

Globalization, Erosion of Tax Base, and the Revenue

Potential of Developing Asia's Foreign Exchange Reserve Build-Up

Dr. Donghyun PARK,
Economics and Research Department,
Asian Development Bank (ADB),
Mandaluyong City,
PHILIPPINES 1550
[E-mail] dpark@adb.org
[Telephone] (63)2-6325825
[Fax] (63)2-6362342

Abstract

The sheer speed and scale of developing Asia's economic globalization has disproportionately benefited the region but also places the region at a relatively greater risk from its side-effects. One major side-effect of globalization is the erosion of the tax base due to the growing mobility of capital and the consequent international tax competition for capital. The potential loss of revenues is encouraging Asian governments to look for alternative, non-conventional, non-tax sources of revenue. The central objective of this paper is to explore the extent to which one potential source of non-conventional revenue – the region's soaring excess foreign exchange reserves – can help to compensate regional governments for the erosion of their tax bases. Our analysis indicates that active management of excess reserves along the lines of profit-maximizing sovereign wealth funds can indeed make a significant contribution to the region's non-conventional fiscal revenues.

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1 Introduction

Economic globalization refers to the progressive reduction of barriers to the cross-border flows of goods and services, capital and labor, and the consequent integration of national markets into a single global market. The current wave of globalization has been lubricated by technological progress in information, communication and transportation, and has brought about an unprecedented growth in international trade and capital flows. Although globalization has impacted every corner of the world, it has had its greatest impact on the developing countries of Asia.¹ The economic awakening of the two Asian giants - PRC and India - has been catalyzed by their integration into the world economy. PRC has become the factory of the world, supplying a diverse range of manufactured goods to the rest of the world, while India has become the global leader in the information technology (IT) and business process outsourcing (BPO) industries. Prior to the advent of PRC and India, the NIEs and Southeast Asia had also made good use of their access to foreign markets, capital and technology to power the remarkable economic transformation known as the East Asian Miracle.

In both developed and developing countries, tax systems should be designed so as to finance the required level of public spending as efficiently and equitably as possible. According to Tanzi and Zee (2000), tax policy plays a particularly sensitive role in the economies of developing countries which are well-integrated into the world economy, such as those in developing Asia. In those countries, the tax system should (1) raise enough revenue to finance essential expenditure without resorting to excessive government borrowing, (2) raise revenues in ways that minimize disincentives on economic activity, and (3) do so in ways that do not deviate substantially from international practice. Developing countries face much bigger challenges than

developed countries in setting up effective and efficient tax systems. Those challenges include but are not limited to the structure of the economy which makes it difficult to impose and collect certain taxes, limited institutional capacity of the tax authorities, scarcity and poor quality of basic data, and a political environment which disfavors rational tax policy. As a result, as Tanzi and Zee (2000) note, tax policy in developing countries is often the art of the possible rather than the pursuit of the optimal.

As difficult as life is for tax authorities in developing countries relative to their counterparts in developed countries, globalization is making life even more difficult. As pointed out by Asher and Rajan (2003), Lodin (2002) and Avi-Yonah (2001), globalization is increasing the relative influence of international factors on tax policy, which used to be determined mainly by domestic factors. Although the decline of trade barriers and growing cross-border of capital poses challenges for tax authorities in both developed and developing countries, the challenges are much more pronounced for the latter, due to their weak institutional capacity and traditionally high dependence on foreign trade taxes. Furthermore, given the scope, scale and speed of globalization which developing Asia has experienced, the fiscal pressures arising from globalization are likely to be more severe for the region than for other parts of the developing world. For example, import liberalization and reduction of foreign trade taxes is forcing developing countries to raise more revenues from domestic taxes. Furthermore, in the context of capital inflows, transfer pricing and other tax-avoiding practices by foreign investors are emerging as new issues for institutionally ill-prepared tax authorities.

A major tax policy challenge facing all countries in a world of growing capital mobility is the issue of international tax competition. Technological progress and the removal of exchange controls have led to a sharp growth in the cross-border flows of

both portfolio and foreign direct investment (FDI). In particular, FDI is widely perceived as beneficial for economic growth and contested intensely by governments. Among developing countries, tax competition is an especially relevant issue for developing Asia in light of the region's track record in attracting capital inflows and using them to power its industrialization and development. Indeed some regional countries such as Singapore and Malaysia have been exceptionally successful in attracting FDI through conscious and active government policies. In connection with tax competition, a key concern for developing countries in Asia and elsewhere is that governments may concentrate too much on competing for foreign investments via a wide range of tax incentives. Doing so may lead to a serious neglect of more fundamental tax reforms such as strengthening institutional capacity.

International tax competition for FDI illustrates the fact that under globalization, some sources of revenues, particularly taxes on highly mobile factors, are increasingly coming under pressure. Although extensive immigration restrictions in developed countries render labor much less internationally mobile than capital, this is becoming less true for skilled labor. The underlying reason is the growing international competition for the limited global supply of skills, which is best evidenced by more selective developed-country immigration regimes which favor skilled workers over unskilled workers. One possible policy response to the pressure on revenues from relatively mobile factors such as capital and skilled labor is to shift the tax burden on relatively less mobile factors such as unskilled labor. Unfortunately, such a re-orientation of tax policy may be politically difficult and, in any case, of limited effectiveness in raising revenues. For one, taxing labor rather than capital and unskilled labor rather than skilled labor is likely to arouse opposition on equity grounds in highly unequal developing countries. Taxing the least mobile factors also

amounts to taxing those least able to pay taxes, which limits the amount of revenues that can be collected.

Aizenman and Jinjarak (2006) find some empirical support for the notion that globalization erodes the tax bases of developing countries. Their central hypothesis is that globalization shifts the tax base from taxes which are relatively easy to collect, such as tariffs, seigniorage and financial repression, toward taxes which are more difficult to collect, such as VAT and income taxes.² The underlying intuition is that globalization is a process which moves developing countries toward higher levels of trade and financial integration as well as greater macroeconomic stability. The implicit corollary of a relative shift toward "hard to collect" taxes, especially given the weak institutional capacity of developing-country tax authorities, is that the total tax base of developing countries will shrink as a result of globalization. Aizenman and Jinjarak confirm their central hypothesis - the revenue/GDP ratio of "easy to collect" taxes fell in developing countries between the early 1980s and the late 1990s, whereas the ratio/GDP ratio of "hard to collect" taxes rose. More relevantly for our purposes, they also find that although higher revenues from "hard to collect" taxes partly offset the lower revenues from "easy to collect" taxes, the net result was a drop in total tax revenue/GDP ratio due to the small initial base of "hard to collect" taxes in developing countries.

Although one should not exaggerate the impact of globalization on the taxation capacity of national governments, it is equally important to note that globalization, which increases the mobility of some factors and hence reduces their taxability, will unleash some pressure on tax revenues.³ Asher (2005) argues that a significant means for governments to ease those fiscal pressures is to seek unconventional non-tax sources of revenues. The central objective of this paper is to look at one potential

source of unconventional fiscal resource mobilization - foreign exchange reserves. One significant current macroeconomic trend in developing Asia is the rapid build-up of foreign exchange reserves it has experienced since the Asian crisis. The issue of fundamental interest to us is the extent to which this trend can help to provide the region with the fiscal resources it needs for its short-term and long-term fiscal needs.

The remainder of this paper is organized as follows. In Section 2, we explore developing Asia's tax competitiveness, overall fiscal situation, and trends in the relative importance of non-tax revenues as a source of government revenues. In Section 3, we briefly look at the basic facts about the region's post-crisis foreign exchange reserves build-up and analyze the extent to which the region's reserves exceed the amounts required for traditional liquidity purposes. In Section 4, we discuss whether such excess reserves constitute a free fiscal asset at the disposal of the region's governments. In Section 5, we provide some quantitative estimates of the fiscal dividend which can be generated in the form of investment income from more active management of excess reserves. Section 6 wraps up the analysis with the key messages and broad themes which emerge from our analysis.

2 Developing Asia's Tax Competitiveness, Overall Fiscal Position, and Relative Importance of Non-Tax Revenues as a Source of Government Revenues

Before we begin to delve into our central issue of the fiscal implications of developing Asia's foreign exchange reserve build-up, it is worthwhile to take a look at the broader fiscal landscape of the region. More specifically, in this section, we examine the international competitiveness of developing Asia's tax systems, overall fiscal position and long-term fiscal resource requirements, and trends in the share of non-tax revenues in total government revenues. A brief overview of these issues will help to more clearly define the context in which we explore the potential contributions

of the region's soaring foreign exchange reserves to the fiscal resources of regional governments. For example, a large budget deficit indicates that the government faces short-term pressures to mobilize revenues in order to reduce the deficit.

