billion would be automatically purchased by the central bank to prevent such an appreciation. In contrast, under a completely flexible exchange rate regime, the central bank will not intervene at all and the excess supply's effect will be entirely borne by a stronger domestic currency, which should eventually reduce the current account surplus and restore external equilibrium.

The growth of the region's reserves mirrors, to some extent, the growth of regional output over time. Therefore, to put the region's reserve growth in perspective, it is useful to scale regional reserves by gross domestic product (GDP). Figure 2 shows that the reserves-to-GDP ratio rose from 12.3% in 1990 to 35.8% in 2006. Over the same period, developing Asia's share of global reserves rose from 23.8% to 44.0% (Figure 3). The share of developing Asia in the developing world's reserves rose from 49.8% in 1990 to 58.7% in 2006 (Figure 4).

FIGURE 2
RATIO OF FOREIGN EXCHANGE RESERVES TO GDP, DEVELOPING ASIA, 1990–2006

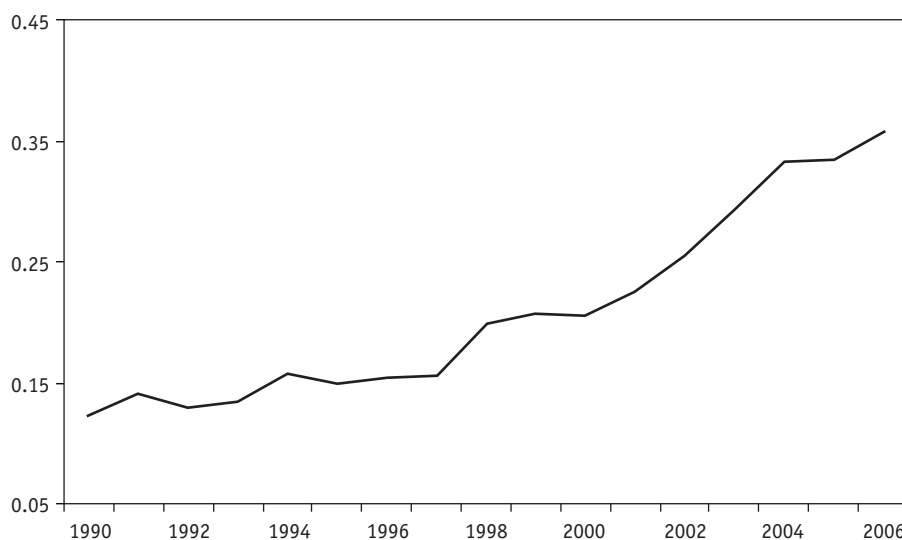


FIGURE 3
SHARE OF DEVELOPING ASIA IN WORLD FOREIGN EXCHANGE RESERVES,
1990–2006 (PERCENT)

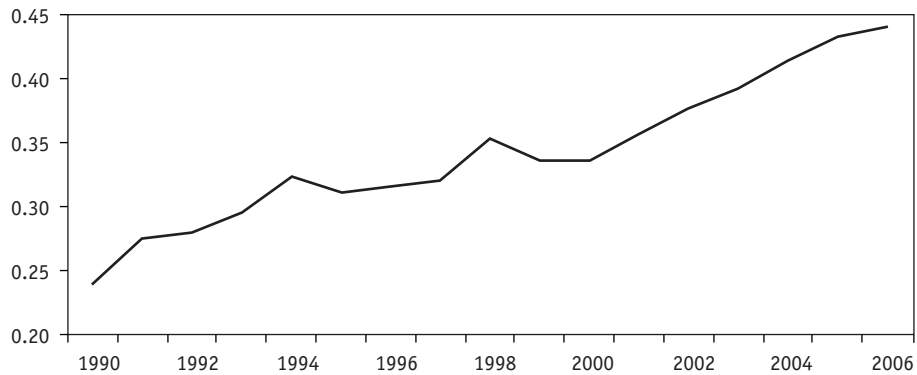
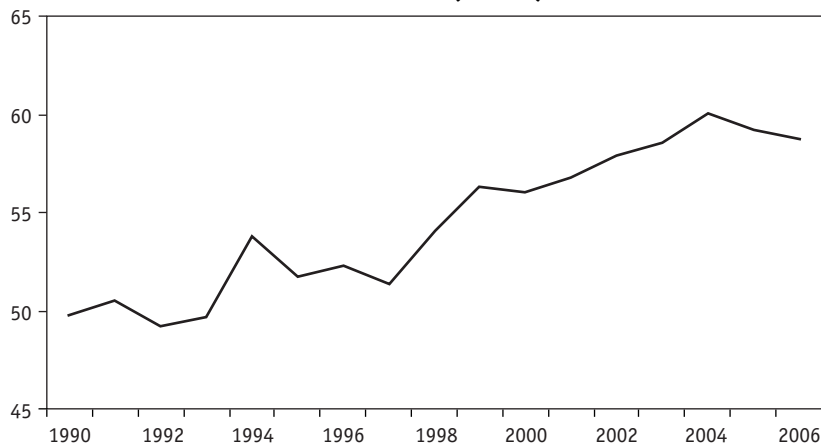


FIGURE 4
SHARE OF DEVELOPING ASIA IN THE DEVELOPING WORLD'S FOREIGN EXCHANGE RESERVES,
1990–2006 (PERCENT)



Developing Asia's emergence on the global reserve landscape is reflected in the fact that at the end of 2006 no fewer than seven of the world's top 10 reserve-holding economies came from the region. Developing Asia's 12 largest reserve holders are, in descending order: People's Republic of China (PRC); Taipei, China; Republic of Korea (henceforth Korea); India; Singapore; Hong Kong, China; Malaysia; Thailand; Indonesia; Philippines; Kazakhstan; and Viet Nam. Together they account for almost all the region's reserves and highlight the pan-regional nature of developing Asia's reserve buildup (Table 1).

TABLE 1
DEVELOPING ASIA'S FOREIGN EXCHANGE RESERVES:
STOCKS AS OF 30 JUNE 2007, AND CHANGE IN STOCKS DURING FIRST HALF OF 2007 AND 2006

ECONOMY	STOCK AS OF JUNE 2007 (\$ BILLION)	CHANGE IN FIRST HALF OF YEAR	
		2007	2006
PRC	1,332.6	266.3	122.2
Taipei,China	266.1	-0.1	7.1
Korea	250.2	11.8	15.3
India	206.1	35.9	25.0
Singapore	143.6	7.4	11.5
Hong Kong, China	136.3	3.1	2.3
Malaysia	90.8	9.1	8.6
Thailand	71.1	6.0	5.7
Indonesia	49.2	8.5	5.3
Philippines	23.3	3.4	2.3
Kazakhstan	20.9	3.2	5.8
Viet Nam	13.4	0.0	2.2
Rest of Developing Asia	30.0	5.5	3.8
Total Developing Asia	2,639.6	360.1	217.1

Sources: *International Financial Statistics* online database (International Monetary Fund 2007) and Bank of Korea website. Data for Taipei,China were downloaded from www.cbc.gov.tw/enghome. All data downloaded 3 September 2007.

The PRC's contribution to this buildup is notable. It accounted for only 14.1% of total regional reserves in 1990, but its share rose sharply to 46.5% by 2006—or 49.6% of total regional reserve growth over the same period. Though it is clear that the PRC's contribution to the level and growth of regional reserves is substantial, others have in fact contributed slightly more than half the buildup, and broadly, contributions to reserves have not been too far out of line with economic size.

As explained in Box 1, a country accumulates reserves if it has a balance of payment (BOP) surplus, which can reflect a current account surplus, financial account surplus, or both. Table 2 shows the average ratio of the current account surplus and financial account surplus to the increase in reserves during 2000–2006. The numbers suggest that the region's BOP surplus is driven largely by current account surplus. The current account surplus, in turn, largely reflects exports of nonresource goods and services although there are exceptions such as oil-rich Kazakhstan. Capital inflows are also significant contributors to the BOP surplus in the PRC and Korea, and in the unique case of India, the BOP surplus is driven entirely by capital inflows. Finally, although the shares of the current account balance and the financial account balance should sum up to one, in theory, they fail to do so in practice due to errors and omissions in the data.

TABLE 2
AVERAGE CURRENT ACCOUNT SURPLUS-TO-CHANGE IN RESERVES (CAS/ Δ R) RATIO AND
AVERAGE FINANCIAL ACCOUNT SURPLUS-TO-CHANGE IN RESERVES (FAS/ Δ R) RATIO IN
DEVELOPING ASIA'S TOP 10 RESERVE HOLDERS, 2000–2006

ECONOMY	CAS/ Δ R RATIO	FAS/ Δ R RATIO
PRC	0.66	0.33
Taipei,China	0.88	-
Korea	0.53	0.36
India	-	0.93
Singapore	2.41	-
Hong Kong, China	2.77	-
Malaysia	1.87	-
Thailand	0.70	0.15
Indonesia	2.93	-
Philippines	0.69	0.73

Note: No value indicates a deficit. For example, India ran a current account deficit during 2000–2006 as a whole.

III. RESERVE ACCUMULATION: COSTS AND BENEFITS

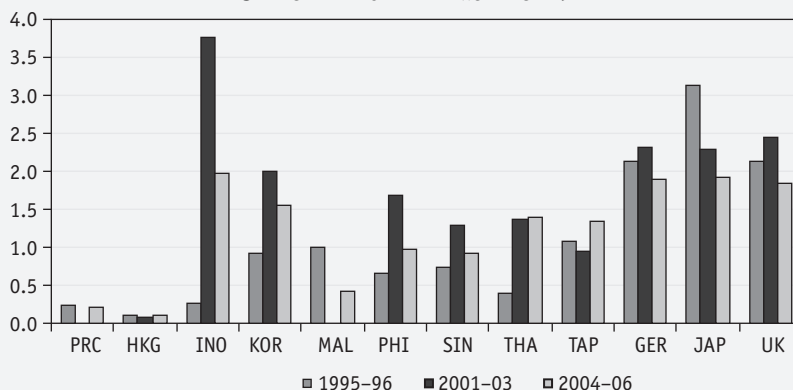
Foreign exchange reserves held by the central bank provide a range of possible benefits. Most immediately, liquid foreign currency assets are believed to provide an important source of self-insurance against the consequences of future financial crisis. Indeed, it has been argued that a sufficiently large stock of foreign exchange reserves might actually lower the probability of such a crisis occurring (see, for example, Hviding, Nowak, and Ricci 2004; or Frankel and Wei 2004). This motive for developing Asia accumulating reserves has possibly been accentuated by their experience in the Asian crisis. Having been hurt once, they are wary of being short of liquidity again. It is possible, too, that an ample supply of foreign exchange reserves can improve a country's sovereign credit rating and, in this way, lower its overseas borrowing costs through the sovereign ceiling. Aizenman and Lee (2006 and 2005) provide extended discussions of the reasons for holding reserves and find strong empirical support for self-insurance motives.

The second main reason for a central bank to purchase foreign exchange reserves is to lower the price of the domestic currency, or at least slow its rate of appreciation. Indeed, some of the region's central banks seem to have been purchasing foreign currency to slow rates of domestic appreciation, even though nominal exchange rates of East and Southeast Asian countries have become more flexible in the postcrisis period (see Box 2). Such currency market intervention is frequently justified by a variety of reasons, but government concerns about the impact of a rapidly appreciating currency on macroeconomic stability and on the export sector often loom large. The analysis in the *Asian Development Outlook 2007 Update* (ADB 2007b) considers links between the real exchange rate and export performance. It is empirically difficult to assess the relative importance of the two main benefits of holding reserves.

