The background of the page is a grayscale image of financial data. It features several overlapping line graphs and bar charts. One prominent chart in the center-left has a y-axis labeled '30 year yield' and an x-axis with years '1990', '1993', and '1996'. The y-axis has numerical values like '10.00', '9.00', '8.00', and '7.00'. Another chart to the right shows a line graph with a y-axis labeled '1000' and '2000'. The overall aesthetic is that of a financial report or a data visualization dashboard.

Singapore's Dichotomized Financial System

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Summary

Singapore is one of the few economies in Asia that have experienced sustained growth for over three decades, with full employment and prolonged price stability. Its unique financial system has weathered several financial crises with relative stability, and plays a pivotal role in its continued growth. Although the financial sector was developed since the 1960s as part of the government's overall industrialization strategy, its evolution into a full-fledged financial center was not what was initially intended for it.

International banking and financing activities in Singapore are very much influenced by the external and domestic economies, local institutional arrangements, and macroeconomic stabilization priorities. To fully understand and appreciate the impact of the dichotomized financial system (in which the onshore and offshore financial activities are demarcated), one must first recognize that Singapore is a small open economy engaged in international trade. The financial markets in Singapore are small and open, and have high capital mobility. Singapore has a prudent government characterized by fiscal surpluses and forced saving.

The deliberate effort to set up a financial center can be a very costly exercise, as those that failed at the effort soon found out. Financial infrastructure involves more than physical buildings and sophisticated telecommunication facilities. A successful financial center must be located in a geographic area and time zone that can fill the gap in international trading hours and serve the needs of the economies in the region. Internationally recognized accounting standards, a well-established legal system, a strong local economy with a stable currency, and a harmonious political environment and effective government are also essential. In addition, the financial center should be equipped with an international airport and topnotch accommodation facilities. Success also demands a quality workforce with English as the *lingua franca*. Singapore does go a long way in satisfying the list of requirements.

The ongoing Asian currency turmoil is essentially a case of grand-scale mismanagement of private-sector funds which led to loss of confidence and to massive, swift, and contagious capital flight. In the face of such volatility, the extent to which an offshore financial center can protect the domestic financial sector against intense fluctuation in asset prices and capital mobility is of interest. This ability would be relevant particularly for emerging economies that were flooded with massive capital inflows for years before the currency crisis and then met with swift and contagious outflows in the midst of financial paralysis.

Singapore is a major financial center that plays the funding role of inward financial intermediation, pools savings, integrates capital markets, creates employment opportunities in all related sectors, facilitates cross-border trade and foreign direct investment, supports economic activities across sectors, and provides a reliable framework for the conduct of monetary and fiscal policies. The significance of the contribution of the financial and business services sector cannot be underestimated.

The terms "Asian currency unit (ACU)" and "domestic banking unit (DBU)" are potentially confusing as they are not currency units like the ECU of Europe and should not be interpreted as demarcated financial markets. Both are simply accounting conventions for financial legal entities established within financial institutions and registered to operate according to specific guidelines laid down by the Monetary Authority of Singapore (MAS). An ACU, unlike a DBU, can deal in any currency except the Singapore dollar.

This demarcation between an ACU and a DBU is made to protect the latter from overcrowding by foreign participants and from external shocks. At the same time, MAS seeks to encourage active foreign participation in ACUs through minimal regulations for offshore banking activities within an increasingly liberal financial framework. How such objectives can be effectively achieved requires an indigenous

response and subtle implementation. The authority has to tread a fine line between instituting controls and ensuring market efficiency.

ACU assets grew at an average annual rate of 75.4 percent in the 1970s but the growth slowed to 25 percent in the 1980s. In contrast, DBU assets grew at an annual average of only 24 percent throughout the 1970s and 1980s, in step with the steady growth in gross domestic product (GDP) during the period. In 1970, DBU assets were only 8 percent and ACU assets only 30 percent of GDP. By 1980, DBU assets were as large as GDP while ACU assets were 3.4 times higher. In the 1990s, ACU assets were seven to ten times as large as GDP, while DBU assets rose at a steadier rate, from about twice the size of GDP in 1990 to about two-and-a-half times in 1997. The ratio of ACU to DBU assets climbed from 27 percent in 1970 to 340 percent in 1980 and 500 percent in 1990, then declined to about 300 percent in 1997. These statistics show the extent of financial deepening in Singapore.

As of 1998, there were 34 full-license banks; of these, 12 were indigenous and the rest were foreign-owned. There are now 13 foreign restricted-license banks. Between 1984 and 1998, the number of foreign offshore-licensed banks increased from 14 to 107, while the number of merchant banks also grew from 11 to 81. This interesting phenomenon reflects the impact of global policy-induced structural change and market preferences regarding the quality of local versus foreign currencies. Clearly, such market developments have affected and will continue to dictate the way in which MAS manages the Singapore dollar.

Over the past three decades, Singapore has faced various internal and external shocks to its financial system. The internal disturbances included the folding up of the Pan-El Company in 1985, which paralyzed the stock markets of Singapore and Malaysia for a few days, the brief economic recession in 1986, and the collapse of Barings Bank in 1995. Among the external shocks were the international monetary

crisis in 1971/73, the stagflation in 1974/75 induced by the oil-price hike, the global stock crash of 1987, the substantial contraction of offshore financial activities in 1992 before the imposition of the capital adequacy ratio requirement, and the Asian currency turmoil which began in 1997. The way in which the financial system operates must therefore be clearly understood and the specific features that allowed the system to cope with such shocks must be identified.

The dichotomized financial system may be studied in terms of its regulatory rules, prudential safeguards, and fiscal incentives. The regulatory framework refers to rules and regulations that are deemed fundamental in shaping the system according to certain economic principles and policy priorities. The evolution of the framework suggests that the governing authorities since the 1970s have consistently opted for a liberalized financial environment based on the operation of market forces and high capital mobility.

The administrative supervisory framework set up by MAS for DBUs and ACUs in the 1970s required the periodic submission of statistics and reports. This shows that at the start, when MAS had very little experience, it focused on establishing an extensive matrix of data and information on the two-tier financial system. Authorities commonly begin regulating and supervising by imposing strict or even excessive rules that may eventually stifle financial activities and institutions. Effective administrative supervision demands a working relationship between financial institutions and the supervising authority where the former are market players and the latter is the whistle-blowing referee.

Financial sector deregulation is being carefully sequenced and reflects both external and domestic monetary conditions. While market forces should be respected in principle, government initiatives, policy interventions, and promotion efforts remain key to the success of a leading financial center. International financial intermediation and globally integrated financial markets are so complex that nonmarket intervention measures by the authorities must often

be carried out through trial and error. It is not easy to supervise within rigorously defined rules. Instead, the authorities are forced to learn to regulate and cope with uncertainty while allowing financial institutions to manage their own market risks and shocks.

The governing authorities regard financial service institutions quite differently from manufacturing companies. The conservative stance of MAS can be seen from its guidelines on such matters as minimum capital funds, capital adequacy ratio, bad-debt provision, and credit facilities for single borrowers or groups of borrowers. The prudential safeguards instituted by the dichotomized financial system have significant impact on domestic financial stability.

On the asset management side, measures such as imposing a ceiling on Singapore dollar credit facilities for resident nonbank customers of offshore banks are perhaps more effective in preventing foreign encroachment on DBUs. On the liability management side, the relative inaccessibility of local deposits to restricted banks and offshore banks also tends to discourage foreign participation in DBUs.

The Macroeconomic Context and Its Effect on Financial Sector Policies

Singapore is one of the few economies in Asia that have registered sustained economic growth for over three decades with full employment and prolonged price stability. Behind this economic resiliency lie the twin engines of growth, namely, the manufacturing sector and the financial and business services sector. These two sectors are mutually reinforcing and each has consistently contributed to about a quarter of Singapore's real gross domestic product (GDP) since the 1980s. Its unique financial system, which has weathered several financial crises including the ongoing Asian currency turmoil with relative stability, plays a pivotal role in its continued growth.

Considering the weaknesses inherent in the system, the relative success of Singapore as a regional

financial center was a bonus. Although the government developed the financial sector since the 1960s as part of its overall industrialization strategy, it did not initially intend the sector to evolve into a full-fledged financial center. The financial sector was meant to provide the necessary infrastructure support for multinational corporations (MNCs), which the republic had successfully attracted since independence in 1965 and the establishment of the Jurong Industrial Park. An understanding of the history and unique circumstances of Singapore will allow a better appreciation of the complexity of the situation and clarify the reasons why policymakers have chosen to take an unconventional path in shaping the evolution of the financial system. International banking and financing activities in Singapore are very much influenced by the external and domestic economies, local institutional arrangements, and macroeconomic stabilization priorities.

Therefore, to fully understand and appreciate the impact of the dichotomized financial system (in which the onshore and offshore financial activities are demarcated), one must first be familiar with Singapore's economy, institutional setting, and policy priorities. Singapore is a small open economy engaged in international trade. Its total merchandise trade (excluding entrepot trade) as a percentage of GDP has well exceeded 200 percent since the early 1990s, compared with 52 percent for Hong Kong, China; 50 percent for Korea; and 75 percent for Taipei, China. Nonoil exports as a percentage of GDP stood at 48 percent in 1980, peaked at 80 percent in 1988, and have hovered around the 75 percent mark in the 1990s.

Since nonoil exports are the largest component of aggregate demand in Singapore, the exchange rate has a great effect on GDP. With the high import content of exports (70 percent) and of total domestic expenditure (60 percent), domestic prices are largely determined by world prices for a given exchange rate. According to a recent study by the Monetary Authority of Singapore (MAS), for a given nominal effective exchange rate (NEER), a 1 percent increase

in foreign prices would lead to a 0.7 percent increase in Singapore's consumer price index (Menon 1995).

The country's financial markets are small and open, and have high capital mobility. Singapore is an international financial center dominated by a large offshore banking sector with neither exchange controls nor restrictions on foreign direct investment flows. As of March 1998, assets in the Asian dollar market (ADM), denominated largely in US dollars, stood at about US\$513 billion, over three times larger than the assets in onshore domestic banking units of about US\$ 169 billion.

Since deposits are freely convertible between local and foreign currencies, and capital can be swiftly mobilized to exploit opportunities for covered interest arbitrage due to rate differentials, domestic interest rates are largely determined by both foreign rates and expectations of the future strength of the Singapore dollar. High capital mobility in the absence of exchange controls and with substantial balance-of-payment flows also means that movements in domestic monetary aggregates are by and large affected by funds from abroad.

Singapore has a prudent government characterized by fiscal surpluses and forced saving. Since the 1970s, except in 1987, the government has been running on budget surpluses. A favorable external environment and strong regional growth translated into an upturn for the Singapore economy in the 1980s and 1990s, with the brief 1985/86 recession providing the only minor glitch. Forced savings, or the net contribution to the Central Provident Fund (CPF), grew rapidly. Gross national saving was about 45 percent of gross national product throughout the 1990s. These rather unusual government and institutional features not only led to an incipient appreciation of the Singapore dollar and a liquidity drain on the banking system, but also complicated the implementation of policy objectives.

The resiliency of the dichotomized financial system and how it has made Singapore the major international financial center that it is today cannot

be overlooked. To evaluate the system, what is needed is a broad understanding of how the government offers policy inducements and market forces ensure efficiency by promoting financial activities according to comparative advantage. (See Appendix 1 for a chronology of financial market-related measures and events.) After highlighting the macroeconomic context of Singapore, this study traces the evolution of the dichotomized financial system since the 1960s in terms of its underlying principles, performance, and economic contribution. Then the study takes a critical look at the regulations, safeguards, and incentives that separate domestic banking units (DBUs) from Asian currency units (ACUs). The analysis is meant to show whether and how such a demarcation insulates the economy from volatility of capital and other external shocks. The next to the last section examines the unique monetary transmission mechanism of Singapore, its peculiar institutional features, and the sequencing of its macroeconomic policy stabilization. Issues at stake are explored and conjectures are made regarding the various implications of the dichotomized financial system. The concluding remarks include observations and lessons drawn for the Association of Southeast Asian Nations (ASEAN) financial system.

The Dichotomized Financial System and Its Evolution Since the 1960s

A practitioner is not judged by the rigor of his logic or by the elegance of his presentation. He is judged by results. Practitioners need to be innovative in grappling with tasks of a third world economy. The book of rules tells you very little; precedents borrowed from advanced countries have a nasty habit of coming apart in your hands.—Dr. Goh Keng Swee (The Practice of Economic Growth, 1977)

There is no good definition of an offshore financial center in the literature. Its characteristics are

not clearly defined and its classification according to its activities is at best ambiguous. An offshore financial center deals with nonlocal currency, generally with very little regulation and primarily but not exclusively for nonresidents (Park 1982). With total assets amounting to US\$557 billion in 1997, Singapore is probably the leading, and certainly the biggest, offshore center. Other major offshore centers that are dichotomized or not fully integrated with the domestic banking sector are found in the Bahamas; Bahrain; Cayman Islands; Hong Kong, China; and Panama.

The deliberate effort to set up a financial center can be a very costly exercise, as those that failed at the effort soon found out. Financial infrastructure involves more than physical buildings and sophisticated telecommunication facilities. A successful financial center must be located in a geographic area and time zone that can fill the gap in international trading hours and serve the needs of the economies in the region. Internationally recognized accounting standards, a well-established legal system, a strong local economy with a stable currency, and a harmonious political environment and effective government are also essential. In addition, the financial center should be equipped with an international airport and topnotch accommodation facilities. Success also demands a quality workforce with English as the lingua franca. Singapore does go a long way in satisfying the list of requirements.

An international financial center exists and flourishes because of the presence of financial institutions that reap economies of scale through their international banking activities. Financial institutions can serve their clients more efficiently in a common center or marketplace because they are better able to constantly update, process, and disseminate information. For an international financial center to succeed, enough financial institutions must participate actively to enable frequent interaction and exchange of ideas among professionals and to facilitate financial innovation. In an active interbank market, surplus funds would be optimally allocated. Funds would

be employed most productively where banks could share liquidity and risks. All these reasons explain Singapore's existence and continued progress as a leading offshore financial center.

The idea of starting an offshore financial center was first mooted by A. Winsemius, a Dutch economic adviser to the country in the late 1960s, after a discussion with an American banker. The two had concluded that Singapore could become a financial center for Southeast Asia since its time zone allowed it to fill the gap that existed in the trading hours of global financial centers. Singapore had to be prepared, however, to take drastic measures, such as terminating its colonial link to the British pound. This could expose the fragile domestic banking sector to international banking competition and erode the effectiveness of monetary policy by compromising monetary autonomy. After a difficult but important cabinet decision was made, then Deputy Prime Minister Goh Keng Swee was asked to design a master plan for the establishment of the Asian dollar market (ADM) to service the untapped pool of hard currencies, mostly dollar-dominated, in the region. Bank of America was the first to be given approval, in November 1968, to participate in the ADM.

The pace of financial liberalization in the various stages of economic development has always been a point of contention. It is not surprising, then, that the financial system and financial structure are once again at the forefront of the debate. The ongoing Asian currency turmoil is essentially a case of grand-scale mismanagement of private-sector funds, which led to loss of confidence and to massive, swift, and contagious capital flight. In the face of such volatility, the extent to which an offshore financial center can protect the domestic financial sector against intense fluctuation in asset prices and capital mobility is of interest.

This ability would be relevant particularly for emerging economies that were flooded with massive capital inflows for years before the currency crisis and then met with swift and contagious outflows in the midst of financial paralysis.

Contribution of Financial and Business Services to Economic Growth

An international financial center contributes not just to the local economy but also to financial intermediation in the surrounding economies. A financial center supports and serves the local economy through various channels. Singapore is a major financial center that plays the funding role of inward financial intermediation, pools savings, integrates capital markets, creates employment opportunities in all related sectors, facilitates cross-border trade and foreign direct investment, supports economic activities across sectors, and provides a reliable framework for the conduct of monetary and fiscal policies. The significance of the contribution of the financial and business services sector cannot be underestimated.

Singapore's GDP has grown by an average of 8.4 percent yearly over the past three decades (a slightly higher average growth rate of 9.5 percent was achieved in the 1970s, compared with 7.4 in the 1980s and 8.2 in the 1990s). The transport and communications sector had the highest average annual growth, with a growth rate of 11 percent between 1970 and 1997. Growth in the sector averaged 14.9 percent in the 1970s, but decelerated to 9.5 percent in the 1980s and 9 percent in the 1990s as the infrastructure of the republic matured. Average growth in the financial and business services sector, at 10.3 percent over the last three decades, was the second highest. This

sector maintained its growth momentum throughout the period. Because Singapore is an international financial center, its financial activities tend to accelerate with growth in real activities around the region. The manufacturing sector, too, experienced double-digit growth in the 1970s, but intensified competition from the newly industrialized economies and the emerging ASEAN economies in the 1980s and 1990s gradually slowed down the growth rate (Table 1).

The financial and business services sector has increased its average contribution to GDP growth over the past three decades, from 1.9 percent in the 1970s to 3.4 percent in the 1980s and 2.3 percent in the 1990s. On the other hand, the manufacturing sector's contribution dropped from 3.2 percent in the 1970s to 1.4 percent in the 1980s and 1.8 percent in the 1990s. Other sectors had a stable contribution to GDP growth, except for the construction sector, whose contribution tended to fluctuate over time (Table 2). In terms of share of GDP, the financial and business services sector caught up with the manufacturing sector in the mid-1980s and overtook it slightly in the 1990s. The two sectors, which are regarded as the twin engines of growth, accounted for 54 percent of GDP in the 1990s. The share of the commerce sector has been steadily declining, while that of the transport and communications sector has gradually picked up, in tandem with the financial and business services sector (Table 3).