2.1 Developing Asia's Tax Competitiveness

As noted earlier, globalization is increasing the cross-border mobility of capital and some other factors of production. As a result, governments are vigorously competing with each other to attract and retain capital, which is vital for generating economic growth and jobs. An integral component of the intense international competition for capital is tax policy. In particular, governments have been wary about raising corporate income tax rates and have often reduced in order to make their countries more attractive for foreign and domestic investors. While corporate income tax rate is only one part of the overall tax burden, it is highly visible and serves as a powerful signal about the attitude of the government toward business and the private sector. Other things equal, companies will prefer countries which impose a lighter overall tax burden than those which impose a heavier burden. We are interested in the relative attractiveness of developing Asia's tax regimes to companies for the following reason: a high overall tax burden suggests strong competitive pressure for governments to reduce corporate income tax and other taxes in the future, while a low burden implies weak competitive pressures.

2.1.1 Joint Study by World Bank and PricewaterhouseCoopers (2008)

A comprehensive international comparison of tax systems entitled "Paying Taxes 2008: the global picture" was jointly carried out by the World Bank and PricewaterhouseCoopers.⁴ The study was based on the results of a survey which has been conducted as part of the World Bank Doing Business report to look at and compare tax regimes around the world. The central objective of the study was to

compare the ease of paying taxes for businesses in 178 countries. The background survey involved collecting information on the tax-related activities of a standard modest-sized company in each of the 178 countries, by reviewing financial statements and list of transactions. The information was used to compute three tax-related indicators - number of tax payments, the time spent on complying with tax obligations, and the tax cost. The three indicators were then equally weighted to produce a ranking for each country for the overall ease of paying taxes.

Table 1 below reports the rankings of selected developing Asian countries, as well as those of selected industrialized countries and non-Asian developing countries. The rankings indicate a great deal of heterogeneity across the region in terms of tax competitiveness. City-states which have a long tradition of liberal economic policies, such as Singapore and Hong Kong (PRC), score highly both in tax rate and overall ease of paying taxes. At the other end, the two giants of PRC and India, along with the Philippines, score poorly in both areas. The other five economies - Korea, Taiwan (PRC), Indonesia, Thailand and Malaysia - are somewhere in the middle between the city-states and the giants. With the exception of the two city-states, the region's tax environment is not noticeably more attractive for businesses than that of other regions. This suggests that the region will not be immune from the general global trend of tax competition for capital and lower taxes on capital.

[Insert Table 1 here]

2.1.2 Report by C.D. Howe Institute (2006)

The 2006 report by C.D. Howe Institute entitled "The 2006 Tax Competitiveness Report: Proposals for Pro-Growth Tax Reform" also looks at and compares tax rates on businesses around the world.⁵ The report is less comprehensive than the World Bank-PricewaterhouseCoopers study in that it focuses solely on the tax cost rather

than the overall ease of paying taxes. Furthermore, its computed tax rate is more narrowly defined and excludes some taxes which had been included in the WB-PWC study. Finally, the C.D. Howe Institute report covers 81 countries whereas the WB-PWC study covers a much larger sample of 178 countries. Nevertheless, the two studies are fundamentally similar in that they seek to compare different countries in terms of the attractiveness of their tax systems to companies, business activities and investment. It is also useful to look at another comparison of tax competitiveness across countries based on a different measure of tax competitiveness.

To highlight the fact that corporate income tax is only one component, albeit a significant component, of the tax rate firms actually face, the C.D. Howe Institute distinguishes between corporate income tax rate and the effective tax rate on capital. The latter rate is defined as the amount of corporate income and other capital-related taxes such as sales tax on capital purchases paid by a business as a percentage of pre-tax profits for marginal investment projects.⁶ Table 2 below reports both tax rates for countries in Table 1 for which data are available. For some countries, there are large differences between the two tax rates - for example, the effective tax rate on capital is almost twice the corporate income tax rate in PRC. Nevertheless, broadly speaking, Table 2 confirms the main implication of Table 1, which is that the corporate tax burden in developing Asia is by and large comparable to other parts of the world, and hence the region will not be immune from international tax competition.

[Insert Table 2 here]

2.2 Developing Asia's Overall Fiscal Position and Long-Term Fiscal Needs

Taxation is only one half of the equation in assessing the fiscal pressure a government faces. Even if a government is ineffective at collecting revenues, it may not face much fiscal pressure if it spends little. The overall fiscal deficit is a pretty

good indication of the short-term budget constraint that a government faces since borrowing requirements and costs will increase as the deficit rises. The budget constraint is especially tight under globalization since international financial markets will impose higher risk premium and other costs on governments and countries which run large budget deficits. For our purposes, a higher government budget deficit implies strong pressure to collect more revenues in order to reduce the deficit. On the other hand, a government enjoying a healthy fiscal position faces much less pressure to collect more revenues.

Table 3 below reports overall government budget balance as percentage of GDP, along with total government expenditures as percentage of GDP, for ten developing Asian countries for 1990, 2000 and 2006. For the most part, the countries of the region enjoy a strong fiscal position. Table 3 confirms the conventional wisdom that fiscal discipline and the ensuing macroeconomic stability is one of the region's main comparative advantages relative to other parts of the developing world. Even the few regional exceptions where chronic fiscal deficits have been a source of macroeconomic instability, such as India and the Philippines, have improved their fiscal performances in recent years largely due to their improved growth performances. The public debt-to-GDP provides a more accurate picture of the long-term fiscal position and sustainability. Table 4 below reports the public debt-to-GDP ratio for the same countries for 2005 and 2006, except Singapore, Taipei (PRC) and Hong Kong (PRC), which effectively do not carry any public debt. Table 4 shows that the figure are generally well below dangerous levels and declining quite rapidly for some economies. The trends in the public debt-to-GDP ratio confirm the story told by trends in the government budget balance - i.e. the region is fiscally in good health.

[Insert Table 3 here]

[Insert Table 4 here]

The preceding discussion should not lead us to ignore the region's huge long-term fiscal requirements. To the contrary, precisely because the overall fiscal situation is strong at the present, regional policymakers have the luxury of taking a good look at and start planning for future fiscal requirements. In particular, two key trends should disabuse regional policymakers from any complacency about the need for adequate fiscal resources in the long run. First, developing Asia in general and East Asia in particular is experiencing a secular demographic transition toward older populations. Falling birthrates and rising life expectancy, driven by higher living standards, will significantly raise the share of the elderly in the region's population. The inevitable implication is that pension and health care expenditures will rise substantially in the future.⁷ Second, although social protection and social insurance have generally been low-priority fiscal areas in developing Asia, they are bound to grow and hence take up more fiscal requirements in the long run. The immediate catalyst of this change is globalization and the structural changes it brings about. There will be growing calls for governments to build stronger social safety nets to minimize the ensuing dislocations and insecurities.

Implicit pension debt is a good concrete example of the daunting long-run fiscal challenges that lie ahead for the region. Implicit pension debt can be broadly defined as the present value of promised pension benefits. Those promises are unfunded or partially funded in a majority of countries since funds are not set aside to cover pension liabilities or are inadequate to fully cover them. According to Holzmann, Palacios and Zviniene (2004) and Sin (2005), in 1999/2000 the implicit pension debts of PRC, Korea and the Philippines amounted to 141%, 57% and 185% of GDP, respectively. In addition to common needs, each country has its own long-term fiscal

needs which require ample fiscal space in the long run. For example, it is well known that inadequate physical infrastructure is one of the main reasons why India cannot achieve even higher growth rates than the impressive rates it has achieved. However, building, improving and maintaining roads, railways, ports, utilities, water facilities and other infrastructure in India will be an immensely costly long-run endeavor. For middle-income countries such as Malaysia and Thailand, a long-run fiscal priority must be to improve their educational systems to produce enough skilled workers to move up the value chain toward more knowledge-intensive industries. In short, the current fiscal health notwithstanding, the region faces a wide range of long-run development challenges which will require massive resources to address effectively.

2.3 Relative Importance of Non-Tax Revenues

Tax reform is the main strategic response to the threat to tax revenues posed by the growing mobility and hence declining taxability of capital and other factors. Unfortunately, revenue-increasing tax reform such as improving compliance through stronger enforcement is theoretically appealing but administratively difficult in the absence of adequate institutional capacity. The same can be said for the broadening of the tax base from direct taxes toward indirect taxes. Raising tax rates is inconsistent with the high priority given to attracting investment among policymakers. According to Asher (2005), even relatively successful tax reform can generate between 1.5% and 2.5% of GDP in additional revenue. Such an increase is much needed in the face of the erosion of the tax base due to globalization but unlikely to be sufficient to meet developing Asia's long-run fiscal challenges.