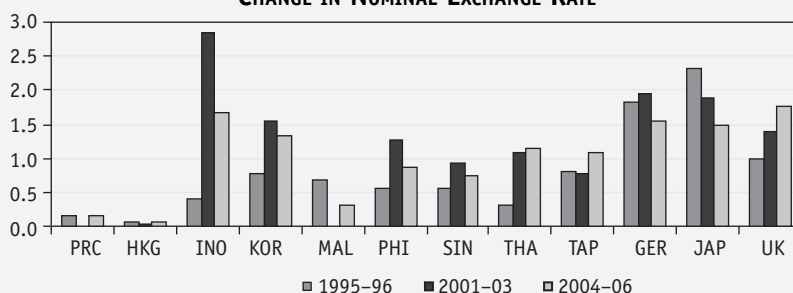
BOX 2
EXCHANGE RATE FLEXIBILITY IN POSTCRISIS EAST ASIA

The postcrisis exchange rate behavior of many East Asian countries seems to imply greater flexibility. Nominal exchange rates became noticeably more volatile in the postcrisis period relative to the precrisis period (see Box Figure 2.1 and 2.2).

BOX FIGURE 2.1
STANDARD DEVIATION OF MONTHLY PERCENTAGE
CHANGE IN NOMINAL EXCHANGE RATE



BOX FIGURE 2.2
STANDARD DEVIATION OF MEAN ABSOLUTE MONTHLY PERCENTAGE
CHANGE IN NOMINAL EXCHANGE RATE



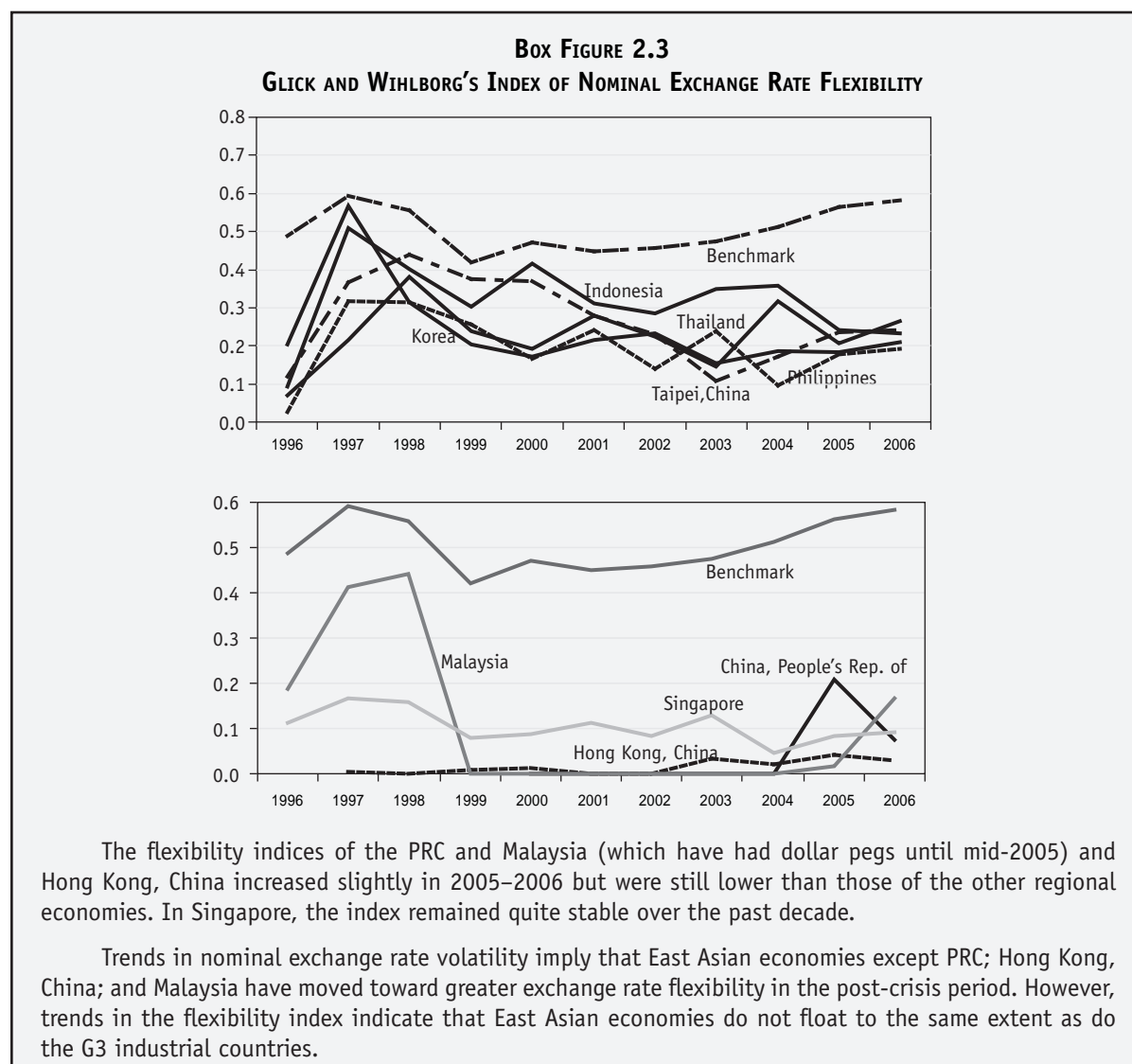
Note: Germany's currency was the mark before the European Monetary Union and the euro thereafter.

Exchange rate movements *per se* may provide only a partial picture of exchange rate flexibility. For example, the degree of volatility under a stable free-float and a heavily managed dirty float may be similar. A methodology developed by Glick and Wihlborg (1997) and also used by Bayoumi and Eichengreen (1998) takes into account movements of both nominal exchange rates and foreign exchange reserves to produce a more informative indicator of exchange rate flexibility, the flexibility index.

In Indonesia; Korea; Philippines; Taipei,China; and Thailand, the flexibility index declined noticeably in the postcrisis period despite relatively high nominal exchange rate volatility (see Box Figure 2.3). In 2005–2006, the flexibility index of these economies fluctuated around 0.2, compared to more than 0.3 during the crisis. In addition, the gap between the index of these currencies and the benchmark G3 currencies (dollar, euro, and yen) widened over time, implying more central bank intervention in the postcrisis period.

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Box 2. CONTINUED.

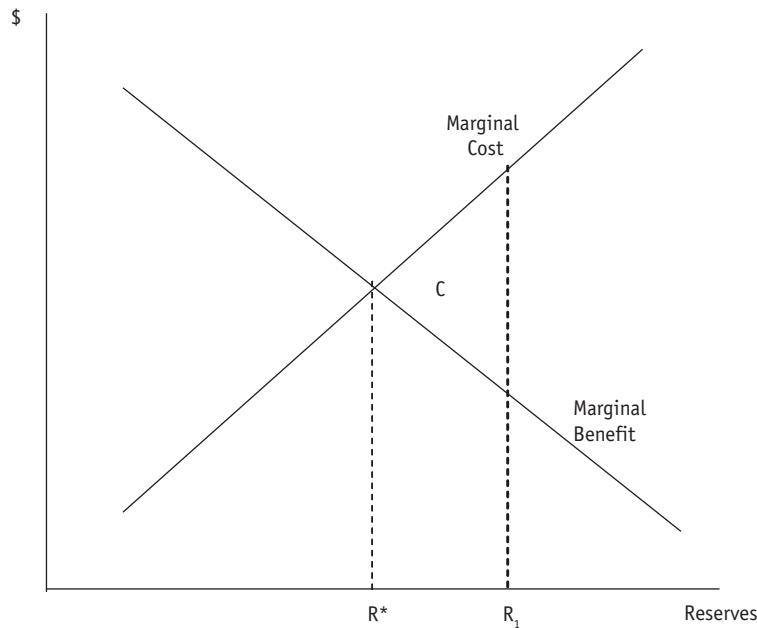


Yet reserve accumulation also entails costs such as a combination of higher inflation, expanded fiscal liabilities, and a higher interest rate. The central bank's issuance of domestic currency to purchase foreign exchange lifts reserve money, which may percolate up to inflation. So, in order to "sterilize" the potential inflationary impact of reserve accumulation, central banks typically attempt to withdraw domestic liquidity by selling debt (in the form of bonds) to the nonbank public. But such sterilization operations entail fiscal costs when, as is often the case, the interest rate the central bank pays on its outstanding domestic bonds exceeds the yield on its foreign reserve assets. Higher interest rates may also follow—since they may be required to persuade the nonbank public to hold a larger stock of (sterilization) bonds. It is only an unusually favorable constellation of factors, such as the benign global inflationary environment and ample global liquidity, which has so far limited the costs of the recent run-up of reserves in Asia, according to Mohanty and Turner (2006).

So what is the central bank's optimal reserve level? Clearly, this is neither infinite (since reserves entail costs) nor zero (since they yield benefits). Reserves are at their optimal level when the marginal benefit of a dollar of extra reserves equals its marginal cost, provided that the reserves are in the range where benefits exceed costs. Beyond a certain level, the marginal benefit of reserves is likely to diminish as they increase. Beyond some point, the level of reserves may do little to reduce the likelihood of crisis or the capacity to cope with one. Likewise, beyond a certain level, the marginal cost of reserves is likely to rise as they increase, as sterilization operations become more expensive, complicating monetary policy.

Figure 5 presents a stylized illustration of the optimal reserve level R^* , where the marginal benefit of reserves—the benefit of an additional dollar of reserves—equals their marginal cost—the cost of an additional dollar of reserves. Beyond R^* , which is where many of the region's central banks are thought to be, accumulating reserves reduces social welfare since the cost of a dollar exceeds the benefit. If, for example, the actual reserve level was R_1 , the amount of "excess reserves" is $(R^* - R_1)$ and the total cost due to the excess is the triangle C. Reducing excess reserves would thus theoretically increase social welfare.

FIGURE 5
OPTIMAL LEVEL OF FOREIGN EXCHANGE RESERVES



Evidently, if a central bank has accumulated more reserves than is theoretically optimal, one must ask why, and what policy adjustments are needed to improve welfare? The most obvious solution to the problem of welfare-reducing excess reserves is to avoid accumulating them to begin with, an issue explored in Box 3. But such a response will necessarily entail structural adjustments and rebalancing of the economy, and as such has greater relevance over the longer run. More flexible exchange rate policies may also help, but they offer no guarantees of reversing reserve accumulation. For example, Korea's currency has appreciated sharply since early 2002, yet its reserves have continued to grow.

BOX 3 FIRST-BEST SOLUTION TO THE PROBLEM OF "EXCESS" RESERVES

By definition, "excess" reserves entail social costs (see Box Figure 3.1). In a fundamental sense, the issue of what to do with them once they have already been accumulated is a study of the "second best." The obvious "first-best" solution (to the problem of too many reserves) is not to accumulate them in the first place!

But slowing or reversing reserve accumulation may not be easy. Even sharp appreciations of some regional currencies, such as the Korean won, have not slowed the pace of accumulation, as Box Figure 3.1 shows. There are questions about the extent and the speed with which nominal exchange rate changes pass through to the real exchange rate; in addition, the impact of real exchange rate changes on short-run export and import responses has been changing over time (see the chapter "Export dynamics in East Asia" in *Asian Development Outlook 2007 Update* [ADB 2007]). Nevertheless, attempts to resist relative price changes over a protracted period will exact costs that may surface in excess reserves or in other ways.

