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To: Members of the Executive Board

From: The Acting Secretary

Subject: The Effect of Capital Inflows on the Domestic Financial Sectors in APEC Developing Countries

Attached for the information of Executive Directors is background material for the paper on Portfolio Capital Flows to Developing Country Members of the Asia-Pacific Economic Cooperation Council (APEC) (SM/94/252, 9/26/94). The papers have been prepared in response to a request made by APEC Finance Ministers in their statement issued at the conclusion of the joint ministerial meeting in Honolulu, Hawaii in March 1994. The papers are to be considered at the meeting of Deputy Finance Ministers of APEC countries on October 3, 1994, in Madrid Spain. Executive Directors were informed of this request in EBD/94/79 issued May 6, 1994.

Mr. Folkerts-Landau (ext. 37665) or Mr. Schinasi (ext. 36613) is available to answer technical or factual questions relating to this paper.

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The Effect of Capital Inflows on the Domestic  
Financial Sectors in APEC Developing Countries <sup>1/</sup>

Prepared by the Research Department

Approved by Mohsin S. Khan

September 26, 1994

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## I. Introduction and Overview 1/

Studies of recent episodes of major capital inflows into APEC developing countries have focussed almost exclusively on the macroeconomic implications of such flows including their macroeconomic causes and effects, and the appropriate policy responses. 2/ The impact of the surge in capital flows on real exchange rates, trade flows, domestic investment, international reserves, and economic activity has been documented for many of the APEC developing countries and for many other developing countries. In addition, the effectiveness and relative merits of various policy measures--including monetary, exchange rate, and fiscal policies--in dealing with the surge in inflows also have been examined in light of the recent country experiences. In particular, experience and existing studies suggest that sterilization to offset the monetary impact of capital inflows is likely to be effective only in the short run. Capital-inflow induced monetary expansions can be effectively curtailed through a nominal exchange rate appreciation and, if real exchange rate appreciation is a concern, by a reduction in public spending. 3/ The taxation of short-term capital inflows might be effective in the short-run, but its effectiveness erodes over time.

However, the large volume of capital inflows has raised other important issues, such as: What are the effects of capital inflows on banking systems

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1/ At the conclusion of the Asia-Pacific Economic Cooperation Council (APEC) Finance Ministers Meeting in Honolulu, Hawaii (March 18-19, 1994) a Joint Ministerial Statement requested that the International Monetary Fund "prepare a study of cross-border portfolio flows into and within the APEC region, providing quantitative measurements of the sources and destinations, as well as the contribution of external flows to total capital mobilized in securities markets." In response to this request the staff has prepared a paper documenting capital inflows to and within countries in APEC, their composition, sources, and destinations; see "Portfolio Capital Flows to the Developing Country Members of APEC," prepared by the Policy Development and Review Department of the IMF. The present paper, prepared by the Research Department of the IMF, serves as background to the overview paper.

2/ For an analysis of these issues for several APEC countries see Mohsin S. Khan and Carmen M. Reinhart, "Macroeconomic Management in Maturing Economies: The Response to Capital Inflows," prepared for the APEC Finance Ministers Meeting in Hawaii on March 18-19, 1994, and Kenneth B. Bercuson and Linda M. Koenig, The Recent Surge in Capital Inflows to three Asean Countries: Causes and Macroeconomic Impact, Occasional Paper No. 15, (Kuala Lumpur, Malaysia: The South East Asian Central Banks, 1993).

3/ See also, Guillermo A. Calvo, Leonardo Leiderman, and Carmen M. Reinhart, "Capital Inflows and Real Exchange Appreciation in Latin America: The Role of External Factors," Staff Papers, International Monetary Fund, Vol. 40 (March 1993), pp. 108-51; and Susan Schadler, Maria Carcovic, Adam Bennett, and Robert Khan, Recent Experiences with Surges in Capital Inflows, IMF Occasional Paper No. 108, International Monetary Fund, December 1993.

and capital markets in recipient countries? Have financial risks in recipient countries increased as a result of the changes in balance sheets and asset price volatility brought about by rapid changes in the volume and composition of capital inflows? Is the existing financial infrastructure--including regulatory, supervisory, and accounting arrangements--capable of fostering an adequate management of these risks?

The need to ensure that these issues are given adequate attention can hardly be overstated. As a group, the developing countries are expected to require more than \$1 trillion of domestic and foreign capital by the year 2000 to build the physical infrastructure necessary to sustain desired growth rates. <sup>1/</sup> In 1993, net capital inflows to the APEC developing countries <sup>2/</sup> amounted to almost \$100 billion, or about 85 percent of total net capital inflows to all developing countries. The ability of the APEC developing countries to attract and effectively intermediate such a volume of financial flows depends importantly on the comprehensiveness, independence, and enforceability of the regulatory and supervisory frameworks in these financial systems. These frameworks need to ensure: (1) that banking systems, which are going to remain the main conduit for the flows of funds into the countries, allocate credit efficiently in an environment where balance sheets are expanding as a result of capital inflows; and (2) that the stability of domestic capital markets is not adversely affected by cross-border flows, and that capital markets possess sufficient integrity and transparency to retain investor confidence.

In the APEC developing countries, where banking institutions have retained a predominant role as financial intermediaries, a significant portion of these capital inflows either entered the recipient countries directly through, or ultimately were deposited in, the recipient country banking system. As a result, capital inflows have led to an expansion of bank balance sheets in several of these countries. It is, therefore, important to ensure that the regulation and supervision of banks is sufficiently strengthened to ensure that credit quality does not deteriorate. The occurrence of costly financial crises in the recent past in some APEC developing countries has shown that concerns about the ability

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<sup>1/</sup> See World Bank, World Development Report 1994 (Washington: Oxford University Press, 1994).

<sup>2/</sup> APEC is comprised of both developing and industrial countries. The APEC developing countries include: Brunei, Chile, China, Hong Kong, Indonesia, Korea, Malaysia, Mexico, Papua New Guinea, the Philippines, Singapore, Taiwan Province of China, and Thailand. The APEC industrial countries include: Australia, Canada, Japan, New Zealand, and the United States.

of these countries to maintain credit quality are not without foundation. 1/

In addition, international capital markets have changed dramatically during the past decade and these changes have presented serious challenges for the countries that are recipients of international capital flows. In particular, the internationalization of institutional funds management--made possible by a continuing liberalization of cross-border flows--has generated a significant supply of yield-sensitive flows that tend to be highly responsive to changes in sentiment about the economic prospects of recipient countries. Indeed, the distinction between long-term international portfolio investment and short-term "hot money" is no longer helpful. Much of international portfolio investment is transactions-driven rather than taking the form of long-term expectations on the economic success of the recipient countries. It is, therefore, important that financial systems have not only a robust market infrastructure--wholesale payments, securities settlement and clearance systems--but also financially resilient intermediaries that can cope with sudden reversals of financial flows and with volatile asset prices.

The APEC developing countries, therefore, face the policy challenge of building a supervisory and regulatory infrastructure that (i) ensures the efficient allocation of bank credit, and (ii) safeguards the integrity and stability of capital markets. Although many of these countries have made great strides in liberalizing and strengthening their financial systems in recent years, much remains to be done.

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1/ Several APEC developing countries are currently experiencing financial problems. In Malaysia, nonperforming loans rose sharply after the onset of recession in 1985 and peaked at 32 percent of total bank loans in 1988; this ratio fell to 12 percent at end-1993. In Indonesia, nonperforming loans held by commercial banks increased significantly in the early 1990s, reaching 16 percent of outstanding loans; this ratio fell from 14 percent in June 1993 to 5 percent in March 1994, in part the result of a reduction in *the value of loans at problem banks and because of growth in new loans*. Nonperforming loans in Korea amounted to 6 percent of total bank loans in mid-1993, and in Mexico, nonperforming assets rose from 2 percent of bank loans in 1991 to 6 percent in September 1993. These asset quality data compare unfavorably to the asset quality in several industrial countries known to have had recent banking problems. Among the Nordic countries, nonperforming loans as a percent of total commercial bank loans peaked in 1992 at 9 percent in Finland, 7 percent in Norway, and 8 percent in Sweden. In the United States, delinquent loans reached 6 percent of commercial bank loans in 1991. In Japan, the official estimate of nonperforming loans among the 21 major banks is 3 percent at end-March 1993.

This paper presents a preliminary examination of the impact of capital inflows on the financial sectors in recipient APEC developing countries. <sup>1/</sup> Section II examines the impact of capital inflows on the banking sector. The first part of this section discusses the relationship *between capital inflows and domestic credit expansion*: capital inflows increase the reserves of the domestic banking system, thereby creating the potential for an expansion of the domestic banking system. The central bank, however, can influence the magnitude of the domestic credit expansion. This subsection provides some preliminary empirical evidence on the impact of capital inflows on domestic credit expansion through various forms of sterilization, which, among other things, affect the allocation of financial risk between the public and private sectors. The second part of this section examines the risks that banking sectors of recipient countries have faced and how these risks may have been exacerbated by changes in the structure of bank balance sheets resulting from capital inflows. Also discussed is how a strengthening of the supervisory and regulatory infrastructure can help reduce and manage such risks.

Section III of the paper examines the impact of capital inflows on equity markets in selected APEC developing countries. It provides an empirical analysis of the impact of capital flows on equity price volatility, on the spillover of equity-price volatility in industrial country markets, and on market efficiency in recipient countries. The section also discusses how certain shortcomings in the infrastructures in APEC emerging markets might contribute to market inefficiency, price volatility, and vulnerability to turbulence in other markets. Section IV summarizes the main conclusions of the study.

## II. The Banking Sector as a Conduit for Capital Inflows

In the APEC developing countries, banking institutions retain a predominant role as financial intermediaries, with bank assets accounting for at least 60 percent of total financial assets in most countries. Capital inflows either flow directly through the banking sector or they affect the banking sector indirectly. Because of the predominance of banks, the soundness of the banking sector and the integrity of bank credit decisions emerges as a key component in managing capital inflows. In many countries, and under varying circumstances, banking problems most often have been the result of bad credit decisions and inept management of credit risk, including overexposure to certain types of risk, and have caused major losses. Large and relatively volatile capital flows can contribute to these problems, especially when bank balance sheets are badly structured, by causing large swings in bank liquidity resulting in alternating periods of

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<sup>1/</sup> A lack of comprehensive country-specific data on supervisory and regulatory practices, on financial sector balance sheets, and on several other relevant aspects of financial structure prevents a detailed analysis of the experiences in individual countries.

credit expansion and contraction. <sup>1/</sup> Two major areas of concern are the ability of the banking system to assess, price, and manage risk, and the adequacy of the supervisory and regulatory frameworks to prevent and contain systemic risk, particularly in the presence of safety nets and the problem of moral hazard. These elements of the financial system--the process of intermediation, the assessment, pricing, and management of private risk, and the management of systemic risk--clearly influence the ability of policymakers to achieve economic objectives, and will likely play a primary role in allocating the capital inflows that clearly will be necessary for sustained economic growth.

An important recent concern in many developing countries that have undertaken financial liberalization is whether their relatively immature financial systems are capable of operating effectively in the presence of sizable and volatile capital inflows, without major financial crises and without imposing wider systemic risks. Large and volatile capital flows can exaggerate risk exposures and impair the ability of both banks and supervisors to adequately assess and manage risk.

Before discussing these important issues in the second part of this section, the first part of this section examines the impact capital inflows have had on the domestic banking systems in selected APEC developing countries. In order to examine this experience, it is useful to discuss the role of central bank intervention and sterilization, which have a direct impact on bank balance sheets and the allocation of financial risk between the private and public sectors.

1. Capital inflows, central bank intervention,  
and domestic credit expansion

When capital inflows enter a developing economy as an increase in domestic bank foreign liabilities, the impact on the banking system is immediate: a local bank experiences an increase in foreign currency liabilities and obtains a foreign currency asset, usually in the form of a deposit in a bank chartered in a foreign currency market. If the local bank

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<sup>1/</sup> The savings and loan crisis in the United States and the banking crises in the Nordic countries are recent examples of how bad credit decisions can weaken the banking system. The recent debt and asset price deflations in many industrial countries illustrate how the combination of expansionary macroeconomic policies, rapid financial liberalization, and an inadequate supervisory and regulatory framework can lead to costly problems. See Morris Goldstein and David Folkerts-Landau, International Capital Markets: Part II. Systemic Issues in International Finance, World Economic and Financial Surveys (Washington: International Monetary Fund, August 1993); and Garry J. Schinasi and Monica Hargraves, "'Boom and Bust' in Asset Markets in the 1980s: Causes and Consequences," in Staff Studies for the World Economic Outlook, World Economic and Financial Surveys (Washington: International Monetary Fund, December 1993), pp. 1-27.

then extends a credit to an importer, the funds flow out of the market, causing no further expansion in domestic bank credit. 1/ Alternatively, the local central bank could purchase the foreign currency funds from the recipient bank, which would cause an increase in domestic currency bank reserves relative to the deposit base. If this transaction increases the reserve-deposit ratio above the legal minimum, banks can use their excess reserve position to increase bank credit. 2/

Even when capital flows into a developing country through nonbank financial asset markets, these transactions can have a similar impact on the banking system as if there had been a direct expansion of bank liabilities. 3/ When a nonresident invests in a nonbank financial asset, a local deposit must be used to pay for it, which involves exchanging a foreign-currency deposit for a local-currency deposit. In such transactions, the deposits and reserves of the domestic banking system are increased, at least temporarily. Hence, regardless of whether foreign capital flows into the market as foreign direct investment, equity portfolio investment, bond issuance, or bank borrowing, the associated increase in deposits and bank reserves can potentially lead to an increase in bank lending, unless these local currency deposits/reserves are either used to import goods and/or assets, or absorbed by the central bank through its sterilization policy. Moreover, the local bank and the local central bank have the same options as if the funds had entered the market through an increase in bank liabilities.

In principle, net capital inflows need not necessarily affect the domestic financial system permanently. At one extreme, the net inflow can finance an equivalent current account deficit, as when a nonresident purchases a domestic asset from a resident, who in turn uses the proceeds to import foreign goods. At the other extreme, the net capital inflow can be deposited within the banking system and completely sterilized by the central

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1/ When the local bank lends funds to the importer, it simultaneously books a foreign currency loan and a foreign currency deposit to the importer. The local bank executes the transaction by drawing on its deposit in the foreign currency bank. At the end of the transaction, the local bank has a liability to the foreign currency bank and a foreign currency loan to the importer.

2/ If the local authorities permit residents to hold foreign currency deposits, the foreign currency deposit base can be expanded by the same process.

3/ For example, most of the bond portfolio inflows, which have dominated portfolio inflows into APEC developing countries in recent years, originated in the Euromarkets and are denominated in one of the major currencies. Thus, when nonresidents purchase Eurobonds issued by APEC borrowers, they transfer foreign currency deposits to APEC borrowers. If these borrowers hold their deposits in the local banking system, bond purchases have the same impact on the domestic financial system as a direct increase in domestic bank foreign liabilities.

bank through a number of instruments. In each extreme case, net capital inflows do not affect the level of private domestic credit; and only in the latter case, will the composition of domestic financial assets and liabilities be altered.