In view of the above considerations, Asher (2005) argues that Asian governments will have to make greater use of non-conventional sources of revenue to meet their fiscal needs in the 21st century. These sources include utilizing existing state assets

more productively, creation of property rights and regulations, auctions, land, emissions trading, fees and user charges, asset-related taxes, treasury management, accessing financial and capital markets, and revenues from oil and mining concessions. It should be noted that many of these non-conventional revenues are non-tax revenues. Our analysis suggests that there is a compelling rationale behind a shift from tax revenues to non-tax revenues in the context of globalization. The erosion of the tax base due to the growing mobility of factors and the consequent difficulty of collecting taxes increases the relative attractiveness of non-tax revenues.

Table 5 below examines the share of non-tax revenues in total government revenues in selected Asian economies in 1990, 2000 and 2006. This share is inevitably subject to some volatility due to the inherent volatility of non-tax revenues. For example, the amount of privatization revenues will jump when a large state-owned enterprise is sold. Nevertheless, in general, the relative importance of non-tax revenues seems to have grown over time across the region. Furthermore, non-tax revenues have become significant revenue sources in all the countries, even though its relative share varies a lot across countries. Non-tax revenues are least important in PRC, where they accounted for 10.2% of total revenues in 2006, although this is significantly higher than the share of 3.9% in 1990. The share of non-tax revenues is much higher in other countries, especially Taipei (PRC), Malaysia, Indonesia and Singapore, where the share reached 30% or higher in 2006. The fact that non-tax revenues have now become familiar and well-established revenue sources should give the regional governments a degree of comfort in seeking new sources of non-tax revenues in response to the adverse impact of globalization on the tax base.

[Insert Table 5 here]

Another worldwide trend in tax policy is the shift from direct tax to indirect tax. Developing Asia is no exception to this trend, and governments throughout the region are reducing their reliance on corporate and personal income taxes while increasing their reliance on goods and services tax (GST) and value added tax (VAT). While the primary rationale behind the global and regional shift from direct taxes to indirect taxes is to encourage investment and work, the shift also reflects international tax competition for capital and, to a lesser extent, skilled labor. For example, the main strategic thrust of Singapore's recent tax reform is to reduce corporate and personal income tax rates in order to attract foreign capital and talent, and compensating for the revenue losses by raising GST rates. While income taxes have a more direct impact on companies and individuals than GST and VAT, the latter also add to the overall tax burden they face.

Therefore, from a broader perspective, increasing the share of non-tax revenues and correspondingly reducing the share of tax revenues may be a more effective means of creating a more conducive tax environment for work and investment. Furthermore, according to conventional wisdom, the shift from direct taxes to indirect taxes worsens income inequality since the poor bear a disproportionately high share of the burden of indirect taxes. A shift from taxes to non-taxes can mitigate the need to raise indirect taxes to compensate for lower direct taxes, and thus mitigate the adverse equity effects. In this paper, we explore a possible source of non-tax revenues for developing Asia, namely the region's foreign exchange reserves, which has grown rapidly since the Asian crisis. Before we discuss the revenue-yielding potential of reserves, let us briefly examine the facts of their post-crisis build-up.

3 Are Developing Asia's Foreign Exchange Reserves Excessive?

We now briefly look at the region's foreign exchange reserve accumulation for the period 1990–2007.⁸ We also explore the relative importance of current account surplus versus financial account surplus as the underlying source of the reserves. The key background facts about the region's reserve build-up sets out the context in which we explore the potential role of reserves as a source of non-tax revenues. In this paper, foreign exchange reserves refer solely to foreign currency assets recorded on central banks' balance sheets, and exclude gold, SDRs, and IMF reserve positions. Figure 1 shows that developing Asia's total foreign exchange reserves grew from \$203 billion to \$2,295 billion in nominal terms and from \$267 billion to \$1,960 billion in real terms between 1990 and 2006. The overall regional trend is one of secular growth since 1990, and a noticeable acceleration since 2000.

[Insert Figure 1 here]

To some extent, the growth of the region's reserves is simply the consequence of the growth of regional output over time. It is therefore useful to scale regional reserves by GDP to put the region's reserve growth in better perspective. Figure 2 indicates that the reserves-to-GDP ratio rose from 12.3% in 1990 to 35.8% in 2006. Figure 3 shows that developing Asia's share of global reserves rose from 23.8% to 44.0% during the same time period. Figure 4 shows that the share of developing Asia in the developing world's reserves increased from 49.8% in 1990 to 58.7% in 2006. In both absolute and relative terms, the region has been experiencing a remarkably rapid build-up of reserves.

[Insert Figure 2 here]

[Insert Figure 3 here]

[Insert Figure 4 here]

Developing Asia's reserves continued to grow strongly in 2007, and the region's

prominence in the global reserve landscape is further evidenced by the fact that it accounted for six of the world's top 10 reserve-holding economies at the end of 2007. The six regional countries are People's Republic of China (1st), India (4th), Taipei, China (5th), Korea (6th), Singapore (8th) and Hong Kong, China (9th). The four non-regional countries are Japan (2nd), Russia (3rd), Brazil (7th) and Germany (10th). Table 6 shows that developing Asia's 12 largest reserve holders are, in descending order: Peoples' Republic of China; Taipei, China; Korea; India; Singapore; Hong Kong, China; Malaysia; Thailand; Indonesia; Philippines; Kazakhstan; and Viet Nam. The twelve economies jointly account for more than 98% of the region's reserves and highlight the pan-regional nature of developing Asia's reserve buildup.

[Insert Table 6 here]

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 7 shows the average ratio of the current account surplus and financial account surplus to the increase in reserves during 2000-2006. The numbers imply that the region's BOP surplus is driven largely by current account surplus. The region's current account surplus is largely derived from the exports of non-resource goods and services. Capital inflows have also contributed to the BOP surplus in China and Korea. In the unique case of India, the BOP surplus is driven entirely by capital inflows. In theory, the shares of the current account balance and the financial account balance should sum up to one, but they fail to do so in practice due to statistical errors and omissions.

[Insert Table 7 here]

Let us now turn to the issue of the extent to which the region's reserves exceed adequate levels. Just as commercial banks can harm its profits by holding excessive cash reserves, countries can harm their welfare by holding excessive foreign exchange

reserves. Central banks typically hold foreign exchange reserves to protect the country from sudden shortages of international liquidity. An ample war chest of reserves may deter speculative attacks on the domestic currency and provide self-insurance against currency crisis. Painful memories of the Asian crisis, which wreaked economic and social havoc on the region, may help to explain the rapid build-up of reserves. Besides the pre-cautionary self-insurance benefit, the other main benefit from holding reserves is to prevent the domestic currency from appreciating and thus harming export competitiveness. Holding reserves entails a number of macroeconomic costs as well, in particular the risk of inflation, fiscal costs and higher interest rate. In short, reserve accumulation entails both benefits and costs, and therefore the optimal level of reserves is neither zero nor infinite. At the optimal reserve level, which is finite, the benefit from an additional dollar of reserves equals the cost.

There is a great deal of uncertainty about the optimal reserve level, which varies across countries and time. Even for a single country at one point in time, there is a lack of consensus about the optimal reserve level. Nevertheless, there is widespread and concern among both policymakers and general public that the region's reserves now exceed all plausible estimates of what it needs for traditional liquidity purposes. A natural corollary of this concern is that Asian governments are wasting valuable national resources – i.e. reserves – by investing them in safe and liquid but low-yielding assets such as US government securities. Intuitively, this type of argument is valid only for excess reserves rather than reserves, which can perform their basic function of providing international liquidity if and only if they are invested in safe and liquid assets. Therefore, it is of utmost importance to conceptually distinguish between reserves and excess reserves. The two are fundamentally different assets with

different functions. The case for active, profit-seeking investment is much stronger for excess reserves than for reserves.

Although the concept of excess reserves is neither precise nor well-defined, we now turn to some well-known measures of reserve adequacy to gauge the magnitude of developing Asia's excess reserves. Empirical studies find those measures, which are rules of thumb based on general economic intuition rather than rigorously derived theoretical indices, to be useful guides for policymakers. Comprehensive discussions of these measures include Edison (2003) and ECB (2006). Empirical studies find one rule of thumb – the ratio of reserves to short-term external debt – to be a particularly significant determinant of an economy's vulnerability to financial crisis. The well-known Greenspan-Guidotti rule stipulates that the critical value of this ratio is one i.e. - a country which has 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 5 below reveals that developing Asia comfortably passes the Greenspan-Guidotti test of reserve adequacy, lending support to the notion that the region's reserves now substantially exceed its requirements.