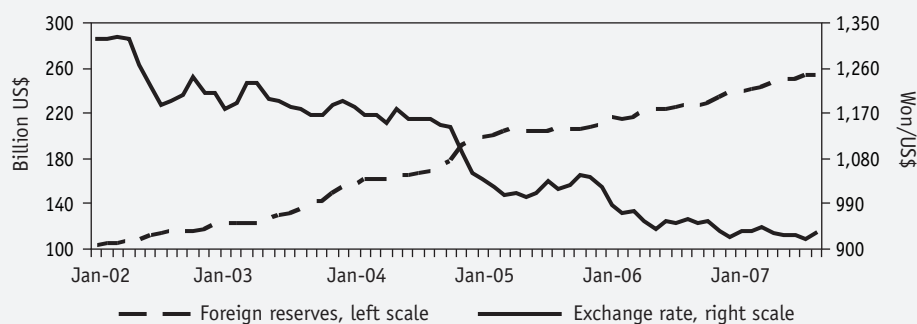
Ultimately, the root cause of excess reserve accumulation lies in the combination of excess net saving (the difference between domestic saving and domestic investment) and the inability of capital markets to intermediate surpluses efficiently. Tackling the underlying structural problems from which excess reserves emerge is difficult, and likely to take time. A closer alignment between actual and socially optimal saving would require governments to consider affordable ways of widening access to merit goods, such as social insurance and pensions. Expanding the availability of credit, particularly for households and small enterprises, would also help the private sector better arrange its consumption and saving over time. On the investment side of the equation, there is a wide variety of possible impediments, and over the years the *Asian Development Outlook* published by ADB has repeatedly emphasized the importance of improving the climate for private sector investment.

In addition to these steps, governments could consider liberalizing opportunities for capital outflows. Some countries have already moved in this direction and this should help shift intermediation functions from the public to the private sector (IMF 2007). In April 2005 for example, Malaysia raised the maximum amount that institutional investors can invest abroad. In April 2006, the PRC launched the Qualified Domestic Institutional Investor (QDII) Program, which enables domestic individuals and companies to hold overseas portfolio assets up to a government-determined aggregate quota. The QDII Program also allows commercial banks to sell yuan-denominated financial products and use the proceeds to buy foreign currency-denominated fixed-income products abroad within the predetermined quota. Subsequently, in May 2007, the scope of the QDII Program was expanded to allow approved QDII banks to invest up to 50% of their overseas investment in equities and equity-linked structured products, with a single stock capped at 5% of a product's asset value. Since the securities regulator of Hong Kong, China, is the only regulator that has currently entered into a memorandum of understanding with the banking regulator of the PRC, banks are currently only permitted to invest in stocks listed in Hong Kong, China.

Box 3. CONTINUED.

Korea, too, has taken steps to ease capital outflows. In January 2007, the government announced tax breaks and other incentives to facilitate overseas portfolio investments by domestic institutional investors and banks, and raised the ceiling on speculative overseas real estate investment from \$1 million to \$3 million. The authorities have also used a variety of promotional measures to facilitate outward FDI, such as new insurance schemes to help hedge FDI-related risks and the expansion of the Export-Import Bank of Korea's overseas investment support capacities.

BOX FIGURE 3.1
TRENDS IN KOREA'S EXCHANGE RATE



Though there is broad theoretical agreement that reserves entail costs as well as benefits, a wide range of views exist about the magnitude of actual costs and benefits. No consensus exists on how to calculate the optimal reserve level. Moreover, there is no obvious reason why the benefits and costs of reserves should be similar across countries or remain constant over time. Countries that peg their exchange rates are obviously going to need more reserves than those whose currency is allowed to move more freely. The need for reserves is also likely to be influenced by the degree of capital account openness, structure of external liabilities, health of the domestic financial system, susceptibility to contagion, and other factors. Given a large element of uncertainty, including the possibility of unknowable shocks with unknowable consequences, erring on the upside of "optimal" reserve calculations is understandable.

The case for heightened caution is especially strong for countries whose reserves are mainly built on capital inflows, especially if those inflows are primarily short-term portfolio investments and debt rather than long-term FDI. The only large regional country that falls into this category is India. Other things equal, India's optimal reserve level is likely to be higher because its reserves largely reflect a financial account surplus rather than a current account surplus.

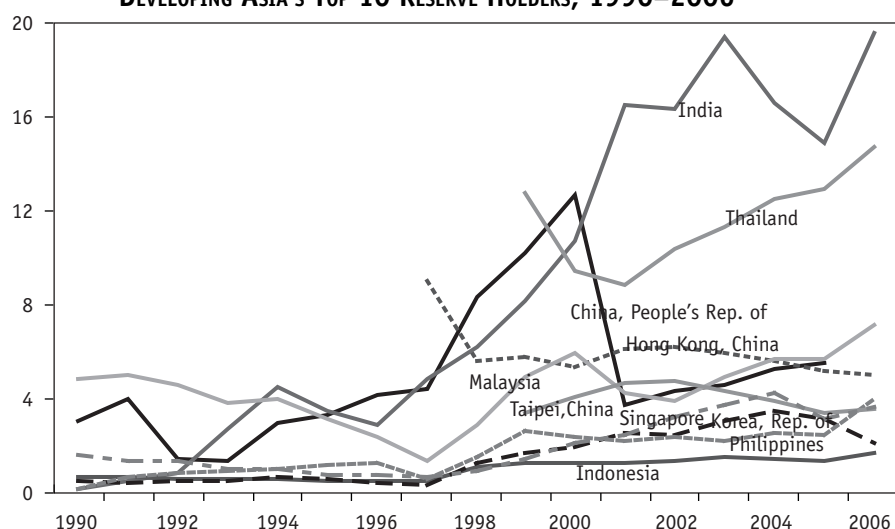
The experience of Thailand prior to the Asian financial crisis offers potentially very valuable lessons. Thailand had the world's 10th largest reserves in 1995 and the 11th largest the following year. Yet even these apparently robust levels failed to prevent the economy from falling prey to crisis in 1997. The lesson is that short-term capital inflows are vulnerable to disruptive reversals, increasing the potential benefits of precautionary reserves. Comprehensive measures of gross external

liability positions are perhaps most relevant. A net-creditor country may still be vulnerable to a financial shock if, for example, nonresidents hold large amounts of shares in the domestic stock market.

The idea that reserve assets should be invested in higher-yielding assets confuses the true need for reserves with the belief that some reserves are surplus to this need. As the primary purpose of reserves is to provide international *liquidity* during a crisis, they can only perform this function if they are invested in *safe* and *liquid* assets. The typically low rate of return on such assets is unfortunate, but beside the point. Therefore, conceptually, it may be helpful to view surplus reserves not as reserves per se but as an entirely different kind of public sector foreign currency asset that can be used for purposes other than self-insurance. Since these assets are publicly owned, one objective might be to maximize the fiscal dividend that they yield. Yet if the government fails to make a clear-cut distinction between reserves (properly defined) and surplus foreign currency assets that can be put to alternative uses, reserve management may be subject to extraneous (perhaps political) influences. The result could be a failure of reserve management to deliver liquidity when needed and to use surplus foreign currency assets in the national interest.

To gauge the magnitude of developing Asia's surplus foreign currency assets, we now turn to some well-known measures of reserve adequacy. Comprehensive discussions of these measures include Edison (2003) and ECB (2006). Although these measures are based on general economic intuition rather than rigorously derived theoretical concepts, empirical studies find them to be helpful guides for policymakers. In particular, many such studies find one such rule of thumb—the ratio of reserves to short-term external debt—to be a significant determinant of an economy's vulnerability to financial crisis. More precisely, according to the well-known Greenspan-Guidotti rule, the critical value of this ratio is one. The idea here is that a country with reserves equal to or more than all external debt falling within one year should be able to service its immediate foreign exchange obligations even during a crisis. Figure 6 reveals that developing Asia comfortably passes the Greenspan-Guidotti test of adequacy.

FIGURE 6
RATIO OF FOREIGN EXCHANGE RESERVES TO SHORT-TERM EXTERNAL DEBT IN
DEVELOPING ASIA'S TOP 10 RESERVE HOLDERS, 1990–2006



Two other well-known reserve adequacy measures are the reserves-to-M2 ratio and the months of imports that reserves can pay for. The basic intuition is that the higher the M2 ratio, the greater the degree to which the risks of crisis-provoking domestic capital flight are covered. The suggested critical values range from 5% to 20%. Figure 7 shows that the reserves/M2 ratio are either above or close to the upper limit of the 5%–20% range for the major reserve holders of developing Asia. The basic idea behind the import cover measure is that a large stock of reserves will reduce vulnerability to adverse current account shocks. The suggested critical value is 3 to 4 months. Figure 8 shows that the number of months that imports can cover is well above four in developing Asia.

FIGURE 7
RATIO OF FOREIGN EXCHANGE RESERVES TO M2 IN
DEVELOPING ASIA'S TOP 10 RESERVE HOLDERS, 1990–2006

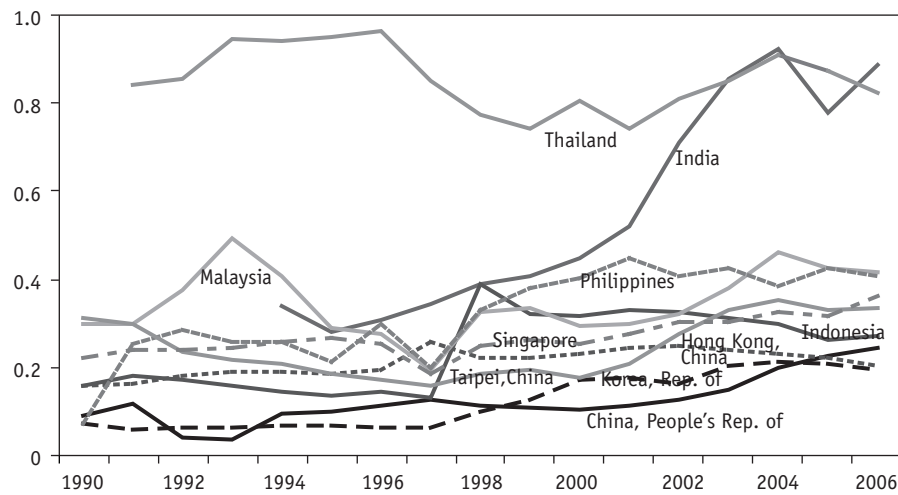
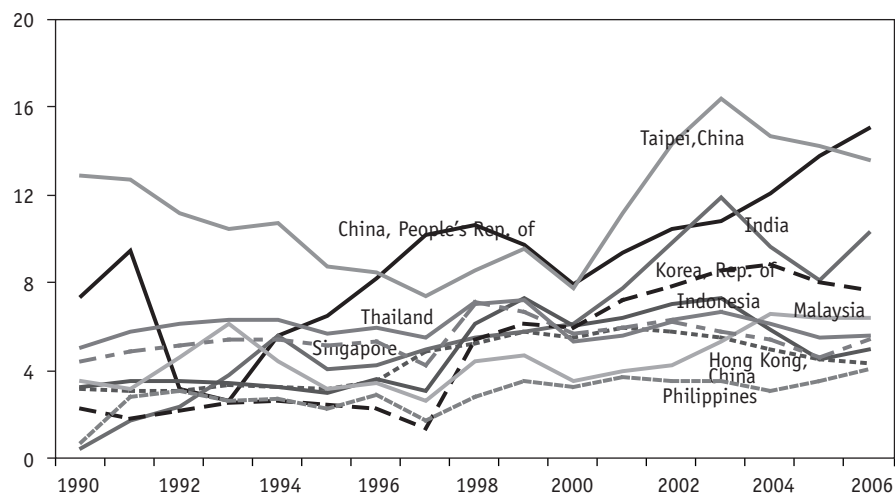


FIGURE 8
IMPORTS COVERED BY FOREIGN EXCHANGE RESERVES (NUMBER OF MONTHS)
IN DEVELOPING ASIA'S TOP 10 RESERVE HOLDERS, 1990–2006



Let us now examine two additional measures of reserve adequacy that are less widely used than the three measures discussed above: reserves-to-GDP ratio and reserves-to-total external debt ratio. Figure 9 shows rising reserves/GDP ratios throughout the region. Figure 10 shows that the reserves-to-total debt ratio is currently substantially above 1 or close to 1, which implies that reserves are sufficient to cover not only short-term external debt but *all* external debt in PRC; Korea; Taipei,China; India; Singapore; Hong Kong, China; Malaysia; and Thailand. Therefore, both reserves/GDP and reserves/total external debt ratios provide further evidence of reserves that are surplus to needs.