In practice, net capital inflows have led to an expansion of domestic credit, reflecting the interplay of government policies, private investment decisions, and the behavior of financial institutions (including the financial infrastructure). In addition to determining the composition of assets and liabilities, the interaction of these decisions also has determined how assets and liabilities are priced, who bears the financial risks, and how these risks are priced.

a. Central bank intervention and sterilization

In 1993, one third of the nearly \$100 billion net capital inflows into the APEC developing countries was absorbed by the central bank in foreign currency reserves. Foreign currency reserves increase when the central bank directly purchases the foreign-currency inflow, for example, as when the central bank purchases foreign currencies from the banking system. The total accumulation of foreign currency reserves in any given period is a measure of the potential effect that net capital inflows can have on the total quantity of central bank reserves held by the banking system, and hence on the level of domestic credit. In general, however, central banks have at their disposal several tools to sterilize the impact of capital inflows on the domestic economy, and in particular, on the pace of domestic credit expansion, including: direct instruments, such as increasing reserve requirements on commercial bank liabilities--to limit flows to the banking system or change the maturity structure of deposits--and indirect instruments, such as conducting open market operations and exchanging government bonds or central bank bills for foreign currency. 1/

Although reserve requirements have been used to sterilize inflows in some countries, they have two important disadvantages. First, to the extent that reserves are remunerated below market interest rates, they impose a tax on bank intermediation by increasing the wedge between interest rates on bank deposits and bank loans. Second, they may not be an effective tool for sterilizing capital inflows that are intermediated by nonbank financial institutions and by the capital markets, such as in the case of bond or equity portfolio flows.

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1/ The need to limit the impact of capital inflows on the money supply is more pronounced for countries that operate fixed or managed exchange rate regimes, which is the case of many APEC developing countries.

Reserve requirements appear to have been an important direct instrument through which APEC developing countries have sterilized capital inflows. 1/ For instance, Malaysia has relied on reserve requirements to absorb some of the excess liquidity generated by large capital inflows. The statutory reserve requirement was increased from 6.5 percent in 1991 to 8.5 percent in 1993, and has been raised more recently to 11.5 percent. Some of the resulting increase in the cost of funds was passed-through to borrowers and lenders, as the margin between deposit and lending rates increased from 3.8 percent to 4.7 percent. 2/ Reserve requirements have also been used extensively in countries in the Western Hemisphere that have experienced high capital flows. For example, in 1992 Chile imposed a reserve requirement of 30 percent on all foreign credits, and Mexico restricted foreign currency liabilities of commercial banks to 10 percent of total liabilities. 3/

By increasing the cost of funds to some institutions, sterilization through reserve requirements can place banks at a competitive disadvantage vis-à-vis nonbank financial institutions, which often are not subject to the same regulations. Over time, bank disintermediation may occur as nonbanks replace banks as a source of private credit at more competitive rates. In Korea, for example, the central bank minimized the impact of increased liquidity on the financial system primarily by imposing high nonremunerated reserve requirements on commercial banks, and by tightly regulating the market for bank credit. 4/ This policy shifted deposits from banks to nonbanks, as the latter were able to offer higher deposit rates; about 36 percent of deposit liabilities were held by deposit money banks in 1992, compared to over 70 percent in the 1970s. In the Philippines, very high reserve requirements, averaging 22 percent between 1987 and 1992, have been, in part, responsible for the low level of bank intermediation in the financial system.

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1/ The effectiveness of using reserve requirements depends on the inability of investors to circumvent the reserve requirement. In many industrial countries, investors can avoid reserve requirements by acquiring financial assets that are close substitutes for bank deposits, such as money market mutual funds, and thereby render sterilization ineffective. In most developing countries, however, close substitutes for bank deposits do not exist and so reserve requirements often can be used as an effective sterilization tool.

2/ Between 1991 and 1993, the cost of maintaining reserves at the central bank is estimated to have increased by about 23.5 percent, whereas the margin increased by 22.7 percent during this period.

3/ These restrictions were relaxed later in the year.

4/ In 1986, short-term money instruments (monetary stabilization bonds) were also introduced to manage liquidity. However, the central bank continues to impose high reserves ratios (11.5 percent) on demand and time deposits.

Where sterilization has been conducted through indirect instruments, such as open market operations, its effectiveness has been limited by the ability of domestic securities and money markets to absorb the sale of government securities or central bank bills. In Korea, for example, the quantity of monetary stabilization bonds (MSB) used by the central bank to sterilize inflows of foreign currencies increased from 9.6 percent of M2 in 1986 to 21 percent in 1992. In the last three years, Malaysia relied extensively on the sales of central bank securities and on money market intervention to reduce liquidity. Often such policies have been associated with high and rising quasi-fiscal costs (the cases of Chile and Malaysia stand out in this regard) as domestic short-term interest rates have remained well above international levels. 1/ Furthermore, it has been argued that the relatively high short-term interest rates have acted as a stimulus to short-term inflows. 2/

Singapore and Malaysia (and other APEC developing countries) have used mechanisms other than reserve requirements or open market operations for sterilizing capital inflows, such as swapping the government's excess savings held by banks in and out of government bonds, to minimize the impact of capital flows on banks balance sheets and prevent bank disintermediation. The Monetary Authority of Singapore did not hold government bonds for use in open market operations, and was reluctant to burden banks with high reserve requirements. Instead, it sterilized capital flows and managed liquidity through portfolio allocations of the Central Provident Fund (CPF). 3/ The extensive savings in the CPF, which were invested primarily in government bonds, and large government budget surpluses allowed the central bank to effectively control liquidity.

In Malaysia, a similar scheme was employed. The central bank in Malaysia manages liquidity in part through the Employee Provident Fund (EPF), which holds about 20 percent of financial assets in Malaysia. Capital inflows are sterilized by transferring government and EPF deposits from the banking system to special accounts in the central bank. As a result, federal and state government deposits held at the central bank

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1/ In the case of Chile, the quasi-fiscal costs associated with intervention policies are estimated to have been 1.4 percent of GDP; see Miguel Kiguel and Leonardo Leiderman, "On the Consequences of Sterilized Intervention in Latin America: The Case of Columbia and Chile," mimeo, 1994.

2/ See Kenneth B. Bercuson and Linda M. Koenig, The Recent Surge in Capital Inflows to three Asean Countries: Causes and Macroeconomic Impact, Occasional Papers No. 15 (Kuala Lumpur, Malaysia: The South East Asian Central Banks, 1993); and Guillermo A. Calvo, Leonardo Leiderman, and Carmen M. Reinhart, "Capital Inflows and Real Exchange Rate Appreciation in Latin America: The Role of External Factors," Staff Papers, International Monetary Fund, Vol. 40 (March 1993), pp. 108-51.

3/ The Central Provident Fund is a government administered compulsory pension fund.

increased from 3 percent of total deposits in 1989 to 19 percent in mid-1992. This sterilization effort expanded central bank liabilities relative to the monetary base and may still have been inflationary. At the same time, however, Malaysia pursued a policy of fiscal consolidation, which was combined with early repayments of external debt.

During the financial reform in 1988-93, Indonesia sterilized capital inflows by actively managing the deposits of public enterprises, which were obliged to convert commercial bank deposits into Bank Indonesia certificates (SBIs). During this period, the outstanding stock of SBIs increased from 8 percent of the total liabilities of Bank Indonesia to 34 percent. Although these sterilization measures were successful in curbing excess liquidity, they also eroded the deposits of state-owned enterprises and sharply raised their cost of funds.

In Taiwan Province of China, sterilization occurred by forcing commercial banks to buy treasury bills and central bank certificates of deposits, and by shifting postal savings from the domestic banking system to the central bank. The central bank's balance sheet expanded and the ability of banks to intermediate financial flows weakened. Korea and Thailand attempted to sterilize capital inflows by encouraging outflows through the early repayment of external debt. Thailand also followed a policy of fiscal restraint combined with increased government deposits at the central bank. 1/

b. The impact of capital inflows on domestic credit in selected APEC countries

As noted earlier, one-third of the \$100 billion that flowed into the group of APEC developing countries in 1993 were absorbed into foreign currency reserves; and this reserve accumulation potentially represents an increase in domestic credit unless it was sterilized. The impact of net capital inflows on domestic credit expansions has differed markedly in individual APEC developing countries, however. In Korea, there were significant capital inflows in 1987 and 1991-92, but only in the earlier period did these result in a large overall payments balance; inflows in the latter period were largely offset by current account deficits. In Taiwan Province of China, large capital inflows in 1986-87 have been followed by large capital outflows. The Philippines did not experience significant capital inflows compared to its current account deficits until 1992. Consequently, capital inflows have not had a great potential for altering the level of domestic credit in these countries. In Indonesia, Malaysia, Singapore, and Thailand, however, the difference between net capital inflows and the current account deficit--the overall balance, which primarily reflects reserve accumulation--was strongly positive, and it is in these

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1/ The government deposits held at the Bank of Thailand increased from 25 percent of total deposits in 1987 to 82 percent in mid-1992.

countries where the impact of capital inflows on the domestic banking system are possibly greatest.

Countries that have experienced the greatest net capital inflows also have experienced rapid expansions in the commercial bank sectors (Table 1). In Thailand, for example, bank assets expanded rapidly in relation to GDP after 1987, from 73 percent of GDP in 1988 to 102 percent in 1993. Similar experiences occurred in Indonesia, where assets expanded from 45 percent of GDP in 1988 to 74 percent in 1993, and in Malaysia, where this ratio increased from 118 percent in 1992 to 134 percent in 1993.

In addition to intermediating capital inflows, commercial banks themselves imported substantial amounts of foreign capital. As a result, commercial bank gross foreign liabilities generally rose as a percent of GDP: in Indonesia, from 2 percent in 1989 to 7 percent in 1993; in Malaysia, from 7 percent in 1990 to 19 percent in 1993; and in Thailand, from 3 percent in 1987 to 11 percent in 1993. In each country, the source of the greatest growth in liabilities was borrowing from foreign financial institutions, and not the accumulation of foreign currency deposits, although reserve accumulation was significant in Indonesia.

An alternative channel--to an increase in foreign liabilities--through which the banking sectors expanded was a direct increase in domestic deposits. Since 1988, nongovernment domestic deposits grew significantly in relation to GDP in both Indonesia and Thailand, and grew at a slightly slower pace in Malaysia (see Table 1). Deposit growth generally increased after the onset of capital inflows, and, in Indonesia and Thailand, provided the impetus for about two-thirds of the expansion of the banking sector. By contrast, in Malaysia, growth in deposits remained subdued until around 1992-93, when deposits rose sharply from 63 percent of GDP in 1992 to 72 percent in 1993.

In all three countries, the increase in deposits and foreign liabilities more than compensated for reductions in central bank credit and government deposits; moreover, these reductions were often deliberate measures implemented as part of sterilization programs. In Malaysia, the ringgit value of government deposits declined by 72 percent between 1989 and 1993, while in Thailand and Indonesia, government deposits grew but at a slower pace than total liabilities. Similarly, central bank credit to commercial banks declined in nominal terms in both Indonesia and Thailand. A more detailed examination of bank assets suggests that funds were directed mostly toward domestic investments. Gross foreign assets declined in relation to GDP in Indonesia and Malaysia, and they increased slightly in Thailand (see Table 1). In all three countries, foreign assets declined as a share of total assets, with the result that net foreign assets declined sharply and in all three cases led to a net liability position. For example, commercial bank net foreign assets declined in Malaysia from less than 1.5 percent of GDP in 1989 to a net liability of 13 percent in 1993 (see Table 1). In Indonesia, a net foreign asset position of 4.5 percent of GDP in 1989 turned to a net liability position of 3 percent in 1993;

Table 1. Indicators of Banking Activity in Selected APEC Countries, 1985-93

(In percent of GDP)

	1985	1986	1987	1988	1989	1990	1991	1992	1993
<b>Indonesia</b>									
Assets of deposit money banks	34.7	39.7	38.6	44.5	55.6	67.8	67.4	70.2	74.3
Loans to private sector	17.4	21.2	22.5	27.4	36.4	49.8	51.7	50.9	54.9
Nongovernment deposits	19.1	21.5	22.1	25.0	30.6	38.5	39.3	41.1	43.9
Foreign assets	6.4	8.0	6.3	5.9	6.4	6.0	4.9	5.0	3.8
Foreign liabilities	0.6	0.5	0.6	0.8	1.9	6.5	5.2	6.2	6.6
<b>Korea</b>									
Assets of commercial banks	70.4	63.9	62.2	59.1	61.2	75.5	74.9	75.1	73.4
Loans to private sector	47.3	46.6	47.4	48.3	51.6	58.3	57.0	55.8	54.6
Nongovernment deposits	23.1	23.0	26.2	28.6	28.1	33.3	31.7	30.2	30.0
Holdings of government securities	1.1	1.2	1.2	1.3	1.2	1.6	1.6	1.0	1.0
Holdings of nongovernment securities	2.0	2.4	2.4	2.1	3.3	4.8	4.8	5.5	6.5
Foreign assets	4.7	3.8	3.5	3.2	2.7	3.7	3.6	4.0	4.6
Foreign liabilities	10.2	7.9	5.7	3.9	3.5	4.0	4.8	4.7	4.4
<b>Malaysia</b>									
Assets of commercial banks	95.7	110.8	106.4	106.5	109.8	111.6	117.3	117.6	134.0
Loans to private sector	62.5	72.4	64.6	61.4	64.4	68.8	74.2	70.9	69.8
Nongovernment deposits	59.1	67.7	62.4	58.0	58.4	53.8	58.9	62.7	71.8
Holdings of government securities	8.6	9.0	11.8	13.0	10.7	9.3	8.7	7.0	5.7
Holdings of nongovernment securities	2.1	3.2	4.6	5.5	4.3	6.2	8.3	8.9	11.0
Foreign assets	3.9	5.4	6.3	8.1	7.7	6.6	5.0	3.6	6.3
Foreign liabilities	8.2	8.6	6.3	5.6	6.2	7.0	9.1	12.6	19.0
<b>Philippines</b>									
Assets of commercial banks	51.8	43.5	42.1	42.8	45.4	50.1	48.0	51.1	58.9
Loans to private sector	19.3	13.9	15.3	15.6	16.7	18.6	17.4	20.0	25.7
Nongovernment deposits	22.1	20.3	20.5	22.2	24.4	26.9	26.9	28.5	32.1
Holdings of government securities	2.5	3.6	3.4	4.5	5.6	5.1	4.5	6.1	5.3
Holdings of nongovernment securities	3.0	2.1	1.3	1.1	1.1	1.6	3.5	2.4	2.9
Foreign assets of commercial banks	7.3	7.4	8.1	8.8	8.6	10.3	8.5	8.8	9.1
Foreign liabilities of commercial banks	13.9	9.6	9.4	9.4	9.6	12.1	10.6	13.1	15.1
<b>Taiwan Province of China</b>									
Assets of deposit money banks	110.0	115.2	127.9	140.5	156.3	157.6	168.9	182.8	193.2
Loans to private sector	2.2	1.7	1.6	1.7	1.5	1.4	1.3	1.3	1.2
Nongovernment deposits	2.8	2.4	2.1	2.0	1.8	1.7	1.5	1.3	1.3
Holdings of government securities	1.5	1.5	1.9	2.9	2.3	1.9	3.1	4.6	5.5
Holdings of nongovernment securities	13.0	22.2	33.3	21.9	19.0	14.8	17.8	13.6	16.0
Foreign assets	14.8	8.6	4.6	5.5	6.6	8.4	7.8	6.3	6.4
Foreign liabilities	5.4	9.9	13.3	10.4	8.2	7.1	8.2	7.4	7.8
<b>Thailand</b>									
Assets of commercial banks	67.5	68.5	72.6	73.4	76.8	82.5	86.6	91.0	102.4
Loans to private sector	45.5	44.2	47.3	51.0	56.3	64.3	67.7	72.8	79.1
Nongovernment deposits	50.0	52.9	55.4	54.9	58.5	63.4	67.1	68.9	73.2
Holdings of government securities	7.3	9.2	8.8	7.9	6.5	5.0	3.2	2.4	1.5
Holdings of nongovernment securities	0.8	1.0	1.0	1.1	1.2	1.2	2.5	2.9	3.6
Foreign assets	3.2	3.7	3.0	2.9	3.8	2.6	2.9	2.8	5.0
Foreign liabilities	4.3	2.8	2.9	4.0	4.6	5.0	4.9	6.0	11.2

Sources: Bangko Sentral ng Pilipinas; Bank Indonesia; Bank of Korea; Bank Negara Malaysia; Bank of Thailand; Central Bank of China (Taiwan Province of China); International Monetary Fund; and IMF staff estimates.

similarly, in Thailand, a near balanced position at the end of 1987 swung to a net foreign liability position of 6 percent of GDP in 1993.