[Insert Figure 5 here]

We now estimate the magnitude of developing Asia's excess reserves by using two other well-known reserve adequacy measures - i.e. the reserves-to-M2 ratio and the months of imports that reserves can pay for. The higher the M2 ratio, the greater the degree to which the risks of crisis-provoking domestic capital flight are covered. The critical values usually range from 5% to 20%. Figure 6 shows that the reserves-M2 ratio is either above or close to the upper limit of the 5%-20% range for Asia's biggest reserve holders. The intuition behind the import cover measure is that reserves help to reduce vulnerability to current account shocks. The critical value is typically three to

four months. Figure 7 shows that the number of months that imports can cover is well above four in the region's biggest reserve holders.

[Insert Figure 6 here]

[Insert Figure 7 here]

4 Are Developing Asia's Excess Reserves Free Fiscal Assets?

In the preceding section, the Greenspan-Guidotti rule and the two other measures of reserve adequacy indicated that developing Asia's foreign exchange reserve levels have now reached levels which are substantially larger than all reasonable estimates of what the region need. That is, the evidence supports the presence of fairly large amounts of excess reserves in the region. For our purposes, the critical question is whether those excess reserves represent a free fiscal asset which can expand the long-run fiscal space in which the region's governments operate. To begin answering that question, we turn to the useful dichotomy introduced by Hildenbrand (2007). According to the dichotomy, foreign exchange reserve accumulation can be divided 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 oil revenues accruing to the governments of oil-producing countries. An example of the second type is the central bank's purchase of foreign exchange that domestic companies earned by manufacturing products.

It is conceptually useful to classify the first type of reserves as *fiscal reserves* and the second type *central bank reserves*. In terms of the balance sheet of the consolidated public sector – i.e. government plus central bank – there is a critical conceptual difference between fiscal reserves and central bank reserves. Whereas

fiscal reserves provide additional fiscal resources for the government, central bank reserves, which are financed by issuing bonds or currency, do not constitute free fiscal assets. Whereas fiscal reserves do not have any counterpart liabilities, central bank reserves have counterpart liabilities in the form of bonds or currency. For the most part, developing Asia's reserve build-up reflects central bank reserves and thus do not represent free fiscal resources. Contrary to widespread misperceptions among the general public, the region's soaring foreign exchange reserves do not represent a fiscal bonanza at the government's disposal.

Regardless of whether the reserve build-up reflects fiscal reserves or central bank reserves, it usually takes place in the context of a balance of payments surplus. In this connection, it is conceptually useful to distinguish among three main types of external surplus – (1) resource-based current account surplus based on natural resource export revenues, (2) non-resource current account surplus based on exports of manufactured goods and services and (3) financial account surplus – i.e. capital inflows from abroad. 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 non-resource current account surplus, financial account surplus or both.

The following example illuminates our central message that developing Asia's foreign exchange reserves are by and large not free fiscal resources. The example pertains to central bank reserves originating from non-resource current account surplus, which is the dominant type of reserves in the region.

4.1 Example: Are Huawei's Export Earnings a Free Fiscal Asset for the Chinese Government?

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 Huawei Technologies, a Chinese manufacturer of telecom equipment, exports US\$ 5 billion and imports US\$ 3 billion. The firm has earned more than it spent, so it is in effect saving and thus adding US\$2 billion to its net wealth. China’s national net wealth has unambiguously increased. In terms of Huawei’s balance sheet, the US\$2 billion is a foreign currency asset, as follows:

Huawei

Assets	Liabilities
US dollars 2	

Now suppose that instead of investing the US\$2 billion abroad in assets such as a US dollar deposit account, Huawei decides to bring its US dollars home and exchange them for Chinese yuan in the Chinese foreign exchange market. Let us suppose further that the People’s Bank of China, for whatever reason, decides to purchase the US\$2 billion dollars with Chinese yuan it issues. The increase in Huawei’s net worth is still worth US\$2 billion, except that the net wealth is now held in yuan. As for the People’s Bank of China, the increase in the value of its assets – the US \$2 billion dollars – is exactly offset by the increase in its liabilities – US\$2 billion dollars’ worth of Chinese yuan, as follows:

People’s Bank of China

Assets	Liabilities
US dollars 2	Chinese yuan 2

From the perspective of the Chinese economy as a whole, there is an increase in the net worth of Huawei but not in the net wealth of the People’s Bank of China. Since the 2 billion dollars’ worth of Chinese yuan increases the monetary base, a central bank concerned about inflation will attempt try to *sterilize* this additional liquidity by selling bonds to the non-bank public. For the sake of simplicity, let us assume that Huawei buys these sterilization bonds. Then the People’s Bank of China’s and Huawei’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 public sector plus central bank.

People’s Bank of China

Assets	Liabilities
US dollars 2	Sterilization bonds 2

Huawei

Assets	Liabilities
Sterilization bonds 2	

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 Kazakhstan, Azerbaijan 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 non-resource economy.

5 How Big Are the Fiscal Dividends from Managing Developing Asia’s Excess Reserves More Actively?

We have just seen 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. Earlier, we pointed out that it is conceptually helpful to distinguish between reserves, which central banks keep to protect the country from sudden shortages of international liquidity, and excess reserves, which may be used for active profit-maximizing investments and other alternative uses. However, even for central bank reserves, the income from investing excess is a fiscal dividend for the government. In this sense, it is critical to conceptually distinguish between reserves and the investment income they yield, especially for central reserves. For fiscal reserves, both the excess reserves themselves and the income from investing them are fiscal assets. On the other hand, for central bank reserves, the excess reserves are not free fiscal assets but the income from investing them are free fiscal assets.

The fact that the investment income from developing Asia's excess reserves is a fiscal resource gives ample justification for the popular notion that continuing to invest the region's excess reserves in safe and liquid but low-yielding assets such as US government securities is a costly waste of valuable resources. We should remember that investing excess reserves as if they were reserves is welfare-reducing since, by definition, for excess reserves the liquidity benefit of an additional dollar falls short of the cost of an additional dollar. For example, if the rate of return that the central bank earns by investing a dollar of excess reserves on traditional reserve assets is 3% but could have earned a rate of return of 10% by investing it instead in higher-return assets, the central bank is incurring a loss of 7% of foregone fiscal dividend. This suggests that the first-best use of the region's excess reserves is to invest them abroad with the objective of maximizing risk-adjusted returns. Such an active, profit-

oriented reserve management strategy will help to maximize the fiscal dividend available for the region's governments.

A group of state-owned financial institutions known as the sovereign wealth funds (SWF) have a long history of using publicly owned foreign exchange to pursue commercial profits.⁹ As such, they provide a natural institutional model for more active, profit-oriented management of developing Asia's excess reserves. The first SWF – the Kuwait Investment Authority – was created way back in 1953.¹⁰ Well-known sovereign funds include Norway's Government Pension Fund, the Abu Dhabi Investment Authority and other Gulf oil funds, and Singapore's Temasek Holdings and Government of Singapore Investment Corporation (GIC). The majority of the most well-established and biggest funds are based on revenues from oil and other commodities. The striking exceptions are the two Singaporean funds whose underlying income base is government budget surplus and profits of government-owned companies. While there is no single authoritative definition of an SWF, SWFs share two defining characteristics – (1) ownership and control by the government, and (2) pursuit of risk-adjusted returns rather than liquidity as the central objective.

It is widely that the two Singaporean funds have been highly effective and successful investors. For example, the market value of Temasek grew on average by a remarkable 18% per year on a compounded basis between 1974 and 2006, while its average dividend yield to its shareholder – the Singaporean government – during 1974-2006 has been an impressive 7%. The GIC has also 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%. It is this kind of commercial success, along with the fact that

Singapore is part of the region, which is inducing governments in Asia to look toward Temasek and GIC as specific blueprints for their own SWFs. In fact, some Asian countries have already set up new SWFs as vehicles for managing their excess reserves. Korea established the Korea Investment Corporation (KIC) in 2005 with initial assets of US\$20 billion and the PRC established the China Investment Corporation with initial assets of US\$300 billion.

While managing excess reserves more actively to earn higher returns is both politically popular and economically sound, doing so effectively requires that developing Asia overcome a number of institutional and structural challenges. It would be a mistake for developing Asian countries to believe that it is possible to build a Temasek or a GIC overnight. It takes a lot of time and effort to build up the necessary institutional capacity to make the high-risk, high-return investments required for a high overall rate of return and, at the same time, to effectively manage the overall risk level of the investment portfolio. The practical implication for the new Asian funds is that it is probably better for those funds to start from starting out as portfolio investors rather than direct investors with controlling stakes in companies. Portfolio investment limits the returns the new funds can expect but more importantly it also limits their exposure to risk.