FIGURE 9
RATIO OF FOREIGN EXCHANGE RESERVES TO GDP
IN DEVELOPING ASIA'S TOP 10 RESERVE HOLDERS, 1990-2006

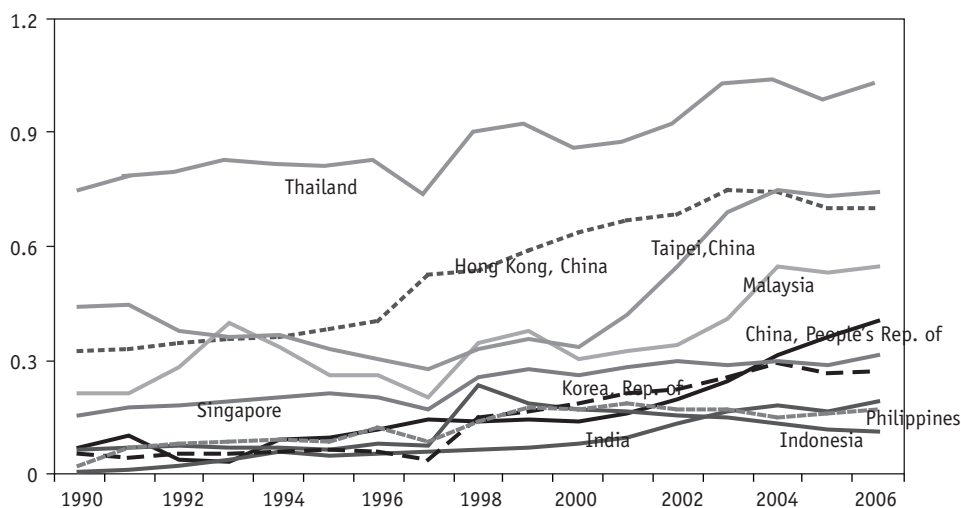
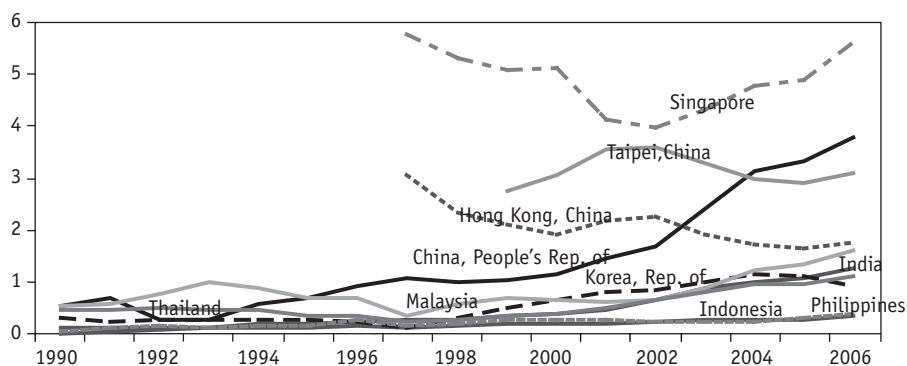


FIGURE 10
RATIO OF FOREIGN EXCHANGE RESERVES TO TOTAL EXTERNAL DEBT
IN DEVELOPING ASIA'S TOP 10 RESERVE HOLDERS, 1990-2006



Policymakers often rely on simple rules of thumb, which give reasonably good policy guidance, to assess reserve adequacy. Nevertheless, it is worthwhile to take a look at the limited but growing theoretical and empirical literature consisting of more rigorous and systematic studies of reserve adequacy. Pertinent studies include Edison (2003), Wyplosz (2007), Jeanne and Ranciere (2006), Gosselin and Parent (2005), Mendoza (2004), Aizenman, Lee and Rhee (2004), Aizenman and Marion (2004 and 2002), and Dooley et al. (2004). The overall balance of evidence in this emerging literature confirms the story told by the rules of thumb—that the region’s current reserve build-up has overshot what might be deemed “optimal”, especially since 2000—although the studies differ considerably about the extent of the overshooting. Another significant general finding is an apparent structural increase in optimal reserves in the post-1997 period, which is consistent with a stronger precautionary demand for reserves after the Asian crisis.

IV. SPENDING RESERVES ON DOMESTIC PROJECTS: MACROECONOMIC IMPLICATIONS

At the broadest level, following Hildenbrand (2007), the region’s foreign exchange reserve accumulation can be split into two types: (i) accumulation based on government budget surpluses, profits of state-owned companies, or other government net income; and (ii) accumulation based on foreign exchange market interventions by central banks within the context of current account surplus and/or capital inflows. The classical example of the first type is associated with export revenues from natural resources such as oil. Governments typically either own the natural resources or heavily tax their private sector owners. For example, the post-2002 commodity boom has provided a fiscal bonanza for the governments of resource-rich countries around the world. Often export revenues are kept in separate funds and thus excluded from official reserve statistics. The second type reflects the central bank’s purchases of foreign exchange. These reserves, which originate from current account surpluses or capital inflows, become part of the central bank’s stock of foreign exchange reserves.

For conceptual clarity and simplification, the first type of reserves can be considered “fiscal reserves” and the second type “central bank reserves.” From the viewpoint of the balance sheet of the *sovereign* (i.e., the consolidated public sector = government plus central bank), there is a critical conceptual difference between fiscal reserves and central bank reserves. Fiscal reserves provide additional fiscal resources for the government and can be spent without incurring debt. Central bank reserves, on the other hand, which are financed by issuing bonds or currency, do not constitute “free fiscal assets” as they have counterpart liabilities, i.e., currency or debt (bonds). It follows that if the government wishes to “spend” such reserves, it must borrow to cover its new liabilities. For the most part, developing Asia’s reserve build-up reflects central bank reserves; these do not represent free fiscal resources at government’s disposal.

Regardless of whether the reserve build-up reflects accrual of fiscal assets or the central bank’s foreign exchange market intervention or both, it usually takes place in the context of a balance of payments or external surplus. In this connection, it is conceptually useful to distinguish among the three main types of external surplus: (i) resource-based current account surplus based on natural resource export revenues; (ii) nonresource current account surplus based on exports of manufactured goods and services; and (iii) financial account surplus, i.e., capital inflows from abroad. For example, the sharp increase in oil price since 2002 has produced a sizable external surplus for oil exporters such as Kazakhstan (Type 1). On the other hand, Korea’s external surplus is driven largely by current account surplus (Type 2) while India’s external surplus is driven by

capital inflows (Type 3). For the region as a whole, the external surplus is predominantly Type 2, in some cases augmented by Type 3, rather than Type 1. In general, fiscal reserves originate from resource-based current account surplus whereas central bank reserves originate from nonresource current account surplus, financial account surplus, or both. Singapore is a particularly interesting case since the government has accumulated large amounts of foreign assets even though it does not have any natural resources.

Consider the implications of developing Asia's reserve build-up for national wealth as opposed to the sovereign balance sheet. The surge in oil prices since 2002 has clearly improved the terms of trade for oil-exporting countries and added to their wealth. It is equally true that a nonresource current account surplus also adds to a country's net wealth. Box 4 elaborates this point. This type of surplus mirrors an excess of savings over domestic investment and is reflected in the accumulation of financial claims on nonresidents. Essentially, the stock of such claims can finance future consumption. Finally, the impact of financial account surplus on national wealth is likely to be more limited. To the extent that foreign debt and equity inflows enhance a country's productivity capacity, they allow for higher output and consumption in the future. However, such inflows constitute foreign residents' future claims on a share of domestic output, which will reduce future consumption by domestic residents.

Box 4
ARE DEVELOPING ASIA'S FOREIGN EXCHANGE RESERVES FREE FISCAL RESOURCES?

For the most part, developing Asia's foreign exchange reserves are the consequences of foreign exchange purchases by central banks, not fiscal surplus, profits of state-owned companies, or other government income. A hypothetical example will clarify that such reserves do not constitute a free fiscal resource. Suppose that Samsung, a large private-sector Korean conglomerate, exports \$50 billion and imports \$30 billion. The firm has earned more than it spent, so it is in effect saving and thus adding \$20 billion to its net wealth. Korea's national net wealth has unambiguously increased. In terms of Samsung's balance sheet, the \$20 billion is a foreign currency asset, as follows:

Samsung

Assets	Liabilities
US dollars 20	

Now suppose that instead of investing the \$20 billion abroad in assets such as a US dollar deposit account, Samsung decides to bring its US dollars home and exchange them for Korean won in the Korean foreign exchange market. Let us suppose further that the Bank of Korea, for whatever reason, decides to purchase the \$20 billion dollars with Korean won it issues. The increase in Samsung's net worth is still worth \$20 billion, except that the net wealth is now held in won. As for the Bank of Korea, the increase in the value of its assets—the \$20 billion dollars—is exactly offset by the increase in its liabilities, or \$20 billion dollars' worth of liabilities, as follows:

Box 4. CONTINUED.

Bank of Korea	
Assets	Liabilities
US dollars 20	Korean won 20

For Korea as a whole, there is an increase in the net worth of Samsung but not in the net wealth of the Bank of Korea. Since the \$20 billion worth of Korean won increases the monetary base, a central bank concerned about inflation might attempt try to *sterilize* this additional liquidity by selling bonds to the nonbank public. For the sake of simplicity, let us assume that Samsung buys these sterilization bonds. Then Bank of Korea’s and Samsung’s balance sheets change as below. It still remains the case that private sector and national net wealth has increased, although there are no additional fiscal resources for the sovereign.

Bank of Korea	
Assets	Liabilities
US dollars 20	Sterilization bonds 20

Samsung	
Assets	Liabilities
Sterilization bonds 20	

A central conclusion is that developing Asia’s reserves do not, in general, create free fiscal resources at the disposal of government. The exception is where government itself earns foreign exchange. In particular, for oil-rich countries such as Azerbaijan, Kazakhstan, and Timor-Leste, the increase in reserves clearly adds to fiscal resources and national wealth. Singapore is somewhat of a special case, in which a commercially active government earns significant amounts of foreign exchange in a nonresource economy.

Asia’s mountain of foreign currency reserves has sparked an important debate about how they might be put to better use. Why can’t “excess” foreign currency assets, which do not serve liquidity needs, be spent on vital domestic projects? Presumably, the social returns on many such projects are much larger than the rewards of investing in an internationally diversified financial portfolio, even when financial markets are booming.

In evaluating the macroeconomic implications of spending reserves, clarity is needed on three basic issues: (i) Are the reserves a “free” fiscal resource? (ii) If they are not, how is spending to be funded? (iii) Does spending entail foreign currency intervention?

The source of reserves determines whether they are a “free” resource, or not. In addition to fiscal reserves and central bank reserves—the two main sources of reserve accumulation already discussed—reserves can accrue through public sector foreign borrowing and grant official development assistance (ODA). In general, fiscal reserves and grant ODA can be considered as fiscal resources

since the government can spend them without incurring debt. In this sense they are “free.” By contrast, central bank reserves and foreign borrowing are not “free” since they have counterpart liabilities.

A. Fiscal Reserves

Consider first circumstances where the foreign currency reserves of the central bank are fiscal assets. In this case, spending or transfers will entail debiting the government account at the central bank, with the central bank providing the needed liquidity. Foreign currency spending on imports for domestic projects would have no monetary or fiscal implications. The drawdown of the government's account would be offset by a reduction in the foreign exchange assets on the central bank's balance sheet. But if government receives and spends domestic currency, the central bank must first sell foreign exchange for domestic currency. This leads to a withdrawal of reserve money, and an appreciation of the domestic currency. But as the government spends and receipts are deposited by the private sector in the commercial banking system, reserve money is replenished.