The net result in some cases was a strong expansion in domestic lending. Loans to the domestic private sector in Thailand increased from 51 percent of GDP in 1988 to 79 percent in 1993; and in Indonesia they increased from 27 percent of GDP to 55 percent. In Malaysia, there was only a modest expansion in lending to the private sector, which actually declined as a proportion of total assets. Banks in Malaysia have invested funds in the interbank market, by holding excess reserves at the central bank, which pays the interbank interest rate on such deposits. Loans to other banks in Malaysia rose from 8 percent of total assets in 1991 to 22 percent in 1993.

In Malaysia and Thailand, the expansion in domestic lending coincided with a reduction in holdings of government securities, and an increase in holdings of private sector securities. Although banks' holdings of all securities as a share of assets or GDP did not rise significantly in Malaysia, and actually fell sharply in Thailand, in both countries bank investment in private securities more than doubled as a proportion of assets and/or GDP between 1989 and 1993.

This brief discussion of bank balance sheets suggests the following general observations: (i) the period of high net capital inflows coincided with an increase in liabilities of the banking sector, often driven by foreign borrowing; (ii) these sources of funds allowed banks to expand their balance sheets despite a reduction in funding from the central bank and the government; and (iii) these funds were allocated mostly to domestic lending, with some increase in private sector securities investment.

c. Risk allocation between the public and private sectors

The decision to sterilize capital inflows implies that the balance sheet of the central bank will expand rather than that of the banking system. This effectively transfers risk from the banking system to the central bank. Because of the high cost of sterilization, and the high potential public cost of financial losses, careful consideration must be given to the allocation of risk between the private and public sectors.

When the banking system is sound and efficient and there is effective regulatory and supervisory control over banks, then capital flows will not create additional risks to the financial system or increase the probability of financial problems. When extending credit, banks are able to anticipate the effect of a reversal of capital flows on the revenues of their borrowers (interest rate and exchange rate risks) by pricing loans accordingly, accumulating reserves against such loans, and reducing the concentration of their loan portfolios to sectors that may be affected by such reversals.

On the other hand when credit institutions operate in a regulatory environment that allows them to misallocate credit and mismanage their balance sheets, a capital inflow induced expansion of bank credit will

create further opportunities for banks to expose the financial system to a larger risk of financial loss. In pursuing a policy of nonsterilization in such weak systems, the central bank runs the risk that it may have to provide liquidity, or equity to troubled or insolvent banks. Moreover, in the event of a reversal of capital flows, weak banks would become especially vulnerable. Due to their poor credit ratings, the weaker financial institutions would be unable to access market and would need central bank support. The history of bank crises, including recent crisis in the industrial countries, clearly demonstrates how high the public costs can be of such rescue operations. 1/

## 2. The banking sector, infrastructure, and capital inflows

The relatively recent experiences in some of the APEC developing countries suggests that the combination of immature infrastructures, relatively weak regulatory structures, and external influences--for example, terms-of-trade shocks and economic recession--can strain domestic financial systems, lead to financial crisis, and impose severe real economic costs on the economy. The recent surges in capital inflows, and the potential for further increases, or for a rapid reversal of these flows, can pose similar risks.

Although a thorough discussion of the experiences with banking crises in individual countries is beyond the scope of this paper, many of the problems that have led to financial crises are common to other APEC countries that are now experiencing sizable and volatile capital inflows. After briefly reviewing recent financial crises in selected APEC countries, and drawing relevant lessons from them, this subsection briefly discusses common areas where supervisory and regulatory frameworks can be improved and recent regulatory reforms in some of the APEC countries. The final part of this section summarizes the challenges in improving the banking sectors in the period ahead.

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1/ In the Nordic countries, public funds (including deposit insurance funds) were expended during 1991-1993 to resolve the banking crises. As a share of 1992 GDP, these public expenditures amounted to 8 percent in Finland, 4 percent in Norway, and 6 percent in Sweden. In 1992, the estimated total cost of resolving the U.S. Savings and Loan crisis and problems in the commercial banking industry was nearly 4 percent of GDP. The large capital flows in Chile in the late 1970s, combined with the full state guarantee to bank deposits and the ownership of banks by industrial or financial conglomerates to which cheap credit was granted, led to the banking crisis in 1982, after the economy was subject to external shocks. The cost of rescuing the banks over the period 1982-85 has been estimated at 44 percent of Chile's 1985 GDP. See Bernhard Fisher and Helmut Reisen, Towards Capital Account Convertibility, Policy Brief No. 4 (Paris: Organization for Economic Cooperation and Development, 1992).

a. Financial crises and inadequate infrastructures

In many of the APEC developing countries, interest rate liberalization and bank deregulation led to greater access to funds, and greater competition among banks for these funds--as capital inflows have done so more recently--well before the regulatory and supervisory frameworks were improved and were capable of adequately safeguarding against systemic risk. In Indonesia and Malaysia, for example, banking crises emerged after significant deregulation measures were implemented in the late 1970s and early 1980s. Although the impetus for many of these measures were terms-of-trade shocks, these shocks and recessions in the early- to mid-1980s exposed the weaknesses in bank balance sheets, including the illiquidity of a large proportion of loans made during the period of increased competition. Improvements in prudential regulation were implemented after a crisis had developed, and in some other countries, regulations specifying the definition of bank capital, provisioning requirements for various classes of substandard assets, and the levels of lending and exposure limits were only promulgated in the late 1980s. The absence of adequate regulation and supervision meant that inherited poor practices were not corrected and that banks were not adequately provisioned against potential loan losses when recession hit. At the same time, the greater competition introduced by the initial reforms made it less possible for banks to earn their way out of financial trouble by widening interest margins.

The structural weakness in many banking systems that surface in times of financial stress--and that might surface during periods of large and volatile capital flows--can be traced, in part, to the use of commercial bank loans to achieve government economic policy objectives. Many of the APEC developing countries, including Indonesia, Korea, Malaysia, the Philippines, and Thailand, some of which have experienced surges of inflows, have regulatory requirements to allocate fixed proportions of bank loan portfolios to particular sectors. 1/ Such practices can be inconsistent with sound banking practices: mandated loans often are refinanced by the

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1/ In Korea, the main objective during the 1970s was to ensure funding for heavy industry. Since then, the emphasis has switched toward small- and medium-sized enterprises. In Malaysia, the main objective has been to ensure access to credit by the Bumiputera population and by small-scale enterprises. In Indonesia, the Philippines, and Thailand, small-scale and agricultural borrowers were the target. These loans were often funded by the authorities directly (as in Korea through government funds allocated to the banks) or indirectly through central bank rediscounting, and usually carried interest rates well below those paid by other borrowers. In Korea, policy loans accounted for almost half of nationwide commercial bank loans through the 1970s and 1980s and even in 1990, almost ten years after these banks were privatized; see Sang-Woo Nam, "Korea's Financial Markets and Policies," mimeograph (Seoul; Korea Development Institute, October 1993). In some of the other countries, the aggregated policy lending requirements reached similar proportions of total commercial bank lending.

central bank at relatively favorable rates, and banks, therefore, have little incentive to properly assess and price their credit risk; and where banks have difficulty meeting their lending requirements, these loans are inevitably extended to projects with high risk and regardless of cash flow. In some countries, the Philippines for example, banks can substitute purchases of government bonds for lending to priority sectors; however, these bonds generally pay below-market interest rates. In addition, because banks often are not required to identify properly, and to provide reserves against, problem loans, banks in many of these countries carried bad loans as performing and capitalized unpaid interest. When economic growth slowed in the mid-1980s and financial stresses emerged a large proportion of these loans became nonperforming, which weakened bank balance sheets, and created the potential for sizable quasi-fiscal costs.

Another problem that has been prevalent in some APEC developing countries is that aggregate bank lending has at times become highly concentrated in particular economic sectors. This concentration of lending increased the vulnerability of the banking system, and of the financial system, to sector-specific economic developments. Even though aggregate balance sheet data generally are not detailed enough to accurately evaluate country risk, they can indicate where there is a high concentration of lending to particular sectors. 1/ In Thailand, for example, the share of bank credit extended to the construction and real estate sectors--two sectors that are typically known to be risky and vulnerable to interest rate changes--has increased sharply since the surge in capital inflows, rising steadily from 8 percent in 1980 to 16 percent in 1990--where it has remained. Most of the increase in lending was for real estate transactions, and so the surge in net capital inflows in 1988-90 appears to have been associated with a significant increase in exposure to property values. As the experience in many industrial countries in recent years has shown--including the United States and Japan--even when the initial collateral value of the land exceeds the value of the loan by a wide margin, significant exposures to commercial property can seriously impair the strength of the bank balance sheets if property prices fall.

In Indonesia, balance sheet weakness in the private banking system was related to credit exposures to borrowers connected to the lending bank. Although there were regulatory restrictions on bank ownership, they did not prevent banks from becoming controlled by nonfinancial firms. 2/ In addition, extensive lending to bank-related borrowers, with little attention

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1/ A true picture of risk exposures can only be obtained from detailed audits of bank balance sheets.

2/ See Anwar Nasution, "Financial Sector Policies in Indonesia, 1980-1993" (mimeographed, University of Indonesia, October 1993). Other examples are Korea and Taiwan Province of China, where the use of dummy accounts and borrowed names is widespread. In these circumstances, it is not possible to enforce restrictions against concentrations of lending to the bank shareholders.

to their capacity to repay, was responsible, in large part, for the accumulation of nonperforming loans on the balance sheets of the private banks. In Malaysia, there were no regulations in the 1980s that governed credit exposures either to single counterparties or to borrowers connected to the bank. Unsecured loans to individuals became nonperforming during the recession in 1985 and the associated severe liquidity shortage. Other sources of bad loans were bank-credit exposures to the property sector and bank credits backed by equity shares, which became nonperforming as a result of the asset price deflation in Malaysia in 1985.

Finally, in general, increased access to an international market might have made it easier for the most creditworthy firms to tap international markets directly by issuing stocks or bonds; this form of financing has soared in recent years. 1/ As a result, banks in many of the APEC developing countries may be lending to second-tier, high risk customers.

The lessons from these experiences for the APEC developing countries are clear: (i) in periods of macroeconomic instability, rapid financial change, and market volatility--such as with surges in capital inflows and the strains they can place on the domestic financial systems--longstanding inefficiencies come to light, such as information and incentive problems, poor credit assessment, inadequate risk management, and other weaknesses in the infrastructure, in particular in the supervisory and regulatory frameworks; and (ii) to avoid such problems in the future--caused either by even greater capital inflows, or reversals of such flows--careful and timely examinations of existing supervisory and regulatory frameworks are needed, and structural changes may be required to strengthen prudential supervision.

b. Weaknesses in the supervisory and regulatory infrastructure

The recent financial history of many of the APEC developing countries, as well as other evidence, suggests that many of these countries are not as well equipped as is desirable to manage the increased risks inherent in intermediating volatile capital flows, and to absorb high asset-price volatility. Many financial institutions remain subject to moral hazard: aspects of the regulatory regime, such as deposit insurance in the Philippines and Taiwan Province of China, or central bank rediscounting of credits to priority sectors, can weaken incentives to manage risks because the costs of loan losses are not borne entirely by the bank. Related incentive problems exist in countries such as Indonesia, the Philippines, and Taiwan Province of China, where state-owned banks play a significant role in the intermediation process. State-owned institutions may have less of an incentive to manage risk properly because there may be a greater presumption of a public sector bailout of a failed state-owned institution than of a failed private bank.

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1/ See the accompanying paper, "Portfolio Capital Flows to the Developing Country Members of APEC."

Even in private institutions, internal risk management may be inadequate. The essence of internal control is the measurement and assessment of risk exposures (including the creditworthiness of the borrowers and market risk) and the implementation of banking practices that make these risks manageable. Poor accounting standards and limited information disclosure requirements make the assessment of the riskiness of creditors very difficult. Accounting standards are widely perceived as being relatively weak in many APEC developing countries. In Indonesia, there are as yet no standards to ensure consistent financial reporting across banks, and similar problems exist in Taiwan Province of China. Similarly, in the Philippines, auditors have limited power to examine company records: they are dependent upon their clients to provide the necessary information and face no penalty if the information reported is incorrect. In many countries, reliable information is available only for the very largest listed companies, particularly those that have accessed foreign capital markets. Even in these cases, the use of "borrowed names" as in Korea or Taiwan Province of China, or the maintenance of multiple accounts, greatly diminishes the reliability of reported information. 1/

The lack of enforcement of existing regulations is a source of problems in many developing countries. A minimum requirement of an effectively operating bank is that there is independent internal oversight of lending decisions by a credit review committee. Such oversight would provide a check against abuses such as lending in excess of loan approval or credit exposure limits. An equally important contribution of the review process is the subsequent follow-up as part of a systematic effort to monitor the quality of the loan portfolio. This management role is often lacking in developing country banking systems, which makes it difficult to obtain a comprehensive picture of the extent to which loans are nonperforming or at risk of becoming nonperforming.