While it is highly unrealistic for the Asian sovereign funds to target Temasek- or GIC-like rates of return in the short run, it is nevertheless interesting to get some quantitative idea of what Asian countries can expect to gain by shifting toward more active management of their excess reserves. Summers (2007) provides an excellent point of departure for analyzing this issue in a simple and straightforward yet intuitively plausible and appealing way. Table 8 below shows the annualized risk and return of 4 types of investment portfolios for long-term historical data. What is most

relevant for our purposes is the typical central bank portfolio and the typical pension portfolio. Central banks traditionally invest in short-maturity, high-grade government securities and money markets instruments whereas pension funds tend to invest in a diversified portfolio of stocks and bonds. The specific assumptions are that central bank portfolio consists of 0-3 years dollar-denominated Treasuries and pension portfolio consists of 60% stocks and 40% bonds. The average annual real return on central bank portfolio is 0.98% whereas the average annual real return on pension portfolio is 5.75%. Although the annualized standard deviation for pension portfolio – 12.45% - is much higher than for central bank portfolio – 1.24%, Summers (2007) shows that the probability of a negative return as well as average real loss in periods of negative real return is higher for central bank portfolios.

[Insert Table 8 here]

A more active investment strategy is analytically equivalent to shifting from a typical central bank portfolio to a typical pension portfolio. Conceptually, sovereign funds and pension funds are alike in that they both have resources which are available for the long run and can thus afford to take a long-run investment horizon. Table 9 below provides some quantitative estimates of those benefits for the 10 largest reserve holding countries of the region for 2006. Excess reserves are computed on the basis of the Greenspan-Guidotti rule as the difference between foreign exchange reserves and short-term external debt. The gains from more active reserve management is computed as the product of multiplying the excess reserves by the difference in rate of return between pension portfolio and central bank portfolio (i.e. $5.75\% - 0.98\% = 4.77\%$). The gains are also expressed as percent of GDP to put them in better perspective. The above numbers indicate that the fiscal dividend from investing excess reserves more actively is quite large. For example, in the case of PRC, shifting

from a central bank portfolio to a pension portfolio would yield a fiscal dividend of 1.63% of GDP. We should also remember that this is not a one-off windfall like privatization revenues but a fiscal dividend which would be available for the government *every year*.

[Insert Table 9 here]

We now repeat the above computational exercise for two alternative definitions of excess reserves. For Table 10 below, we define excess reserves as the difference between foreign exchange reserves and 12.5% of M2 or broad money supply. As noted earlier, the suggested reserve adequacy critical value in terms of the reserves-to-M2 ratio ranges from 5% to 20%, so we take the intermediate value of 12.5%. For Table 11 below, we define excess reserves as the difference between foreign exchange reserves and value of 3.5 months' worth of imports. As noted earlier, the suggested reserve adequacy critical values in terms of the number of months that reserves can cover ranges from 3 months to 4 months, so we take the intermediate value of 3.5 months. For both alternative definitions of excess reserves, the fiscal dividend from more active reserve management is quite high. For example, in the case of the PRC, in terms of the M2 and import cover definitions, the annual fiscal dividend is 0.95% of GDP and 1.48% of GDP, respectively. It is worth repeating that the fiscal dividends are recurrent incomes rather than one-off windfalls.

[Insert Table 10 here]

[Insert Table 11 here]

6 Concluding Observations and Remarks

Developing Asia has reaped enormous economic benefits from globalization. The remarkable economic transformation of the region is largely the story of its successful integration into the world economy. The newly industrialized economies (NIEs)

kicked off the region's globalization process, and were followed by the market economies of Southeast Asia, and now the two regional giants of China and India as well as Vietnam and others. More than any other part of the world, developing Asia has made good use of access to foreign markets, capital and technology to power economic growth and development. While globalization is a worldwide phenomenon rather than an Asia-specific phenomenon, what sets apart the region is the sheer speed and scale of the increase in its cross-border flows of goods and services, capital and technology. This means not only that globalization has benefited the region disproportionately but also that its side-effects are also pronounced for the region.

One major side-effect of globalization is the erosion of the tax base due to growing factor mobility. In particular, the combination of technological progress and liberalizing government policies has fuelled a phenomenal growth in cross-border flows of both portfolio investment and FDI. The ability of capital to re-locate from jurisdictions with high tax burdens to those with lower tax burdens limits the ability of governments to impose taxes. Not only that, since there is widespread perception that foreign capital in general and FDI in particular are important sources of jobs, technological progress and economic growth, governments are vigorously competing with each other to lower corporate income tax rates and provide a more favorable tax environment for foreign investors. While fears of a "race to the bottom" and the withering away of the nation-state are exaggerated, globalization has nevertheless precipitated a worldwide trend toward lower tax burdens on capital.

The erosion of the traditional tax base as a result of growing factor mobility under globalization is encouraging governments of developing Asia to seek alternative, non-conventional sources of revenues. Although much of the region currently seems to enjoy superficially fiscally healthy positions, the region as a whole faces daunting

long-run fiscal challenges arising from demographic transition and globalization, in addition to country-specific challenges. This makes it more imperative for regional governments to secure alternative, non-conventional revenue sources. It is true that tax reform designed to improve taxpayer compliance and tax base broadening through greater use of indirect taxes are possible policy responses to the erosion of the traditional tax base. However, such policy shifts are administratively difficult in light of inadequate institutional capacity in many regional countries, which is why non-conventional revenues are an especially attractive means of raising revenues.

One potential source of non-conventional government revenues which is receiving a lot of attention and interest throughout the region is foreign exchange reserves. A key macroeconomic trend in the region is a rapid build-up of foreign exchange reserves, which have now reached levels which exceed all plausible estimates of what is required for traditional liquidity purposes. The build-up is largely the consequence of foreign exchange market interventions by the central bank within the context of current account surplus derived from exports of manufactured goods and services. There is a widespread and growing perception that the region's soaring reserves are somehow a free fiscal asset at the disposal of the region's governments. Our paper thus lies at the intersection of two issues confronting the region's policymakers – how to compensate for the loss of revenues due to growing factor mobility and how to make good use of the region's growing mountain of excess foreign exchange reserves.

The central issue which we address in this paper is the extent to which reserve management can in fact provide valuable fiscal resources for the government. On the negative side, it should be emphasized that the region's reserves themselves are by and large *not* free fiscal assets because they have counterpart liabilities in the balance sheet of the consolidated public sector. This is due to the underlying nature of the

region's reserves, which are central bank reserves rather than fiscal reserves. On the positive side, the income from investing the region's excess reserves, unlike the excess reserves themselves, does represent a valuable fiscal dividend. Therefore, instead of passively investing excess reserves in traditional reserve assets, the region's governments should invest them more actively with the goal of maximizing risk-adjusted returns. Simple calculations based on long-term historical data on rates of return suggest that the fiscal dividend from such a shift can be quite substantial. However, the realization of the fiscal dividend is neither automatic nor guaranteed. As such, the region's governments would do well to adopt a prudent gradualist investment approach of first building up the required institutional capacity for profit-seeking overseas investment, including risk management capacity, and starting out as portfolio rather than direct investors. With this caveat in mind, the potential fiscal dividend from managing developing Asia's excess foreign exchange reserves more actively is large enough to be of significant value to the region's governments in their quest for alternative, non-conventional sources of revenue.