Table 1: Annual Changes in Gross Domestic Product at 1990 Market Prices, by Sector, 1970–1997 (percent)

| Sector | 1970–1974 | 1975–1979 | 1980–1984 | 1985–1989 | 1990–1994 | 1995–1997 |
|--|-------------|------------|------------|------------|------------|------------|
| Commerce | 10.2 | 5.1 | 5.8 | 6.9 | 8.4 | 7.0 |
| Manufacturing | 15.6 | 8.8 | 5.2 | 9.2 | 8.0 | 5.9 |
| Transport and Communications | 15.7 | 14.0 | 11.0 | 7.9 | 8.7 | 9.3 |
| Construction | 9.9 | 5.0 | 22.0 | (10.0) | 15.1 | 13.7 |
| Financial and Business Services ^a | 13.9 | 7.9 | 13.5 | 7.9 | 9.8 | 8.8 |
| Others ^b | 5.4 | 3.3 | (0.7) | 8.8 | 3.1 | 4.2 |
| Total | 11.5 | 7.4 | 8.5 | 6.3 | 8.6 | 7.8 |

() = negative values are enclosed in parentheses.

^a Includes insurance and real estate services.

^b Includes agriculture and fishing, quarrying, utilities, other services, less imputed bank service charge and import duties.

Sources: *Singapore System of National Accounts 1995* and *Yearbook of Statistics Singapore*, various issues.

Table 2: Contribution to Growth in Gross Domestic Product at 1990 Market Prices, by Sector, 1970–1997 (percent)

| Sector | 1970–1974 | 1975–1979 | 1980–1984 | 1985–1989 | 1990–1994 | 1995–1997 |
|--|-------------|------------|------------|------------|------------|------------|
| Commerce | 2.2 | 1.1 | 1.0 | 1.0 | 1.4 | 1.2 |
| Manufacturing | 3.8 | 2.5 | 1.3 | 1.4 | 2.0 | 1.5 |
| Transport and Communications | 1.0 | 1.3 | 1.1 | 1.5 | 1.0 | 1.1 |
| Construction | 0.9 | 0.3 | 1.8 | (3.4) | 0.9 | 1.0 |
| Financial and Business Services ^a | 2.3 | 1.4 | 2.5 | 4.3 | 2.4 | 2.1 |
| Others ^b | 1.3 | 0.9 | 0.8 | 1.4 | 1.4 | 0.8 |
| Total | 11.5 | 7.5 | 8.5 | 6.2 | 9.1 | 7.7 |

() = negative values are enclosed in parentheses.

^a Includes insurance and real estate services.

^b Includes agriculture and fishing, quarrying, utilities, other services, less imputed bank service charge and import duties.

Sources: *Singapore System of National Accounts 1995* and *Yearbook of Statistics Singapore*, various issues.

Table 3: Share in Gross Domestic Product, by Sector, 1970–1997 (percent)

| Sector | 1970–1974 | 1975–1979 | 1980–1984 | 1985–1989 | 1990–1994 | 1995–1997 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| Commerce | 22.7 | 21.3 | 19.0 | 18.2 | 18.7 | 18.1 |
| Manufacturing | 27.0 | 27.9 | 27.3 | 26.5 | 27.6 | 26.9 |
| Transport and Communications | 7.2 | 9.5 | 11.5 | 12.8 | 12.8 | 13.3 |
| Construction | 9.5 | 8.6 | 10.2 | 7.7 | 6.7 | 8.1 |
| Financial and Business Services ^a | 17.6 | 19.3 | 22.3 | 26.3 | 26.8 | 27.2 |
| Others ^b | 17.8 | 14.4 | 9.9 | 8.6 | 7.4 | 6.4 |
| Total^c | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

^a Includes insurance and real estate services.

^b Includes agriculture and fishing, quarrying, utilities, other services, less imputed bank service charge and import duties.

^c Total may not be equal to 100 due to rounding.

Sources: *Singapore System of National Accounts 1995* and *Yearbook of Statistics Singapore*, various issues.

The financial and business services sector is the only sector whose share of employment has risen consistently, from 6.7 percent in the 1970s to 8.5 percent in the 1980s and 12.8 in the 1990s. This swift job-creation trend was confirmed by the robust expansion in international financial activities to serve MNCs and to fund the growth of the region. Other sectors, including commerce, transport and communications, and construction, have had stable employment shares (Table 4). The manufacturing sector, however, appears to have had a declining share of employment since 1993, and employment growth in the sector actually contracted between 1995 and 1997. Higher unit labor costs and business operation costs may have driven the more labor-intensive manufacturing activities to relocate in other countries. In contrast, employment growth in the financial and business services sector was 49 percent in the 1990s,

versus 18 percent employment growth over that same period in the entire economy.

It is interesting to note that in the financial and business services sector, changes in productivity, as defined by the Ministry of Trade and Industry, peaked at 7.3 percent in the second half of the 1980s but then sank to 3.2 percent in 1990–1994 and 0.2 percent in 1995–1997. These were well below the total change in productivity of 4.3 percent and 1.9 percent over the corresponding period (Table 5). In terms of changes in real productivity based on the definition adopted by the Ministry of Labor, the productivity trend for the financial and business services sector in the 1990s is even worse, at 2.1 percent for 1990–1994 and -1.6 percent for 1995–1997, well below the 5 and 4.2 percent change in real productivity throughout the economy over the same periods (Table 5a). Low productivity in the financial and business

Table 4: Employment Share, by Sector, 1976–1997

| Sector | Number of Persons (thousand) | | | | | | Percent of Total | | | | | |
|--|------------------------------|----------------|----------------|----------------|----------------|--|------------------|--------------|--------------|--------------|--------------|--|
| | 1976–1979 | 1980–1984 | 1985–1989 | 1990–1994 | 1995–1997 | | 1976–1979 | 1980–1984 | 1985–1989 | 1990–1994 | 1995–1997 | |
| Commerce | 218.8 | 256.1 | 291.3 | 355.5 | 384.0 | | 23.3 | 22.6 | 23.1 | 22.8 | 22.2 | |
| Manufacturing | 260.9 | 324.2 | 341.0 | 428.1 | 411.0 | | 27.8 | 28.6 | 27.1 | 27.4 | 23.8 | |
| Transport and Communications | 108.9 | 126.8 | 125.3 | 160.4 | 196.0 | | 11.6 | 11.2 | 10.0 | 10.3 | 11.3 | |
| Construction | 47.5 | 76.0 | 96.3 | 100.9 | 118.3 | | 5.1 | 6.7 | 7.6 | 6.5 | 6.8 | |
| Financial and Business Services ^a | 63.2 | 89.9 | 115.5 | 171.4 | 255.9 | | 6.7 | 7.9 | 9.2 | 11.0 | 14.8 | |
| Others ^b | 238.8 | 259.9 | 289.7 | 345.9 | 365.0 | | 25.5 | 22.9 | 23.0 | 22.1 | 21.1 | |
| Total | 938.1 | 1,132.9 | 1,259.1 | 1,562.2 | 1,730.2 | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |

^a Includes insurance and real estate services.

^b Includes agriculture and fishing, quarrying, utilities, other services and activities not adequately defined.
Source: Report on the Labor Force Survey of Singapore, various issues.

services sector, which may be related to the protection from foreign competition that has traditionally been afforded the domestic financial sector, could well be one price to pay under the dichotomized financial system.

The Dichotomized Financial Structure: Conceptual Framework and Rationale

The active financial participation of offshore license banks and merchant banks can be seen in the swift rise in the number of ACUs established, from 14 in 1970 to 227 in 1998. What can we make of this phenomenal rise in the number of ACUs and how do banks with ACUs perform compared with those with DBUs? More fundamentally, what are these ACUs and DBUs and why were they created?

The terms “ACU” and “DBU” are potentially confusing. It is not known why they were coined in Singapore, became the subject of legislation, and gained official acceptance. Very often, the ACU and the DBU are misunderstood as currency units like the ECU in Europe. Sometimes they are mistaken for demarcated financial markets. In fact, both are simply accounting conventions for financial legal entities established within financial institutions and registered to operate according to specific guidelines laid down by MAS.

Technically, what distinguishes the ACU from the DBU is that the former is allowed to deal in any currency except the Singapore dollar. (See Appendix 2 on the terms and conditions of operation of ACUs and DBUs.) This functional demarcation is intended by MAS to ensure that DBUs are not overcrowded by foreign participation and are insulated from external shocks through strict regulations. At the same time, MAS seeks to encourage active foreign participation in ACUs through minimal regulations for offshore banking activities within an increasingly liberal financial framework. How such objectives can be effectively achieved requires an indignant response and subtle implementation. The

Table 5: Changes in Productivity,^a by Sector, 1978–1997 (percent)

| Sector | 1978–1979 | 1980–1984 | 1985–1989 | 1990–1994 | 1995–1997 |
|--|------------|------------|------------|------------|------------|
| Commerce | 1.2 | 2.8 | 5.3 | 4.3 | 4.1 |
| Manufacturing | 4.2 | 5.9 | 4.3 | 6.8 | 4.9 |
| Transport and Communications | 8.6 | 9.6 | 6.8 | 5.1 | 5.0 |
| Construction | (3.3) | 6.1 | 0.9 | 3.7 | (4.8) |
| Financial and Business Services ^b | 2.3 | 5.1 | 7.3 | 3.2 | 0.2 |
| Total | 3.3 | 4.9 | 4.9 | 4.3 | 1.9 |

() = negative values are enclosed in parentheses.

^a Productivity is defined as real value-added per worker.

^b Includes insurance and real estate services.

Source: *Economic Survey of Singapore*, various issues.

Table 5a: Changes in Real Productivity,^a by Sector, 1977–1997 (percent)

| Sector | 1977–1979 | 1980–1984 | 1985–1989 | 1990–1994 | 1995–1997 |
|--|------------|------------|------------|------------|------------|
| Commerce | 1.7 | 3.4 | 3.0 | 4.8 | 5.6 |
| Manufacturing | 3.4 | 3.3 | 4.1 | 7.0 | 6.5 |
| Transport and Communications | 9.6 | 10.4 | 5.5 | 3.6 | 3.0 |
| Construction | (8.4) | 8.1 | (8.5) | 11.3 | 8.5 |
| Financial and Business Services ^b | (1.0) | 6.0 | 1.5 | 2.1 | (1.6) |
| Total | 3.0 | 5.5 | 2.7 | 5.0 | 4.2 |

() = negative values are enclosed in parentheses.

^a Change in real productivity is defined as the annual percentage change in S\$ thousand per worker at 1990 market prices.

^b Includes insurance and real estate services.

Sources: *Singapore System of National Accounts 1995*, *Yearbook of Statistics Singapore*, and *Report on the Labor Force Survey of Singapore*, various issues.

authority has to tread a fine line between instituting controls and ensuring market efficiency.

Two overriding concerns justify this demarcation of the financial sector since the early 1960s. On the one hand, the government wants to ensure that ACU activities, largely dominated by offshore banks, are only minimally regulated. As Goh (1984) has pointed out, “freedom from regulation is the *raison d’être* of offshore banking, in particular, regulations by the central bank of the host country.” By strictly regulating DBUs, on the other hand, MAS openly admits that measures are “all confined to the domestic sector” because “we want to make sure the system protects the depositors. This is our overriding concern” (Hu 1997).

It is therefore absolutely important to understand the government’s policy objectives and policy priorities from the outset. Yet these two basic concerns tend to be overlooked or to give rise to confusion.

On liberalizing offshore banking activities, Hu reiterated that:

Once you put controls, you are no longer an international financial center. We have no capital controls, no foreign exchange controls. Given the small size of the market, the whole idea of developing Singapore as a financial center is to do offshore business, not to develop Singapore’s domestic business. This is where there is fundamental misunderstanding.

The attempt by MAS since 1999 to further open up the DBUs to competition by enticing a few more full-license foreign banks should be seen as an effort to modernize local banking institutions rather than as a policy shift to blur the demarcation between ACUs and DBUs.

An examination of the country’s financial structure discloses the interesting evolution of its financial sector. From an economy with a financial subsector

providing services and support to MNCs, Singapore has been transformed into a major financial hub capable of funding regional growth and engaging in international financial intermediation (Table 6). As of 1998, it had 34 full-license banks, of which 12 were local and the other 22 were foreign-owned. The number and distribution of full-license banks have been rather stable since the 1970s. The number of foreign restricted-license banks currently stands at 13. This figure has also remained largely unchanged since the 1970s. It has been MAS' longstanding concern not to allow overcrowding in the small domestic banking sector. The recent trend toward mergers among local banks, which the governing authorities encourage, may reduce further the number of such banks. However, between 1974 and 1998, the number of foreign offshore-licensed banks increased (from 14 to 107), and so did the number of merchant banks (from 11 to 81).

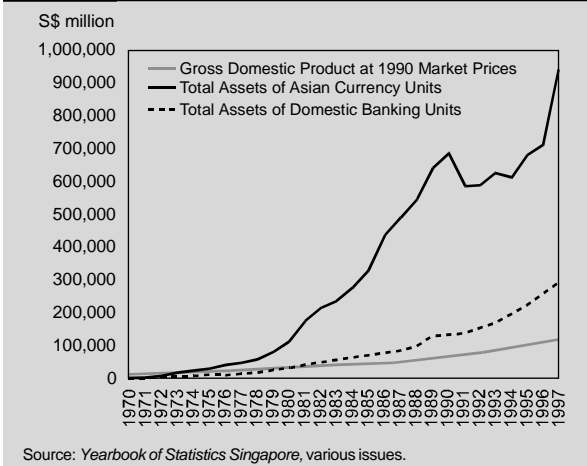
The operation of restricted banks, offshore banks, and merchant banks in Singapore is subject to rigid guidelines. Restricted banks are not allowed to operate savings accounts or to accept fixed deposits of less than S\$250,000 each, and can operate only in one location, with no subbranching. Such restrictions limit their retail banking activities with small account holders. However, restricted banks are permitted to engage in all other banking services just like full-license banks and tend to be oriented toward wholesale banking. Offshore banks concentrate on regional banking and thus mostly cater to nonresident companies or nonresident individuals in Singapore since there is a ceiling on their credit transactions in Singapore dollars. In addition, offshore banks cannot accept fixed or other interest-bearing deposits in Singapore dollars or savings deposits from nonbank customers who are residents of Singapore. Merchant banks are prevented from accepting deposits or borrowing from the public in any form, or from raising funds by issuing securitized debts or certificates of deposit. Such rigid guidelines clearly drive offshore and restricted banks away from DBU activities to the

Asian dollar market, while merchant banks are deliberately kept from competing with commercial banks.

The Dichotomized Financial Sector: A Performance Review

ACU assets grew at an average annual rate of 75.4 percent in the 1970s but the growth slowed to 25 percent in the 1980s. In contrast, DBU assets grew at an annual average of only 24 percent throughout the 1970s and 1980s, in step with the steady GDP growth during the period (see Figure 1 for comparison of GDP, ACU and DBU asset values and trends.) In 1970, DBU assets were only 8 percent and ACU assets only 30 percent of GDP. By 1980, DBU assets were as large as GDP while ACU assets were 3.4 times higher. In the 1990s, ACU assets were seven to ten times as large as GDP, while DBU assets rose at a steadier rate, from about twice the size of GDP in 1990 to about two-and-a-half times in 1997. These statistics show the extent of financial deepening in Singapore. (See Tables 7 and 8 for ACU and DBU asset values and trends.)