Complications occur if the central bank wants to avoid an appreciation. It would then repurchase foreign currency in the market, expanding reserve money. Left unsterilized, the monetary expansion would raise the domestic price level and real exchange rate appreciation would occur through inflation. If foreign exchange market intervention is accompanied by sterilization—the sale of domestic currency securities to the private sector—domestic interest rates rise. Fiscal costs occur not because of government spending *per se*, but because the monetary authorities choose to maintain the pre-existing exchange rate parity. In intermediate cases, drawing on foreign currency reserves to fund domestic spending could entail some combination of a nominal appreciation, rising domestic prices, and higher domestic interest rates. On the real side of the economy, net exports and/or interest sensitive components of domestic expenditure would adjust depending on real exchange rate and interest rate impacts.

B. Central Bank Reserves

Now imagine that government spending requires borrowing reserves from the central bank. Assume too that the exchange rate is pegged and there is full sterilization of foreign currency market interventions. Further assume that government spending takes the form of foreign currency spending on imports for domestic projects.

In the first leg of the transaction, the reduction in foreign exchange reserves is offset by an expansion of government securities held by the central bank. There is no impact on the balance sheet of the commercial banking system, as government purchases do not create private sector deposits. Moreover, as this operation entails no foreign exchange market purchases or sales, the exchange rate parity is unaltered. Eventually, however, the government would have to service its debt with the central bank.

Alternatively, government could sell debt directly to the nonbank public, using the proceeds to purchase foreign currency from the central bank. Now reserve money is withdrawn and interest rates rise, but there are no foreign exchange market impacts. Through its deflationary impact, the contraction of reserve money induces a depreciation of the real exchange rate and capital inflows are encouraged by rising domestic interest rates. Any induced balance of payments surplus will raise the demand for domestic currency requiring foreign currency purchases to maintain the peg, hence expanding reserve money. This raises the price level, counteracting the earlier deflation. Government borrowing and spending of foreign currency has increased domestic currency debt and has required that the foreign currency be repurchased to check a nominal appreciation. Changes in interest rates and in the real exchange are felt on domestic expenditure and net exports.

It would make little sense for the government to finance domestic currency spending, rather than foreign currency purchase of imports, by borrowing reserves from the central bank. For example, infrastructure projects typically have high local content. In this case, the government must purchase domestic currency using the foreign currency reserves it borrowed. Though this operation has no direct impact on base money since the government spends the purchased domestic currency, it exerts pressure for an appreciation of the nominal exchange rate, with the attendant need for intervention and sterilization. If a government wants to spend on domestic infrastructure, it would be much simpler and more transparent to do so through orthodox domestic-debt-funded fiscal operations.

In the final analysis, government spending of fiscal reserves is comparatively straightforward. However, central bank reserves are not a “free asset” and government attempts to spend them may imply policy reversals and responses that cause reserves to flow back onto the balance sheet of the central bank.

Box 5 looks at the specific case of spending foreign exchange reserves for domestic purposes, i.e., whether India should use its soaring reserves to finance its large and growing need for infrastructure. Given the complications of using foreign currency assets to fund domestic currency spending, the Indian government has rightfully exercised a great deal of caution in exploring this issue. Box 5 describes in detail the various potential pitfalls associated with using reserves to improve India’s infrastructure.

Nevertheless, the Indian experience also suggests that there is some scope for innovation and creativity in using reserves productively for high-priority fiscal needs. In particular, a more creative use of Indian reserves for infrastructure might be to deploy them to mitigate risks on private sector investments. But for this to work, the obstacles that block potential private sector participation in domestic infrastructure would ultimately have to be removed. If this could be achieved, contingent liabilities in the form of guarantees would not result in debt and could boost national productivity. Furthermore, such guarantees can help to bring in foreign infrastructure companies with superior technology or know-how, resulting in, for example, better roads at lower costs. This will not only directly benefit Indian infrastructure but also contribute to learning-by-doing on the part of Indian infrastructure companies.

Box 5
USING INDIA'S EXCESS RESERVES FOR INFRASTRUCTURE?

The Government of India has proposed a mechanism for using foreign exchange reserves for infrastructure investment. The proposal was announced in the Federal Budget Speech in February 2007, and the Reserve Bank of India (RBI) and the Ministry of Finance are currently working on implementing the proposal. One of the recommendations of a high-level government committee on infrastructure financing is to use a small part of the foreign exchange reserves without the risk of monetary expansion. Thus, it is proposed in the budget to establish two wholly owned subsidiaries of the India Infrastructure Finance Corporation (IIFC) with the following objectives: (i) to borrow funds from the RBI and lend to Indian companies implementing infrastructure projects in India, or to co-finance their external commercial borrowings (ECBs) for such projects, solely for capital expenditures outside India; and (2) to borrow funds from the RBI and invest such funds in highly rated collateral securities, so as to enhance the credit ratings of Indian companies that raise funds in international markets for infrastructure projects in India. The loans by RBI to these two subsidiary companies will be guaranteed by the Government of India, and the RBI will be guaranteed a rate of return higher than the average rate of return on the reserves.

The specific proposals outlined is part of a broader line of thinking within the Indian government, which is seriously considering infrastructure financing as a major avenue for using RBI's soaring reserves more actively. The government has forecast that the country needs \$320 billion in infrastructure investment during the next five years as the country's rapid economic growth tests the limits of its long-neglected ports, roads, airports, and power utilities. The combination of woefully inadequate infrastructure and strong growth prospects means that the social rate of return on infrastructure investments is likely to be high. This is all the more so since inadequate infrastructure is widely seen as one of the biggest obstacles to India's sustained economic growth. Therefore, in principle, it seems that India would do better to invest part of its reserves on high-return domestic highways than on low-return US government bonds. This is especially true if the infrastructure investments are limited to spending on imports, since this entails less inflationary risk than domestic spending.

Though attractive in principle, a number of considerations suggest that the Indian government should approach the issue of using reserves to finance infrastructure with a great deal of caution. Fortunately, as the limited scope and specific targeting of the two specific proposals shows, the government is doing precisely that so far. First, India's reserves are a result of the central bank's foreign exchange market interventions and, as such, are not sovereign wealth, and hence are not fiscal resources. Second, underlying much of India's reserve build-up are potentially volatile short-term portfolio capital inflows, which calls for setting aside more reserves. Third, infrastructure projects in India yield low or negative returns due to political and economic risks associated with adjusting the tariff structure, introducing labor reforms, and upgrading technology. A more direct and effective policy approach to financing infrastructure is to create a more favorable business environment for private sector investment. Fourth, using reserves to finance infrastructure will soften the government's budget constraint and weaken fiscal discipline, a major risk in light of the government's unhealthy overall fiscal position. Fifth, much of infrastructure investment is likely to revolve around domestic spending, so it makes more sense for the government to issue rupee-denominated infrastructure bonds directly. Not only is the alternative of issuing bonds to purchase reserves to buy rupees roundabout, it increases the monetary base and thus entails risk of inflation.

V. SOVEREIGN INVESTMENT AGENCIES: EXPERIENCES AND CHALLENGES

As was seen in the previous section, spending on domestic projects represents one possible use for developing Asia's large and growing surplus reserves. Another policy option is to use the surplus reserves to make overseas investments with the aim of maximizing risk-adjusted returns. In this context, sovereign investment agencies, better known as sovereign wealth funds, are attracting the interest of policymakers throughout the region.

In this section, the experiences of existing SWFs, which can provide valuable lessons for the new Asian SWFs, are first surveyed. The development context that defines the broader objectives and functions of the Asian funds is then explored. Finally, based on the experiences of the existing SWFs and the Asian development context, a number of specific design principles that may help funds maximize fiscal dividends are set forth.

A. Experiences of Existing SWFs

The past experiences of existing SWFs can lead to a better understanding of the challenges that lie ahead for the new Asian SWFs. Although the term SWF was coined only recently (Rozanov 2005a and 2005b), SWFs have been around for quite some time. In fact, the oldest fund, the Kuwait Investment Authority, goes all the way back to 1953. While SWFs are hardly new, they have come into the spotlight recently due to their sheer size. There is no single authoritative definition of an SWF. However, regardless of their differences, SWFs share two defining characteristics namely (i) ownership and control by the government, and (ii) pursuit of risk-adjusted returns as the central objective.

According to Jen (2007), SWFs now have as much as \$2.5 trillion in assets, a number that could possibly double by 2012. To put the numbers into better perspective, as of mid-2007, Jen (2007) estimates that the world's official foreign exchange reserves stand at around \$5.1 trillion; hedge funds are considered to control between \$1.5 trillion and \$2 trillion in assets; and total global financial assets are roughly around \$140 trillion. If current trends persist, the assets at the disposal of SWFs may expand rapidly, both in absolute terms and relative to the size of global foreign exchange reserves.

Table 3 lists the world's biggest and most well-established SWFs. In terms of their underlying resource base, SWFs can be broadly classified into two types, commodity and noncommodity. Commodity funds have been established from export revenues of key natural resources such as oil and gas. As such, SWFs are sometimes called oil funds or natural resource funds because a majority of them were created from revenues from oil, gas, copper, phosphates, and other minerals. In this case, countries are converting real assets buried in the ground (e.g., oil) into financial assets. Majority of the world's most well-established sovereign funds are commodity funds, including the two biggest, Norway's Government Pension Fund (see Box 6) and the Abu Dhabi Investment Authority.

TABLE 3
SOVEREIGN WEALTH FUNDS IN THE WORLD

ECONOMY	NAME OF FUND	ASSETS (US\$ BILLION)	YEAR OF INCEPTION	TYPE
United Arab Emirates	Abu Dhabi Investment Authority	875	1976	Commodity: Oil
Singapore	Government of Singapore Investment Corporation	330	1981	Noncommodity
Norway	Government Pension Fund	300	1990	Commodity: Oil
Saudi Arabia	Various types	300	n/a	Commodity: Oil
PRC	China Investment Corporation	300	2007	Noncommodity
Kuwait	Kuwait Investment Authority	160–205	1953	Commodity: Oil
Singapore	Temasek Holdings	100	1974	Noncommodity
Hong Kong, China	Investment Portfolio (Hong Kong Monetary Authority)	100	1998	Noncommodity
Australia	Future Fund	50	2004	Noncommodity
Qatar	Qatar Investment Authority	40	n/a	Commodity: Oil
Alaska	Permanent Reserve Fund	35	1976	Commodity: Oil
Russia	Oil Stabilization Fund	32	2003	Commodity: Oil

Note: Due to lack of official information from the funds themselves, asset sizes are largely estimates from unofficial sources such as Morgan Stanley (Jen 2007).

Sources: Jen (2007), Rozanov (2005), Setser and Ziemba (2007), Temasek Holdings (2007), Rietveld and Pringle (2007), United States Treasury (2007), and Government of Singapore Investment Corporation website (<http://www.gic.com.sg>).

Box 6
NORWAY'S GOVERNMENT PENSION FUND

In striking contrast to other SWFs, Norway's oil-based SWF, the Government Pension Fund (GPF) Global, is characterized by a high degree of transparency and disclosure of information. The Ministry of Finance, which owns the funds, reports to the parliament on all important issues related to the fund, such as changes in investment strategy, performance, risks, and costs. The central bank, which manages the fund, publishes quarterly reports on the fund's management, along with an annual report that lists all of the fund's investments. Those reports are comparable in terms of information disclosure to the reports of publicly listed private sector companies. Due to its high level of transparency and good investment performance, GPF fund has become a model for new resource-based SWFs in developing Asia and beyond. For example, Kazakhstan's National Oil Fund has explicitly modeled itself after the GPF.