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Table 1
Ease of paying taxes, rank out of 178 economies, 2007

Economy	Overall rank	Number of tax payments	Time to comply	Total tax rate
PRC	168	104	167	163
India	165	162	105	159
Korea	106	141	114	44
Taiwan	91	65	126	78
Thailand	89	104	93	66
Singapore	2	5	3	14
Malaysia	56	104	54	54
Indonesia	110	146	95	63
Hong Kong	3	3	13	15
Philippines	126	138	64	135
Japan	105	29	131	133
US	76	21	122	102
Germany	67	39	65	124
Brazil	137	24	177	158
Russia	130	58	151	131
Mexico	135	74	155	127
South Africa	61	24	131	62
Turkey	54	35	79	96

Source: World Bank and PricewaterhouseCoopers (2008)

Table 2
Effective tax rate on capital and corporate income tax rate, 2006

Economy	Effective tax rate on capital	Corporate income tax rate
PRC	46.9%	24%
India	30.2	33%
Korea	31.5%	27.5%
Thailand	19.1%	30%
Singapore	11.5%	20%
Malaysia	20.3%	28%
Indonesia	28.7%	30%
Hong Kong, PRC	6.1%	17.5%
Japan	32.2%	41.9%
US	38%	39.2%
Germany	38.1%	38.4%
Brazil	38.8%	34%
Russia	37.6%	22%
Mexico	13.8%	30%
South Africa	15.3%	29%
Turkey	5.2%	30%

Source: C.D. Howe Institute (2006)

Table 3
Overall Government Budget Balance in Selected Asian Economies
As Percentage of GDP, 1990, 2000 and 2006

	1990	2000	2006
PRC	- 2.8 (18.5)	- 2.8 (16.3)	- 0.7 (19.2)
India	- 7.8 (18.5)	- 5.7 (15.5)	- 3.7 (14.1)
Korea	- 0.6 (15.5)	1.1 (18.9)	0.4 (23.5)
Taipei, PRC	1.8 (14.5)	- 4.6 (22.9)	- 0.3 (15.9)*
Thailand	4.8 (13.9)	- 2.2 (17.3)	1.1 (16.4)
Singapore	10.8 (21.3)	10.0 (18.8)	7.0 (15.8)*
Malaysia	- 2.9 (27.7)	- 5.5 (22.9)	- 3.3 (24.9)
Indonesia	- 0.9 (19.6)	- 1.1 (15.8)	- 1.0 (20.1)
Hong Kong	0.7 (14.3)	- 0.6 (17.7)	3.7 (15.8)
Philippines	- 3.5 (20.4)	- 4.0 (19.3)	- 1.1 (17.3)

Source: Asian Development Bank (2007)

Notes: Number inside the parenthesis shows total expenditure/GDP ratio,

* 2005 figures, 2006 figures are not available.

Table 4
Public Debt as Percentage of GDP in
Selected Asian Economies, 2005 and 2006

	2005	2006
PRC	17.9	17.3
India	83.9	82.2
Korea	36.4	32.3
Thailand	47.4	42.3
Malaysia	62.5	56.5
Indonesia	45.6	38.6
Philippines	86.3	77.4

Source: IMF Article IV reports.

Note: Taiwan (PRC), Hong Kong (PRC) and Singapore do not carry substantial debt.

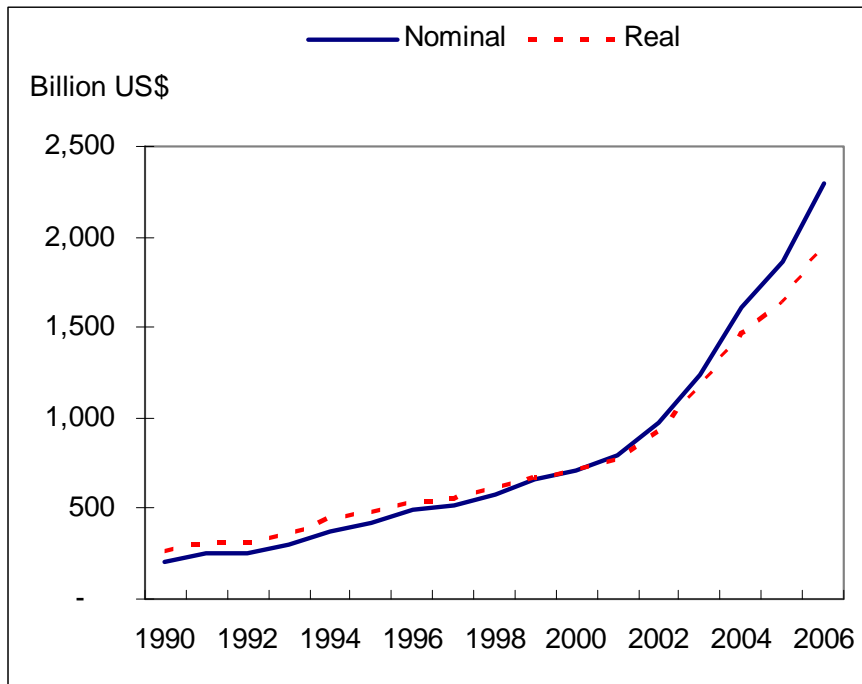
Table 5
Percentage Share of Non-Tax Revenues in Total Government Revenues,
Selected Asian Economies, 1990, 2000 and 2006

	1990	2000	2006
PRC	3.9	6.1	10.2
India	21.8	29	18.3
Korea	9.5	19.9	20.5
Taipei, PRC	19.7	24.3	31.8*
Thailand	6.3	10.1	11.3*
Singapore	42.6	41.0	36.3*
Malaysia	28	23.7	29.9
Indonesia	5.3	43.5	35.7
Hong Kong, PRC	24.9	27.2	19.9
Philippines	13.1	9.6	11.7

Source: Asian Development Bank (2007)

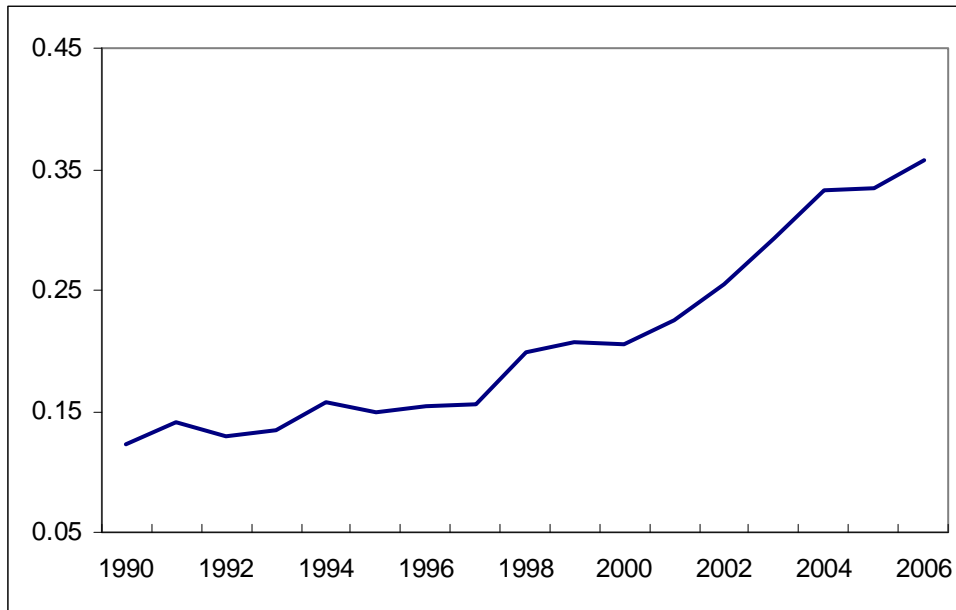
Notes: For some countries, total government revenues are the sum of current revenues and capital receipts. In this case, the figure shown are the
* 2005 figures, 2006 figures are not available.

Figure 1
Nominal and Real Foreign Exchange Reserves of Developing Asia,
1990-2006



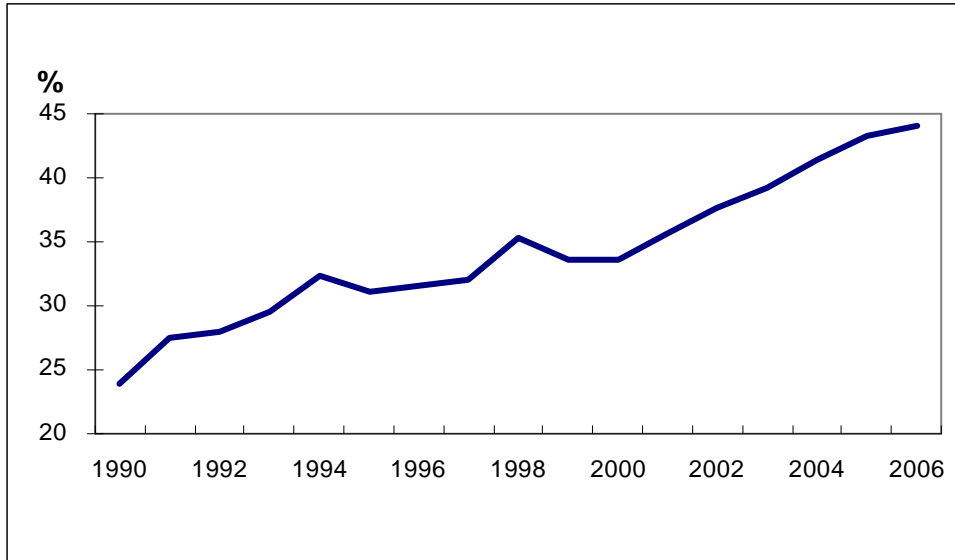
Source: Asian Development Outlook database