Figure 1: Gross Domestic Product at 1990 Market Prices and Assets of Asian Currency Units and Domestic Banking Units, 1970–1997



The ratio of ACU to DBU assets climbed from 27 percent in 1970 to 340 percent in 1980 and peaked at 570 percent in 1986, then declined to about 300 percent in 1997 (Figure 2). This interesting phenomenon reflects the impact of global policy-induced

Table 6: Financial Structure: Number of Financial Institutions in Singapore, 1970–1998^a

| Item | 1970 | 1971 | 1972 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| Banks | 37 | 42 | 44 | 62 | 63 | 70 | 73 | 77 | 81 | 91 | 99 | 111 |
| Local ^b | 11 | 11 | 11 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Foreign | 26 | 31 | 33 | 50 | 51 | 57 | 60 | 64 | 68 | 78 | 86 | 98 |
| Full banks | 26 | 25 | 25 | 24 | 24 | 24 | 24 | 24 | 24 | 23 | 23 | 23 |
| Restricted banks | na | 6 | 8 | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 |
| Offshore banks | na | na | na | 14 | 15 | 21 | 23 | 27 | 31 | 42 | 50 | 62 |
| (Banking offices including head offices and main offices) | 167 | 192 | 197 | 231 | 235 | 243 | 251 | 261 | 272 | 292 | 311 | 335 |
| Asian Currency Units ^c | 14 | 19 | 24 | 56 | 58 | 66 | 70 | 79 | 88 | 108 | 120 | 137 |
| Banks | 14 | 19 | 24 | 44 | 45 | 52 | 56 | 60 | 64 | 77 | 85 | 97 |
| Merchant Banks | na | na | na | 11 | 12 | 13 | 13 | 18 | 23 | 30 | 34 | 38 |
| Others | na | na | na | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| Discount Houses | na | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Finance Companies | 36 | 36 | 36 | 36 | 36 | 36 | 34 | 34 | 34 | 34 | 34 | 35 |
| (Finance companies' offices including head offices) | na | 75 | 77 | 87 | 88 | 91 | 92 | 94 | 93 | 96 | 104 | 121 |
| POSBank | na | 44 | 47 | 55 | 62 | 62 | 67 | 77 | 85 | 101 | 106 | 107 |
| Merchant Banks | 2 | 2 | 8 | 20 | 20 | 21 | 22 | 25 | 29 | 36 | 39 | 43 |
| Insurance Companies ^d | na | 79 | 80 | 77 | 69 | 67 | 67 | 68 | 70 | 71 | 74 | 77 |
| Direct Insurers | na | na | na | na | na | na | na | na | na | 62 | 63 | 64 |
| Professional reinsurers | na | na | na | na | na | na | na | na | na | 9 | 11 | 13 |
| Captive insurers | na | na | na | na | na | na | na | na | na | na | na | na |
| Representative Offices | 8 | 19 | 27 | 36 | 38 | 39 | 40 | 45 | 44 | 47 | 49 | 52 |
| Banks | 8 | 19 | 27 | 36 | 37 | 38 | 38 | 43 | 41 | 44 | 45 | 48 |
| Merchant Banks | na | na | na | na | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 |
| Stockbroking Companies ^e | na | na | na | na | na | na | na | na | na | na | na | na |
| SES member companies | na | na | na | na | na | na | na | na | na | na | na | na |
| SES nonmember companies | na | na | na | na | na | na | na | na | na | na | na | na |
| Investment Advisers | na | na | na | na | na | na | na | na | na | na | na | na |
| International Money Brokers | na | na | 2 | 4 | 5 | 5 | 5 | 6 | 6 | 7 | 7 | 8 |
| SIMEX Members ^f | na | na | na | na | na | na | na | na | na | na | na | na |
| Corporate Clearing Members | na | na | na | na | na | na | na | na | na | na | na | na |
| Corporate Nonclearing Members | na | na | na | na | na | na | na | na | na | na | na | na |
| Individual Members | na | na | na | na | na | na | na | na | na | na | na | na |
| Commercial Associate Members | na | na | na | na | na | na | na | na | na | na | na | na |
| Trading Permit Holders | na | na | na | na | na | na | na | na | na | na | na | na |

na = not available, POSBank = Post Office savings bank, SES = Stock Exchange of Singapore, SIMEX = Singapore International Monetary Exchange.

^a All reported figures are for end-March except for the years 1970, 1971, 1972, and 1974 which are for end-December.

^b All local banks are full banks.

^c Asian currency unit is a separate accounting unit of banks and other financial institutions that is given approval to transact in the Asian Dollar Market.

^d Insurance companies are subdivided into the categories life insurance, general insurance, and life and general insurance for the years 1970–1979.

^e More stringent monitoring of stockbroking companies came into effect after the Securities Industry Act (1986).

^f SIMEX began operations in December 1983.

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

structural change and market preferences regarding the quality of local currency versus foreign currencies. Clearly, such market developments have affected and will continue to dictate the way in which MAS manages the Singapore dollar and will, in turn, affect the flow of funds within the two-tier financial entity.

A Two-Tier Financial Entity: The Domestic Banking Unit vs. the Asian Currency Unit

When evaluating the republic's dichotomized financial system, most local scholars choose to describe how the two tiers of the financial system have dif-

| 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 118 | 122 | 129 | 135 | 133 | 135 | 136 | 141 | 137 | 131 | 128 | 142 | 140 | 153 | 152 | 154 |
| 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 12 | 12 | 12 | 12 |
| 105 | 109 | 116 | 122 | 120 | 122 | 123 | 128 | 124 | 118 | 115 | 129 | 128 | 141 | 140 | 142 |
| 23 | 23 | 23 | 23 | 23 | 22 | 22 | 22 | 22 | 22 | 22 | 32 | 22 | 32 | 22 | 22 |
| 13 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 13 |
| 69 | 72 | 79 | 85 | 83 | 86 | 87 | 92 | 88 | 82 | 79 | 83 | 92 | 95 | 105 | 107 |
| 358 | 368 | 381 | 393 | 396 | 406 | 411 | 422 | 431 | 439 | 435 | 446 | 463 | 473 | 482 | 474 |
| 153 | 160 | 174 | 180 | 183 | 190 | 191 | 199 | 198 | 196 | 188 | 198 | 209 | 214 | 224 | 227 |
| 106 | 110 | 118 | 124 | 123 | 125 | 126 | 131 | 127 | 121 | 118 | 123 | 132 | 135 | 144 | 146 |
| 45 | 48 | 54 | 54 | 58 | 63 | 64 | 67 | 70 | 75 | 70 | 75 | 77 | 79 | 80 | 81 |
| 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 4 | 4 | 4 | 4 | na | na | na | na | na | na | na | na | na | na | na |
| 35 | 34 | 34 | 34 | 31 | 31 | 30 | 28 | 27 | 27 | 27 | 27 | 23 | 22 | 19 | 19 |
| 135 | 132 | 133 | 134 | 134 | 135 | 135 | 137 | 135 | 129 | 130 | 131 | 128 | 128 | 125 | 119 |
| 111 | 123 | 132 | 136 | 135 | 135 | 138 | 142 | 147 | 150 | 149 | 140 | 145 | 135 | 133 | 130 |
| 49 | 51 | 55 | 55 | 59 | 64 | 65 | 68 | 71 | 76 | 78 | 76 | 77 | 79 | 80 | 80 |
| 80 | 82 | 82 | 84 | 90 | 99 | 110 | 124 | 135 | 136 | 140 | 142 | 141 | 146 | 154 | 163 |
| 65 | 64 | 63 | 63 | 60 | 57 | 57 | 57 | 60 | 60 | 58 | 58 | 58 | 59 | 59 | 61 |
| 15 | 16 | 16 | 16 | 18 | 18 | 19 | 25 | 29 | 32 | 36 | 36 | 35 | 38 | 45 | 50 |
| na | 2 | 3 | 5 | 12 | 24 | 34 | 42 | 46 | 44 | 46 | 48 | 48 | 49 | 50 | 52 |
| 58 | 57 | 51 | 51 | 47 | 46 | 47 | 45 | 49 | 52 | 52 | 49 | 57 | 58 | 65 | 70 |
| 54 | 53 | 47 | 47 | 44 | 42 | 43 | 42 | 46 | 50 | 50 | 47 | 54 | 55 | 62 | 68 |
| 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 |
| na | na | na | 41 | 36 | 45 | 48 | 57 | 63 | 71 | 72 | 78 | 81 | 82 | 95 | 90 |
| na | na | na | 29 | 24 | 24 | 25 | 26 | 26 | 26 | 33 | 33 | 33 | 33 | 33 | 33 |
| na | na | na | 12 | 12 | 21 | 23 | 31 | 37 | 45 | 39 | 45 | 48 | 49 | 62 | 57 |
| na | na | na | 7 | 10 | 21 | 43 | 60 | 81 | 93 | 108 | 125 | 136 | 151 | 162 | 156 |
| 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 8 | 10 | 11 | 10 | 8 | 9 |
| na | 177 | 204 | 244 | 298 | 314 | 349 | 386 | 389 | 349 | 452 | 468 | 492 | 520 | 546 | 533 |
| na | 32 | 31 | 30 | 30 | 35 | 36 | 37 | 39 | 37 | 39 | 38 | 39 | 38 | 36 | 36 |
| na | 33 | 36 | 39 | 40 | 43 | 42 | 43 | 39 | 36 | 30 | 31 | 30 | 27 | 29 | 26 |
| na | 112 | 137 | 175 | 228 | 236 | 240 | 279 | 277 | 264 | 371 | 387 | 411 | 443 | 470 | 460 |
| na | na | na | na | na | na | 9 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 |
| na | na | na | na | na | na | 22 | 16 | 22 | na | na | na | na | na | na | na |

ferred over the years (Lee 1986; Lim et al. 1988). Some comment on the relative performance of the two and their significance with regard to macroeconomic stabilization objectives (Peebles and Wilson 1996; Ngiam 1996). Foreign scholars tend to conjecture on the ways in which the dichotomized financial

system may be insulating the republic against external shocks (Hodjera 1978; Hewson 1981; McKinnon 1981; Bryant 1985; Claassen 1992; Fischer and Reisen 1993; Woo and Hirayama 1996). However, no one has systematically explained how a built-in mechanism within the two-tier financial entity

Figure 2: Asset Ratios of Asian Currency Units and Domestic Banking Units, 1990–1997

Gross domestic product at 1990 market prices.
Source: *Yearbook of Statistics Singapore*, various issues.

contributes to such ability. In view of the ongoing currency turmoil and the resultant volatility of capital, such a built-in mechanism is of particular interest and relevance.

Over the past three decades, Singapore has faced various internal and external shocks to its financial system. The internal disturbances included the folding up of the Pan-El company in 1985 which paralyzed the stock markets of Singapore and Malaysia for a few days, the brief economic recession in 1986, and the collapse of Barings Bank in 1995. Among the external shocks were the international monetary crisis in 1971/73, the stagflation in 1974/75 induced by the oil-price hike, the global stock crash of 1987, the substantial contraction of offshore financial activities in 1992 before the imposition of the capital

Table 7: Commercial Banks (Domestic Banking Units): Assets and Liabilities, 1970–1998^a (\$ million)

| Item | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
|---|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Assets | | | | | | | | | | | | | |
| Cash in hand | 50.0 | 46.0 | 63.0 | 70.0 | 97.0 | 107.0 | 105.3 | 115.1 | 154.6 | 161.1 | 272.4 | 222.4 | 247.9 |
| Balances with MAS | 116.8 | 147.0 | 233.0 | 594.0 | 445.0 | 454.1 | 511.7 | 546.3 | 633.1 | 733.7 | 923.1 | 1,195.1 | 1,417.5 |
| S\$NCDs held | | | | | | 381.2 | 380.1 | 292.6 | 198.4 | 166.2 | 127.8 | 89.0 | 76.8 |
| Amount due from banks ^b | 800.7 | | | | | | | 3,712.5 | 4,331.5 | 5,646.6 | 6,880.1 | 11,824.3 | 9,823.6 |
| In Singapore | | | | | | | | 1,263.6 | 1,616.2 | 1,986.6 | 2,756.7 | 4,196.0 | 3,727.9 |
| ACUs | | | | | | | | 1,068.4 | 853.1 | 1,265.9 | 1,655.0 | 3,094.2 | 3,074.1 |
| Outside Singapore | | | | | | | | 1,380.5 | 1,862.1 | 2,394.1 | 2,468.4 | 4,534.1 | 3,021.6 |
| Money Market Investments | 604.7 | 843.0 | 989.0 | 695.0 | 712.0 | 780.4 | 819.9 | 832.4 | 947.7 | 1,065.6 | 1,573.0 | 2,262.0 | 2,486.3 |
| Treasury bills ^c | 604.7 | 843.0 | 895.0 | 340.0 | 319.0 | 364.5 | 328.5 | 306.7 | 324.4 | 369.9 | 688.9 | 784.0 | 568.4 |
| Deposits with discount houses | | | 94.0 | 355.0 | 393.0 | 415.9 | 491.4 | 525.7 | 623.3 | 695.7 | 884.1 | 1,478.0 | 1,917.9 |
| Other Investments | 221.3 | 434.0 | 544.0 | 817.0 | 922.0 | 1,073.2 | 1,446.8 | 1,604.7 | 1,685.7 | 1,690.6 | 1,914.9 | 1,955.6 | 3,118.0 |
| In Singapore | | 334.0 | 430.0 | 727.0 | 831.0 | 995.4 | 1,365.7 | 1,540.6 | 1,620.4 | 1,639.6 | 1,845.7 | 1,882.6 | 2,994.4 |
| Government securities ^d | 90.0 | 129.0 | 196.0 | 333.0 | 381.0 | 473.4 | 762.0 | 897.5 | 955.2 | 908.9 | 861.1 | 689.0 | 1,016.2 |
| Other securities ^e | 131.3 | 205.0 | 234.0 | 394.0 | 450.0 | 522.0 | 603.7 | 643.1 | 665.2 | 730.7 | 984.6 | 1,193.9 | 1,978.2 |
| Outside Singapore | | 100.0 | 114.0 | 90.0 | 91.0 | 77.8 | 81.1 | 64.1 | 65.3 | 51.0 | 69.2 | 72.7 | 123.6 |
| Loans and advances to nonbank customers of which bill financing | 2,367.2 | 2,615.0 | 3,565.0 | 5,146.0 | 5,697.0 | 7,678.7 | 8,894.2 | 10,183.0 | 12,226.4 | 16,007.0 | 20,206.9 | 25,229.1 | 29,442.9 |
| Commercial bills | | 555.0 | 719.0 | 1,054.0 | 1,111.0 | | 1,326.2 | 1,622.5 | 2,352.2 | 2,827.5 | 3,948.3 | 44,049.3 | 3,979.4 |
| Fixed and other assets | 138.7 | 231.0 | 278.0 | 526.0 | 633.0 | 738.7 | 840.1 | 951.4 | 1,040.9 | 1,277.0 | 1,417.9 | 1,853.0 | 1,924.2 |
| Total Assets | 4,299.4 | 4,871.0 | 6,391.0 | 8,902.0 | 9,617.0 | 11,213.3 | 12,998.1 | 18,238.0 | 21,218.3 | 26,747.8 | 33,316.1 | 44,630.8 | 48,537.2 |
| Liabilities | | | | | | | | | | | | | |
| Paidup capital and reserves | 262.5 | 350.0 | 417.0 | 788.0 | 921.0 | 1,088.7 | 1,270.9 | 1,353.9 | 1,498.1 | 1,861.2 | 2,665.4 | 3,799.5 | 4,301.3 |
| Deposits of nonbank customers ^f | 2,896.8 | 3,746.0 | 4,737.0 | 5,800.0 | 6,586.0 | 7,606.0 | 8,488.5 | 8,969.5 | 10,045.7 | 12,178.4 | 16,035.0 | 20,007.9 | 23,408.7 |
| S\$NCDs issued | | | | | | 527.6 | 617.8 | 513.4 | 455.3 | 515.0 | 331.9 | 404.5 | 428.0 |
| Amount due to banks ^b | 830.8 | 296.0 | 702.0 | 1,316.0 | 811.0 | 642.9 | 903.3 | 5,044.2 | 6,624.1 | 8,615.9 | 9,942.5 | 15,366.0 | 14,426.4 |
| In Singapore | | 12.0 | 12.0 | 91.0 | 26.0 | 28.9 | 1.7 | 1,271.7 | 1,718.7 | 2,415.4 | 2,888.4 | 4,241.3 | 3,941.6 |
| ACUs | | 57.0 | 148.0 | 350.0 | 94.0 | 33.2 | 53.8 | 1,355.1 | 1,944.3 | 2,399.8 | 2,267.1 | 3,035.2 | 3,683.4 |
| Outside Singapore | | 227.0 | 542.0 | 875.0 | 691.0 | 580.8 | 847.8 | 2,417.4 | 2,961.1 | 3,800.7 | 4,787.0 | 8,089.5 | 6,801.4 |
| Amount borrowed from other creditors | | 135.0 | 192.0 | 401.0 | 655.0 | 658.0 | 774.6 | 792.9 | 843.9 | 1,053.4 | 1,549.2 | 2,115.4 | 2,623.8 |
| Bills payable | | 75.0 | 95.0 | 126.0 | 107.0 | 266.7 | 298.1 | 738.9 | 864.0 | 1,410.2 | 1,261.1 | 989.5 | 1,291.0 |
| Other liabilities | 309.3 | 219.0 | 248.0 | 417.0 | 538.0 | 574.0 | 644.9 | 825.2 | 886.6 | 1,113.7 | 1,531.0 | 1,948.0 | 2,058.1 |
| Total Liabilities | 4,299.4 | 4,871.0 | 6,391.0 | 8,902.0 | 9,617.0 | 11,213.3 | 12,998.1 | 18,238.0 | 21,218.3 | 26,747.8 | 33,316.1 | 44,630.8 | 48,537.2 |

ACU = Asian currency unit, MAS = Monetary Authority of Singapore, NCD = negotiable certificate of deposit.

^a End-December except for 1970 and 1998 whose reported figures are for end-March.

^b Figures for 1971–1976 are reported as "Net balances due to banks."

^c Figure for 1970 is an aggregate figure for Treasury bills and Singapore government securities.

^d In 1970, "Government securities" is called "Other Government."

^e In 1970, the item "Other securities" is the sum of "Other Singapore public authorities securities" (\$4.9 million) and "Private securities" (\$126.4 million).

^f This item is called "Deposits" in 1970.

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

adequacy ratio requirement, and the Asian currency turmoil which began in 1997. The way in which the financial system operates must therefore be clearly understood and the specific features that allowed the system to cope with such shocks must be identified. It is useful to study the two-tier financial system in terms of its regulatory rules, prudential safeguards, and fiscal incentives. These three broad aspects, besides their other functions, cushion the economy against the adverse effects of swift capital flows.

Regulatory Rules

The regulatory framework refers to rules and regulations that are deemed fundamental in shaping the financial system according to certain economic principles and policy priorities. If one were to carefully

examine the underlying principles of the regulatory framework and the way in which it has evolved over time, it becomes clear that the governing authorities have consistently opted for a liberalized financial environment based on the operation of market forces and high capital mobility.