Norway began producing oil in the North Sea in 1970 and is currently the world's third largest exporter of oil. Such large-scale exports of oil have continuously generated substantial fiscal revenues for the Norwegian government. In 1996, the Norwegian government created the GPF, which has since been renamed the Government Pension Fund Global in 2006. The fund had assets of around \$285 billion at the end of 2006. The renaming reflects the fund's role in mobilizing government savings to meet the rapid future growth of public pension expenditures. However, the fund is not an earmarked pension fund. Rather, the fund's basic economic function is essentially that of an endowment fund, and its central mandate is to transform Norway's oil wealth into a diversified portfolio encompassing foreign equities and bonds. The two main expected benefits from such transformation is the reduction of total risk through diversification as well as higher returns.

Box 6. CONTINUED.

The fund is included in the government budget and money is not transferred to the fund until the budget is balanced. This means that the government cannot build debt at the same time as it accumulates assets in the oil fund. The use of petroleum is separated from the ongoing accumulation of income and serves as a buffer for government finances. The buffer function is related to the fact that petroleum income accounts for a substantial portion of government revenues. Those revenues are uncertain due to the wide variation in oil prices.

At the end of 2006, fixed income instruments and equities accounted for 60% and 40% of the fund's strategic benchmark portfolio, respectively. The fixed instruments subportfolio consists of instruments from Europe (60%), America/Africa (35%), and Asia/Oceania (5%), and its benchmark portfolio is based on Lehman Brothers global indices for government and corporate bonds. The equity subportfolio consists of instruments from Europe (50%), America/Africa (35%), and Asia/Oceania (15%), and its benchmark portfolio is based on the FTSE All-World indices. The fund's investment performance relative to the strategic benchmark portfolio of equities and bonds from three broad geographic regions has been satisfactory, as evidenced by an average annual excess return of 0.48 percentage point relative to the benchmark during 1998–2006. The accumulated excess return is NOK 28.9 billion or \$4.7 billion. At a broader level, GPF has effectively safeguarded national wealth for future generations and shielded government finances as well as the economy at large from the volatility of oil prices. Another significant contribution of the GPF has been to prevent Norway from being infected with Dutch disease, or the phenomenon of resource-rich countries suffering loss of competitiveness due to currency appreciation, as evident in the fact that the country has a fairly well-diversified economy.

Quite clearly, the Norwegian SWF experience can provide valuable lessons for resource-rich countries in developing Asia. However, some defining characteristics of the Norwegian model need to be discussed before the model's applicability to other countries can be meaningfully assessed. First, all of the fund's capital is invested outside Norway and in foreign currencies. The underlying motivation here is to prevent inflationary pressures and currency appreciation that would result if a large proportion of the oil revenues were spent domestically. Second, a new business unit was created within the central bank, the Norges Bank Investment Management (NBIM), which was independent from the rest of the central bank. For example, the compensation structure is different and much more performance-linked at NBIM. The finance ministry acts as the owner but only provides broad strategic guidance to NBIM, which actively manages the assets. Third, the fund is explicitly and transparently included in the government fiscal balance. Although in theory the fund serves as a buffer for government finances, in practice annual transfers from the fund to the government budget has been limited to a maximum of 4% of the fund's market value. Fourth, and this is related to the third point, there is a strong underlying philosophy that oil revenues should benefit all generations of Norwegians. The government has made lots of efforts to explain the endowment nature of the oil wealth and firmly resisted populist calls for spending more from the fund. Fifth, as already noted, GPF-G has been unique among SWFs in terms of its exceptionally high degree of transparency and information disclosure. The finance ministry and central bank jointly provide virtually all relevant fund-related information to the general public.

However, not all SWFs were created out of natural resource wealth. For noncommodity SWFs, funding has usually come from one of the following sources: (i) transfer of foreign exchange reserves, (ii) government budget surplus and other government net income, and (iii) foreign aid in the form of trust funds. Among noncommodity economies, Singapore is unique in its long history and abundant experience with SWFs. The country's two SWFs, Temasek Holdings and Government of Singapore Investment Corporation (GIC), jointly manage assets of about \$430 billion, and were

created as vehicles to deploy fiscal surpluses (broadly defined) rather than natural resource income (see Box 7). Asia's newer SWFs (see Table 4) are also largely noncommodity funds but financed through the central bank's foreign exchange reserves.

Box 7
TEMASEK HOLDINGS AND GOVERNMENT OF SINGAPORE INVESTMENT CORPORATION

Temasek is the older of the two Singaporean SWFs and is essentially the government's investment holding company. Temasek, which currently has assets of between \$80–100 billion, began its operations in 1974. As such, it is one of the oldest nonresource SWFs in the world. The Ministry of Finance had begun acquiring ownership interests in strategic companies throughout the economy, from banking to telecommunications to transportation, since Singapore's early nation-building years, and those investments reached substantial levels by the early 1970s. Temasek thus has its origins in the government's strategic decision to run its investments on a sound commercial basis and prevent any conflict with the government's public interest role of policy making and market regulations. At a deeper level, Temasek reflects Singapore's unique brand of state-led capitalism in which the government is extensively involved in the production of goods and services. The major reason Temasek has attracted so much attention from the region's emerging SWFs is its exceptional investment performance. According to Temasek (2006), its market value grew on average by a remarkable 18% per year on a compounded basis between 1974 and 2006. During the same period, the market value of Temasek's portfolio rose from \$170 million to \$64 billion. Although there is some debate about the accuracy of the numbers, there is almost universal consensus about Temasek's credentials as a highly successful investor.

Temasek is characterized by a number of noteworthy structural characteristics. Above all, Temasek seems to enjoy a very high degree of operational autonomy and freedom from political interference in its day-to-day operations. In terms of its corporate governance, Temasek has an independent board, which consists largely of private sector business leaders and only one representative from the Ministry of Finance. As of March 2006, around 40% of senior managers were non-Singaporeans. Furthermore, more than a quarter of all professional staff were non-Singaporeans. Operational independence has given Temasek a great deal of discretion in terms of its investment decision-making. In addition to its bread and butter of large equity stakes in domestic and foreign companies, Temasek has ventured into areas such as private equity, real estate, and venture capital. Temasek's appetite for high risk and high return is also evident in its medium-term portfolio target of one-third exposure to the emerging markets of Asia. The remaining two-thirds are to be equally divided between Singapore and OECD economies. Therefore, although all of Temasek's investment holdings were initially in Singaporean companies, the share of Singaporean companies in Temasek's portfolio is now only one-third. Temasek's profits are paid back to the government as dividends.

Temasek is very much an active investor and seeks to control or influence the management of the companies in which it buys equity stakes. In recent years, around 60–70% of Temasek's portfolio consisted of investments where the company's share of total equity exceeded 20%. Indeed Temasek's overall investment philosophy can be summarized as that of an active shareholder that seeks to maximize sustainable shareholder value. Although Temasek has the luxury of adopting either long or short investment horizons, in practice its guiding principle has been to manage for long-term value. While it might be tempting for outsiders to dismiss the commercial orientation of a government-owned institution, it is in fact accurate to say that Temasek has been run on a purely commercial basis, more or less like Goldman Sachs. The one area where Temasek lags far behind the likes of Goldman Sachs is transparency, although it has recently made efforts to improve its transparency, such as publishing audited financial statements.

Box 7. CONTINUED.

GIC was initially established in 1981 following the government's strategic decision to invest some of the country's foreign exchange reserves in higher-yielding foreign assets. It has become substantially bigger than its older sister Temasek, and currently has estimated assets of at least \$100 billion, with some estimates as high as \$330 billion. Even though GIC started out as an investment management company entrusted with investing part of reserves, its funds now come primarily from the Singaporean government rather than the central bank. In contrast to Temasek, GIC does not own the assets it manages but manages them on behalf of its two clients, the government and the central bank. GIC is, in effect, an external fund manager for the two clients. GIC is external rather than internal because GIC, like Temasek, is run on a purely commercial basis and enjoys a high degree of operational independence. Although the government sets GIC's broad investment objectives (such as asset class mix, expected return, and risk tolerance) and monitors GIC's performance, it does not interfere with the day-to-day operations. GIC finances its operating expenditure by receiving a fee from its two clients.

The biggest common factor binding the two SWFs is that they are owned and funded by the Singaporean government. More specifically, the Ministry of Finance acting on behalf of the government is the sole shareholder of both funds even though Temasek, unlike GIC, owns the assets it manages. As such, Temasek and GIC pay all their dividends back to the finance ministry, and Temasek's average dividend yield to its shareholder during 1974–2006 has been an impressive 7%. What is less than fully transparent is the mechanism for determining how much profit the two funds pay back to the government and how the government spends the money it gets from the funds. It is widely believed that GIC also serves as the asset manager of the Central Provident Fund (CPF). However, there is no formal systematic relationship between the two, and in particular, the rate of return on CPF savings is unrelated to the rate of return on GIC's investments.

It is conceptually helpful to think of both as managers of the wealth of a commercially active and successful government. None of Temasek's funds and only a minor part of GIC's funds comes from Singapore's reserves. As noted before, the two funds differ from developing Asia's new SWFs in that they are based on fiscal reserves, much like the oil funds of the Gulf, rather than central bank reserves. That is, the Singaporean funds are based on fiscal surplus, the profits of state-owned companies, and other government net income, whereas the new Asian funds are based on foreign exchange market intervention by the central bank. Both GIC and Temasek use external fund managers as an integral part of their investment strategy. In the case of GIC, the share of assets under management by EFM may be as high as 25% while Temasek uses external fund managers when there are potentially high returns or as a means to establish market presence.

A more fundamental similarity between Temasek and GIC is that they have fully used their operational autonomy to invest in a wide range of risky asset classes in pursuit of high returns. They have also made good use of their long-term investment horizons to earn premiums for foregoing liquidity. For GIC, the range of asset classes includes government and corporate bonds, equity, foreign exchange, commodities, real estate, private equity, venture capital, and infrastructure. Just like Temasek, GIC has established a solid track record of consistently good investment performance. According to company sources, between 1981 and 2006, the average annual return has been 9.5% in US dollar terms and 8.2% in Singapore dollar terms. The average annual return above global inflation has been 5.3%. Moreover, GIC has added value in both equities and bonds against the relevant industry indices. The two SWFs have thus not only used their operational independence vigorously but effectively as well. The overall picture that emerges is that of two well-run and successful private-sector companies, not altogether different from Goldman Sachs. The performance of GIC and Temasek so far also indicates a high level of risk management capacity that has effectively managed the overall risk of their portfolios.

TABLE 4
SOVEREIGN WEALTH FUNDS IN DEVELOPING ASIA

ECONOMY	NAME OF FUND	ASSETS (US\$ BILLION)	YEAR OF INCEPTION	TYPE
Singapore	Government of Singapore Investment Corporation	330	1981	Noncommodity
PRC	China Investment Corporation	300	2007	Noncommodity
Singapore	Temasek Holdings	100	1974	Noncommodity
Hong Kong, China	Investment Portfolio (Hong Kong Monetary Authority)	100	1998	Noncommodity
Brunei Darussalam	Brunei Investment Agency	30	1983	Commodity: Oil
Korea, Rep. of	Korea Investment Corporation	20	2005	Noncommodity
Malaysia	Khazanah Nasional Bhd.	15	1993	Noncommodity
Kazakhstan	National Oil Fund	15	2000	Commodity: Oil, gas, metals
Taipei, China	National Stabilization Fund	15	2000	Noncommodity
Azerbaijan	State Oil Fund	1.6	1999	Commodity: Oil
Timor Leste	Petroleum Fund	1.22	2005	Commodity: Oil and gas
Uzbekistan	Fund for Reconstruction and Development	0.5	2006	Commodity and noncommodity
Kiribati	Revenue Equalization Reserve Fund	0.47	1956	Commodity: Phosphate mining
Nauru	Nauru Phosphate Royalties Trust	0.07	1968	Commodity: Phosphate mining
India	To be named	n.a.	n.a.	Noncommodity
Thailand	To be named	n.a.	n.a.	Noncommodity

Note: A number of trust funds in the Pacific region that have been financed by government and donor funds are not included in the above list and have an aggregate size of about \$500 million.