Figure 2
Ratio of Foreign Exchange Reserves to GDP, Developing Asia,
1990-2006



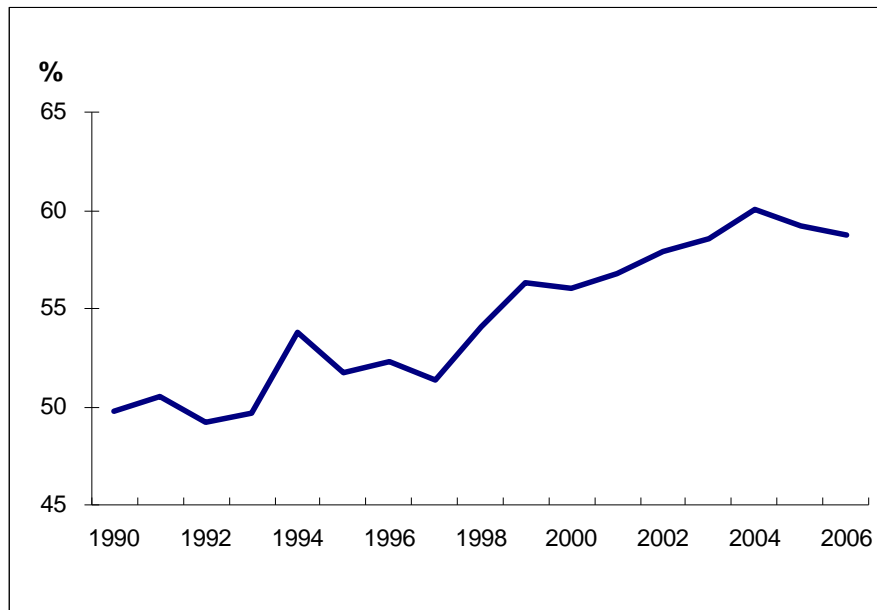
Source: Asian Development Outlook database

Figure 3
Share of Developing Asia in World Foreign Exchange Reserves,
1990-2006



Source: Asian Development Outlook database

Figure 4
Share of Developing Asia in Developing World's Foreign Exchange Reserves,
1990-2006



Source: Asian Development Outlook database

Table 6
 Developing Asia's Foreign Exchange Reserves (\$ billion):
 Stocks as of 31 December 2007 and 31 December 2006

Country	Stock as of December 2007	Stock as of December 2006	Percent Increase (%)
CHINA,P.R.: MAINLAND	1,528.25	1,066.34	43.32
Taipei, China	270.31	265.14	1.95
INDIA	264.73	170.19	55.5
KOREA	261.77	238.39	9.8
SINGAPORE	162.96	135.81	20.0
CHINA, P.R.:HONG KONG	152.70	133.17	14.7
MALAYSIA	101.3	81.72	24.0
THAILAND	85.24	65.15	30.8
INDONESIA	54.56	40.70	34.1
PHILIPPINES	30.07	19.89	51.2
KAZAKHSTAN	19.25	17.75	8.5
VIETNAM	17.16	13.38	28.3

Sources: International Monetary Fund, International Financial Statistics online database, available:<http://www.imfstatistics.org/>,
 Central Bank of China, available: <http://www.cbc.gov.tw>; Bank of Korea available: <http://www.bok.or.kr>; all downloaded 1
 February 2008.

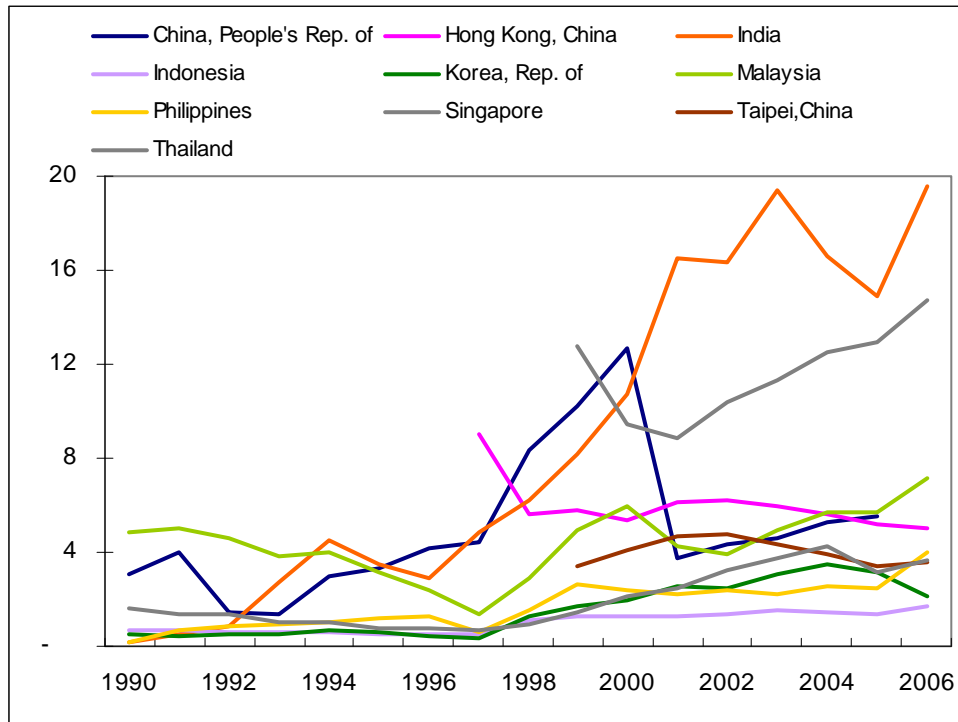
Table 7
Average Current Account Surplus-to-Change in Reserves (CAS/ Δ R) Ratio and
Average Financial Account Surplus-to-Change in Reserves (FAS/ Δ R) Ratio in
Developing Asia's Top 10 Reserve Holders, 2000-2006

Country	CAS/ Δ R Ratio	FAS/ Δ R Ratio
CHINA, P.R.: MAINLAND	0.66	0.33
Taipei, China	0.88	-
KOREA	0.53	0.36
INDIA	-	0.93
SINGAPORE	2.41	-
CHINA, P.R.: HONG KONG	2.77	-
MALAYSIA	1.87	-
THAILAND	0.70	0.15
INDONESIA	2.93	-
PHILIPPINES	0.69	0.73

Source: Asian Development Outlook database

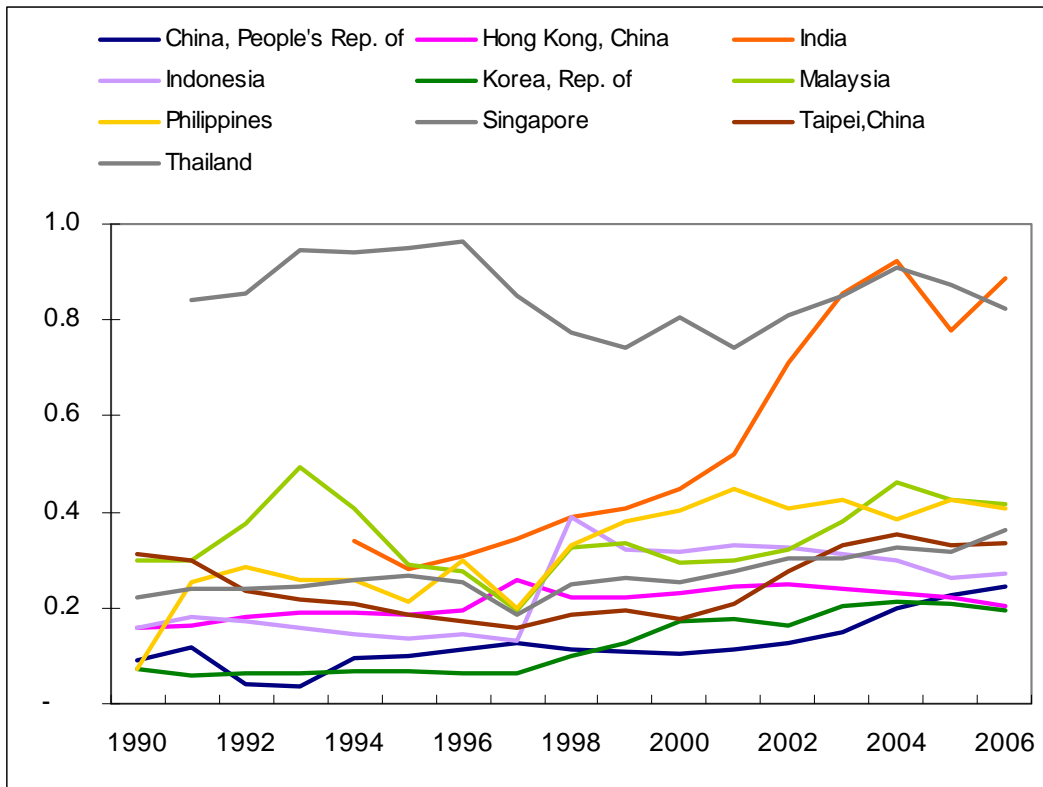
Note: No value indicates a deficit. For example, India ran a current account deficit during 2000-2006 as a whole.