The supervisory and regulatory infrastructures in APEC developing countries are often ill-equipped to assess and manage the systemic risks inherent in immature financial systems, especially in the presence of large and volatile capital flows. 2/ The general requirements of a sound

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1/ See Bambang Sudibyo and others, "Public Confidence on the Independence of Public Accountants," paper presented in the Sixth Annual PACAP Finance Conference held in Jakarta, Indonesia (July 6-8, 1994); Jia-Dong Shea, "The Financial Development and Policies in Taipei, China" (mimeographed, Nankang, Taiwan Province of China: Institute of Economics, Academia Sinica, October 1993); and Mario B. Lamberte and Gilberto M. Llanto, "A Study of Financial Sector Policies: the Philippine Case" (mimeographed, Philippine Institute for Development Studies, October 1993).

2/ The Annex contains summary descriptions of essential elements of commercial bank regulations drawn, in most cases, from published sources only. Errors and omissions may exist where relevant information is not readily available or, as in the case of Taiwan Province of China, where there is no official contact with the International Monetary Fund.

prudential regulatory structure include vesting the supervisory agency with the authority to examine bank operations and balance sheets, to inject liquidity or capital into banks to contain financial crises, to close banks and to restrict dividend payments, to issue cease and desist orders, to establish entry criteria and capital adequacy rules, to define exposure limits, to delineate and enforce permitted and prohibited activities, and to enforce asset classification and provisioning rules. An important contribution of bank supervision is to relate the true economic value of a bank's portfolio to the bank's capital base, and bank supervision and examination must, therefore, focus on the identification and resolution of problem assets. Poor accounting standards may mean, however, that banks have inadequate information about the quality of their loan portfolios, and that even detailed examinations by supervisors and regulators may not reveal more information.

Current regulations governing the reporting of asset quality fall short of international practices in a number of APEC developing countries. In Malaysia, for example, there is only an elementary loan classification system, and loans must be six months in arrears before they are classified as nonperforming--the same allowance as given in Taiwan Province of China. In Thailand, there appear to be no requirements to classify loans, and, in all three countries, required loan-loss provisions are relatively low. In the Philippines, the loan classification system appears to leave considerable discretion to bank management to decide how to classify loans. <sup>1/</sup> In addition, regulators in some cases may have no credible legal recourse against banks that fail to comply with regulations. Central banks, for example, may not have the authority to close insolvent banks, to seize assets or to issue cease and desist orders.

Most of the APEC developing countries have introduced modified risk-based capital requirements in recent years. If banks are not required to report accurately on the condition of their asset portfolios, however, then capital requirements are ineffective. To avoid capital losses on nonperforming loans, banks will record interest as accrued. Additional problems may arise due to liberal or unclear definitions of what can be included in capital. As a result, high capital-adequacy ratios in countries with weak disclosure requirements often disguise bad loans.

To avoid loan losses, bank regulators in most APEC developing countries have imposed limits on bank lending in a variety of forms, including

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<sup>1/</sup> In the United States, nonperforming loans include all loans that are at least 90 days overdue and all 'substandard' and 'loss' loans. In Japan, nonperforming loans are defined as loans to bankrupt borrowers and loans that are 180 days, or more, overdue.

liquidity requirements and exposure limits. 1/ In Indonesia, banks may not provide credits in excess of 20 percent of bank capital to any one borrower, or 50 percent to any group of borrowers. In Thailand, the limit on lending to any one debtor is 25 percent of capital and the limit on receiving commitments from the same borrower is 50 percent. In the Philippines, the single-borrower limit is 25 percent of capital unless the loan is secured by risk-free assets. In Taiwan Province of China, banks may not lend in excess of their deposits. There are, however, no other limits on lending to individual borrowers other than on loans to bank insiders. In most of the countries, there are statutory limits or prohibitions on lending to directors or other officers of the bank and, in some cases, but not all, these apply to their families and companies they own.

Such controls are easily circumvented in countries where regulations and accounting practices are weak. For example, in Korea, until September 1993, it was legal to use a fictitious name when transacting with a financial institution. As a result, there was no way to enforce restrictions on loans to individual counterparties or bank insiders. The use of dummy accounts or borrowed names is not uncommon in other countries too--Taiwan Province of China, for example. 2/ Moreover, in Malaysia until 1986 and the Philippines until relatively recently, for example, bank examiners lacked the authority to trace the use of funds once they were deposited in accounts, so it was not possible to prevent borrowers passing the proceeds on to others who were not eligible for loans.

Strong legal and accounting systems are important elements of the regulatory support for risk management. In many developing countries, debtors enjoy strong protection from the courts which reduce the effectiveness of the bank claims to seize collateral in the event that the loans are not properly serviced. Bankruptcy proceedings are frequently an inefficient way of resolving bank claims. In the Philippines, the Insolvency Law lists bank claims last among 14 categories of preferences for the settlement of claims on the assets of a bankrupt firm. There is often no separate judicial structure that specializes in commercial law, with the result that courts may not be well-equipped for adjudicating such disputes. In addition, it is common for there to be no registration of collateral claims; this means that lenders must take physical possession of collateral--which eliminates the use of land as collateral--in order to

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1/ In the European Union, banks face a limit of 25 percent of capital on each of their large exposures--a transitional limit of 40 percent is applied in some cases--with the added condition that all exposures in excess of 10 percent of capital cannot exceed 8 times capital. In the United States, the large exposure limit is 15 percent of capital plus surplus, and in Japan the limit on exposures of ordinary banks to single borrowers and their subsidiaries is 40 percent of equity.

2/ See Jia-Dong Shea, "The Financial Development and Policies in Taipei, China" (mimeographed, Nankang, Taiwan Province of China: Institute of Economics, Academia Sinica, October 1993).

enforce their claims and to be sure that there are no other claims on the same assets.

c. Deregulation and capital inflows

While capital inflows were frequently encouraged by deregulation measures, the negative impact they appear to have had on financial institutions in some countries has led to two types of responses. One response, adopted by Malaysia for example, has been to try to reverse temporarily the factors that attracted foreign capital in the first place. In the past year, Bank Negara Malaysia has imposed limits on the size of banks' foreign currency swap books and on their overall foreign liabilities. For a few months in 1994, residents were not permitted to sell short-term securities to nonresidents. In addition, foreign financial institutions' accounts in Malaysian banks had to be deposited in vostro accounts with the central bank, which do not pay interest and were subject to reserve requirements; this resulted in a high tax on nonresident deposits. The reserve requirement on vostro accounts was lifted in May and the ban on issues of short-term securities to nonresidents was rescinded in August.

By contrast, in Indonesia, pressures from foreign capital flows have been used to promote deregulation and reforms in the domestic markets. The initial round of interest rate deregulation in 1983 was prompted by external pressures, which in Malaysia had contributed to the imposition of new controls on bank lending rates in that year. 1/ More recently, the Indonesian authorities have not attempted to constrain inflows--reserve requirements have not been raised as they have in Malaysia for example--but they have tried to ensure their proper intermediation by improving prudential regulations and by sterilizing when necessary. One cost of this openness has been that the initial reduction in interest rates when capital inflows surged, and their subsequent increase when sterilization was strengthened, appear to have added to the asset quality problems in the banking system. Nonperforming loans in the large state-owned banks reportedly increased from 6 percent of loans at the end of 1990 to 21 percent as of October 1993.

The timing of reform measures suggests that an important objective of financial liberalization was the improved access to, and use of, foreign capital. 2/ The simultaneity, in some countries, of financial deregulation and liberalization of external capital flows supports this conjecture. More directly, in Indonesia, between 1979 and 1991, the Central Bank encouraged foreign exchange inflows through the banking system by conducting foreign currency swaps with the banks--on demand--at a forward premium that was set below the expected rate of depreciation. Before 1989

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1/ See David C. Cole, "Financial Reforms in Four Southeast Asian Countries: Indonesia, Malaysia, Philippines and Thailand" (mimeographed, Cambridge, Massachusetts: Harvard University, October 1993).

2/ See Cole, *ibid.*

banks were subject to a system of complex ceilings on foreign borrowing. Between March, 1989 and 1991 this policy was combined with limits on daily net open foreign exchange positions amounting to 25 percent of capital (reduced to 20 percent in 1991). The change in policy, combined with the subsidy on the forward premium, induced inflows of short-term capital, which Bank Indonesia could not sterilize given the shallowness of the money market. 1/ In 1990, monetary policy was tightened (interest rates on SBIs bills rose from 17.7 percent in March 1990 to 21.5 percent in March 1991) and the forward premium subsidy was cut substantially. The ceilings on foreign borrowing were reintroduced in October 1991, but private borrowers face only a reporting requirement, not an approval requirement.

In other countries, the ability of banks to accumulate foreign liabilities or foreign-currency denominated domestic liabilities was improved as part of the early deregulation process. Capital inflows were further encouraged by the relatively high interest rates that prevailed in the region. Although specific causes differed among countries, high interest rates were a direct result of factors such as monetary tightening, interest rate deregulation, the encouragement of competition among financial institutions, and the relatively high costs of intermediation.

### III. The Impact of Portfolio Capital Flows on Emerging Equity Markets

As detailed in the overview paper, capital began to flow in substantial amounts to the APEC developing countries in the late 1980s, mostly in the form of foreign direct investment (FDI). During the early 1990s the composition of flows began to change markedly, and portfolio flows began to play an increasingly important role (Table 2). Net portfolio flows increased sharply in dollar terms in the 1990s and also rose as a share of total net capital inflows, from about 2 percent of net inflows in 1990 to about 42 percent in 1993. At the same time, "other" net capital inflows--which includes commercial bank lending--fell slightly in dollar terms and declined sharply as a share of total net inflows. 2/ Equity flows, which were negligible prior to 1989, rose significantly in the early 1990s, and bond flows surged, although most bond issues were raised in the Euromarkets and were not intermediated by the domestic bond markets in individual countries.

The benefits to APEC developing countries of greater access to global capital markets include lower funding costs, the result of diversification of funding sources, improved liquidity and market depth, and increased market efficiency. However, these benefits of capital inflows can be offset, at least in part, by the possibility that the international

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1/ See Anwar Nasution, "Financial Sector Policies in Indonesia, 1980-1993" (mimeographed, University of Indonesia, October 1993).

2/ See the accompanying paper, "Portfolio Capital Flows to the Developing Country Members of APEC."

Table 2. Net Capital Flows to APEC Developing Countries, 1990-93 1/

	1990	1991	1992	1993
<u>(In billions of U.S. dollars)</u>				
Net Capital flows	<u>26.6</u>	<u>51.9</u>	<u>43.3</u>	<u>89.4</u>
Foreign direct investment	12.1	19.1	23.4	39.5
Portfolio investment	0.5	11.5	19.9	37.1
Other	14.1	21.3	--	12.8
<u>(In percent of net capital flows)</u>				
Net Capital flows	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Foreign direct investment	45.5	36.8	54.0	44.2
Portfolio investment	1.9	22.2	46.0	41.5
Other	53.0	41.0	--	14.3

Sources: International Monetary Fund, Balance of Payments Statistics Yearbook; and IMF staff estimates, as presented in "Portfolio Capital Flows to the Developing Country Members of APEC," prepared by the Policy Development and Review Department.

1/ Net medium- and long-term capital, excluding exceptional financing and flows related to debt and debt-service reduction.

integration of capital markets has exposed the smaller and less liquid stock markets to spillovers of turbulence from industrial country securities markets. In addition, the high volatility of equity prices in recipient countries has led to concerns about the impact of capital inflows on equity price volatility in these countries. <sup>1/</sup> Moreover, many of the emerging markets have not yet had sufficient time to develop an adequate financial infrastructure, including adequate accounting standards, disclosure requirements, trading mechanisms and exchanges, and clearing and settlement systems. It is possible that the interaction of surges in capital flows and weaknesses in the financial infrastructure can increase systemic risks, and in some cases lead to systemic problems in domestic markets. Finally, there is a question of whether market integrity and transparency in the capital markets of APEC developing countries is evolving sufficiently quickly to retain the confidence of foreign investors in times of stress. This section discusses these issues and provides some empirical analyses of spillover effects from foreign markets, of price volatility, and of market efficiency.

1. Spillovers, price volatility, market liquidity, and market efficiency

a. Market linkage and spillovers

The increased participation of foreign investors can potentially strengthen the linkage between local and foreign markets. Although foreign participation might not affect the relationships between market fundamentals in industrial and emerging stock markets, it can magnify the effect of industrial country market turbulence (as experienced in the first quarter of 1994) on the emerging equity markets. <sup>2/</sup>

Spillovers increase when the behavior of nonresident investors leads to a defensive investment strategy by resident investors. Because local investors generally have no information about whether foreign investors are changing their portfolios because of liquidity constraints, rediversification, or special information about economic fundamentals, local investors will tend to react to such moves. Such reactions will magnify the effect of foreign turbulence on the local market.

To examine whether volatility spillovers have increased recently, Table 3 reports correlations between stock price volatility in the United States on one day and stock price volatility in emerging stock markets on

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<sup>1/</sup> In addition, as Table 4 below highlights, volatility in emerging markets, as measured by the standard deviation of stock returns, remains very high by industrial country standards. For the period January 1992 to July 1994, daily stock returns in these emerging markets were twice as variable as stock returns in the United States.

<sup>2/</sup> See Morris Goldstein and David Folkerts-Landau, International Capital Markets: Developments, Prospects, and Policy Issues, World Economic and Financial Surveys (Washington: International Monetary Fund, September 1994).

Table 3. Volatility Spillover Analysis

	Correlation Measure of Volatility Spillover <u>1/</u>
Hong Kong	
Low inflow period (Jan. 1988 - Aug. 1991)	0.068 **
High inflow period (Sept. 1991 - Oct. 1993)	0.023
Volatile flow period (Nov. 1993 - July 1994)	0.150 * +
Korea	
Low inflow period (Jan. 1988 - Dec. 1991)	0.055 *
High inflow period (Jan. 1992 - June 1993)	0.029
Volatile flow period (July 1993 - July 1994)	0.120 *
Thailand	
Volatile flow period (Jan. 1988 - Apr. 1991)	0.296 ***
Moderate inflow period (May 1991 - Oct. 1992)	0.115 ** +++
High flow volatility period (Nov. 1992 - July 1994)	0.103 **
Mexico	
Low inflow period (Jan. 1988 - Apr. 1990)	0.048
Volatile flow period (May 1990 - Jan. 1993)	0.324 *** +++
More steady inflow period (Feb. 1993 - July 1994)	0.003 +++

Source: IMF staff calculations from The WEFA Group data.

Note: The separation of the overall sample into different subsample periods with different portfolio flow characteristics is performed by inspecting the monthly portfolio flow data from the United States to these emerging markets and the data on the changes in monthly flows. The separation is also jointly determined by the use of common structural-break test statistics including the CUSUM test statistics and the CUSUMSQ test statistics. The return data are the continuously compounded daily return from the Hang Seng Index for Hong Kong, the Korea Composite Index for Korea, the Bangkok SET Index for Thailand, and the Morgan Stanley Capital International Index for Mexico.