In June 1967, almost two years after Singapore's independence in August 1965, the Board of Commissioners of Currency, Singapore (BCCS) started issuing Singapore dollars which were fully backed by gold and foreign reserves. Following this was the introduction of the Banking Act of 1970, which took immediate effect when MAS began operating in January 1971. Singapore formally abolished the cartel system for exchange-rate fixing in July 1972 and terminated the currency interchangeability between

| 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 275.4 | 291.4 | 303.5 | 334.2 | 328.4 | 568.3 | 401.3 | 471.2 | 532.9 | 543.1 | 578.3 | 593.5 | 688.0 | 811.2 | 802.2 | 790.2 |
| 1,557.6 | 1,742.3 | 1,830.1 | 1,907.9 | 2,153.2 | 2,370.9 | 3,314.1 | 3,486.3 | 4,227.4 | 4,764.5 | 5,198.9 | 5,564.3 | 6,471.8 | 7,095.4 | 7,702.2 | 7,843.3 |
| 136.5 | 133.0 | 105.0 | 134.2 | 135.5 | 145.9 | 283.0 | 296.6 | 271.7 | 198.6 | 180.3 | 71.0 | 104.9 | 198.5 | 212.5 | 212.5 |
| 11,904.5 | 17,087.8 | 20,768.4 | 28,000.6 | 33,853.2 | 38,148.1 | 57,238.2 | 55,205.7 | 47,683.7 | 57,724.2 | 62,516.6 | 79,152.9 | 79,837.0 | 86,112.6 | 99,951.7 | 91,784.0 |
| 3,699.2 | 4,088.4 | 5,341.5 | 6,694.3 | 9,270.5 | 8,832.6 | 15,165.9 | 18,438.4 | 12,058.4 | 11,936.4 | 17,401.5 | 28,411.2 | 30,926.6 | 33,555.1 | 30,220.6 | 31,594.9 |
| 3,831.6 | 5,724.8 | 6,820.2 | 8,299.4 | 9,961.7 | 13,828.7 | 21,427.9 | 16,922.7 | 17,900.2 | 22,703.6 | 21,328.8 | 26,373.8 | 25,398.6 | 24,851.9 | 34,517.1 | 22,563.8 |
| 4,373.7 | 7,275.4 | 8,606.7 | 13,006.9 | 14,621.0 | 15,486.8 | 20,644.5 | 19,844.6 | 17,725.0 | 23,084.2 | 23,786.3 | 24,367.9 | 23,511.8 | 27,705.6 | 35,214.0 | 37,625.3 |
| 2,482.8 | 2,664.3 | 2,560.6 | 2,867.1 | 2,399.4 | 2,161.2 | 1,773.3 | 1,988.9 | 3,362.0 | 4,660.0 | 4,798.5 | 4,888.1 | 5,661.4 | 5,939.0 | 6,738.3 | 7,557.1 |
| 432.9 | 277.1 | 270.5 | 551.1 | 2,399.4 | 2,161.2 | 1,773.3 | 1,988.9 | 3,362.0 | 4,660.0 | 4,798.5 | 4,888.1 | 5,661.4 | 5,939.0 | 6,738.3 | 7,557.1 |
| 2,049.9 | 2,387.2 | 2,290.1 | 2,316.0 | | | | | | | | | | | | |
| 3,957.4 | 4,101.9 | 4,802.4 | 4,898.5 | 6,125.9 | 6,891.4 | 9,045.0 | 10,376.8 | 10,862.9 | 11,717.1 | 13,177.5 | 14,608.2 | 16,637.6 | 18,694.3 | 19,667.5 | 20,299.5 |
| 3,817.0 | 3,959.7 | 4,609.9 | 4,538.1 | 5,871.2 | 6,644.2 | 8,764.3 | 10,035.2 | 10,532.3 | 11,448.0 | 12,777.3 | 13,439.6 | 15,508.4 | 17,400.4 | 18,340.0 | 18,945.3 |
| 1,601.2 | 1,680.4 | 2,100.2 | 1,773.0 | 2,887.4 | 3,251.2 | 5,053.1 | 5,934.0 | 6,403.1 | 6,945.8 | 7,975.1 | 8,681.3 | 10,092.5 | 11,599.0 | 12,145.1 | 12,533.9 |
| 2,215.8 | 2,279.3 | 2,509.7 | 2,765.1 | 2,983.8 | 3,393.0 | 3,711.3 | 4,101.1 | 4,129.1 | 4,502.2 | 4,802.2 | 4,758.3 | 5,415.9 | 5,801.4 | 6,194.9 | 6,411.4 |
| 140.4 | 142.2 | 192.5 | 360.4 | 254.7 | 247.2 | 280.7 | 341.6 | 330.7 | 269.2 | 400.2 | 1,168.7 | 1,129.2 | 1,293.9 | 1,327.5 | 1,354.2 |
| 34,045.8 | 36,867.5 | 37,403.1 | 35,792.8 | 37,868.6 | 41,848.8 | 50,785.9 | 57,696.4 | 64,009.1 | 69,138.9 | 78,454.3 | 90,974.2 | 108,974.0 | 126,987.7 | 143,243.8 | 141,046.6 |
| 3,900.4 | 4,124.8 | 3,628.1 | 4,113.0 | 3,599.6 | 4,096.9 | 4,533.4 | 4,952.0 | 5,466.0 | 5,710.3 | 5,835.8 | 6,247.8 | 6,879.2 | 8,693.4 | 9,363.5 | 7,905.5 |
| 2,177.8 | 2,819.0 | 2,844.8 | 2,898.0 | 3,619.5 | 4,306.6 | 4,360.7 | 4,480.0 | 5,143.8 | 4,556.0 | 5,346.0 | 6,100.3 | 6,203.2 | 6,884.7 | 11,270.6 | 10,102.7 |
| 56,537.8 | 65,707.2 | 70,618.0 | 76,833.3 | 86,483.6 | 96,441.2 | 127,201.7 | 134,002.0 | 136,093.4 | 153,302.4 | 170,250.4 | 201,952.5 | 224,578.7 | 252,723.4 | 289,588.8 | 279,635.8 |
| 4,887.9 | 5,539.8 | 5,475.5 | 5,383.1 | 6,412.1 | 6,759.5 | 7,972.2 | 8,623.1 | 9,748.0 | 11,379.3 | 13,296.3 | 15,685.3 | 18,904.1 | 20,977.3 | 23,709.6 | 23,724.1 |
| 26,265.5 | 28,026.3 | 28,744.5 | 30,612.6 | 36,393.0 | 42,475.3 | 53,351.1 | 63,979.7 | 72,241.1 | 78,483.2 | 85,400.8 | 99,032.2 | 108,885.5 | 118,201.5 | 124,134.8 | 130,349.8 |
| 471.7 | 300.7 | 263.6 | 696.4 | 896.8 | 992.6 | 1,421.7 | 1,457.0 | 1,193.4 | 939.7 | 1,015.7 | 667.2 | 920.0 | 1,043.0 | 846.0 | 805.0 |
| 18,803.7 | 25,403.9 | 29,531.1 | 33,303.9 | 36,397.5 | 39,327.6 | 57,475.1 | 52,697.1 | 45,002.1 | 54,397.5 | 62,264.7 | 77,295.1 | 86,063.1 | 101,576.8 | 125,856.1 | 109,379.9 |
| 3,895.1 | 4,275.2 | 5,724.1 | 6,833.5 | 8,560.4 | 8,872.9 | 16,391.9 | 14,512.3 | 10,419.7 | 11,862.8 | 16,626.7 | 25,125.5 | 29,881.0 | 34,328.6 | 31,134.2 | 32,596.1 |
| 6,046.5 | 8,359.2 | 9,688.5 | 10,701.5 | 10,180.4 | 10,183.7 | 13,970.3 | 15,309.9 | 13,307.0 | 15,994.9 | 20,450.0 | 24,993.0 | 26,293.3 | 31,293.4 | 50,049.6 | 44,483.5 |
| 8,862.1 | 12,769.5 | 14,118.5 | 15,768.9 | 17,656.7 | 20,271.0 | 27,112.9 | 22,874.9 | 21,275.4 | 26,539.8 | 25,188.0 | 27,176.6 | 29,888.8 | 35,954.8 | 44,672.3 | 32,300.3 |
| 2,553.7 | 2,552.5 | 2,383.6 | 1,791.0 | 907.2 | 815.2 | 769.1 | 683.0 | 877.9 | 1,096.3 | 1,101.6 | 1,337.6 | 1,369.8 | 1,423.1 | 1,316.0 | 1,322.2 |
| 1,296.3 | 1,200.5 | 1,148.1 | 1,100.8 | 522.5 | 587.4 | 607.6 | 726.1 | 633.8 | 566.7 | 752.2 | 511.6 | 503.4 | 589.2 | 552.5 | 584.7 |
| 2,259.1 | 2,683.4 | 3,071.7 | 3,945.5 | 4,954.6 | 5,483.5 | 5,604.9 | 5,836.1 | 6,397.2 | 6,439.8 | 6,419.0 | 7,423.6 | 7,932.8 | 8,911.7 | 13,173.9 | 13,470.1 |
| 56,537.8 | 65,707.2 | 70,618.0 | 76,833.3 | 86,483.6 | 96,441.2 | 127,201.7 | 134,002.0 | 136,093.4 | 153,302.4 | 170,250.4 | 201,952.5 | 224,578.7 | 252,723.4 | 289,588.8 | 279,635.8 |

Table 8: Asian Dollar Market (Asian Currency Units): Assets and Liabilities, 1970–1998^a (US\$ million)

| Item | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
|--------------------------------|--------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| Assets | | | | | | | | | | | | | |
| Loans to nonbank customers | 13.9 | 188.8 | 600.9 | 1,214.3 | 2,629.4 | 3,303.4 | 4,048.3 | 4,782.0 | 6,376.8 | 8,484.4 | 12,402.3 | 19,452.2 | 27,606.3 |
| Interbank funds | 370.2 | 850.8 | 2,331.1 | 4,961.9 | 7,528.0 | 9,098.5 | 12,951.4 | 15,751.5 | 19,829.7 | 28,093.7 | 39,552.2 | 62,173.1 | 69,564.4 |
| In Singapore | 13.1 | 38.5 | 99.4 | 261.6 | 223.0 | 270.1 | 414.4 | 573.4 | 866.6 | 1,100.4 | 1,084.7 | 1,495.2 | 1,738.5 |
| Inter-ACU | na | na | na | na | na | na | na | na | 3,718.9 | 5,999.3 | 9,955.4 | 15,522.3 | 19,213.9 |
| Outside Singapore ^b | 357.1 | 812.3 | 2,231.7 | 4,700.3 | 7,305.0 | 8,828.4 | 12,537.0 | 15,178.1 | 15,244.2 | 20,994.0 | 28,512.1 | 45,155.6 | 48,612.0 |
| NCDs held | na | na | na | na | na | na | na | na | na | na | 879.3 | 1,451.6 | 2,274.0 |
| Other assets | 5.7 | 23.2 | 44.1 | 101.0 | 199.9 | 195.5 | 354.1 | 484.8 | 833.6 | 1,585.0 | 1,558.6 | 2,698.3 | 3,851.0 |
| Total Assets | 389.8 | 1,062.8 | 2,976.1 | 6,277.2 | 10,357.3 | 12,597.4 | 17,354.1 | 21,018.3 | 27,040.1 | 38,162.7 | 54,392.6 | 85,775.2 | 103,295.7 |
| Liabilities | | | | | | | | | | | | | |
| Deposits of nonbank customers | 243.7 | 237.9 | 398.7 | 912.8 | 1,614.2 | 2,067.7 | 1,960.3 | 2,254.6 | 3,600.0 | 5,771.4 | 9,250.6 | 13,555.6 | 17,629.7 |
| Interbank funds | 141.0 | 811.2 | 2,550.1 | 5,249.3 | 8,531.4 | 10,294.3 | 15,067.2 | 18,350.3 | 21,987.2 | 29,424.9 | 40,879.6 | 66,366.3 | 79,223.9 |
| In Singapore | 5.7 | 56.4 | 145.0 | 405.6 | 675.6 | 584.0 | 799.2 | 1,382.8 | 1,442.5 | 1,881.8 | 1,304.3 | 1,817.5 | 1,496.9 |
| Inter-ACU | na | na | na | na | na | na | na | na | 3,719.1 | 5,999.5 | 9,955.2 | 15,523.0 | 19,226.6 |
| Outside Singapore ^b | 135.3 | 754.8 | 2,405.1 | 4,843.7 | 7,855.8 | 9,710.3 | 14,268.0 | 16,967.5 | 16,825.6 | 21,543.6 | 29,620.1 | 49,025.8 | 58,500.4 |
| NCDs issued | na | na | na | na | na | na | na | na | na | na | 2,498.5 | 3,126.8 | 3,126.6 |
| Other Liabilities | 5.1 | 13.7 | 27.3 | 115.1 | 211.7 | 235.4 | 326.6 | 413.4 | 1,452.9 | 2,966.4 | 1,763.9 | 2,726.6 | 3,315.6 |
| Total Liabilities | 389.8 | 1,062.8 | 2,976.1 | 6,277.2 | 10,357.3 | 12,597.4 | 17,354.1 | 21,018.3 | 27,040.1 | 38,162.7 | 54,392.6 | 85,775.2 | 103,295.7 |

na = not available, ACU = Asian Currency Unit, NCD = negotiable certificate of deposit.

^a End-December except for 1998 whose reported figures are for end-March.

^b Figures for 1970–1977 include Inter-ACU transactions.

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

the Malaysian ringgit and the Singapore dollar in May 1973 but maintained par interchangeability with the Brunei dollar. In July 1973, MAS removed the cartel system of foreign-exchange quotation among banks and allowed the Singapore dollar to float “freely.” Unofficially, though, this floating system was managed. In 1981, MAS officially adopted a managed-float regime, creating a basket of currencies based on the value of trade with Singapore’s major trading partners. The Ministry of Trade and Industry (MTI), which was then in consultation with MAS, would decide the future worth of the basket of currencies or the value of the Singapore dollar vis-à-vis the upper and lower bands of the weighted basket of currencies. MAS has since been authorized to manage-float the Singapore dollar within this band, which has been widening gradually in the 1990s.

The abolition of the cartel system of interest-rate determination (MAS Notice 620, July 1975) allowed banks to quote their own interest rates on deposits and advances to customers. MAS, however, had to be informed, at least one working day in advance, of any change in the prime lending rate, the rates paid

on all types of nonbank customer deposits, and the rate charged on overdraft facilities. Reliance on the market mechanism to regulate precious financial resources would ensure both efficiency and competitiveness in credit allocation and capital mobility.

Capital-account liberalization in Singapore took full effect in 1978 with the complete abolition of exchange controls (MAS Notice 754, June 1978). Residents could now participate fully in ACU asset-liability activities and foreign-exchange transactions. MAS was quite prepared to liberalize the capital account at this early stage of financial development. Certainly, it did not intend to deal with capital flows through exchange controls since ample safeguards could be installed by legislating incentives that would not hamper the healthy expansion of the offshore financial sector.