Figure 5
 Ratio of Foreign Exchange Reserves to Short-Term External Debt in
 Developing Asia's Top 10 Reserve Holders, 1990-2006



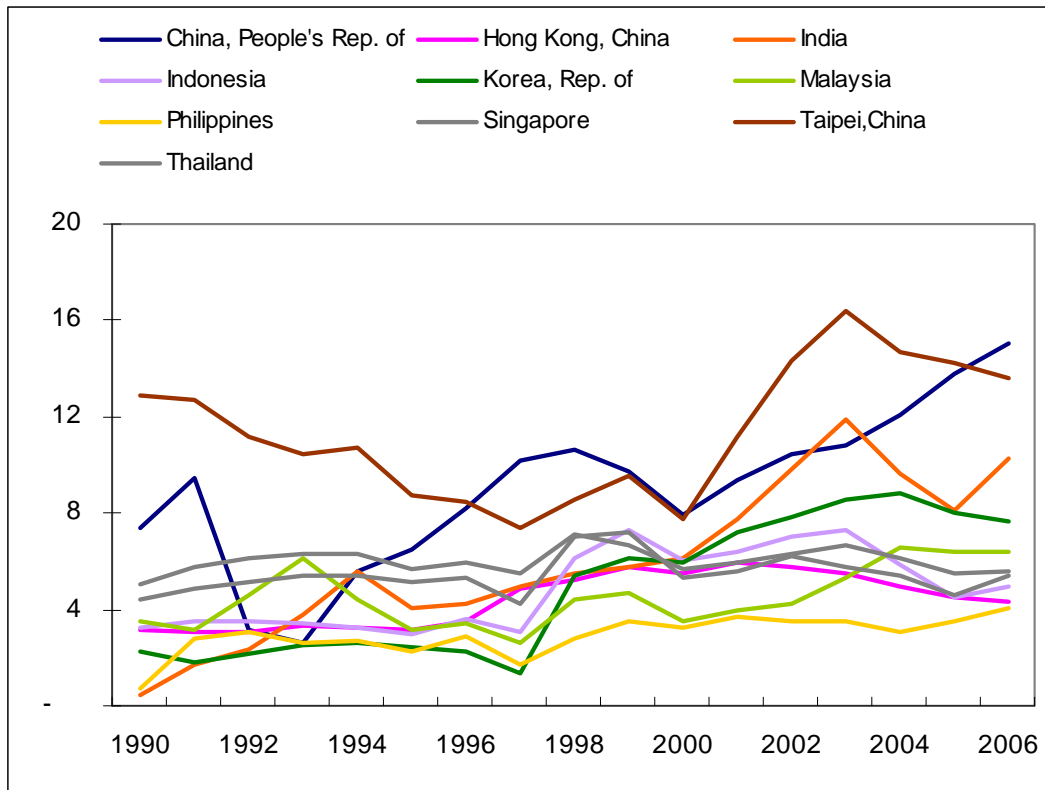
Source: Asian Development Outlook database

Figure 6
 Ratio of Foreign Exchange Reserves to M2 in
 Developing Asia's Top 10 Reserve Holders, 1990-2006



Source: Asian Development Outlook database

Figure 7
Imports Covered by Foreign Exchange Reserves (Number of Months)
in Developing Asia's Top 10 Reserve Holders, 1990-2006



Source: Asian Development Outlook database

Table 8
Annualized Risk/Return of Investment Portfolios, 1926-2004

Investment portfolio	Average annual real return (Geometric)	Annualized standard deviation of return
100% US 1-month deposits	0.65%	0.89%
Typical central bank portfolio	0.98%	1.24%
Typical pension portfolio	5.75%	12.45%
100% US stocks	7.11%	19.37%

Source: Summers (2007)

Table 9
 Excess Reserves [Defined as the Difference Between Foreign Exchange Reserves
 and Short-Term External Debt] and the Benefit of Investing Excess Reserves More
 Actively in Developing Asia's Top 10 Reserve Holders, 2006

Country	Excess Reserves (Billion US\$)	Benefit from More Active Investment of Excess Reserves (Billion US\$)	Benefit as Percent of GDP
CHINA, P.R.: MAINLAND	898.94	42.88	1.63
Taipei, China	190.90	9.11	2.56
KOREA	124.75	5.95	0.67
INDIA	161.49	7.70	0.86
SINGAPORE	126.51	6.03	4.57
CHINA, P.R.: HONG KONG	106.37	5.07	2.68
MALAYSIA	70.34	3.36	2.25
THAILAND	47.36	2.26	1.09
INDONESIA	16.80	0.80	0.22
PHILIPPINES	14.88	0.71	0.61

Source: ADB Staff Estimates

Table 10
 Excess Reserves [Defined as the Difference Between Foreign Exchange Reserves
 and 12.5% of M2] and the Benefit of Investing Excess Reserves More Actively in
 Developing Asia's Top 10 Reserve Holders, 2006

Country	Excess Reserves (Billion US\$)	Benefit from More Active Investment of Excess Reserves (Billion US\$)	Benefit as Percent of GDP
CHINA, P.R.: MAINLAND	541.76	25.02	0.95
Taipei, China	166.02	7.92	2.23
KOREA	87.93	4.19	0.47
INDIA	146.18	6.97	0.78
SINGAPORE	115.17	5.49	4.16
CHINA, P.R.: HONG KONG	51.70	2.47	1.30
MALAYSIA	57.25	2.73	1.83
THAILAND	42.63	2.03	0.99
INDONESIA	21.84	1.04	0.29
PHILIPPINES	13.80	0.66	0.56

Source: ADB Staff Estimates

Table 11
 Excess Reserves [Defined as the Difference Between Foreign Exchange Reserves and Value of 3.5 Months' Worth of Imports] and the Benefit of Investing Excess Reserves More Actively in Developing Asia's Top 10 Reserve Holders, 2006

Country	Excess Reserves (Billion US\$)	Benefit from More Active Investment of Excess Reserves (Billion US\$)	Benefit as Percent of GDP
CHINA, P.R.: MAINLAND	817.62	39.00	1.48
Taipei, China	196.87	9.39	2.64
KOREA	129.52	6.18	0.70
INDIA	112.40	5.36	0.60
SINGAPORE	50.66	2.42	1.83
CHINA, P.R.: HONG KONG	25.77	1.23	0.65
MALAYSIA	37.13	1.77	1.19
THAILAND	22.73	1.08	0.53
INDONESIA	11.77	0.56	0.15
PHILIPPINES	2.63	0.13	0.11

Source: ADB Staff Estimates

Endnotes

¹ Throughout this paper, developing Asia refers to the 44 developing-country members of the Asian Development Bank. For a full list of the members, please visit the ADB website at www.adb.org. Developing Asia does not include Japan, Iran and Middle Eastern countries, but includes East Asia, Southeast Asia, South Asia, former Soviet republics, and the island-states of the Pacific.

² Studies which explain the developing countries' traditional reliance on easy-to-collect taxes include Cukierman, Edwards and Tabellini (1992), Aizenman and Guidotti (1994), Emran and Stiglitz (2005), and Gordon and Li (2005).

³ According to Hobson (2003), neither the capacity of national governments to tax nor the welfare state in rich countries is likely to wither away as a consequence of globalization.

⁴ An earlier edition of the study, *Paying taxes: the global picture*, was published in 2006.

⁵ An earlier edition of the study, *The 2005 tax competitiveness report: unleashing the Canadian tiger* was published in 2005.

⁶ Chen (2000) defines the marginal effective tax rate on capital.

⁷ See, for example, Heller (2003) and Clark (2002).

⁸ Park (2007) provides a comprehensive overview of the causes and policy implications of developing Asia's foreign exchange reserve accumulation.

⁹ Johnson-Calari and Rietveld (2007) provide an excellent overview of sovereign wealth management.

¹⁰ Despite such long history, the term "sovereign wealth fund" was coined only in 2005, by Andrew Rozanov (2005a, 2005b).