Sources: Jen (2007), Rozanov (2005), Setser and Ziemba (2007).

Sovereign wealth funds have traditionally provided only sparse information about their activities and their use of fund resources. Reporting is not at par with that followed by private investment banks, and more comparable with hedge funds and private equity funds. Only Norway's GPF is fully transparent about its asset size and composition as well as investment performance. Other sovereign funds, including Singapore's Temasek and GIC, provide much less detailed information about their investment strategy and performance. The oil-based sovereign funds of the Gulf region provide the least information about their underlying investment and risk positions. Although precise data on rates of returns are unavailable it is generally believed that the well-established SWFs of the Gulf, Norway, and Singapore have been competent and successful investors. Developing Asian countries that have now embarked on creating their own SWFs are hoping to emulate this success.

B. The Development Context: Objective and Function

The experiences of existing SWFs alone cannot provide design and implementation guidance to the region's new SWFs unless the development context defining the objectives, functions, and

concerns of the new funds is taken into account. At a broader level, developing Asia continues to face a wide range of long-term developmental challenges. The region as a whole suffers from various structural and institutional obstacles to overcome if it is to sustain its remarkable economic performance. While the specific developmental challenges differ from country to country, addressing them effectively requires not only political will, good governance, and sound policies, but also adequate fiscal resources over the long term. Therefore, far-sighted fiscal planning requires developing Asia's governments to secure the largest possible fiscal space for the future.

It was earlier pointed out that it is conceptually helpful to distinguish between reserves, properly defined, and surplus foreign currency assets that can be put to alternative uses. It was also seen earlier that in the case of developing Asia, reserves are by and large central bank reserves rather than fiscal reserves and therefore are not free fiscal assets. However, even for central bank reserves, the income from investing surplus foreign currency assets is a fiscal dividend for the government. In this sense, it is critical to conceptually distinguish between reserves and the investment income they yield. Since the investment income represents an increase in fiscal resources, the case for spending such income to meet long-term development challenges is much stronger than it is for the reserves themselves. Therefore, the SWF's basic function must be to maximize the fiscal dividend available for governments to meet future fiscal needs.

While the central function of SWFs is to generate the largest possible fiscal dividend for the government, they also serve a number of more specific purposes. Some of them have been created to help maintain fiscal stability and shield the economy from volatility in export revenues. Such purposes have been particularly important for oil-rich and commodity-exporting countries given the historical volatility of commodity prices. Another specific purpose of SWFs is to help monetary authorities cope with unwanted expansion of domestic liquidity due to reserve accumulation. Yet another purpose of SWFs is to build savings for future generations, such as in the case of Norway's Government Pension Fund and Australia's Future Fund. Regardless of their specific purpose, SWFs seek to maximize returns, unlike central banks, which manage international liquidity.

It was earlier seen that some part of developing Asia's reserves are effectively fallow since they are not needed for liquidity purposes. At the same time, the region faces huge development needs to be met. These include, but are not limited to, physical infrastructure, contingent pension liabilities, health care costs, environmental services, and development of lagging regions. It makes a lot of sense to put the fallow resources to work since this creates additional fiscal resources that can be used to bridge financing gaps. At the same time, it is important for governments to think specifically about and plan how the fiscal resources will be used. This will depend on relative fiscal priorities, which will necessarily differ from country to country. To the extent that fiscal resources are fungible, planning should occur within accepted fiscal frameworks and conform to international standards. Intended uses may influence fund structure, strategy, and operations as they may have implications for the time horizon of investments, draw-downs, liquidity needs, appetite for risk, and so forth. These and other contextual factors point to some design principles for SWFs.

C. Design Principles for Good Practice

The experiences of existing SWFs, in conjunction with the development context embracing objectives, functions, and concerns, suggest a number of broad design principles for good practice for developing Asia's new SWFs. The interpretation of these principles and their implementation

might reasonably vary, as might their implications for disclosure and accountability mechanisms. There is no one-size-fits-all prescription, and country circumstances, experience, and capabilities will matter.

(i) Tier 1 Design Principles: Mandate, Governance, and Capacity

Since an SWF is a state-owned agency, the government must decide on certain key parameters in the context both of its tolerance for risk and its broader fiscal objectives. This may reasonably involve setting guidelines on investment objectives, investment mix, and exposure to risk. Government must also determine reporting requirements and the broad contractual terms and responsibilities of staff, management, and the board. Hiring decisions and terms should be left to management.

A major set of concerns arising from the state ownership of SWFs is that they may be forced to pursue politically motivated noneconomic objectives. Using a state-owned financial institution to pursue noneconomic objectives inevitably muddles purpose, complicates operational management, and perforce detracts from the central objective of generating as large a fiscal dividend as possible. A narrow focus on the pursuit of fiscal dividends, served by a commercially oriented and operationally independent agency, has compelling attraction in terms of the alignment of institutional objectives, incentives, and performance criteria. Arrangements that shield the agency from operational interference by government would be bolstered by the appointment of qualified, independent board members.

The reality is that SWFs are fundamentally political creations and so must reflect the polity and institutional conditions of the investing country. Nevertheless, if such agencies are to serve their intended purpose, they must not continue their lives as political creatures. Experience and analysis suggest that SWFs become more effective investment vehicles when commercial objectives are paramount and reflected in autonomous operational structures. Well-defined mandate, in terms of welfare objectives and uses of investment income, is also a pre-condition. Therefore, design principles related to the SWF's mandate, autonomy, capacity to use autonomy, and commercial orientation define the necessary conditions for success in maximizing fiscal dividends, and take precedence over other design principles. Those design principles are laid out below.

1. Well-defined Welfare Objectives

Popular perception that the SWF contributes to national welfare helps to mobilize political support for a SWF. Therefore, a SWF should have a well-defined welfare objective, which specifies how it can promote national welfare. This is related to the need for well-defined liability specifying the uses of the fund's income. Examples of such liabilities include future pension liabilities, other fiscal needs, or welfare of future generations. In the case of Norway's GPF, the general public has a clear understanding that part of the fund's income will be used to support the current budget; another part will be used to meet future pension liabilities; and yet another part will be saved for future generations. Since in principle the central mission of any government is to maximize the welfare of the society it serves, at some point the funds have to deliver tangible benefits for the general public. If a SWF were a private sector company, how it allocates the income from its investments is its own business. But the point is precisely that those funds do not belong to private sector companies. Mobilizing popular support also requires clearly communicating the SWF's policies and objectives to the general public. The absence of such communication may erode the general public's confidence in the SWF and bring about political pressures to use its assets irresponsibly, as if they were free assets.

2. Operational Autonomy and Freedom from Political Interference

Regardless of its specific governance structure, a SWF needs to have complete control over day-to-day investment decision making if it is to perform successfully. Once the government or central bank interferes with how the fund carries out its business, profits will inevitably suffer for the simple reason that motives other than profit maximization will enter the picture. In other words, political interference constitutes a cost in business. The ability to maximize returns subject to manageable risk is inevitably compromised without the autonomy to decide where and how to invest. Of course, operational independence is not a sufficient condition for investment success but it is a necessary condition, without which success will be impossible. Furthermore, independence amounts to very little without accountability. As such, the government should hold the fund strictly accountable for its investment performance. In connection with operational independence, the concept of central bank independence, which grants operational freedom to central banks and is widely thought to have contributed to the worldwide improvement in inflation performance, provides a potential institutional model for SWFs.

3. Commercial Orientation

Very much related to the pre-condition of operational independence is the importance of running the SWF on a purely commercial basis. Since earning the highest risk-adjusted returns, or, more simply, making as much money as possible for the government should be the central objective of SWFs, they should not be burdened with noncommercial objectives. This also implies that the sole criterion for assessing a fund's performance should be the rate of return. The rate of return is influenced by the time horizon of investments and the risk tolerance level, both of which are set by the government. Nevertheless, the agency in charge of investing surplus reserves should be free from the public interest role of policy making and market regulations. It should also be managed solely on the basis of commercial criteria without the need to accommodate noncommercial objectives. This has the significant additional benefit of dispelling concerns about noncommercial objectives in host countries.

4. Adequate Institutional Capacity

An important policy lesson is the flip side of the first positive lesson: operational independence. It would be a serious mistake to believe that it is possible to build a Temasek or a GIC overnight. That is, it takes a lot of time and effort to build up the institutional capacity to make good use of operational independence. Both Temasek and GIC have accumulated a large stock of institutional knowledge and experience from their many years of operations. Furthermore, aside from Hong Kong, China, only Singapore has long been the major international financial hub in developing Asia. Therefore, unlike the rest of the region, the infrastructure, human capital, and regulatory framework of a sophisticated and well-functioning financial system are all already well in place. It is unrealistic to assume that the new Asian funds already have the capacity to invest competently in areas like private equity, venture capital, and real estate, let alone equity stakes in start-up companies in emerging industries such as biotech or clean energy. The practical implication is that a gradualist approach of learning-by-doing is probably necessary. It is better to start from less risky asset classes and to build up investment management capacity before moving on to more adventurous asset classes. Also, moving into risky assets without adequate institutional capacity may lead to big early losses, which will erode public support for the fund.

(ii) Tier 2 Design Principles: Operational Design

Operational autonomy, freedom from political interference, commercial orientation, and adequate institutional capacity are necessary but not sufficient conditions for setting up and running effective SWFs capable of maximizing fiscal dividends. It is conceivable for even SWFs that satisfy all the necessary conditions to perform poorly in terms of investment performance. There are a number of design principles that provide some guidance for SWFs on how to invest their funds more productively once they satisfy the necessary conditions. Those second-tier design principles relate to the operational design of SWFs and are laid out below.

1. Separation Between Liquidity Management and Surplus Reserve Investment

Both the central bank and the SWF should have clear mandates to do their jobs, and those mandates should not be mixed up. To the extent possible, the SWF should be free from obligations to provide additional international liquidity to the central bank in case of emergencies of the same nature as the Asian crisis. Such concerns should remain solely in the domain of the central bank's reserve management. As long as sovereign wealth remains classified as reserves, it is subject to stringent restrictions in terms of where and how they can be invested. Formal classification aside, as long as there is a mindset of equating reserves and surplus reserves, there will be a limit to the returns that the fund can hope to achieve. There is a very real danger that the failure to clearly distinguish between the two will compromise the achievement of both liquidity and return. It should be pointed out that the separation cuts both ways. Just as the central bank should not expect the SWF to bail it out during a financial crisis, the SWF should not expect the central bank to bail it out if its investments go wrong. In this context, there is much to be said for the newly created China Investment Corporation's issuance of yuan-denominated bonds to buy up reserves from the Peoples' Bank of China for overseas investment purposes. This makes a clear-cut separation between traditional reserves and funds for sovereign investment.