MAS began supervising DBUs and ACUs by requiring the periodic submission of statistics and reports. Fortnightly reports included a computation of the liability base and reserve requirements maintenance (MAS Notice 613, April 1987), and the capital funds and net head-office funds of banks (MAS

| 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 30,384.6 | 33,766.1 | 37,440.3 | 38,741.8 | 55,010.8 | 66,550.7 | 86,393.5 | 125,516.0 | 134,078.2 | 134,184.1 | 136,857.4 | 145,822.5 | 173,264.7 | 180,505.5 | 173,286.3 | 152,276.0 |
| 74,446.8 | 85,329.0 | 104,933.2 | 146,609.7 | 171,092.9 | 194,755.5 | 228,725.2 | 239,119.8 | 197,028.2 | 193,757.8 | 214,276.8 | 234,338.5 | 258,769.8 | 278,743.1 | 330,685.5 | 309,950.7 |
| 2,791.4 | 3,832.1 | 4,618.7 | 4,926.5 | 5,079.7 | 5,254.2 | 7,329.6 | 8,744.6 | 8,221.1 | 8,726.4 | 12,716.9 | 17,106.7 | 18,591.6 | 22,357.2 | 29,846.3 | 27,667.2 |
| 19,690.0 | 21,862.5 | 26,991.8 | 30,603.8 | 26,055.8 | 25,800.6 | 27,565.9 | 34,440.2 | 26,626.4 | 26,740.3 | 31,713.5 | 36,356.6 | 39,669.5 | 40,236.8 | 48,882.9 | 45,771.5 |
| 51,965.4 | 59,634.4 | 73,322.7 | 111,079.4 | 139,957.4 | 163,700.7 | 193,829.7 | 195,935.0 | 162,180.7 | 158,291.1 | 169,846.4 | 180,875.2 | 200,508.7 | 216,149.1 | 251,956.3 | 236,512.0 |
| 2,728.1 | 2,726.9 | 2,949.9 | 3,008.1 | 2,922.7 | 1,523.3 | 1,496.4 | 1,740.4 | 1,781.1 | 1,884.5 | 2,899.5 | 3,917.7 | 6,450.4 | 7,952.7 | 5,837.0 | 4,979.1 |
| 4,301.4 | 6,232.8 | 10,050.9 | 12,242.2 | 15,842.1 | 17,647.8 | 19,966.7 | 24,019.2 | 24,837.5 | 24,552.2 | 32,069.4 | 32,266.7 | 39,747.8 | 39,668.8 | 47,384.7 | 46,136.7 |
| 111,860.9 | 128,054.7 | 155,374.2 | 200,601.8 | 244,868.8 | 280,477.2 | 336,581.8 | 390,395.5 | 357,725.0 | 355,378.6 | 386,103.0 | 416,345.4 | 478,232.9 | 506,870.2 | 557,193.5 | 513,342.6 |
| 20,619.9 | 21,523.6 | 28,018.8 | 33,804.6 | 41,575.5 | 47,453.9 | 55,019.4 | 66,885.5 | 63,499.4 | 63,612.2 | 62,669.0 | 65,787.8 | 80,603.6 | 95,373.5 | 113,683.4 | 114,056.9 |
| 84,743.4 | 100,186.5 | 120,030.1 | 159,368.9 | 192,485.3 | 221,803.6 | 269,582.1 | 309,427.1 | 281,813.4 | 279,821.3 | 308,939.9 | 333,537.8 | 376,106.5 | 389,469.6 | 414,526.2 | 369,454.4 |
| 1,787.7 | 2,943.2 | 4,174.2 | 4,860.9 | 6,538.7 | 8,444.2 | 12,620.3 | 11,955.8 | 14,258.8 | 18,194.7 | 18,502.4 | 22,676.3 | 25,133.5 | 25,257.4 | 32,271.9 | 21,829.0 |
| 19,697.9 | 21,866.5 | 26,993.8 | 30,603.5 | 26,056.6 | 25,801.4 | 27,566.5 | 34,438.1 | 26,624.1 | 26,741.6 | 31,716.4 | 36,354.3 | 39,670.2 | 40,243.3 | 48,905.3 | 45,796.0 |
| 63,257.8 | 75,376.8 | 88,862.1 | 123,904.5 | 159,890.0 | 187,558.0 | 229,395.3 | 263,033.2 | 240,930.5 | 234,885.0 | 258,721.1 | 274,507.2 | 311,302.8 | 323,968.9 | 333,349.0 | 301,829.4 |
| 3,364.6 | 2,997.4 | 2,310.4 | 2,028.1 | 2,177.2 | 2,126.4 | 2,355.3 | 2,014.0 | 1,334.1 | 925.0 | 760.2 | 797.2 | 1,737.5 | 2,229.5 | 2,198.1 | 1,989.3 |
| 3,133.1 | 3,347.1 | 5,014.9 | 5,400.2 | 8,630.5 | 9,093.3 | 9,625.1 | 12,068.8 | 11,078.0 | 11,020.1 | 13,733.6 | 16,222.6 | 19,785.2 | 19,797.3 | 26,785.9 | 27,861.4 |
| 111,860.9 | 128,054.7 | 155,374.2 | 200,601.8 | 244,868.8 | 280,477.2 | 336,581.8 | 390,395.5 | 357,725.0 | 355,378.6 | 386,103.0 | 416,345.4 | 478,232.9 | 506,870.2 | 557,193.5 | 513,342.6 |

Notice 601, November 1983). Monthly reports included a first schedule showing the DBU's or ACU's assets and liabilities position on the last business day of each month, taking into account loans and advances to nonbank customers, forward foreign-exchange transactions, interbank indebtedness, and asset transfers between the two units (MAS Notice 610, November 1983). Credit files and loans and advances made to all borrowers, including bank directors, staff, and related concerns, as of the last business day of each month also had to be submitted (MAS Notices 611 and 612, November 1983). Other requirements were a quarterly schedule of loans and advances of banking offices and branches in Singapore, and annual reports with balance sheets and profit-and-loss statements (MAS Notice 608, November 1973).

This showed that at the start, when the authority had very little experience, it focused on establishing an extensive matrix of data and information on the two-tier financial system. Authorities commonly begin regulating and supervising by imposing strict or even excessive rules that may eventually stifle fi-

ancial activities and institutions. Effective administrative supervision demands a working relationship between financial institutions and the supervising authority where the former are market players and the latter is the whistle-blowing referee.

Financial sector deregulation is being carefully sequenced, and reflects both external and domestic monetary conditions. While market forces should be respected in principle, government initiatives, policy interventions, and promotion efforts remain key to the success of a leading financial center. International financial intermediation and globally integrated financial markets are so complex that nonmarket intervention measures by the authorities must often be carried out through trial and error. It is not easy to supervise within rigorously defined rules. Instead, the authorities are forced to learn to regulate and cope with uncertainty while allowing financial institutions to manage their own market risks and shocks. Indeed, a good understanding of the "rules of the game" and the "appropriate role" of financial institutions will be crucial to a smooth working relationship between supervisors and market players.

Prudential Safeguards

Singapore has always stood for free trade and free market competition. It has always been at the forefront of liberalization and has benefited from it. Couldn't the same consciousness apply to financial services? When the issue was put to the then Chairman of MAS, Hu, he offered no apology but retorted instead:

Would you advocate that? Have you thought through the problems? When a bank collapses, not only will the shareholders lose, all the depositors' money and the voters' money will be lost. In addition to that, the collapse of the bank may have a systemic effect: the whole economy may be undermined. (Business Times, 23–24 August 1997)

In other words, because money is the lifeblood of the economy, the governing authorities regard institutions offering financial services quite differently from manufacturing companies.

The conservative stance taken by MAS toward financial institutions is thus not surprising. As of 1998, local banks were required to have minimum capital funds of S\$800 million, while foreign banks had to have at least S\$200 million to operate in Singapore. Reflecting this highly cautious approach, local banks maintain a capital adequacy ratio of between 15 and 18 percent despite their relatively limited international dealings and although MAS requires a ratio of only 12 percent and the Bank for International Settlements, in 1992, set a minimum guideline of 8 percent. This has put Singapore banks among the strongest banks worldwide (Merrill Lynch 1992). Compared with regional banks, Singapore banks have a relatively low level of nonperforming loans of 6–10 percent, as disclosed by MAS in August 1998 in the midst of the Asian currency crisis. In any case, MAS and Singapore banks are known for their conservative stance in classifying and grading loans (MAS Notice 612, November 1983). In fact, even before the Asian currency turmoil, Singapore banks routinely overprovided for and wrote off bad and doubtful debts

under close monitoring by MAS (MAS Notice 606, February 1978). Total credit facilities to a single borrower or group of borrowers are capped at a threshold value of 30 percent in excess of the bank's capital fund (MAS Notice 623, March 1984).

Internationalization of financial intermediation is tightly scrutinized and monitored. Usually, such intense regulation reflects insufficient understanding of the costs and benefits involved, on the part of the regulating authority. The MAS Guidelines on Asian Currency Unit (Terms and Conditions of Operation) provide ample safeguards in the form of strict prudential requirements designed to protect certain macroeconomic aims or policy objectives (see Appendix 2). A bank must keep its DBU and ACU accounts separate (item 2). The total ACU assets and liabilities of a bank are subject to a maximum limit fixed by MAS (item 3). These provisions are classic examples of caution in demarcating the two units to facilitate supervision and to prevent external disruptions.

The MAS Guidelines provide further that a bank must:

furnish a satisfactory undertaking to the Monetary Authority of Singapore either from its Head Office or other parties named by the Authority that it will maintain a sound liquidity position at all times and that the Head Office or other parties named by the Authority will on demand provide adequate funds to make up for any liquidity or other shortfall. (item 15)

Banks are also expected to use the actual names of account holders, rather than a number, a code word, or the names of proxies (item 16); otherwise, the approval to operate an ACU may be revoked by MAS (item 18). Such strict prudential requirements imposed on banks discourage the operation of financial institutions whose clients require confidentiality and, to some extent, prevent financial activities that thrive on anonymity.

To comprehend how the dichotomized financial system ensures prudential safeguards, we will ex-

amine those measures that significantly affect domestic financial stability and the ability of the financial system to withstand external shocks. On the asset management side, measures such as imposing a ceiling on Singapore dollar credit facilities for resident nonbank customers of offshore banks are perhaps more effective in preventing foreign encroachment on DBUs (MAS Notices to Banks on Guidelines for Operation of Offshore Banks). MAS has consistently denied that such a ceiling poses a constraint to offshore banks since "every foreign bank has excess of up to \$150 million in Singapore-dollar loans and it is not fully utilised." Such argument is technically valid since the credit ceiling has been steadily revised upward over the years (Table 9).

Table 9: Singapore Dollar Resident Loan Limit on Offshore Banks

| Year | Limit (S\$ million) |
|------|---------------------|
| 1973 | 15 |
| 1978 | 30 |
| 1988 | 50 |
| 1992 | 70 |
| 1993 | 100 |
| 1995 | 120 |
| 1996 | 150 |
| 1997 | 200 |
| 1998 | 300 |

Source: Monetary Authority of Singapore.

A rough calculation suggests that an increase in the limit by US\$30 million can increase the stake of offshore banks in DBUs by a collective US\$3 billion. As can be seen, the ceiling has been raised since the 1970s, very gradually at the outset but in more generous increments since the mid-1990s. Foreign banks tend to consider the argument as a vicious cycle. Credit facilities are not fully utilized because the ceiling itself has effectively capped the potential market for each foreign bank so that its management board is unwilling to commit resources in the DBU. In effect, the ceiling discourages foreign participation even if that is not its stated purpose. For many offshore banks, however, the ceiling is not a

problem since most of their syndicated loans are dollar-denominated and their clients' fund requirements are mostly denominated in foreign currencies.

On the liability management side, the relative inaccessibility of local deposits to restricted banks and offshore banks also tends to discourage foreign participation in DBUs. Both offshore banks and restricted banks are not allowed to accept fixed deposits of less than S\$250,000 per deposit and savings deposits from nonresidents. Offshore banks are not allowed to accept savings deposits, fixed deposits, and other interest-bearing deposits in Singapore dollars from Singapore residents (MAS Notices to Banks on Guidelines for Operation of Restricted Banks and Guidelines for Operation of Offshore Banks). Other restrictions include limits on the number of branch premises; exclusion from the Network for Electronic Transfers, Singapore (NETS); and limits on the number of automated teller machines (ATMs) allowed (MAS Notice 603, November 1983). These factors have, quite naturally, discouraged offshore banks from participating in DBUs (Table 10). The unequal treatment of foreign banks in the domestic sector, where they are excluded from electronic point-of-sale systems and the shared ATM network and are restricted from branching, is perceived by some quarters as constituting a cartel to keep them out of DBUs.

It has often been argued that such restrictions contribute to higher reserve costs and, hence, to a higher effective cost (EC) of funds for foreign banks. The latter is the true interest rate that a bank will have to pay to raise funds, and it therefore determines the bank's minimum lending rate, or the minimum yield on its investment. Thus, EC has two components: the nominal cost of funds (NC) and the reserve cost (RC , or $\sum_{i=1}^5 R_i Y_i$). This relationship is expressed by the following formulas:

$$\sum_{i=1}^5 R_i Y_i + (100 - X) EC = 100 NC \quad (1a)$$

$$EC = \frac{100 NC - \sum_{i=1}^5 R_i Y_i}{100 - X} \quad (1b)$$

Table 10: Branches and ATMs: Local Banks vs Foreign Banks, as of 1999

| Bank | Number of Branches | Number of ATMs |
|--------------------------------------|--------------------|----------------|
| Local Banks | | |
| Post Office Bank | 131 | 670 |
| United Overseas Bank | 82 | 286 |
| Overseas Chinese Banking Corporation | 55 | 304 |
| Development Bank of Singapore | 42 | 260 |
| Overseas Union Bank | 40 | 152 |
| Tat Lee Bank | 32 | 94 |
| Keppel Bank | 16 | 17 |
| Total | 398 | 1,783 |
| Foreign Banks | | |
| Malayan Banking Berhad | 22 | 22 |
| Standard Chartered Bank | 19 | 19 |
| Hong Kong Bank | 11 | 20 |
| Sime Bank | 7 | 0 |
| Bank of America | 3 | 2 |
| Bank of China | 3 | 3 |
| Citibank | 3 | 15 |
| UCO Bank | 3 | 0 |
| Bank of Tokyo-Mitsubishi Bank | 2 | 0 |
| Chase Bank | 2 | 0 |
| Kwangtung Provincial Bank | 2 | 2 |
| ABN Amro | 1 | 0 |
| Ban Hin Lee Bank | 1 | 0 |
| Bangkok Bank | 1 | 0 |
| Bank of East Asia | 1 | 0 |
| Bank of India | 1 | 0 |
| Credit Agricole Indosuez | 1 | 0 |
| PT Bank Negara Indonesia | 1 | 0 |
| HL Bank | 1 | 0 |
| Indian Bank | 1 | 0 |
| Indian Overseas Bank | 1 | 0 |
| Sakura Bank | 1 | 0 |
| Total | 88 | 83 |

ATM = automated teller machine.
Source: Monetary Authority of Singapore.

Thus, EC can be expressed as follows:

$$EC = f[R_i, Y_i, NC, X(R_i)]$$

where reserve requirements comprise various percentage ratios (R_i) of a combination of returns (Y_i) on some non-interest-bearing cash balances and low-yielding liquid assets against the liability base. In the case of Singapore, the five i items are minimum cash balances, notes and cash in circulation, government

securities such as Treasury bills and bonds, overnight repurchase agreements, and bills of exchange. X is defined as the ratio of total reserve requirements held against the liability base.

All banks with DBUs are obliged to observe the statutory reserve requirement that is currently fixed at 21 percent of the liability base (X), of which 3 percent consists of the minimum cash balance (MCB) and 18 percent liquid assets (MAS Notice 613, April 1987). The effective cost of funds would include additional reserve costs on top of the nominal cost of local deposits or interbank borrowing. Since X is mostly fixed, it follows from the first equation that EC can be reduced only if RY is rising or NC is declining. The relative inaccessibility of local deposits forces foreign banks that wish to lend in Singapore dollars to revert to the local interbank Singapore dollar money market for funds. A foreign bank's liability base is likely to fluctuate more than that of a local bank and, therefore, the liquid assets it acquires would naturally be geared more toward short-term, lower-yielding Treasury bills than longer-term, higher-yielding bonds on which the risk of capital loss is greater. The EC of foreign banks is therefore likely to be less competitive since their RY tends to be lower and their NC tends to be higher than local banks' (see Charts 3 and 5 in Tan and Seow 1997).

In fact, MAS has detected and dealt severely with cases of "round tripping," wherein a bank treats deposits made with it as balances held for banks or branches outside Singapore, instead of part of its liability base, to avoid the statutory reserve provision and, hence, evade the additional reserve cost which otherwise would have been incurred. (See MAS Notice 613, April 1987.) MAS also further tightened loopholes by prohibiting banks from accepting Singapore dollar deposits from nonbank customers via foreign-exchange swaps.

The core activities of a bank revolve around the efficient management of its assets and liabilities. To maximize profit, banks must not only acquire a portfolio of assets that offers the highest yield, but

also raise the required funds while minimizing the costs of borrowing. It appears that the conspicuous inertia of foreign banks when it comes to participating in DBUs is not explained by the interplay of market forces and competition. Rather, it should be perceived as a result of the government's policy-inspired regulations to nurture local banks and to insulate the domestic financial sector from foreign participation. Such a deliberately protectionist strategy discourages competition and does not make financial services more efficient. After decades of nurturing by MAS, the local Big Four banks have grown in size and are among the top 20 banks in Asia based on tier-1 capital. Although the limit on foreign shareholding of the locally incorporated banks was raised from 20 to 40 percent in the 1990s, these local banks are still considered too small when compared with global players.

From the perspective of safeguarding, having a definite distinction between residents and nonresidents enables the authority to demarcate the financial activities of bank as well as nonbank customers between the DBU and the ACU. This policy is known as the noninternationalization of the Singapore dollar. Such a policy, which can be traced to the earliest MAS Notice 621, September 1981, is indispensable to the objective of "throwing sand into the wheels" of perfect capital mobility. MAS can then monitor the sources and uses of funds as well as influence demand for the Singapore dollar but without restricting flows of capital between DBUs and ACUs.

The distinction made regarding the eligibility of financial participation by residents and nonresidents is a crucial safeguard of the two-tier financial system. Strict regulations and rules are often imposed because of fear of excessive asset price variability or volatile capital flows, given the difficulty of striking a fine balance. The terms "residents" and "nonresidents" refer to both bank and nonbank customers. "Residents" comprise Singapore citizens and permanent residents. "Nonresidents" comprise com-

panies that were incorporated in Singapore and are jointly owned, majority-owned, or otherwise controlled by foreigners (MAS Notice 621, July 1992). The latest statement of MAS policy defines "residents" in broader and clearer terms as Singapore citizens, individuals who are tax-residents of Singapore, companies incorporated in Singapore, and overseas subsidiaries that are jointly owned or majority-owned by Singapore citizens (MAS Notice 757, August 1998).

The MAS Notices to Banks under the Asian Currency Unit (Terms and Conditions of Operation), which has not been revised since it was first issued, contains a clause on the prohibited use of the Singapore dollar in nine out of its 18 items. These nine items (see items 4, 6, 7, 8, 9, 10, 11, 12, and 13) govern the scope of financial activities allowed to banks with ACUs. The prohibitions against the use of the Singapore dollar stated in those items, together with other regulations and guidelines, essentially drive a wedge between DBUs and ACUs while at the same time promoting the latter.

In the context of the noninternationalization policy, the thrust is therefore to restrict nonresidents' use of Singapore dollar credit facilities outside Singapore. However, as the strength of indigenous financial institutions and the local economy grows over time, the authority should gradually relax the limits on Singapore dollar financing to residents for overseas projects. This approach is also known as the gradual internationalization of the Singapore dollar.