1/ Correlation between squared daily local return and lagged squared daily return of the Dow Jones Industrial Average. \*\*\*, \*\*, and \* indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively. In addition, +++, ++, and + indicate a significant change in the correlation measure from the previous period at the 1 percent, 5 percent, and 10 percent levels, respectively.

the following day. Volatility is estimated by the squared daily stock market return. As Table 3 shows, there have been volatility spillovers from the U.S. stock market to the emerging stock markets and these spillovers have been strongest in periods when portfolio flows have been most volatile. <sup>1/</sup> The correlation measures of volatility spillovers are highest during the volatile-flow periods in all countries examined except Thailand. For both Hong Kong and Korea, the correlation measure of volatility spillovers in the volatile-flow period are more than twice as large as in the low-inflow period. For Mexico, the correlation measure of volatility spillovers in the volatile-flow period (which occurs in a different time period than those of Hong Kong and Korea) is more than seven times the correlation measure for the low-inflow period.

b. Increase in market volatility

The presence of foreign investors can also increase stock price volatility by magnifying price fluctuations in the local market. Outflows are likely to occur when small and illiquid markets are weak. Investors tend to redeem their shares from the fund, and fund managers are then obliged to sell shares in the local market, which further depresses prices. In this way, the participation of large mutual funds--which in some countries is the only way for nonresidents to invest--might have a destabilizing impact on the local market. In December 1993, for example, U.S. investors purchased \$674 million worth of Hong Kong shares, on a net basis; however, in the following month, U.S. investors sold, on a net basis, \$708 million of Hong Kong shares, and set the stage for the rapid decline in share prices in the coming months. A similar reversal of capital flows occurred in Mexico. In February 1994, there was a net equity inflow of \$280 million from the United States; however, in the following month, U.S. investors sold a net \$170 million of Mexican shares. This rapid change in capital flows was accompanied by a rapid stock-price decline in Mexico, demonstrating the important impact that volatile equity flows can have on the variability of stock prices in small local markets.

In this context, three related questions arise: has stock-return volatility increased in absolute terms in the emerging markets; has this volatility increased in emerging stock markets relative to, for example, return volatility in the United States; and has the probability of large declines in stock prices increased? The results in Table 4 show that the absolute volatility of stock returns have shown little evidence of increasing during periods of increased portfolio flows, the exception being

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<sup>1/</sup> The increase in volatility spillover in Mexico, when portfolio flows became volatile, is statistically significant at the 1 percent level (see Table 3). The subsequent drop in spillover, when portfolio flows became less volatile, is also highly significant. In Thailand, there is a significant drop in volatility spillover when portfolio flows became less volatile.

Table 4. Daily Market Index Return Volatility and Extreme Price Movement Analysis, 1988-94

	Absolute Volatility <u>1/</u>	Relative Volatility <u>2/</u>	Probability of Extreme Price Decline <u>3/</u> ( <u>In percent</u> )
<b>Hong Kong</b>			
Low inflow period (Jan. 1988 - Aug. 1991)	1.61	1.52	2.06
High inflow period (Sept. 1991 - Oct. 1993)	1.31	1.98	1.74
Volatile flow period (Nov. 1993 - July 1994)	2.33	3.68	9.94
<b>Korea</b>			
Low inflow period (Jan. 1988 - Dec. 1991)	1.51	1.42	3.22
High inflow period (Jan. 1992 - June 1993)	1.18	2.55	3.40
Volatile flow period (July 1993 - July 1994)	1.14	2.31	2.01
<b>Thailand</b>			
Volatile flow period (Jan. 1988 - Apr. 1991)	1.19	1.74	5.51
Moderate inflow period (May 1991 - Oct. 1992)	1.69	2.14	3.97
High flow volatility period (Nov. 1992 - July 1994)	1.17	2.66	3.75
<b>Mexico</b>			
Low inflow period (Jan. 1988 - Apr. 1990)	1.99	1.88	5.11
Volatile flow period (May 1990 - Jan. 1993)	1.57	1.76	4.59
More steady inflow period (Feb. 1993 - July 1994)	1.61	2.57	3.72

Source: IMF staff calculations from The WEFA Group data.

Note: The separation of the overall sample into different subsample periods with different portfolio flow characteristics is performed by inspecting the monthly portfolio flow data from the United States to these emerging markets and the data on the changes in monthly flows. The separation is also jointly determined by the use of common structural-break test statistics including the CUSUM test statistics and the CUSUMSQ test statistics. The return data are the continuously compounded daily return from the Hang Seng Index for Hong Kong, the Korea Composite Index for Korea, the Bangkok SET Index for Thailand, and the Morgan Stanley Capital International Index for Mexico.

1/ Standard deviation of the daily return.

2/ Standard deviation relative to standard deviation of the daily return of the Dow Jones Industrial Average.

3/ Probability of a larger than 3 percent daily drop.

Hong Kong in the period when portfolio flows were very volatile. 1/ In Mexico and Korea, absolute price volatility has actually declined. 2/ The estimated declines in both absolute volatility and the probability of sharp price declines in Mexico and Korea does not support the view that increased portfolio flows will necessarily cause excessive speculative trading and price fluctuations. The decline in volatility might be due, in part, to an increase in liquidity associated with the inflow of capital.

The relatively minor change in price volatility in the emerging markets generally reflects a similar pattern in the more developed equity markets throughout the world. For example, volatility in stock market returns in the United States declined during the period 1988-94. Despite this similarity, however, in all of the APEC emerging markets studied there is strong evidence that stock-returns volatility has increased in these markets relative to stock-returns volatility in the United States, especially in the period when portfolio flows were very volatile. The most extreme case is Hong Kong, where the ratio of the standard deviation of stock returns in the volatile-portfolio-flow period is more than twice that for the low-portfolio-flow period. This increase in relative volatility in the emerging markets is consistent with the view that volatile portfolio flows can magnify the sensitivity of stock returns in emerging stock markets to fluctuations in stock returns in the larger developed equity markets, such as in the United States.

With regard to the probability of sharp stock price declines, the most striking example is Hong Kong, where the probability of a price decline larger than 3 percent is about 10 percent in the volatile-flow-period and about 2 percent in the low-flow period. In other markets, however, the probability of a sharp price decline is not higher during periods with volatile flows. In the case of Korea, the probability of a decline larger than 3 percent turns out to be lower in the volatile-flow period than in the other periods. For Thailand, the volatile-flow period has the highest probability of an extreme price drop. In Mexico, the probability of a sharp decline in the volatile-flow period is lower than in the low-flow period but higher than in the more-steady-flow period. It is such sudden and sharp changes in prices and, the risk of a sudden loss of liquidity--as is discussed below--that can significantly increase systemic risk.

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1/ The increased volatility in Hong Kong might have been related to sudden reversals of investor sentiment about the prospects for investment in China.

2/ This is also true for Chile, another country that has been experiencing a surge in capital flows and a stock market boom; see Carmen M. Reinhart and Vincent Reinhart, "The Role of Capital Markets in Emerging Markets," mimeograph, 1994.

c. Risk of a sudden loss of market liquidity <sup>1/</sup>

The rapid increase in foreign demand for emerging market equities combined with their relatively limited supply has fueled sharp increases in equity prices (Chart 1). The rise in stock prices was particularly pronounced during 1993 before easing somewhat in early 1994, as short-term interest rates in the United States moved upward. The surge in prices, in turn, has contributed to a marked rise in market capitalization and an equally dramatic increase in price-earnings ratios (Table 5). For Mexico, the price-earnings ratio increased almost sixfold from 1988 to 1993, while the price earnings ratios in Hong Kong and Korea doubled from 1989 to 1993. <sup>2/</sup> This sharp run-up in prices and price-earnings ratios has fueled concerns about the impact of a reversal in the pattern of capital flows.

A sudden withdrawal of funds by foreign investors can produce big variations in market liquidity, which in turn can lead to higher market volatility. This liquidity effect can be large, especially since, unlike the New York Stock Exchange in the United States, many APEC stock exchanges are operating on an auction/order-driven trading system without specialists or without securities dealers who will use their inventory to provide liquidity and smooth price fluctuations. The possibility of a sudden drop in market liquidity when it is most needed can imply that the benefits of

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<sup>1/</sup> The experience of several Latin American countries during the late 1970s and early 1980s provides some basis for those concerns. In several countries, including Chile and Mexico, the surge in inflows was accompanied by booming equity and real estate prices; the abrupt reversal of those flows in the early 1980s eroded the earlier price gains and, in most instances, left stock prices well below their pre-boom levels; see Guillermo A. Calvo, Leonardo Leiderman, and Carmen M. Reinhart, "Capital Inflows to Latin America: The 1970s and the 1990s," IMF Working Paper No. WP/92/85 (Washington: International Monetary Fund, October 1992); also published in Development, Trade and the Environment, ed. by Edmar Bacha (London: Macmillan Press, forthcoming). The impact of this reversal on financial markets and on the banking sector was substantial and is shown to have played a key role in spawning the banking crises that followed; see Liliana Rojas-Suarez and Steven R. Weisbrod, "Financial Market Fragilities in Latin America: From Banking Crisis Resolution to Current Policy Challenges" (mimeographed, Washington: International Monetary Fund, August 1994). Similar, if less acute, adverse effects on the banking sector, are also evident in industrial countries; see Garry J. Schinasi and Monica Hargraves, "'Boom and Bust' in Asset Markets in the 1980s: Causes and Consequences," in Staff Studies for the World Economic Outlook, World Economic and Financial Surveys (Washington: International Monetary Fund, December 1993), pp. 1-27.

<sup>2/</sup> See Robert A. Feldman and Manmohan S. Kumar, "Emerging Equity Markets: Growth, Benefits, and Policy Concerns," IMF Paper on Policy Analysis and Assessment No. PPAA/94/7 (Washington: International Monetary Fund, March 1994).

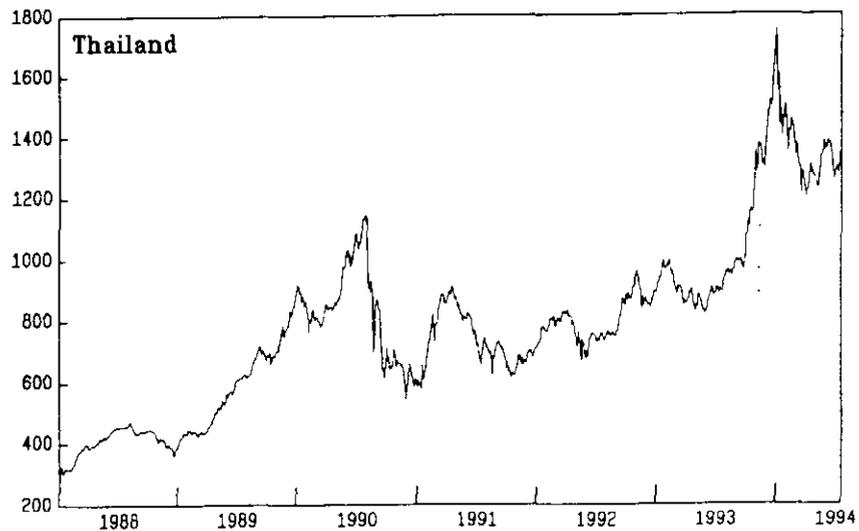
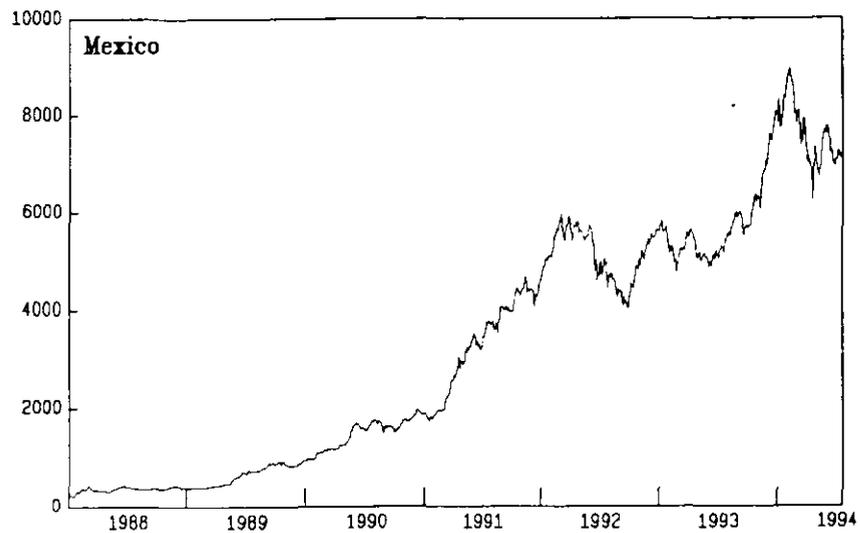
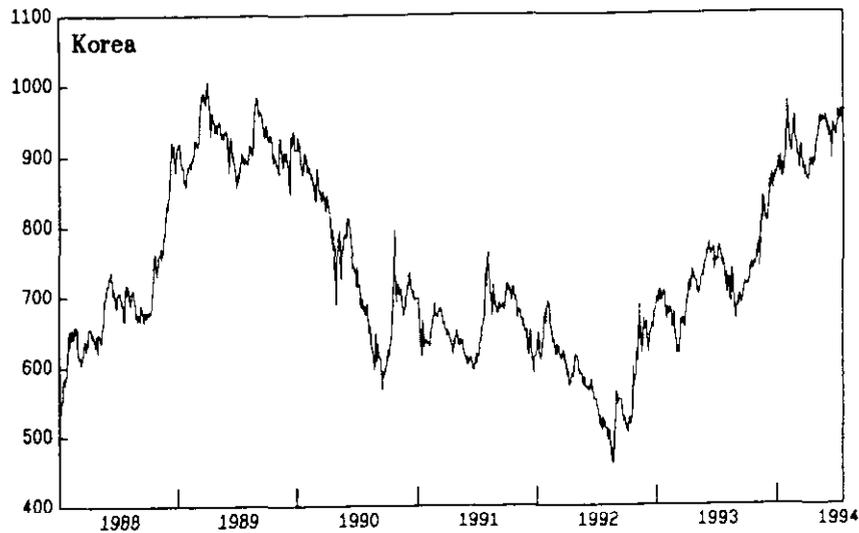
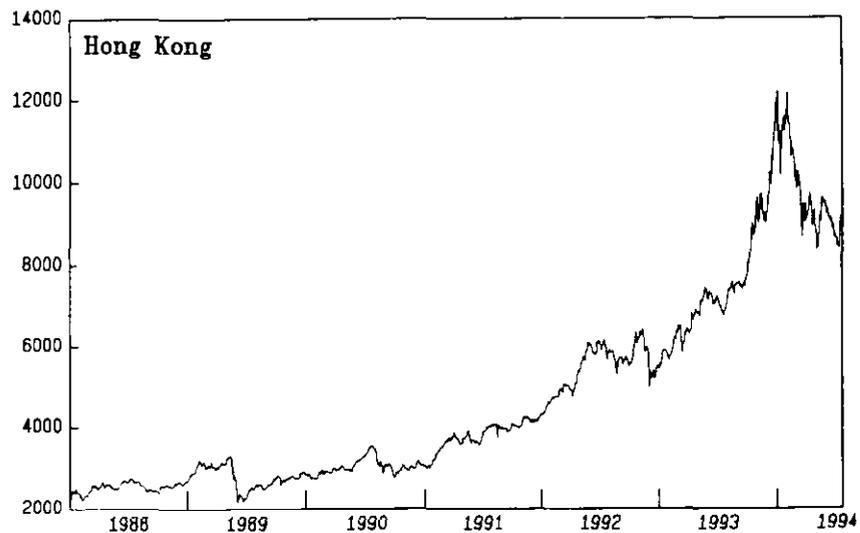
Table 5. Selected Stock Markets: Recent Developments, 1988-93