2. Long-term Investment Horizon, Risk Taking, and Risk Management

Maximizing returns and wealth over the long run requires adopting a long-term investment horizon as well as taking significant risks. The definition of "long run" is necessarily imprecise because it is determined by the government's investment horizon, which differs from country to country. Nevertheless, SWFs have a longer investment time horizon than central banks in the general sense that the maturity of their investments is not restricted by liquidity considerations. At the most basic level, taking a more long-term view allows the sovereign funds to realize substantial premiums for foregoing liquidity. More fundamentally, however, it enables them to ignore short-term volatility and focus on the long-term prospects of their investments rather than change strategy every time there is bad news. The advantages of a long-term investment horizon should not be underestimated. A somewhat related but slightly different from a long-term horizon is the obvious but often neglected dictum that high returns require high risks. The experience of the Singaporean SWFs bears this out most emphatically. They have been buying assets such as private equity, venture capital, and real estate well outside the tolerance limits of central bank reserve managers. However, the broad risk tolerance level is ultimately set by the government rather than the SWF and

will vary from country to country. Regardless of the risk tolerance level, **risk management should be an important element of setting up an SWF. In this connection, a distinction should be made between the risk of single investments and the risk of the overall portfolio.** For example, Temasek and GIC may have risky investments in their portfolio, but the portfolio may be structured, through geographical and instrument diversification, so that overall risk level is moderate. Finally, improved risk management capacity by the SWF may encourage the government to raise the risk tolerance level in pursuit of higher returns.

3. Asset–liability Management Framework

As was discussed earlier, for developing Asia reserves are not free fiscal resources and therefore reserve accumulation is not an increase in free fiscal resources. This central fact entails some significant policy implications. Above all, an asset–liability management framework may be more appropriate for the region’s SWFs than the asset management framework guiding the oil funds and the Singaporean funds. Such framework explicitly highlights the basic nature of SWF funds, (i.e., borrowing from the central bank) and the costs of this borrowing. Furthermore, it is advisable for SWFs to take measures to avoid potential asset–liability mismatches. For example, borrowing short-term from the central bank to invest in long-term investment projects may create a duration mismatch between assets and liabilities. Also, the fact that the China Investment Corporation has foreign exchange assets and domestic currency liabilities might prove costly if the yuan appreciates. The possibility of asset–liability mismatches provides an argument for regulating leverage by SWFs. Borrowing without due regard for the nature of assets may lead to balance sheet problems.

4. Foreign Investment

Investing abroad rather than at home can contribute significantly to macroeconomic stability. Spending the foreign exchange at home entails adverse inflationary consequences and may also harm export competitiveness by strengthening the domestic currency. Therefore, an important lesson from the experiences of Norway’s GPF is that from the perspective of macroeconomic stability, investing abroad is preferable to investing at home. The two major benefits for resource-dependent economies such as Kazakhstan is that keeping the money outside the country (i) shields the government finances and the economy as a whole from volatility induced by oil price volatility; and (ii) prevents Dutch disease, or loss of competitiveness in non-oil sectors due to exchange rate appreciation, and thus facilitates economic diversification. The case for investing abroad is even stronger when the reserve accumulation is the consequence of foreign purchases by the central bank, as is the case in most of developing Asia. Buying domestic currency with foreign exchange for domestic spending purposes may offset and undermine the central bank’s efforts to influence the exchange rate, which led to the reserve buildup in the first place. In the context of fiscal policy, spending reserves for domestic purposes may compromise fiscal transparency and discipline by obscuring the underlying nature of the fiscal resources, which are borrowed funds rather than wealth. Finally, the presence of “round-tripping” problems would dissipate the benefits of investing abroad. Such problems would arise if, for example, the China Investment Corporation were to buy into a private equity fund in the United States, which would then make investments in the People’s Republic of China.

(iii) Tier 3 Design Principles: Transparency

Operational autonomy and other necessary conditions, in conjunction with the investment-specific design principles just outlined, will go a long way toward enabling SWFs to fulfill their central function of maximizing fiscal dividends. It is also in the self-interest of the SWFs to strive for transparency and accountability. Of course, the degree of transparency is heavily influenced by the government's preferences, and thus is beyond the control of the SWF. The third-tier design principles, which relate to transparency-related issues, are laid out below.

1. Transparency

Transparency matters for SWFs for three broad reasons: (i) political and fiscal accountability to assure that the general public that the funds are not misused; (ii) incentive compatibility related to aligning the interests of the SWF staff with those of the SWF, and the interests of the SWF with those of the government; and (iii) market failure and financial risks that may have adverse effects on international financial stability. In developing Asia, some degree of transparency may improve the SWF's investment performance by promoting good governance and accountability. The government, as the owner of the SWF, should hold the SWF strictly accountable for its investment performance. Indeed operational autonomy would amount to very little without accountability. On the other hand, transparency is not without costs in terms of investment performance, a salient one being short-termism due to political pressures. Those pressures may force the SWF to adopt a more short-term investment horizon and thus deprive it of the substantial premium for foregoing liquidity. Regardless of the benefits and costs of transparency, domestic political pressures may force the SWF to become more open and transparent, which means lack of transparency is not an option.

2. Transparency and Financial Protectionism

There is an important additional reason why it may be in the self-interest of the new Asian funds to pursue at least some degree of transparency. The activities of SWFs will necessarily be influenced by the laws, regulations, and policies of foreign jurisdictions and by the impact that they have in the countries in which they buy real and financial assets. As Truman (2007) points out, the commercial investments made by sovereign investment agencies must conform to the laws and regulations of the host countries and enjoy no immunity. At a minimum, sovereign investment agencies' activities are likely to be subject to closer scrutiny by host-country governments than those of their private-sector counterparts. The risk is that such **concerns, legitimate or not, may lead** to various forms of "financial protectionism" in host countries. Therefore, it may be in countries' self-interest to voluntarily take steps that address legitimate fears and reduce the risk of being singled out for special treatment.

VI. SUMMARY AND CONCLUSIONS

The one overarching finding emerging from the analysis is that the first-best use of surplus foreign currency assets is to invest them abroad with the goal of maximizing risk-adjusted returns subject to the broad parameters set by the government. The nature of the region's reserves means that an asset-liability management framework is more appropriate for managing those investments than an asset management framework. The returns from the investments represent a valuable fiscal dividend that can augment the resources available for the region's governments to tackle the region's many long-run developmental challenges.

Before moving on to some concluding observations, it is useful to summarize the key findings and messages of this paper as well as how they relate to each other. Such a summary provides a bird's eye view of the major issues of the phenomenon of developing Asia's surging reserves. One set of key findings and messages pertains to the stylized facts about foreign exchange reserve accumulation in the region and the underlying nature of those reserves.

First, the region has indeed experienced accelerated reserve accumulation since 2000. The acceleration has occurred not only in absolute terms but also relative to the region's output and as a share of global reserves. The region's reserves largely reflect current account surplus rather than capital account surplus. The current account surplus, in turn, largely reflects exports of nonresource goods and services rather than exports of oil and other natural resources.

Second, as a result of the accelerated accumulation, the region now has reserves that are well in excess of estimates of what developing Asia needs for traditional liquidity purposes. All reserve adequacy indicators point to the same conclusion—the region now has substantial amounts of surplus reserves although the exact amount is subject to debate. Therefore, there is ample justification for the popular intuition that the region would be better off by reallocating its surplus reserves away from safe and liquid but low-yielding assets toward higher-risk, higher-yielding investments.

Third, by and large, the region's reserves originate from central bank foreign exchange market interventions rather than from government budget surplus or other government income. As such they are not free fiscal resources and should not be treated as such. At a minimum, this calls for greater caution and more careful analysis in using the reserves, as well as guarding against pressures for fiscally unsound spending.

A second set of key findings and messages naturally follows from the first set of findings, which suggests that it is suboptimal for developing Asia to continue to invest all its reserves in safe and liquid but low-yielding assets. They pertain to more specific directions on how developing Asia can use its surplus reserves more actively to achieve development objectives and higher welfare through more active reserve management.

First, although spending the surplus reserves on infrastructure projects or for other domestic purposes has superficial appeal, it entails a number of macroeconomic costs. Nevertheless, it is still possible to use the surplus reserves productively at home. One example is to use them innovatively to mitigate risks on private sector infrastructure investments, which would facilitate the importation of advanced technology and know-how conducive for better infrastructure.

Second, while the surplus reserves themselves are not free fiscal assets, the stream of income generated by investing surplus reserves are fiscal dividends available for the government's use. It follows that an especially promising use of the region's surplus reserves is to invest them in foreign

currency assets for the purpose of maximizing risk-adjusted returns and thus fiscal dividends for the government.

Third, a group of state-owned financial institutions known as sovereign wealth funds have been around for quite some time whose main objective has traditionally been to maximize risk-adjusted returns. As such, they provide a natural institutional model for developing Asia's fledgling wealth funds. Although designs will have to be tailored to country circumstances, the past experiences of the existing SWFs nevertheless do provide broad but useful directions for designing and operating the region's new funds.

Fourth, as the owner of the fund resources, governments must clearly be able to exercise influence over the design of the SWF and to hold it accountable for its investment performance. This is especially true in light of the wide range of long-term developmental challenges that require ample fiscal resources over the long run. Investment objectives in terms of asset mix, expected returns, and risk tolerance should properly be determined by government.

Fifth, although the government should set the broad parameters within which the SWF operates, it is absolutely vital that the investment agency has operational autonomy, provided that it has adequate institutional capacity. Government interference with the day-to-day management of the investment portfolio may lead to pursuit of noncommercial objectives and is thus likely to erode returns. A related key message of this paper is that the SWF will have a better chance of fulfilling its central function of maximizing fiscal dividends for the central government if it is run on a purely commercial basis.

Having surveyed these key findings and messages, a couple of concluding observations about the big picture of developing Asia's surplus reserves is in order. Fears have been widely expressed, especially in host countries, that the sheer size of the new Asian SWFs in charge of investing those reserves would undermine international financial stability. At least for now, these fears appear somewhat exaggerated. Moving foreign currency reserves from short-term, liquid investments into longer-term securities and equity investments will take time and should, if anything, be stabilizing. The point is not that sovereign investors are necessarily benign for global financial markets but rather that there are clearly opportunities for gains in terms of overall efficiency and stability. In principle, funds that undertake long-term investments in a highly diversified international portfolio and that are not swayed by capricious market movements should be welcome. More efficient allocation of capital will benefit both host and investor countries alike.

What tends to be forgotten in all the headlines about the potentially adverse effects of SWFs on global financial stability and host countries is that the region has a legitimate interest in using its large and growing surplus reserves more productively. In light of developing Asia's remarkable economic performance, it is sometimes easy to forget that the region still faces a wide range of long-term development challenges. Effectively addressing those challenges will require a great deal of fiscal resources in the long run and far-sighted fiscal planning. SWFs can thus make an important contribution to the **region's growth and development by maximizing the fiscal resources available** for governments to achieve long-run fiscal sustainability.

At the same time, the investment activities of SWFs, by their very definition, take place across borders and affect the interests of not only the investing country but the host country as well. As such, host countries have a legitimate interest in ensuring that those activities conform to their rules and regulations and, more generally, do not harm their markets or economy. The risk is that

host-country concerns may lead to various forms of financial protectionism. Given that both host and investor countries are affected by, have legitimate interests in, and can potentially benefit from the SWFs' investments, international dialogue would be a helpful first step for ensuring that those investments will be mutually beneficial. Self-evidently, any such dialogue must not merely be a forum for airing out the fears and concerns of host countries. The voice of investing countries must be fully represented, clearly heard, and understood. As in trade, criss-crossing bilateral agreements and "tit for tat" actions are likely to come at a high cost in terms of inefficiency and missed opportunities.

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About the Paper

Dong Hyun Park finds evidence strongly supportive of popular opinion that developing Asia should manage its foreign exchange reserves more actively. The analysis indicates that, contrary to popular opinion, the region's reserves are not a free fiscal asset but the income from investing them represents a fiscal dividend for the region's governments. This and other factors suggest that the first-best use of the region's reserves is to invest them abroad to maximize risk-adjusted returns. The resulting expansion of fiscal space will help the region's governments tackle the huge long-term developmental challenges still facing the region.

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