The revised definition of residents and nonresidents in MAS Notice 757, August 1998, encompasses a broader classification of borrowers and wider usage by destination. Residents now have access to cheaper Singapore dollar funding and can borrow Singapore dollars for use even outside Singapore for bona fide overseas projects, provided the Singapore dollar proceeds are converted into foreign currencies. Foreign companies can now issue bonds denominated in Singapore dollars, even if the proceeds are to be used outside Singapore. Foreign companies can also list Singapore dollar-denominated shares

on the Stock Exchange of Singapore. But the ultimate safeguard is that Singapore-dollar proceeds would have to be converted to a foreign currency before leaving the DBU; this rule applies to both residents and nonresidents.

Comparing the November 1983 and July 1992 versions of MAS Notice 621, which has since been replaced by MAS Notice 757, August 1998, one will notice clearer rules and a wider net being cast on the acceptable bounds of the internationalization of the Singapore dollar. These are evident in the classification by residential status, the applicable range of economic activities, and the thrust of the policy. Without getting into the technical details of the greater internationalization of the Singapore dollar, which is not within the scope of this study, a fair observation can be made here. When MAS was less certain of the impact of the policy and of MAS' ability to influence that impact, a cautious approach was to leave the MAS Notice 621, November 1983, brief and vague by stating that "banks should observe the Authority's policy of discouraging the internationalisation of [the] Singapore dollar." Residential status was not specifically defined and the economic activities for which the Singapore dollar could be used were not mentioned at all. Only a blanket requirement of a detailed written proposal in direct consultation with MAS was imposed.

MAS Notice 621, July 1992, spelled out residential status and the economic activities in greater detail, followed by a stern warning that MAS "has no wish to facilitate external speculative activities in our financial or property markets"; "if in doubt," it went on, "[a] bank should consult the Authority." MAS Notice 757, August 1998, explicitly spelled out the instances when banks had to consult with MAS, other instances when banks could dispense with consultation, and instances when banks were prohibited outright from using Singapore dollars. The MAS' longstanding policy of not encouraging the internationalization of the Singapore dollar was maintained. The important lesson to be learned here is that gradual

internationalization means incremental revision and evolutionary change with judicious relaxation, without jeopardizing the monetary policy framework. The latest revision, MAS Notice 757, November 1999, is just another attempt to gradually internationalize the Singapore dollar through policy fine-tuning (Appendix 3).

As the government's signal for further financial liberalization in Singapore intensifies, calls for a review of the controversial policy will again surface as they have in the past. MAS noted the trade-off between the noninternationalization policy and the development of the capital markets, particularly the bond market, in Singapore. The controversy was put to rest when the MAS Chairman revealed that a systematic internal study undertaken had validated the controversial Banking Act for the following reasons:

Firstly, the policy makes it harder to mount a speculative attack on the Singapore dollar. The restrictions hinder speculators who need to borrow Singapore dollars in order to [go] short on the currency. Secondly, the policy had impeded the development of an offshore market in Singapore dollars, beyond MAS oversight and influence. Thirdly, the noninternationalisation policy has an important deterrent effect, signalling the MAS' determination not to tolerate speculation in the Singapore dollar. (Lee 1998)

The MAS Chairman then officially stated the following important policy conclusion:

We do not plan to change our policy on the noninternationalisation of Singapore dollar in the foreseeable future. As a small and open economy, we cannot afford to have our currency subject to manipulation or speculation.

This must be the clearest official policy signal to the markets and the international financial community to maintain some degree of monetary autonomy, and the effects of such an announcement should not be overlooked if the policy is to remain credible. The feasibility of achieving the coexistence of exchange-rate stability, capital mobility, and monetary autonomy,

or the “triad of incompatibility,” will be discussed in the next major section.

FISCAL INCENTIVES

Incentives refer to measures that help to promote market development, strengthen market forces, and stimulate participants' interest. Fiscal incentives fundamentally influence structural development. In relation to the ACU, they directly reflect the government's determination to promote it. A main objective of demarcating between the DBU and the ACU is to ensure exchange-rate stability through some degree of monetary autonomy, without impairing capital mobility. Recommended fiscal incentives may, however, have significant implications for currency switching between the two units. Fiscal incentives that influence the preference between the local currency and foreign currencies would also affect capital-account balances through capital transfer, such that, contrary to the results of conventional analysis, the alignment between exchange rates and current-account balances would have doubtful value.

To promote the Asian dollar market, the withholding tax on nonresidents' interest income was abolished in 1968 and the ACU was exempted by MAS in 1972 from the statutory reserve requirement, effectively paving the way for future developments and providing a level playing field for ACU players. Unlike the disadvantage in cost of funds incurred by foreign banks operating in the DBU, all participants in the ACU bear no extra reserve cost that denotes an implicit tax on financial transactions.

To spur greater participation in the ACU, the concessionary corporate tax on income was reduced from 40 to 10 percent in 1973. This immediately rendered participation in the DBU relatively less attractive. Although the corporate tax on income was steadily reduced to 25 percent in 1999, it is still much higher than the 10 percent imposed on the ACU. Further fiscal incentives granted included exemption from estate duty for approved Asian dollar bonds and nonresident ACU deposits in 1976, and abolition

of the stamp duty on ACU offshore loan agreements and Asian dollar bond certificates in 1980. Additional fiscal incentives granted in the 1980s included a five-year tax holiday for all income derived from syndicated offshore loans, tax exemption for offshore fee income and commissions earned by nonresidents, and exemption from stamp duty for nonresidents' ACU transactions in securities that are not denominated in Singapore dollars.

Since the early 1990s, substantial efforts have been made to promote Singapore as a regional financial trading center and to accelerate fund management activities. For example, a 10 percent concessionary tax rate was extended to lending and borrowing activities in foreign securities and transactions in ACUs with approved fund managers. To further boost risk management and capital-market activities, a concessionary tax rate of 5 percent was granted to the trading of foreign securities by ACUs with taxable income exceeding S\$10 million. Fund managers with managed funds of at least S\$5 billion from foreign investors operating in ACUs would enjoy a concessionary tax rate of 5 percent for the incremental increase in taxable income over the preceding qualifying year.

Government initiatives, in the form of attractive fiscal incentives in support of the various financial activities of ACUs, formed the basis of marketing efforts. In summary, foreign financial participation in ACUs was successfully expanded and encroachment on DBUs was discouraged because of various push and pull factors. Push factors, such as the ceiling on Singapore dollar loans, the relative inaccessibility of local deposits, and higher reserve costs, kept foreign banks from participating in DBUs. On the other hand, pull factors, including the abolition of withholding tax on the interest income of nonresidents, the waiver of the statutory reserve requirement, and a wide range of fiscal incentives pertaining to syndicated loans, foreign securities trading, and fund management, led foreign banks to concentrate and expand their offshore banking activities within ACUs.

A fine balance has to be struck between DBUs and ACUs since managing them can be a double-edged blade. If ACUs are made too attractive through a waiver of the reserve cost, the lowering of profit taxes, and the granting of fiscal incentives, DBUs may become unstable as financial activities shift toward the Asian dollar market. The strength of the Singapore dollar, especially since the 1980s, has kept this from happening. Yet, this very record of success could cause financial activities to shift from ACUs to DBUs, thereby destabilizing the domestic banking sector. The solution lies in prudential regulation and strict administrative supervision with ample safeguards, according to the policy of gradual internationalization of the Singapore dollar. These can provide an effective buffer against internal and external shocks.

The dichotomized financial system was achieved through three broad strategies: segregation between foreign and local financial intermediation, construction of a protective shield between foreign and local institutions, and insulation of the domestic banking sector from possible international economic turbulence. In formulating, implementing, and maintaining the dichotomized financial system, MAS has had to take into account Singapore's economy and institutions. These issues and their policy implications must therefore be clearly understood.

The Dichotomized Financial System: Issues and Policy Implications

It is widely accepted in the literature and among central banking authorities, and confirmed by international experience, that the monetary authority cannot persist in trading inflation against higher economic growth. Although the dominance of money supply is widely recognized, money-supply targeting has not been very successful worldwide because of the long and unexpected lag in monetary impact. In fact, according to a recent study by the International Monetary Fund (1995), a decreasing number of countries

still peg their currencies to a single currency or a basket of currencies or in terms of shares in world trade. More countries appear to be moving toward a flexible, independent floating exchange regime, in which the authorities only act to smooth fluctuations but do not target a particular level.

Singapore has adopted an exchange-rate arrangement whereby MAS concentrates on a single nominal anchor instead of monitoring several intermediate targets or control measures at the same time. Singapore will also not maintain an official peg of any sort as this could lead to unrealistic exchange rates. Macroeconomic stabilization by MAS since the 1980s has been dominated by monetary policy, essentially exchange-rate management. Does Singapore's dichotomized financial system facilitate such management? Does the demarcation of financial activities between the DBU and the ACU, coupled with the segregation between local and foreign banks, make exchange-rate management more effective by helping to regulate liquidity in the domestic financial sector? These are interesting issues to consider. An affirmative answer connotes rejection of the hypothesis of the triad of incompatibilities, or the coexistence of exchange-rate stability, free capital mobility, and monetary autonomy, as some authors (see, for example, Fischer and Reisen [1993]) have suggested.

Management and Transmission Mechanism of the Singapore Dollar

The longstanding budgetary policy of the republic is to maintain operating and development expenditures at levels that can be financed with government revenues. The role of active fiscal stabilization in Singapore is therefore somewhat curtailed, even in the short run. MAS has adopted the exchange rate as the moving nominal anchor for monetary policy since the early 1980s, as officially stated in the authority's annual report for 1981/82:

The Authority's ability to pursue independent monetary and interest rate policies is constrained

by the open nature of the economy and the close linkage between domestic and international financial markets. In this setting, the Authority concentrates on an exchange rate policy.... The Singapore dollar exchange rate is based on a managed float system, in which it is allowed to fluctuate within a target band. This target band is based on a trade-weighted basket of currencies of Singapore's major trading partners. The Authority manages the float within the band mainly through its foreign exchange operations.

The unusual features of consistent budget surpluses and a huge but forced net contribution to the Central Provident Fund make liquidity management and the implementation of exchange-rate policy rather unique (Figure 3). Conventional channels and instruments for regulating liquidity flows in an economy under monetary policy, such as open-market operations through Treasury bills and bonds, variations in reserve requirements, or the discount-window approach, do not play an active role in Singapore.

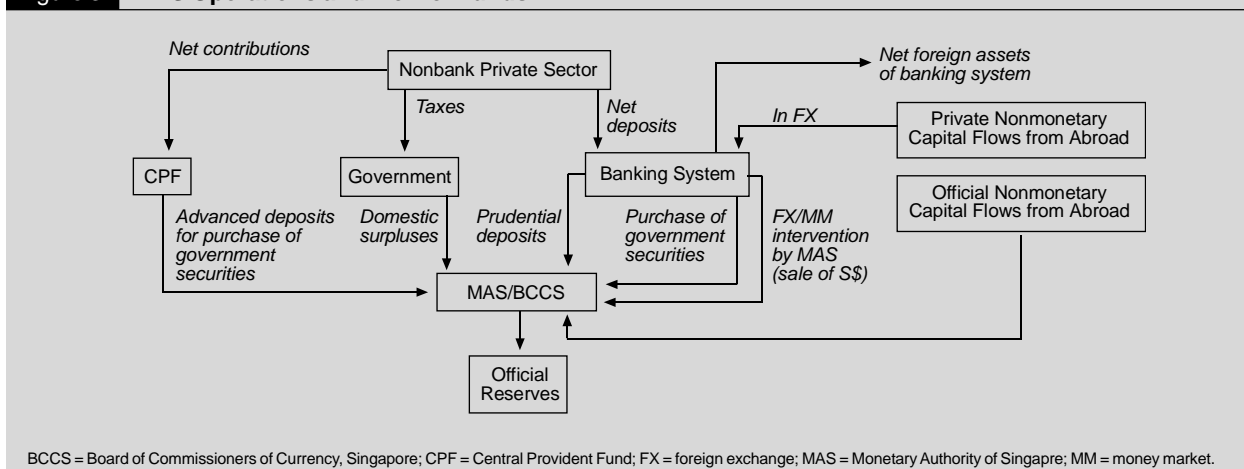
The more important, if not the most frequent, means of regulating liquidity in the banking system appears to be intervention by MAS through the foreign-exchange market, currency swaps, and direct deposit injections or withdrawals in the money market. Compulsory CPF contributions and domestic surpluses from government agencies such as the statutory boards and ministries are channeled to MAS

as part of official reserves for investment by the Government Investment Corporation (GIC). Hence, the banking system periodically experiences substantial liquidity drains. MAS tends to purchase US dollars and sell Singapore dollars in the currency swap market, in amounts that depend on its exchange-rate objective.

If MAS wished to see a stronger Singapore dollar, the offsetting transactions in the currency swaps would be less than the initial liquidity drains from the banking system. If the objective were a weaker Singapore dollar, the offsetting transactions would exceed the initial liquidity drains. Since Singapore is a price taker when it comes to domestic interest-rate movements, growth in the money supply would therefore be totally subservient to the exchange-rate policy if MAS were "actively" pursuing its exchange-rate objective. On the other hand, if MAS were merely "guiding" the exchange-rate movements, money supply could retain its dominance in a monetarist world.

The official objective of a strong exchange-rate policy is to contain imported inflation and keep domestic price increases low, for sustained economic growth. Rapid economic expansion in the post 1985/86 years has presented another task for exchange-rate management, which is to regulate the economy when it overheats. However, MAS also recognizes that with full employment in Singapore, "any attempt

Figure 3: MAS Operations and Flow of Funds



to hold down the Singapore dollar artificially would only buy a temporary improvement in competitiveness. It would be quickly undermined by higher inflation." If there is a sharp rise in worldwide inflationary pressure, MAS admits that it may be difficult to engineer "an offsetting sharp appreciation of exchange rate without causing short-run competitive and adjustment problems." An economic system of highly flexible wages and swift price adjustments will have limited scope for monetary policy. Given the widespread year-to-year adjustments in wage contracts under the National Wages Council's tripartite arrangement, exchange-rate policy may be able to exploit only a very short-term trade-off, lasting no more than a year, between inflation and trade competitiveness (Teh and Shanmugaratnam 1992).

The more pertinent issue to ponder must be the extent to which MAS is willing to step in to safeguard export competitiveness through a weaker exchange-rate policy even if it means going against the market trend. Another issue is the extent to which the strong exchange-rate policy of the post 1985/86 recession years is MAS-managed, as opposed to market-driven. The econometric evidence appears to support the view that MAS actually "guides" rather than "targets" the exchange rate.

First, although money supply appears to be a dominant influence on the exchange rate, a significant bidirectional association between the two constitutes prima facie evidence that MAS has not been "actively" pursuing an exchange-rate targeting policy since money supply has not been made completely endogenous. In fact, narrow (M1) and broad (M2) money supply contributed 40 and 35 percent of the feedback, respectively. Second, exchange rate does significantly affect the consumer price index (CPI), as policymakers have foreseen, but the absence of a link between the exchange rate and the domestic supply price index (DSPI) is not unexpected. Third, M1 and M2 have a significant effect on both the real economy and general prices. Fourth, the major impact of industrial production on unit labor cost (ULC)

can be explained by the tightening of the labor market in a full-employment economy. Higher ULC in turn exerts further pressure on CPI that can be eased only through faster exchange-rate appreciation to slow down export growth and industrial production (Chen and Tan 1996).

Exchange-rate management since the inflationary environment of the early 1980s has been successful in containing imported inflation (Table 11). The weaker Singapore dollar has contributed to higher export growth overall, but the improvement in export performance really came from increased export of services rather than goods (Chen et al. 1991). MAS did not engineer the steady appreciation of the Singapore dollar since the mid-1980s; the market did. MAS happened to agree that a strong Singapore dollar was needed to maintain price stability and recognized the new role of the exchange rate in cooling down the overheated economy. It is difficult to determine the costs incurred by the authority in the course of exchange-rate management, and foreign reserve statistics may not tell the full story. GIC, which is responsible for investing surpluses, does decide on the movement of funds in an opaque manner. Suffice it to say, however, that one of the prerequisites of exchange-rate management must be a healthy level of surplus accumulation. So long as MAS adheres to the stated principle of leaving fundamental currency value to market forces, the costs incurred should be moderate and tend to average out over time.