(In billions of U.S. dollars; end-of-period levels)

	1988	1989	1990	1991	1992	1993
<b>Hong Kong</b>						
Market capitalization	...	76.9	82.5	121.7	171.1	376.8
Price-earnings ratio	...	11.2	10.0	13.1	14.2	22.6
Number of listed companies	...	294.0	299.0	357.0	413.0	478.0
<b>Korea</b>						
Market capitalization	94.2	140.9	110.6	96.4	107.4	139.4
Price-earnings ratio	13.9	14.4	12.6	10.7	11.6	17.7
Number of listed companies	502.0	626.0	669.0	686.0	688.0	693.0
<b>Thailand</b>						
Market capitalization	8.8	25.6	23.9	35.8	58.3	130.5
Price-earnings ratio	12.0	26.4	13.8	15.6	16.3	26.1
Number of listed companies	141.0	175.0	214.0	276.0	305.0	347.0
<b>Mexico</b>						
Market capitalization	13.8	22.6	32.7	98.2	139.1	200.7
Price-earnings ratio	3.4	8.9	11.9	14.5	13.5	18.8
Number of listed companies	203.0	203.0	199.0	209.0	195.0	190.0

Sources: Asiamoney, Asian Equity Guide (March 1994); and International Finance Corporation, Emerging Markets Data Base.

Chart 1. Stock Market Trends, January 1988 - July 1994<sup>1</sup>



Source: The WEFA Group.

<sup>1</sup>Local stock market indices are shown. The indices are: Hang Seng Index for Hong Kong; Korea Composite Index for Korea; Bangkok SET Index for Thailand; and Morgan Stanley Capital International Index for Mexico.



the increase in portfolio flows in the form of a declining liquidity premium might not be fully realized.

d. Impacts on market efficiency

On the positive side, capital inflows may have resulted in an increase in information efficiency in some recipient markets. Information efficiency allows capital markets to perform their allocative function by discovering prices of securities that reflect all available information. Mispricing may cause a misallocation of resources to relatively unproductive enterprises and industries, which ultimately will raise the cost of capital for efficient enterprises. The presence of international investors, who often are equipped with better valuation techniques and more advanced computer and information processing technology, can speed up the adjustment of prices to changes in fundamental economic factors.

Market efficiency can be tested by examining the ability of local stock returns to predict future returns and by examining to what extent stock returns in industrial country markets (the U.S. equity market, for example) affect future equity returns in emerging markets (Table 6). The rationale for using predictability as a measure of inefficiency is that sluggishness in the adjustment of stock prices to new information can affect the ability of past stock returns to predict future returns; likewise changes in the speed of price adjustment can lead to changes in predictability. Greater predictability implies less efficiency. Predictability is examined both before and after the surges in portfolio flows and during both high-flow-volatility and low-flow-volatility episodes.

As Table 6 shows, predictability using past local market returns (Column 1) is lower for Hong Kong and Mexico in the steady-high-flow period than in the previous low-inflow period, which suggests greater efficiency. Predictability of Korean stock returns is essentially unchanged, however, following an inflow of foreign capital, and for Thailand, predictability by past local market returns is in fact higher in the relatively more steady-inflow period.

The tests of the predictability of emerging stock market returns using past returns from the U.S. stock market (Column 2) reveal that predictability is greater when portfolio flows are larger, especially when such flows are volatile. Using both past local market returns and the returns from the U.S. stock market (Column 3), predictability seems to be higher when flows have been volatile, suggesting that for all countries examined except Thailand, there was some loss of efficiency.

2. The role of the financial infrastructure

Although differences across markets may reflect differences in market fundamentals, it is unclear how portfolio investment by foreign investors alone could have produced major changes in the volatility of market fundamentals and in the cross-country relationships between market

Table 6. Market Efficiency Tests, 1988-94

(In percent)

	Predictability of Local Stock Market Return		
	Using past local returns	Using past Dow Jones Industrial Average (DJIA) returns	Using past local and DJIA returns
<b>Hong Kong</b>			
Low inflow period (Jan. 1988 - Aug. 1991)	6.5	6.4	13.2
High inflow period (Sept. 1991 - Oct. 1993)	4.3	4.1	8.0
Volatile flow period (Nov. 1993 - July 1994)	7.9	16.8	22.1
<b>Korea</b>			
Low inflow period (Jan. 1988 - Dec. 1991)	3.5	1.8	5.1
High inflow period (Jan. 1992 - June 1993)	3.9	3.1	7.1
Volatile flow period (July 1993 - July 1994)	5.3	3.0	8.0
<b>Thailand</b>			
Volatile flow period (Jan. 1988 - Apr. 1991)	3.6	14.2	15.7
Moderate inflow period (May 1991 - Oct. 1992)	7.4	4.5	12.2
High flow volatility period (Nov. 1992 - July 1994)	5.5	4.8	9.9
<b>Mexico</b>			
Low inflow period (Jan. 1988 - Apr. 1990)	8.7	2.3	12.2
Volatile flow period (May 1990 - Jan. 1993)	6.2	17.2	20.7
More steady inflow period (Feb. 1993 - July 1994)	4.4	10.2	14.0

Source: IMF staff calculations from The WEFA Group data.

Note: Predictability is measured by the regression R-squared from regressing daily local market return on returns from the past ten days. It represents the percentage of the variation in the daily local market return explained by returns from the past ten days. The separation of the overall sample into different subsample periods with different portfolio flow characteristics is performed by inspecting the monthly portfolio flow data from the United States to these emerging markets and the data on the changes in monthly flows. The separation is also jointly determined by the use of common structural-break test statistics including the CUSUM test statistics and the CUSUMSQ test statistics. The return data are the continuously compounded daily return from the Hang Seng Index for Hong Kong, the Korea Composite Index for Korea, the Bangkok SET Index for Thailand, and the Morgan Stanley Capital International Index for Mexico.

fundamentals. It is more likely that cross-country differences reflect fundamental differences in the underlying structure of equity markets in individual countries, and in particular differences in the underlying financial infrastructures.

The underlying structural characteristics of these emerging equity markets that are most likely to affect the relationships between portfolio capital flows and the determination of equity prices are: (a) accounting and disclosure requirements; (b) the capacity of the trading systems; (c) the availability of derivative products, margin trading, and short selling; and (d) the clearance and settlement system in the equity markets.

a. Accounting and disclosure requirements

One fundamental reason for high price volatility in many APEC developing countries is a lack of information. When information is uncertain and disclosure is inadequate, unsubstantiated rumors cause volatility. Differences in the availability and quality of information and the speed of information dissemination can affect the impact of sudden changes in portfolio flows on both price and volume volatility, especially in relatively small and illiquid equity markets.

For example, the improvement in disclosure requirements in Thailand following the enactment of the Securities and Exchange Act in 1992 might explain the decrease in volatility spillover from the U.S. stock market, as well as the decline in the likelihood of extreme price movements as the portfolio flows increased. The adoption of the Automated System Stock Exchange of Thailand (ASSET), which in addition to order matching also calculates market statistics and supports market surveillance and regulatory functions, would also have facilitated the dissemination of information to the public. This, in turn, contributed to an increase in the informational efficiency of the market. By contrast, although the disclosure of insider information in the Korean stock market seems adequate, the reporting of accounting information has only recently become more useful with the requirement that consolidated financial statements be provided. This relative lack of information, interacting with a sudden surge in portfolio flows may well have increased the impact of foreign shocks on the Korean market and accelerated the spillover effects of equity market turbulence in the industrial country equity markets during periods of rapid changes in portfolio capital flows.

These observations suggest that in order to reduce the potential for instability and to improve the allocative performance of the market, an improvement in the availability of information and in the quality of information is helpful. For example, securities commissions might issue more detailed guidelines concerning the material that should be included in

financial statements and require the adoption of internationally accepted methods of accounting. 1/

In addition, rules for reporting insider trades and for the conditions under which insiders cannot trade are useful in maintaining investor confidence in the fairness of the market and in reducing the impact of rumors on insider trades on market volatility. These rules may be more important in developing countries than in industrial countries, because the concentration of stock ownership and the interconnections among major business families is probably closer than in larger, more developed markets. Disclosure of interests on the part of directors and large shareholders to the public can also reduce the possibility of market manipulation and the greater volatility that it may entail.

b. Market size and system capacity

The effect that portfolio flows can have on an emerging stock market depends importantly on the size of the flow relative to the size of the market, and the capacity of the market to quickly process and absorb the number of foreign orders and transactions. The magnitude of flows into individual stock markets relative to their size may also help explain why individual markets have been affected differently by the recent surge in flows.

Table 7 presents recent monthly figures for net equity inflows from the United States to those APEC markets studied. In October 1993, the net capital inflow from the United States to the Hong Kong stock market was \$1.3 billion, which was more than 10 percent of the average monthly trading volume in the market. In December 1993, the net portfolio inflow from the United States to the Mexican stock market was \$1.7 billion, about one third the average monthly trading volume in the Mexican Bolsa. The amount of portfolio flows relative to trading volume is also quite high for other months. It is important to note that because the portfolio flow figures are net figures (the difference between aggregate buys and sells), the actual trading due to U.S. investors in these markets can be more than twice the amount of portfolio flows. As such, trading by U.S. investors in the Hong Kong and Mexican stock markets has contributed significantly to the total volume of trading.

In comparison, portfolio flows were small relative to trading volume in the Korean and Thai stock markets. These differences in the relative magnitudes of portfolio flows might explain the observations that both Mexico and Hong Kong have experienced the greatest volatility spillover effects from the U.S. stock market in the periods in which portfolio flows were volatile. The differences in the size of portfolio flows might also

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1/ See Ray Harris, "Financial Disclosure and Accounting Standards," mimeograph prepared for the Asia-Pacific Forum on Securities Market Regulation and Supervision held at Manila, Philippines (July 12, 1994).

Table 7. Portfolio Flow versus Trading Volume, 1993-94

(In millions of U.S. dollars)

	Monthly Portfolio Flow from the United States					Average Monthly Trading Volume in 1993
	Oct. 1993	Nov. 1993	Dec. 1993	Jan. 1994	Feb. 1994	
Hong Kong	1,336	464	674	-708	-217	12,500
Korea	195	146	58	225	102	17,642
Thailand	21	82	37	-64	-7	6,684
Mexico	662	966	1,736	452	280	5,295

Sources: The monthly portfolio flow data are from the United States, Department of Treasury. Average monthly trading volume for Korea, Thailand, and Mexico are based on IMF staff calculations using data published in International Finance Corporation, Quarterly Review of Emerging Markets: Fourth Quarter 1993. Average monthly trading volume for Hong Kong is based on IMF staff calculation using data published in Asiamoney, Asian Equity Guide (March 1994).

explain why the increase in local market volatility relative to that of the United States is also the strongest for Hong Kong and Mexico when flows became volatile.

c. Existence of derivative trading, margin trading and short-selling

Some of the APEC developing countries have established derivatives markets recently. In Hong Kong, futures written on the Hang Seng index of 33 blue chip stocks--the Hang Seng index futures--has been available for trading since May 1986, and the Hang Seng index options were introduced in March 1993. The introduction of individual stock options is planned for 1995. Trading in the Hang Seng index futures is very active. In the first three quarters of 1993, the turnover in the futures market was 1.3 times that of the spot market. Trading in the recently introduced index options is less active, with monthly trading volume reaching only 13 percent of trading in the index futures. It is often argued that derivative products, due to their highly leveraged nature, can also facilitate speculation, which can lead to higher stock market volatility and more extreme price movements. Hence, the availability of derivative instruments and program trading in Hong Kong may also explain why the Hong Kong stock market has experienced the greatest increase in both absolute and relative volatility and a relatively high increase in volatility spillover effects when portfolio flows became very volatile.

A related issue is whether the market allows for margin trading and short-selling, which are other means of obtaining greater leverage. Hong Kong also allows margin trading, and the Securities and Futures Commission in Hong Kong does not impose direct restrictions on initial and variation margin levels. <sup>1/</sup> In contrast, both Korea and Thailand have extensive margin regulations. In Korea, securities are classified into a margin group (for which margin trading is available) and a nonmargin group, and margin levels are determined by the SEC. The initial margin requirement is about 40 percent. Short selling is also allowed in Korea, but there is a restriction that an investor can only short sell up to 50 percent of the investor's equity. In order to check excessive margin trading and short selling, the SEC of Korea also imposes limits on aggregate margin and short-selling positions. Specifically, total margin buying positions for a stock may not exceed 20 percent of the total number of shares outstanding.

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<sup>1/</sup> The only relevant (but minor) constraint in Hong Kong is the financial resources rule in the Securities Ordinances in which a broker's secured receivables are only allowed to be counted as liquid assets to the extent of the market value of the securities held as collateral. Generally, brokers operating in Hong Kong impose their own restrictions. The common initial margin level is 50 percent of the value of the collateral. Hong Kong also allows short selling, but this just began in January 1994. Short selling is allowed only for some of the component stocks of the Hang Seng index; and for borrowing of more than 14 days, a 15 basis point stamp duty is levied on both the borrower and the lender on top of the transaction stamp duty.

Furthermore, total short selling is not allowed to exceed 10 percent of the total number of shares outstanding. In Thailand, margin trading is allowed and maintenance and variation margin levels are set by the SEC of Thailand. However, one major difference between margin trading in Thailand and many other countries is that margin payments are required to be made in cash-- even highly liquid near-cash securities are not accepted.

In sum, the lack of margin regulation in Hong Kong relative to other countries might have facilitated the use of margin trading, which can potentially exacerbate market overreaction. This might also explain, in part, why the Hong Kong stock market was the market with the greatest increase in market volatility when portfolio flows became very volatile.

d. Clearance and settlement

The proper design and implementation of clearing and settlement systems for stock transactions is essential for maintaining the ability of the emerging stock markets to absorb and to allocate financial resources to their most productive uses, especially in the presence of large price fluctuations caused by rapid inflows and outflows of large amounts of foreign portfolio capital. The importance of having a properly designed exchange and clearing system with good risk management can be demonstrated by the experience of the Hong Kong futures market around the 1987 stock market crash.