In Singapore, the money supply manages to retain its dominance in the real economy and inflation is still essentially a monetary phenomenon. MAS seems to have no long-term ability or intention to "target" the exchange rate and its "guiding" policy serves only to smooth fluctuations in the short run through liquidity management. Despite the absence of capital control and high capital mobility, the Singapore dollar remains one of the most stable currencies. The "impossible trinity" of exchange-rate stability, free capital mobility, and monetary autonomy would have been

Table 11: Exchange Rate and Inflation Rate, 1980–1997

| Year | Imported Inflation (percentage points) | Domestic Inflation (percentage points) | Total Inflation (percent) | Exchange Rate (S\$/US\$) |
|------|---|---|------------------------------|-----------------------------|
| 1980 | 4.7 | 3.8 | 8.5 | 2.1 |
| 1981 | 3.3 | 4.9 | 8.2 | 2.1 |
| 1982 | 1.1 | 2.8 | 3.9 | 2.1 |
| 1983 | (0.4) | 1.6 | 1.2 | 2.1 |
| 1984 | (0.1) | 2.7 | 2.6 | 2.1 |
| 1985 | (0.5) | 1.0 | 0.5 | 2.2 |
| 1986 | (0.8) | (0.6) | (1.4) | 2.2 |
| 1987 | 0.1 | 0.4 | 0.5 | 2.1 |
| 1988 | 0.6 | 0.9 | 1.5 | 2.0 |
| 1989 | 0.6 | 1.8 | 2.4 | 2.0 |
| 1990 | 0.4 | 3.0 | 3.4 | 1.8 |
| 1991 | 0.4 | 3.0 | 3.4 | 1.7 |
| 1992 | 0.2 | 2.1 | 2.3 | 1.6 |
| 1993 | 0.5 | 1.9 | 2.4 | 1.6 |
| 1994 | 0.7 | 2.9 | 3.5 | 1.5 |
| 1995 | 0.3 | 1.4 | 1.7 | 1.4 |
| 1996 | 0.2 | 1.2 | 1.4 | 1.4 |
| 1997 | 0.2 | 1.8 | 2.0 | 1.7 |

() = negative values are enclosed in parentheses.
Source: *Economic Survey of Singapore*, various issues.

difficult to achieve if liquidity management in the DBU were frustrated by the money multiplier, which would become more unpredictable since capital flows are not contained in the ACU. Exchange-rate management would have been less effective if the short-term exchange-rate target were neutralized by a significant pool of Singapore dollars outside Singapore or with nonresidents, outside the jurisdiction of MAS. Speculative attacks on the Singapore dollar in the foreign-exchange market would have been difficult to quell if liquidity in the local interbank money market were controlled by the local and foreign full-license banks with a long-term interest in Singapore. This must be the essence of the dichotomized financial system.

Trade Competitiveness and Current- and Capital-Account Liberalization

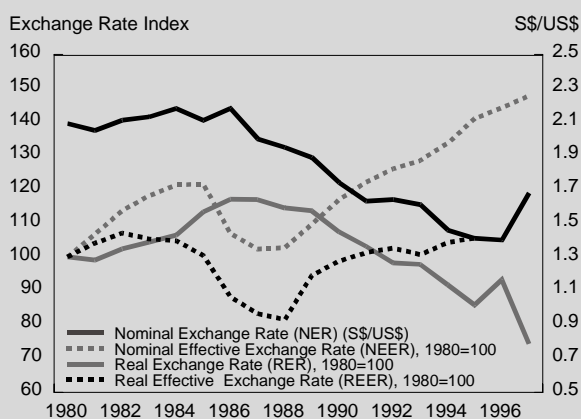
Managing a trade-weighted Singapore dollar floating within a band would still involve market judgment, and may not be an easy task for MAS. The

real effective exchange rate (REER) index is a trade-weighted exchange rate, adjusted for relative inflation differentials, and is computed as a geometric weighted average of the bilateral real exchange rate index with each of the major trading partners of Singapore. The Singapore REER index was declining in the mid-1980s but picked up from 1989 onward. In fact, in terms of the REER index, the Singapore dollar has appreciated against the US dollar by as much as 27 percent since 1987. Similarly, the nominal exchange rate (NER) of the Singapore dollar, measured as a bilateral rate against the US dollar, has also appreciated substantially, by as much as 33 percent, since 1987. The real exchange rate (RER), which customarily uses the consumer price index as the price deflator, has also appreciated by about 27 percent since 1987. (See Figure 4 and Table 12 for the exchange-rate movements from 1980 to 1997.)

The steady appreciation of the Singapore dollar is in line with the currency experience of the surplus-driven East Asian newly industrialized economies

(NIEs) such as Hong Kong, China; Korea; and Taipei, China whose currencies were closely linked to the US dollar and therefore appreciated after the latter's overvaluation peak in 1985. Singapore's international trade, however, does not seem to be affected by the appreciation of its currency. The relative export competitiveness index (RECI) takes the

Figure 4: Exchange-Rate Movements, 1980–1996 (1980=100)



Sources of basic data: International Monetary Fund, *International Financial Statistics* (CD-ROM); Asian Development Bank, *Asian Development Outlook*, various issues; *Yearbook of Statistics Singapore*, various issues.

difference between a country's export prices and that of its competitors in their common market, measured in US dollars. The RECI can improve or worsen depending on the interplay of three factors: imported material costs, wage costs, and the exchange rate. The relative unit labor cost (RULC) takes the ratio of one country's unit labor cost versus that of its competitors, expressed in US dollars. The RULC can rise or fall in a period of strong exchange-rate movements depending on the relative strength of the opposing forces, that is, the relative exchange-rate effect and the price effect. The ability of Singapore to sustain its export competitiveness in the 1980–1994 period can be attributed to interactions among three factors—cost of imported materials, wage cost, and the effects of the exchange rate—which are captured in the RECI (Chen, Lee, and Tan 1996).

As Singapore increasingly looks toward the economies in the region for joint investment participation and business cooperation in its effort to broaden and deepen its economic structure, further financial liberalization and policy reformulation are

Table 12: Exchange Rate Movements, 1980–1997

| Year | Nominal Effective Exchange Rate (NEER) 1980=100 | Real Exchange Rate (S\$/US\$) (RER) 1980 = 100 | Real Effective Exchange Rate (REER) 1980=100 | Nominal Exchange Rate (NER) (S\$/US\$) |
|------|---|--|--|--|
| 1980 | 100.00 | 100.00 | 100.00 | 2.09 |
| 1981 | 106.71 | 99.17 | 104.10 | 2.05 |
| 1982 | 113.79 | 102.41 | 107.10 | 2.11 |
| 1983 | 118.13 | 104.48 | 105.30 | 2.10 |
| 1984 | 121.45 | 106.59 | 104.80 | 2.80 |
| 1985 | 121.57 | 113.43 | 100.40 | 2.11 |
| 1986 | 107.02 | 117.16 | 88.22 | 2.18 |
| 1987 | 102.37 | 117.08 | 83.25 | 2.00 |
| 1988 | 102.80 | 114.59 | 81.49 | 1.95 |
| 1989 | 109.73 | 113.74 | 94.51 | 1.89 |
| 1990 | 116.97 | 107.44 | 98.84 | 1.74 |
| 1991 | 122.22 | 103.13 | 101.31 | 1.63 |
| 1992 | 126.28 | 98.29 | 102.60 | 1.64 |
| 1993 | 128.59 | 97.84 | 100.72 | 1.61 |
| 1994 | 133.72 | 91.90 | 104.38 | 1.46 |
| 1995 | 141.00 | 85.82 | 105.66 | 1.41 |
| 1996 | 144.24 | 93.39 | | 1.40 |
| 1997 | 147.78 | 74.34 | | 1.68 |

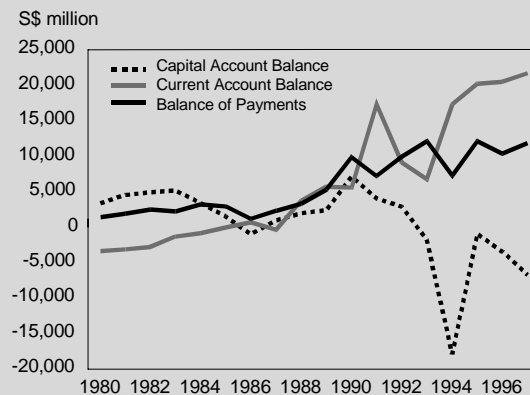
Sources of basic data: International Monetary Fund, *International Financial Statistics* (CD-ROM); Asian Development Bank, *Asian Development Outlook*, various issues; *Yearbook of Statistics Singapore*, various issues.

to be expected. Does exchange-rate policy vis-à-vis the real effective exchange rate influence the outcome of such a growth strategy? Policy simulations by Chen and Tan (1992) revealed that a weaker REER would lead to an increase in foreign investment in Singapore, while a stronger REER would discourage foreign investment by multinational corporations. On the other hand, a weaker REER would lead to lower investment abroad, while a stronger REER would significantly stimulate Singapore's overseas investment. However, an increase in receipts of Singaporeans from the rest of the world takes place when REER weakens, and vice versa. This is due to the dominance of the exchange-rate effect, through remittance conversion from abroad, over the effect of changes in investments made abroad by Singaporeans.

It is useful to note that exchange rates may have a weak link to Singapore's current account, as it is apparent that prolonged periods of appreciation in the Singapore dollar actually coincide with successive periods of current-account surpluses. Furthermore, the use of the CPI index as a deflator may not be an appropriate guide to competitiveness since it merely reflects domestic costs and also captures the prices of nontraded goods. Where the alignment between exchange rates and current-account balances is concerned, however, the relationship is less clear-cut for the several factual observations outlined below. First, in the 1980–1995 period, Singapore's current account generally improved while the REER fluctuated, with moderate appreciation in the early 1980s followed by a period of substantial depreciation between 1985 and 1988 and further appreciation after 1988. Second, given the high import content of the country's exports, the benefits to export prices of lower costs for imported intermediate goods appear to have more than offset the disadvantage of a strong Singapore dollar. Third, a stronger Singapore dollar can reduce nominal expenditure for imports since lower import prices also offset the negligible substitution effect between domestic and imported goods.

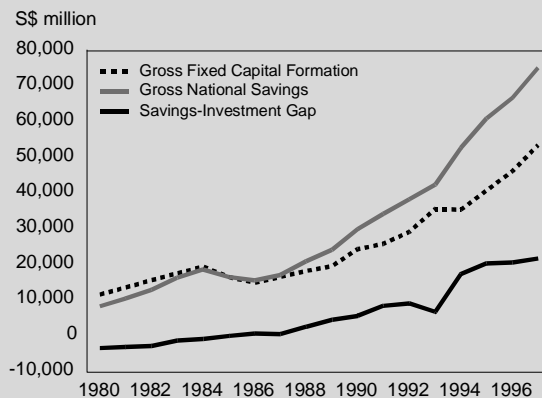
Singapore's balance-of-payments position has improved significantly especially since the mid-1980s. Surpluses have reached a ceiling of around S\$12 billion because of tremendous improvement in the current account, which hit a record high of S\$22 billion in 1997. The capital account began to deteriorate only following the spread of Singapore's "external wing policy" to the regional economies in 1992 (Figure 5 and Table 13). After decades of dynamic economic growth, the rate of investment decelerated as the economy matured, resulting in a large positive savings-investment gap. Gross national savings as a percentage of gross national product (GNP) went up to 51.2 percent in 1997 from a low of 34.2 percent in 1980. Gross fixed capital formation as a percentage of GNP declined from 48.1 percent in 1980 to 36.4 percent in 1997 (Figure 6 and Table 14).

Figure 5: Balance of Payments, 1980–1996



Source: *Yearbook of Statistics Singapore*, various issues.

Figure 6: Savings-Investment Gap, 1980–1996



Source: *Yearbook of Statistics Singapore*, various issues.

Trade balances were negative throughout the 1980s and early 1990s. Thereafter, they hovered at close to zero, as shown in Figure 7. The maturing economy has reduced the need for imports of goods. There has also been a corresponding surge in exports of goods as well as of services. In the 1990s, Singapore has begun to reap the fruits of being an international service hub, including the earnings of its financial,

Table 13: Balance of Payments, 1980–1997 (S\$ million)

| Year | Capital Account (Net) | Nonmonetary Capital | Monetary Capital |
|------|-----------------------|---------------------|------------------|
| 1980 | 3,388.3 | (3,345.6) | 1,433.8 |
| 1981 | 4,578.5 | (3,104.5) | 1,938.4 |
| 1982 | 4,940.6 | (2,773.6) | 2,517.5 |
| 1983 | 5,204.4 | (1,289.7) | 2,237.7 |
| 1984 | 3,369.9 | (820.9) | 3,250.6 |
| 1985 | 1,536.9 | (7.8) | 2,941.7 |
| 1986 | (967.7) | 693.7 | 1,208.6 |
| 1987 | 989.6 | (331.8) | 2,328.5 |
| 1988 | 1,987.6 | 3,788.2 | 3,343.6 |
| 1989 | 2,438.5 | 5,700.2 | 5,334.2 |
| 1990 | 7,154.8 | 5,612.9 | 9,892.5 |
| 1991 | 4,051.9 | 17,364.7 | 7,262.8 |
| 1992 | 2,920.9 | 9,146.1 | 9,959.0 |
| 1993 | (1,746.0) | 6,794.7 | 12,153.7 |
| 1994 | (17,855.6) | 17,364.7 | 7,301.7 |
| 1995 | (926.3) | 20,254.2 | 12,173.9 |
| 1996 | (3,437.6) | 20,564.6 | 10,406.6 |
| 1997 | (6,734.8) | 21,722.4 | 11,855.7 |

() = negative values are enclosed in parentheses.
Source: *Yearbook of Statistics Singapore*, various issues.

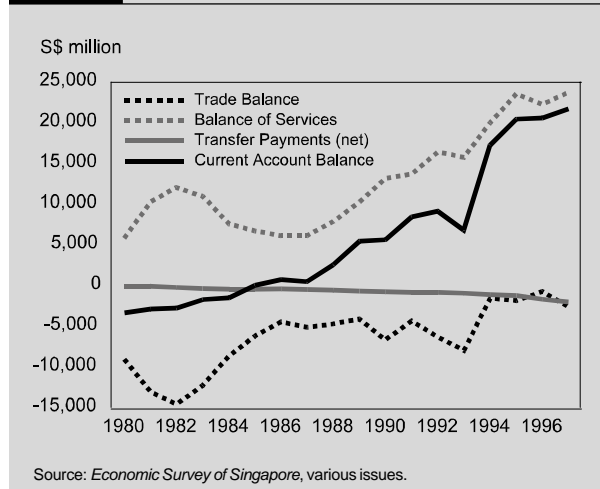
Table 14: Savings-Investment Gap, 1980–1997

| Year | Gross National Savings/ Gross National Product (percent) | Gross Fixed Capital Formation/ Gross National Product (percent) | Gross National Savings (S\$million) | Gross Fixed Capital Formation (S\$million) | Savings- Investment Gap (S\$million) |
|------|--|---|---|--|--|
| 1980 | 34.2 | 48.1 | 8,282.0 | 11,627.6 | (3,345.6) |
| 1981 | 37.2 | 48.2 | 10,482.5 | 13,587.0 | (3,104.5) |
| 1982 | 40.6 | 49.3 | 12,885.2 | 15,658.8 | (2,773.6) |
| 1983 | 44.6 | 48.1 | 16,306.1 | 17,595.8 | (1,289.7) |
| 1984 | 45.6 | 47.6 | 18,596.4 | 19,417.3 | (820.9) |
| 1985 | 41.0 | 41.0 | 16,543.4 | 16,551.2 | (7.8) |
| 1986 | 39.4 | 37.6 | 15,588.5 | 14,894.8 | 693.7 |
| 1987 | 39.6 | 38.5 | 17,108.4 | 16,636.6 | 471.8 |
| 1988 | 41.4 | 36.1 | 20,831.7 | 18,204.1 | 2,627.6 |
| 1989 | 42.8 | 34.7 | 24,128.3 | 19,568.6 | 4,559.7 |
| 1990 | 43.9 | 35.6 | 29,961.7 | 24,348.8 | 5,612.9 |
| 1991 | 45.4 | 34.2 | 34,183.6 | 25,746.6 | 8,437.0 |
| 1992 | 46.4 | 35.3 | 38,258.7 | 29,112.6 | 9,146.1 |
| 1993 | 45.3 | 38.0 | 42,315.3 | 35,520.6 | 6,794.7 |
| 1994 | 48.6 | 32.7 | 52,625.5 | 35,389.7 | 17,235.8 |
| 1995 | 50.0 | 33.4 | 60,957.0 | 40,702.8 | 20,254.2 |
| 1996 | 50.1 | 34.7 | 66,734.0 | 46,170.0 | 20,564.0 |
| 1997 | 51.2 | 36.4 | 75,144.7 | 53,422.3 | 21,722.4 |

() = negative values are enclosed in parentheses.
Source: *Yearbook of Statistics Singapore*, various issues.

transportation, and tourism sectors, and the investment income of the public sector. The current-account surpluses clearly resulted from marked improvements in the export of services (Figure 7 and Table 15).

Figure 7: Current Account, 1980–1996



Capital-account deficits, beginning in the early 1990s, were largely caused by outflows of nonmonetary capital (including private-sector portfolio and direct investment flows), public-sector capital sub-

scriptions to international institutions, and repayment of foreign loans. Over the same period, inflows of monetary capital included changes in the foreign assets and liabilities of DBUs—mainly amounts due from banks outside Singapore and ACUs, loans and advances to nonbank customers, and discounting of bills payable outside Singapore. The sudden plunge in nonmonetary capital may be due to short-term speculative movements in equity funds (Figure 8 and Table 16).