In 1987, three organizations were involved with the risk management of the Hong Kong futures markets, but there were various problems with the prevailing arrangement. First, the clearing house was not involved in daily market monitoring and surveillance. Second, the guarantor could not set exchange membership standards including capital requirements. Third, the guarantor could not supervise the clearing members. Fourth, members of the HKFE could not participate in the management of the clearing house guarantor. By 1987, the trading volume of the Hang Seng index futures had increased so much since its introduction in May 1986 that it exceeded the capacity of the system. These weaknesses almost lead to a collapse of the market in October 1987 when a big drop of the Hang Seng index caused many futures brokers to default. Trading was suspended for four days, and the Hong Kong Government, with the help of leading banks and brokerage firms, put together two HK\$2 billion bailout packages to help the organizations to meet their obligations. It was argued that in the absence of these packages the Hong Kong market would have collapsed.

This weak risk management structure was replaced in May 1989 by a new clearing house, the Hong Kong Futures Exchange Clearing Corporation (HKCC), which provides both clearing and guarantee functions. Under the new structure, HKFE membership is a prerequisite for HKCC membership. Furthermore, a HK\$220 million reserve fund was established, daily marking to market was adopted, and the HKCC was given power to set margin requirements, to make margin calls and to impose position limits. This new risk management system held up very well during the market turbulence in June

1989 and more recently in the early part of 1994, highlighting the importance of establishing adequate clearing arrangements.

The harmonization of settlement periods across markets is also important. Differences in the length of the settlement period across markets can impose additional settlement risk for international investors and can significantly affect the behavior of international investors, and hence the behavior of market prices, in the event of major market turbulence abroad. Furthermore, due to differences in time zones, funding, and foreign exchange, a unilateral cut in settlement period in one country can also create settlement problems for international investors. In June 1994, the board of the International Securities Market Association (ISMA) unanimously decided that the settlement of international securities should be harmonized and moved to a T+3 basis by June 1, 1995. Several APEC countries, such as Indonesia, Malaysia, and the Philippines currently have longer settlement periods.

#### IV. Conclusions

International capital markets have changed significantly in recent years, and these changes pose important challenges for the APEC developing countries. First, domestic banking systems must be sufficiently well regulated and supervised to prevent a decline in credit quality in the presence of capital inflows. Second, domestic equity markets must be capable of coping with increases in market volatility and with possible spillover effects from turbulence in industrial country markets, and there must also be a sufficient level of integrity and transparency in these markets to retain the confidence of international investors even during periods of heightened uncertainties.

##### 1. Improvements to the banking systems

In order to benefit fully from surges in capital inflows, APEC developing countries need to place greater emphasis on encouraging sound banking practices and on providing adequate supervision and regulation. In addition to medium-term measures to improve supervisory and regulatory frameworks, actions can be taken now in several areas:

- The quality of bank supervision and regulation can be improved by credibly enforcing existing statutory limits that restrict commercial banks from engaging in activities that can be seen to have contributed to past crises, including large exposures to individual borrowers, related parties, or certain types of exchange rate and interest rate risk. Although beyond the scope of this paper, an evaluation of supervisory and regulatory enforcement, by the authorities in individual countries, would be helpful.

- Significant improvements in financial accounting and disclosure requirements would allow banks to assess and price credit risk more accurately. Moreover, banking system stability would be improved if

regulatory agencies, including central banks, had access to detailed information, on a consistent basis, about bank management, internal controls, and asset quality.

- Commercial bank loans extended to meet government-mandated quantitative targets often are risky and mispriced, and have weakened bank balance sheets and financial systems in several APEC developing countries; economic policy objectives are best implemented directly and transparently, rather than through commercial banks.

## 2. Improving the domestic equity markets

Surges in portfolio flows have made it more likely that turbulence in developed capital markets will spillover into the APEC emerging markets, and volatility in the APEC markets studied has increased relative to that of the United States. The paper has identified several potential weaknesses in the financial infrastructures that might have contributed to this increased volatility. Some measures that can be taken to strengthen financial infrastructure include:

- Improve the quality and availability of information by adopting international accounting standards, including more timely, audited, and consolidated financial statements; disclosing transactions by large shareholders and insiders; collecting and disseminating price and transaction information, and information on takeover and acquisition activities; and coordinating disclosure rules across countries.

- Adapt trading systems to the increased volume and size of transactions to accommodate the increase in capital flows; and establish mechanisms to reduce discrete price movements and variations in market liquidity, such as market makers.

- Enhance risk management in clearance and settlement systems by: improving market surveillance; adopting daily marking-to-market, imposing position limits, and setting proper margin requirements; strengthening capital adequacy standards for exchange and clearinghouse members; and harmonizing settlement periods to reduce the amount of risk in individual clearing systems.

- Limit activity in derivative markets until a well functioning infrastructure is established in primary markets. Without proper supervision and regulation, derivatives trading can increase systemic risk.

## 3. Remaining risks

These improvements are helpful in reducing a country's vulnerability to the risks created by increased capital flows. However, even after adequate supervisory and regulatory frameworks are in place, appropriate policy actions may still be called for to address some other risks. First, capital inflows, which amounted to about 5 percent of GDP for all APEC countries in

1993, can be difficult to absorb without macroeconomic adjustments. Second, recent experience indicates that abrupt changes in capital flows can occur, leaving both private agents and policymakers little time to adjust. Third, even if banks are adequately regulated and supervised, nonbank financial institutions may remain vulnerable. Fourth, market concentration may be an important source of volatility, and remains high in most APEC developing countries, with the ten largest stocks accounting for between 28-68 percent of market value in 1993; this share is 14 percent for the United States. Even in the presence of these risks, however, the APEC developing countries can, with the proper mix of macroeconomic, financial, and structural policies, benefit from these capital inflows. 1/

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1/ See Mohsin S. Khan and Carmen M. Reinhart, "Macroeconomic Management in Maturing Economies: The Response to Capital Inflows," prepared for the APEC Finance Ministers Meeting in Hawaii on March 18-19, 1994.

Indonesia: Elements of Commercial Bank Regulation

Ownership regulations

- a corporation may own shares in a bank up to its own net worth
- foreign ownership of the traded shares of a domestic commercial bank may not exceed 49 percent
- foreign banks may have a maximum equity participation of up to 85 percent of paid-up capital

Capital requirements

- newly established private banks must have at least Rp 50 billion in capital
- newly established joint venture banks must have at least Rp 100 billion in capital
- banks must meet a minimum capital requirement of 8 percent of risk-weighted assets by Dec. 1993

Lending restrictions

- commercial banks must allocate 20 percent of their credits to small businesses
- foreign banks may choose to allocate 20 percent of their credit to export-related activities
- banks must keep a loans/deposit ratio below 110 percent

Exposure limits

- single-counterparty exposure limits apply to individuals and groups of related borrowers: 1/

New loans:	20 percent of bank capital		
Old loans:	<u>individuals</u>	<u>groups</u>	
	20 percent	50 percent	as of May 1993
	20 percent	35 percent	by end-December 1995
	20 percent	20 percent	by end-March 1997

- legal lending limits:

- parties related to the bank 2/: 10 percent of bank capital as of March 1997
- directors, commissioners, their family members, employees, and companies they own in which the ownership of the companies is 25 percent or more of the paid-up capital, whether individually or jointly: 10 percent of the bank capital
- shareholders or their family members or companies they own: up to 20 percent of bank capital if the shareholder's stake in the bank is less than 10 percent; up to 10 percent if the shareholder's stake in the bank is 10 percent or more
- companies owned by the bank: up to 10 percent of the bank's equity participation if the bank owns 25 percent or more of the company's equity; up to 20 percent of bank capital if the bank owns less than 25 percent of the company's equity

- equity investments:

- banks may hold equity in banks or other financial institutions, such as leasing, venture capital, securities firms, insurance companies, and so on.
- banks may conduct temporary equity participation to settle the problems of bad debt on the condition that in due time the equity participation shall be withdrawn

- foreign assets/liabilities:

- state-owned banks face a ceiling on their foreign liabilities; private banks must also report their foreign liabilities, but face no limits

Reserve requirements

- banks must hold reserves of at least 2 percent of deposits; the reserves may be held in the form of cash on hand or a demand deposit with Bank Indonesia

Accounting for asset quality

- loan classification:

- current: credit with installments other than house ownership credit
  - no arrears in principal over 1 month, 3 months, and 6 months for credit with installment periods less than 1 month, monthly/bimonthly/quarterly, and 4 months or more respectively
  - no arrears in interest over 1 month or 3 months for credit with installment periods less than 1 month and 1 month or more respectively
- credit with installments for house ownership
  - no arrears in principal over 6 months
- substandard: credit with installments other than house ownership credit
  - there are principal arrears between 1 month and 2 months, 3 and 6 months, and 6 and 12 months for credit with installment periods less than 1 month, monthly/bimonthly/quarterly, and 4 months or more respectively

Indonesia (concluded): Elements of Commercial Bank Regulation

- there are interest arrears between 1 month and 3 months or between 3 and 6 months for credit with installment periods less than one month and 1 month or more respectively  
credit with installments for house ownership
  - there are arrears in amortization more than 6 months but not more than 9 months
- doubtful: meets neither then criteria of current nor of substandard, but collectible and the collateral value exceeds 75 percent of the debt or uncollectible but the collateral value exceeds 100 percent of the debt
- loss: does not meet the criteria for current, substandard, or doubtful; or meets the criteria for doubtful, but there has been no repayment or remedial actions within 21 months of being classified as doubtful
- specific reserves required:
    - current: 0.5 percent
    - substandard: 3 percent after deducting collateral (10 percent after December 1996)
    - doubtful: 50 percent after deducting collateral
    - loss: 100 percent after deducting collateral

Deposit insurance  
- none

Sources: Answers to Essential Questions of International Banking and Securities Laws: Vol. I, Asia (Euromoney Publications: London, 1992); Bank Indonesia, "Act of the Republic of Indonesia No. 7 of 1992 Concerning Banking with Regulations for Implementation"; Bank Indonesia, "Series of Improved Banking Regulations, May 29, 1993"; Bank Indonesia, "The Nature and Types of Foreign Commercial Borrowing Coordination, November 19, 1992"; Bank Indonesia, Annual Report, various issues; and Anwar Nasution, "Financial Sector Policies in Indonesia, 1980-1993" (mimeographed, University of Indonesia, October 1993).

1/ Two borrowers are considered members of a group if: (i) one company owns 35 percent or more of the equity of the other; or (ii) a third party owns 35 percent or more of both companies; or (iii) they have officers (e.g., directors) in common; or (iv) one provides financial assistance to, or guarantees the obligations of, another.

2/ Parties related to a bank are: shareholders who own 10 percent or more of the bank's paid-up capital; bank commissioners, directors, their family members, officers, and companies of which any of these own 25 percent or more.

Korea: Elements of Commercial Bank Regulation

Ownership regulations

- no individual may own more than 8 percent of the voting stock of a nationwide commercial bank (15 percent for local banks)

Capital requirements

- nationwide commercial banks must have minimum capital of W 25 billion; local banks must have capital of at least W 3 billion
- equity capital must equal or exceed 5 percent of outstanding liabilities from credit obligations or guarantees
- equity capital should exceed 7.25 percent of risk-weighted assets (8 percent by 1996)

Lending restrictions

- the volume of a bank's loans may not exceed its deposits
- nationwide commercial banks must allocate 45 percent of new loans to small- and medium-sized enterprises
- foreign banks must allocate 45 percent of new loans to small- and medium-sized enterprises
- banks make "policy" loans on the direction of the government, financed by the National Investment Fund
- foreign currency loans may only be extended for the purposes of importing capital equipment, airplanes, used vessels and high technologies, and for financing foreign direct investment abroad

Exposure limits

- single-borrower limit: banks may not grant loans to a single counterparty in excess of 20 percent of its equity capital without approval from the Superintendent of Banks; banks may not lend to, guarantee, or assume the obligations of a single counterparty in excess of 40 percent of bank capital
- each bank faces ceilings on its outstanding loans to the nation's five largest and 30 largest conglomerates
- other lending limits:
  - banks may not lend to any of their officers or employees other than to make petty loans
  - banks may not grant loans for purposes of commodities or securities speculation
  - banks may not grant loans to allow a customer to buy the bank's stock, or grant loans on pledge of its own stock, or on stocks in excess of 20 percent of the equity of any other corporation
  - banks may not grant loans to their subsidiaries in an aggregate amount exceeding 20 percent of capital
- foreign exchange exposure limits apply to foreign exchange banks:
  - the combined short- and long-positions may not exceed 10 percent of equity capital
  - the short-spot-position may not exceed 1 percent of equity capital or \$2 million, whichever is higher
  - documents proving underlying real demand for foreign exchange/won forward contracts with notional principal above the equivalent of \$3 million and for periods longer than 2 working days must be provided within 45 working days of the initiation of the contract
  - documents proving underlying real demand for foreign exchange/won futures contracts with notional principal above the equivalent of \$10 million must be provided within 45 working days of the initiation of the contract
- investment restrictions
  - banks may not purchase or retain shares in any other bank
  - banks may not purchase or retain shares in excess of 10 percent of the shares of any other corporation
  - acceptance of shares and investments in bonds with maturities greater than three years shall not exceed 100 percent of the bank's equity capital
  - banks may not possess real property other than that which is necessary for their operations; the value of such property may not exceed the bank's equity capital

Reserve requirements

- banks must hold reserves equal to 11.5 percent of won-denominated demand, time and savings deposits, and residents' foreign currency deposits; and 1 percent of non-residents' foreign currency deposits
- banks must maintain a minimum ratio of liquid assets to deposits of 30 percent

Accounting for asset quality

- loan classification:
  - normal: no delays in debt service longer than three months
  - precautionary: payments arrears of 3 to 6 months
  - substandard: that part of loans in arrears for 6 months or more that is adequately covered by collateral

Korea (concluded): Elements of Commercial Bank Regulation

- doubtful:           that part of loans in arrears for 6 months or more that is not covered  
                          by collateral but not yet loss
- loss:               doubtful loans for which collection is not expected
- general and specific reserves required:
- banks must allocate 10 percent of net profits to capital reserves until the latter equal the bank's paid-up capital
  - banks must make loan-loss provisions equal to the expected loss for all loans
  - a chargeoff of a loan against loan-loss reserves must immediately be offset by an equal transfer to loan-loss reserves from net profit

Deposit insurance

- none

Sources: Answers to Essential Questions of International Banking and Securities Laws: Vol. I, Asia (London: Euromoney Publications, 1992); The IBCA Limited; Sang-Woo Nam, "Korea's Financial Markets and Policies" (mimeographed, Korea Development Institute, October 1993); and Hoon Shim, ed., Financial System in Korea (Seoul: Bank of Korea, 1990).

Malaysia: Elements of Commercial Bank Regulation

Bank ownership

- individuals may not own more than 10 percent of the shares of any financial institution
- corporations may not own more than 20 percent of the shares of any financial institution
- a corporation that is 75 percent owned by one family faces the ownership restriction applied to individuals
- the transfer of more than 5 percent of bank shares needs Ministry of Finance approval

Capital requirements

- commercial banks must have at least M\$20 million in capital
- domestic banks must satisfy an 8 percent ratio of capital to risk assets according to a modified Bank for International Settlements (BIS) capital adequacy framework

Lending restrictions

- lending to the Bumiputera community must equal or exceed 20 percent of end-1991 loans outstanding
- commercial banks must provide lending under the Principal Guarantee Scheme of at least M\$80 million, of which M\$40 million must be made available to Bumiputera borrowers
- housing loan commitments must number 75,000 units with aggregate value of M\$4,500 million, at a minimum interest rate of 1.75 percent above the Base Lending Rate, or 9 percent, whichever is lower. The Ministry of Finance provides a 1 percent interest subsidy for loans made at 9 percent.
- central bank or government-financed loans made, in part, through the banking system include: the Fund for Food Scheme, the Fund to Accelerate Construction of Low-Cost Housing; the Malaysian Shipping Finance Fund

Exposure limits

- single-borrower exposure limits are prescribed by the Bank Negara Malaysia; such limits apply to individual borrowers and their immediate family members, groups of borrowers acting in concert, and the groups of affiliated companies
- loans to directors, officers and employees and their family members, and companies in which any of these own more than 5 percent of the equity, except for the purchase of housing by family members, are prohibited
- foreign exchange
  - net external liabilities of individual commercial banks, less trade-related or investment-related inflows, are subject to a ceiling set by the Bank Negara Malaysia
- equity investments
  - banks may not acquire shares in unrelated nonbank financial institutions or in other banks
  - banks may invest in trustee shares or in shares of "blue-chip" privatized enterprises as prescribed by the Bank Negara Malaysia
  - banks may invest in non-trustee shares or interests in non-trustee shares of any corporation listed on the Kuala Lumpur Stock Exchange Main Board subject to the following limits:
    1. investments shall not exceed 5 percent of the corporation's paid-up capital or 5 percent of the banks' paid-up capital and published reserves (net working funds in the case of foreign banks)
    2. the aggregate cost of investment in non-trustee shares may not exceed 5 percent of the bank's paid-up capital and reserves (net working funds in the case of foreign banks)
    3. the aggregate cost of investment in trustee and non-trustee shares in Telekom, EON, and PROTON, may not exceed 25 percent of the bank's paid-up capital and reserves (net working funds in the case of foreign banks)
    4. investments in shares of Telekom, EON, and PROTON will be subject to conditions 1 and 2 above if these shares have not attained trustee status within 5 years of their listing
  - banks may not acquire shares other than those provided above except in settlement of debts or through debt/equity swaps and these must be disposed of within 12 months
- other
  - banks are prohibited from owning any immovable property other than that which is needed to conduct their business

Reserve requirements

- commercial banks face a statutory reserve requirement of 11.5 percent of eligible liabilities

Malaysia (concluded): Elements of Commercial Bank Regulation

Accounting for asset quality

- nonperforming loans are defined as:

1. overdrafts in excess of approved limits, or of dormant accounts, for 6 months
2. term loans and revolving loans for which principal and interest payments are in arrears for six months.
3. bankers' acceptances, trust receipts, and so on, which are not redeemed at maturity
4. rescheduled credits: if the loan was rescheduled before being classified as nonperforming then it is nonperforming if it is in arrears for a total of six months before and after rescheduling; if the loan was rescheduled after becoming nonperforming it remains classified as nonperforming until all arrears are cleared

- loan-loss reserves

- banks must set aside reserves equal to 1 percent of total loans less interest in suspense and specific provisions

Deposit insurance

- none

Sources: Answers to Essential Questions of International Banking and Securities Laws: Vol. I, Asia (London: Euromoney Publications, 1992); Bank Negara Malaysia, Annual Report, various issues; and Bloomberg Business News.

Philippines: Elements of Commercial Bank Regulation

Ownership regulations

- an individual may not own more than 20 percent of the equity of a bank
- a corporation may not own more than 30 percent of the equity of a bank
- a group of corporations that are majority owned by the same group of persons may not own more than 20 percent of the equity of a bank
- corporations that are majority owned by an individual or family may not own more than 20 percent of the equity of a bank
- foreign equity participation in a bank is limited to 30 percent of the voting stock of any one bank; foreign equity holdings may reach 40 percent of the bank's equity provided the excess over 30 percent is invested in non-voting stock  $\frac{1}{2}$
- these regulations do not apply to ownership structures in effect when they were implemented in 1989

Capital requirements

- universal commercial banks must have capital of at least ₱ 1.5 billion; regular commercial banks with foreign currency unit licenses must have capital of at least ₱ 750 million
- commercial banks are required to maintain a ratio of net worth to risk assets of 10 percent (8 percent for universal banks)

Lending restrictions

- at least 75 percent of the total deposits, net of required reserves, and cash in vault, accumulated in branches or banks in each of three regions outside the National Capital Region must be invested in that region. This condition may be considered satisfied if loans to agriculture and export industries equal to at least 60 percent of deposits
- banks must set aside 25 percent of incremental loanable funds for agriculture lending as follows: 10 percent for agrarian reform beneficiaries and 15 percent for general agricultural lending
- banks must allocate 10 percent of their loan portfolio to small enterprises with total assets below ₱ 5 million
- loans secured by real estate are limited to 70 percent of the property value; other secured loans are limited to 50 percent of the collateral value

Exposure limits

- single-counterparty exposure limit applies to individuals and groups of affiliated borrowers:
  - the total of credits and contingent liabilities (minus loans secured by deposits or government securities) may not exceed 25 percent of the bank's unimpaired surplus and capital
- lending limits:
  - loans to a director, officer, shareholder, or related interest may not exceed an amount equal to his deposits and the book value of their paid-up capital contribution; unsecured lending to such borrowers may not exceed 30 percent of their deposits and the book value of their paid-up capital
  - the aggregate of loans to directors, officers, shareholders, or related interests may not exceed 15 percent of the bank's loan portfolio, or 100 percent of its capital account net of deferred taxes and certain other adjustments
- foreign exchange exposures:
  - a bank's long foreign exchange position may not exceed 25 percent of the preceding month-end unimpaired capital; this measure is enforced on a daily basis
  - a bank's short foreign exchange position may not exceed 15 percent of the preceding month-end unimpaired capital; this measure is enforced on a daily basis

Reserve requirements

- banks must maintain reserves at the Bangko Sentral ng Pilipinas against deposits equal to 17 percent of eligible deposits; 55 percent of these reserves earn interest at an annual rate of 4 percent
- interbank loans have a 1 percent reserve requirement
- special time deposits under special financing programs of the government and IGLF and ALF loans, are exempt
- government-owned or controlled banks must allocate 50 percent of their government deposits or other government funds in liquid assets

Accounting for asset quality

- loan classification:
  - unclassified: - currently performing; no expected payment difficulties
  - loans especially mentioned: - currently performing, but where there is a potential for payment problems

Philippines (concluded): Elements of Commercial Bank Regulation

- substandard:                   - loans under litigation; secured loans past due for 6 months but in the process of collection; unsecured loans past due for 90 days
- doubtful:                     - substandard loans without at least 20 percent repayment of principal during the succeeding 12 months
- past due loans secured by collateral of declining value
- loss:                         - uncollectible or with worthless collateral
- past due loans with no interest paid in 6 months
- doubtful loans without at least 20 percent repayment of principal in the succeeding 12 months
- required loan-loss reserves:
  - unclassified:                 0 percent
  - loans especially mentioned: 0 percent
  - substandard:                 25 percent of unsecured portion
  - doubtful:                    50 percent
  - loss:                         100 percent
- banks must have reserves equal to 10 percent of the book value of temporary investments in stocks and bonds
- real estate is classified as substandard if held for less than 5 years; for real estate held more than 5 years the reserve requirement increases by 10 percent each year held so that property held 10 or more years carries a reserve requirement of 50 percent (similar rules apply to personal property acquired except that the cut-off holding period is 3 years)
- the excess of book value over market value for real estate is classified as a loss asset
- accounts receivable are substandard if 61-180 days old
- accounts receivable are doubtful if 181-360 days old
- accounts receivable are loss assets if more than 361 days old

Deposit insurance

- Philippine Deposit Insurance Corporation membership is compulsory for commercial banks
- the maximum coverage is ₱ 100,000 per depositor

Sources: Answers to Essential Questions of International Banking and Securities Laws: Vol. I, Asia (London: Euromoney Publications, 1992); Central Bank of the Philippines, Annual Report, various issues; Mario B. Lamberte and Gilberto M. Llanto, "A Study of Financial Sector Policies: the Philippine Case" (mimeographed, Philippine Institute for Development Studies, October 1993); and Sycip, Gorres, Velayo, and Company, A Study of the Commercial Banks in the Philippines: Annual Report (Manila, Philippines: The SGV Group, various issues).

1/ Upon implementation, the new law on foreign bank entry will allow three modes of entry for foreign banks: (i) the establishment of up to 10 new banks with full banking authority; (ii) ownership of up to 60 percent of a new subsidiary; and (iii) acquisition of up to 60 percent of an existing bank.

Taiwan Province of China: Elements of Commercial Bank Regulation 1/

Ownership regulations

- an individual investor may not own more than 5 percent of a bank's equity
- a group of investors may not own more than 15 percent of a bank's equity

Capital requirements

- banks must have capital of at least NT\$10 billion, of which at least 20 percent must be issued to the general public
- banks must maintain a ratio of capital to risk-weighted assets of at least 8 percent
- foreign banks must remit capital of at least NT\$150 million plus NT\$120 million per branch

Lending restrictions

- the volume of medium-term credit must not exceed the value of time deposits
- short-term credit facilities must not exceed the sum of time deposits and demand deposits
- medium banks must extend 70 percent of their loans to small- and medium-sized enterprises
- building and construction loans may not exceed 20 percent of the sum of total deposits and bank debt instruments outstanding; construction loans must be for no longer than 20 year maturities
- NT\$ deposits of foreign banks may not exceed 15 times their remitted operating capital

Exposure limits

- the Banking Law of 1989 sets limits on related-party lending
- banks may not extend credits to, or guarantee the obligations of, their directors or employees
- the central bank sets ceilings on banks' foreign liabilities
- banks may not own corporate securities or property other than that which is needed for their operations

Reserve requirements

- banks are required to hold reserve accounts with the central bank in the following proportions to deposits:

checking deposits	15-40 percent
demand deposits	10-35 percent
savings deposits	5-20 percent
time deposits	7-25 percent
- the central bank may mandate liquidity requirements

Accounting for asset quality

- loan classification:

overdue loans:	not repaid at maturity
called accounts:	interest is 6 months overdue; or interest is less than 6 months overdue, but collateral is claimed by other creditors
bad loans:	loans that are 2 years in arrears
- for state-owned banks, the ratio of bad loans may not exceed 1 percent for secured loans and 3 percent for unsecured loans
- loans of state-owned banks are considered state assets; loan officers in such banks may be personally liable for loan losses

Deposit insurance

- participation in the Central Deposit Insurance Corporation is voluntary; most private and public banks are not members; in June 1992, 39 percent of deposits were insured

Sources: Answers to Essential Questions of International Banking and Securities Laws: Vol. I, Asia (London: Euromoney Publications, 1992); Brian W. Semkow, "Financial Reform in Taiwan," Butterworths Journal of International Banking and Financial Law (June 1992), pp. 269-76; and Jia-Dong Shea, "The Financial Development and Policies in Taipei, China" (mimeographed, Nankang, Taiwan Province of China: Institute of Economics, Academia Sinica, October 1993).

1/ Information contained in this Annex may be incomplete due to the lack of official contact with the authorities. In particular, recent financial liberalization measures may have changed some of these regulations.

Thailand: Elements of Commercial Bank Regulation

Ownership regulations

- a bank must have at least 250 individual shareholders who together own no less than 50 percent of the shares issued
- an individual shareholder may own no more than 0.5 percent of a bank's shares
- an individual investor, the investor's spouse and children, and partners in a business activity may not own more than 5 percent of a bank's shares
- Thai shareholders must own at least 75 percent of a bank's shares

Capital requirements

- banks' capital should equal at least 20 percent of their contingent liabilities
- banks must maintain a ratio of capital to risk-weighted assets of at least 7.5 percent; of this, at least 5 percent must be tier 1 capital
- foreign banks must maintain a ratio of capital to risk-weighted assets of at least 6.5 percent
- required minimum capital ratios increase to 8 percent for domestic banks (of which 5.5 percent must be tier 1 capital) and 6.75 percent for foreign banks at the end of 1994
- foreign bank branches must have assets of at least B 125 million in Thailand

Lending restrictions

- banks must allocate at least 20 percent of credit to agriculture or other activities in rural areas
- once commercial banks commit themselves to 50 percent of the credit requested by priority sectors (at concessional interest rates), the central bank will provide the remaining 50 percent
- bank branches must extend credit equal to 60 percent of deposits to borrowers in that region

Exposure limits

- single-borrower limit: banks may not extend credit to any one individual borrower in excess of 25 percent of capital; banks may not offer off-balance-sheet commitments to any one customer in excess of 50 percent of capital
- banks may not extend loans or other obligations to their directors or their family members, or to businesses in which they hold a 30 percent interest
- equity investments
  - a bank may not own shares or debentures of incorporated companies totalling more than 20 percent of total capital or 10 percent of the company's equity without approval of the Bank of Thailand
  - a bank may not own shares in another bank except those acquired in settlement of debts, and these must be disposed of within 6 months
  - a bank may not accept its own shares, or those of any other bank, as security for a loan
- foreign exchange
  - a bank's net foreign asset position may not exceed 25 percent of capital
  - a bank's net foreign liabilities position may not exceed 20 percent of capital
- a bank may not own property other than that which is necessary for the conduct of its business or that acquired in the settlement of debts (which must be disposed of within 5 years)

Reserve requirements

- banks have a liquidity reserve ratio equal to 7 percent of total deposits: at least 2 percent must be held in interest-free deposits at the Bank of Thailand, no more than 2.5 percent may be held in cash, and the remainder must be held in eligible securities (government debt, Bank of Thailand bonds, and debentures and bonds of government organizations and enterprises)

Accounting for asset quality

- banks must allocate 0.5 percent of deposits, borrowings, and other funds outstanding at the end of the previous year to the Financial Institutions Development Fund; these funds may be augmented by Bank of Thailand reserves

Deposit insurance

- none

Sources: Answers to Essential Questions of International Banking and Securities Laws: Vol. I, Asia (London: Euromoney Publications, 1992); Bank of Thailand, Annual Report, various issues; Bloomberg Business News; Commercial Banking Act as amended, 1985; and "Financial Sector Policies in Thailand" (mimeographed, paper submitted to and sponsored by the Asian Development Bank, October 1993).