Figure 8: Capital Account, 1980–1996

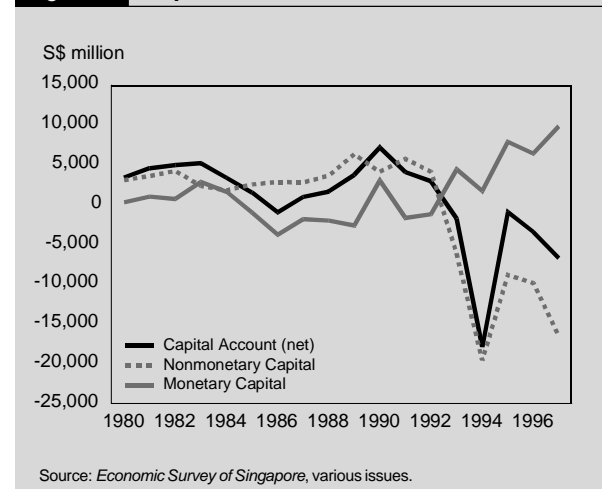


Table 15: Current Account, 1980–1997 (S\$ million)

| Year | Trade Balance | Balance of Services | Transfer of Payments (Net) | Current-Account Balance |
|------|---------------|---------------------|----------------------------|-------------------------|
| 1980 | (9,056.0) | 5,816.0 | (109.0) | (3,349.0) |
| 1981 | (13,056.0) | 10,265.0 | (130.0) | (2,921.0) |
| 1982 | (14,587.0) | 12,050.0 | (245.0) | (2,782.0) |
| 1983 | (12,304.0) | 10,962.0 | (389.0) | (1,731.0) |
| 1984 | (8,684.0) | 7,573.0 | (440.0) | (1,551.0) |
| 1985 | (6,224.0) | 6,685.0 | (469.0) | (8.0) |
| 1986 | (4,497.0) | 6,093.0 | (415.0) | 693.7 |
| 1987 | (5,152.0) | 6,116.0 | (492.0) | 471.8 |
| 1988 | (4,719.3) | 7,841.5 | (597.0) | 2,524.8 |
| 1989 | (4,124.0) | 10,270.0 | (715.0) | 5,431.0 |
| 1990 | (6,703.5) | 13,119.3 | (803.0) | 5,612.0 |
| 1991 | (4,382.4) | 13,682.8 | (863.0) | 8,437.0 |
| 1992 | (6,367.3) | 16,391.5 | (878.1) | 9,146.1 |
| 1993 | (7,980.5) | 15,744.1 | (968.8) | 6,794.7 |
| 1994 | (1,600.6) | 19,958.3 | (1,121.9) | 17,235.8 |
| 1995 | (1,855.2) | 23,564.9 | (1,261.4) | 20,448.3 |
| 1996 | (733.6) | 22,272.8 | (1,708.2) | 20,564.6 |
| 1997 | (2,628.3) | 23,741.6 | (2,019.2) | 21,722.4 |

() = negative values are enclosed in parentheses.

Source: *Economic Survey of Singapore*, various issues.

Table 16: Capital Account, 1980–1997 (S\$ million)

| Year | Capital Account (Net) | Nonmonetary Capital | Monetary Capital |
|------|-----------------------|---------------------|------------------|
| 1980 | 3,388.3 | 3,096.7 | 291.6 |
| 1981 | 4,578.5 | 3,583.6 | 994.9 |
| 1982 | 4,940.6 | 4,224.7 | 715.9 |
| 1983 | 5,204.4 | 2,378.4 | 2,826.0 |
| 1984 | 3,369.9 | 1,769.7 | 1,600.2 |
| 1985 | 1,536.9 | 2,554.8 | (1,017.9) |
| 1986 | (967.6) | 2,820.8 | (3,788.4) |
| 1987 | 989.6 | 2,799.8 | (1,810.2) |
| 1988 | 1,654.8 | 3,650.1 | (1,995.3) |
| 1989 | 3,710.5 | 6,329.1 | (2,618.6) |
| 1990 | 7,154.8 | 4,109.5 | 3,045.3 |
| 1991 | 4,051.9 | 5,722.7 | (1,670.8) |
| 1992 | 2,920.9 | 4,093.6 | (1,172.7) |
| 1993 | (1,746.0) | (6,137.4) | 4,391.4 |
| 1994 | (17,855.6) | (19,562.9) | 1,707.3 |
| 1995 | (926.3) | (8,830.2) | 7,903.9 |
| 1996 | (3,437.6) | (9,827.6) | 6,390.0 |
| 1997 | (6,734.8) | (16,584.1) | 9,849.3 |

() = negative values are enclosed in parentheses.
Source: *Economic Survey of Singapore*, various issues.

How were these flows of “hot money,” seeking handsome returns and quick killings, reduced to a manageable size without noticeable instability in the domestic financial sector? The capital market has ample safeguards. Since November 1996, foreign companies could list Singapore dollar–denominated shares on the Stock Exchange of Singapore only if they had operating headquarters (OHQ) status and at least 35 percent of their revenue, profits, or expenses were attributable to Singapore. Under such stringent requirements, only two companies qualified. The working guideline of 35 percent was relaxed to 20 percent in August 1998. The point to note here is that these guidelines are periodically reviewed. Monetary capital is highly mobile: more than 70 percent of the funds in the Asian dollar market are of three months’ tenure or less. The noninternationalization of the Singapore dollar keeps foreign fund flows within the ACU with sufficient incentives. Domestic outflows of funds are kept within the domestic banking sector since any funds deployed overseas from the DBU, whether approved before or after the fact, must first be converted into foreign currencies.

Domestic Banking Unit vs. Asian Currency Unit: A Flow-of-Funds Analysis

Banking activities in Singapore are 75 percent offshore participation and 25 percent domestic-based. MAS has constantly tread a fine line through trade-offs between further liberalization of the financial center and greater internationalization of the domestic banking sector. Its approach is cautious, and future changes are likely to be incremental and evolutionary. In other words, the line of demarcation between the DBU and the ACU is expected to thin over time. Given the conflicting objectives, striking a delicate balance to ensure nonvolatile flows of funds between the two units can be tricky. Gradually, as residents gain greater access to the ACU and wider participation by nonresidents in the DBU is achieved, market rates and competitiveness will increasingly govern the flow of funds between the two units. Regulations, safeguards, and incentives, however, influence or distort market rates and competitiveness.

In a two-tier financial system governed by competition, there is always the danger of the foreign

currencies in the ACU overwhelming the local currency of the DBU, or vice versa. Some economists have suggested that since the ACU is dominated by the US dollar, the fiscal incentives make “dollarization encroachment” on DBU assets and liabilities likely. The latter may, in turn, destabilize the DBU and, hence, the real economy. An analysis of the flow of funds from 1970 to 1982 can be found in the study by Bryant (1985). Important structural changes, however, have since taken place. Between 1980 and 1989, computed statistics suggest that DBU assets and liabilities grew by 17.2 percent annually. Growth in the ACU was slightly faster, at 25 percent. No encroachment took place, since there was no apparent “round tripping” of deposits from the DBU to the ACU, probably reflecting the confidence of residents in the local currency.

The significant decline in the growth of ACU assets and liabilities in the 1990s is primarily due to the 8 percent minimum capital adequacy ratio set by the Bank for International Settlements. Growth of ACU assets turned negative, dropping to -8.4 percent in 1991 and -0.7 percent in 1992, as offshore banks ran down their balance sheet to meet the requirements of their home regulators, before bouncing back to 8.6 percent in 1993. Since Singapore banks are still well above the 12 percent capital adequacy standard set by MAS, total DBU loans to nonbank customers grew by an average 12 percent throughout the 1980s and 1990s. Average growth of ACU loans to nonbank customers plummeted from 203 percent in 1971-1979 to a staggering 27 percent in the 1980s and 7 percent in the 1990s. (See Tables 17-18a for the annual growth rates of DBU and ACU assets and liabilities.)

Interestingly, as the momentum of growth reversed over the period 1990 to 1998, some “internationalization encroachment” of the Singapore dollar may have occurred when DBU assets and liabilities grew faster (at 9.3 percent) than those of ACUs (at 5.1 percent). However, the gradual strengthening of the Singapore dollar vis-à-vis the

greenback since the early 1990s could also have contributed to this reversal in growth momentum. As more than 70 percent of ACU liabilities and more than 65 percent of ACU assets have tenures of three months or less, the essentially short-term Asian dollar market depicts the volatile nature of fund flows (Table 19). The annual growth of interbank lending from DBUs to ACUs declined to 3 percent in the 1990s from 34.6 percent in the 1980s. In the 1990s, interbank deposits from ACUs to DBUs grew by 15.5 percent yearly but interbank deposits from DBUs to ACUs grew by only 6.8 percent. The important lesson is that market forces, not just MAS alone, will affect the pace of the internationalization of the Singapore dollar as the country's economic structure evolves.

To understand the cause of the reversal in the growth momentum, we need to study the distribution of loans and deposits in both DBUs and ACUs. Nonbank customer deposits in ACUs have remained very stable, at about a fifth of total liabilities. The remaining four fifths are interbank funds which come mainly from banks outside Singapore, reflecting the success of the ACU as a funding center (Figure 9 and Table 20). On the other hand, ACU interbank lending has been on the decline while lending to nonbank customers has trended upward probably because of strong regional growth in the 1990s (Figure 10 and Table 20a).

The distribution of DBU assets between interbank and nonbank customers has been rather stable in the 1990s (Figure 11 and Table 21). Likewise, the distribution of DBU liabilities between interbank and nonbank customers has also remained stable over the same period. Because of the fiscal incentives granted to ACUs, DBU liabilities in foreign currencies are placed in ACUs, as their steadily increasing share of liabilities, from 6.8 percent in 1980 to 15.9 percent in 1998, shows (Figure 12 and Table 21a). DBU stability reveals the effectiveness of the MAS' policy of keeping a tight rein on the domestic banking sector, with virtually no new full-license banks entering the

Table 17: Annual Change in Assets of Domestic Banking Units, 1971–1998 (percent)

| Year ^a | Total Assets | Loans to Nonbank Customers | Total Interbank Funds ^b | Interbank Funds | | | Money-Market Investments | Total Other Investments | Other Investments | | Balances with MAS | Other Assets ^c |
|-------------------|--------------|----------------------------|------------------------------------|-----------------|------------|-------------------|--------------------------|-------------------------|-------------------|-------------------|-------------------|---------------------------|
| | | | | In Singapore | Inter-ACUs | Outside Singapore | | | In Singapore | Outside Singapore | | |
| 1971 | 13.3 | 10.5 | 0.0 | 0.0 | 0.0 | 0.0 | 39.4 | 96.1 | 0.0 | 0.0 | 25.9 | 46.8 |
| 1972 | 31.2 | 36.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.3 | 25.3 | 28.7 | 14.0 | 58.5 | 23.1 |
| 1973 | 39.3 | 44.3 | 0.0 | 0.0 | 0.0 | 0.0 | (29.7) | 50.2 | 69.1 | (21.1) | 154.9 | 74.8 |
| 1974 | 8.0 | 10.7 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 12.9 | 14.3 | 1.1 | (25.1) | 22.5 |
| 1975 | 16.6 | 34.8 | 0.0 | 0.0 | 0.0 | 0.0 | 9.6 | 16.4 | 19.8 | (14.5) | 2.0 | 68.1 |
| 1976 | 15.9 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | 34.8 | 37.2 | 4.2 | 12.7 | 8.0 |
| 1977 | 40.3 | 14.5 | 0.0 | 0.0 | 0.0 | 0.0 | 13.7 | 10.9 | 12.8 | (21.0) | 6.8 | 2.5 |
| 1978 | 16.3 | 20.1 | 16.7 | 27.9 | (20.2) | 34.9 | 1.6 | 5.0 | 5.2 | 1.9 | 15.9 | 2.6 |
| 1979 | 26.1 | 30.9 | 30.4 | 22.9 | 48.4 | 28.6 | 12.4 | 0.3 | 1.2 | (21.9) | 15.9 | 15.1 |
| 1980 | 24.6 | 26.2 | 21.8 | 38.8 | 30.7 | 3.1 | 47.6 | 13.3 | 12.6 | 35.7 | 25.8 | 13.3 |
| 1981 | 34.0 | 24.9 | 71.9 | 52.2 | 87.0 | 83.7 | 43.8 | 2.1 | 2.0 | 5.1 | 29.5 | 19.0 |
| 1982 | 8.8 | 16.7 | (16.9) | (11.2) | (0.6) | (33.4) | 9.9 | 59.4 | 59.1 | 70.0 | 18.6 | 3.9 |
| 1983 | 16.5 | 15.6 | 21.2 | (0.8) | 24.6 | 44.7 | (0.1) | 26.9 | 27.5 | 13.6 | 9.9 | 15.2 |
| 1984 | 16.2 | 8.3 | 43.5 | 10.5 | 49.4 | 66.3 | 7.3 | 3.7 | 3.7 | 1.3 | 11.9 | 25.2 |
| 1985 | 7.5 | 1.5 | 21.5 | 30.7 | 19.1 | 18.3 | (3.9) | 17.1 | 16.4 | 35.4 | 5.0 | 0.3 |
| 1986 | 8.8 | (4.3) | 34.8 | 25.3 | 21.7 | 51.1 | 12.0 | 2.0 | (1.6) | 87.2 | 4.3 | 3.5 |
| 1987 | 12.6 | 5.8 | 20.9 | 38.5 | 20.0 | 12.4 | (16.3) | 25.1 | 29.4 | (29.3) | 12.9 | 21.3 |
| 1988 | 11.5 | 10.5 | 12.7 | (4.7) | 38.8 | 5.9 | (9.9) | 12.5 | 13.2 | (2.9) | 10.1 | 23.0 |
| 1989 | 31.9 | 21.4 | 50.0 | 71.7 | 55.0 | 33.3 | (17.9) | 31.3 | 31.9 | 13.6 | 39.8 | 0.5 |
| 1990 | 5.3 | 13.6 | (3.6) | 21.6 | (21.0) | (3.9) | 12.2 | 14.7 | 14.5 | 21.7 | 5.2 | 4.0 |
| 1991 | 1.6 | 10.9 | (13.6) | (34.6) | 5.8 | (10.7) | 69.0 | 4.7 | 5.0 | (3.2) | 21.3 | 13.4 |
| 1992 | 12.6 | 8.0 | 21.1 | (1.0) | 26.8 | 30.2 | 38.6 | 7.9 | 8.7 | (18.6) | 12.7 | (10.9) |
| 1993 | 11.1 | 13.5 | 8.3 | 45.8 | (6.1) | 3.0 | 3.0 | 12.5 | 11.6 | 48.7 | 9.1 | 15.2 |
| 1994 | 18.6 | 16.0 | 26.6 | 63.3 | 23.7 | 2.4 | 1.9 | 10.9 | 5.2 | 192.0 | 7.0 | 10.8 |
| 1995 | 11.2 | 19.8 | 0.9 | 8.9 | (3.7) | (3.5) | 15.8 | 13.9 | 15.4 | (3.4) | 16.3 | 3.4 |
| 1996 | 12.5 | 16.5 | 7.9 | 8.5 | (2.2) | 17.8 | 4.9 | 12.4 | 12.2 | 14.6 | 9.6 | 12.8 |
| 1997 | 14.6 | 12.8 | 16.1 | (9.9) | 38.9 | 27.1 | 13.5 | 5.2 | 5.4 | 2.6 | 8.6 | 55.6 |
| 1998 | (3.4) | (1.5) | (8.2) | 4.5 | (34.6) | 6.8 | 12.2 | 3.2 | 3.3 | 2.0 | 1.8 | (9.6) |

() = negative values are enclosed in parentheses.

ACU = Asian currency unit, MAS = Monetary Authority of Singapore.

^a End-December figures except for 1998 whose reported figures are for end-March.

^b Figures for 1971–1976 are reported as "Net balances due to banks."

^c "Other assets" include "Cash in hand," "\$NCDs held," and "Fixed and other assets."

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Table 17a: Annual Changes in Liabilities of Domestic Banking Units, 1971–1998 (percent)

| Year ^a | Total Liabilities | Deposits of Nonbank Customers | Total Interbank Funds ^b | Interbank Funds | | | Paid-up Capital and Reserves | Amount Borrowed from Other Creditors | Other Liabilities ^c |
|-------------------|-------------------|-------------------------------|------------------------------------|-----------------|------------|-------------------|------------------------------|--------------------------------------|--------------------------------|
| | | | | In Singapore | Inter-ACUs | Outside Singapore | | | |
| 1971 | 13.3 | 29.3 | (58.4) | na | na | na | 33.3 | 0.0 | (4.9) |
| 1972 | 31.2 | 26.5 | 102.9 | 0.0 | 159.6 | 138.8 | 19.1 | 42.2 | 16.7 |
| 1973 | 39.3 | 22.4 | 87.5 | 658.3 | 136.5 | 61.4 | 89.0 | 108.9 | 58.3 |
| 1974 | 8.0 | 13.6 | (38.4) | (71.4) | (73.1) | (21.0) | 16.9 | 63.3 | 18.8 |
| 1975 | 16.6 | 15.5 | (20.6) | 11.2 | (64.7) | (15.9) | 18.2 | 0.5 | 112.1 |
| 1976 | 15.9 | 11.6 | 40.5 | (94.1) | 62.0 | 46.0 | 16.7 | 17.7 | 14.1 |
| 1977 | 40.3 | 5.7 | 458.4 | 74,705.9 | 2,418.8 | 185.1 | 6.5 | 2.4 | 33.1 |
| 1978 | 16.3 | 12.0 | 31.3 | 35.1 | 43.5 | 22.5 | 10.7 | 6.4 | 6.2 |
| 1979 | 26.1 | 21.2 | 30.1 | 40.5 | 23.4 | 28.4 | 24.2 | 24.8 | 37.8 |
| 1980 | 24.6 | 31.7 | 15.4 | 19.6 | (5.5) | 26.0 | 43.2 | 47.1 | 2.8 |
| 1981 | 34.0 | 24.8 | 54.5 | 46.8 | 33.9 | 69.0 | 42.5 | 36.5 | 7.0 |
| 1982 | 8.8 | 17.0 | (6.1) | (7.1) | 21.4 | (15.9) | 13.2 | 24.0 | 13.0 |
| 1983 | 16.5 | 12.2 | 30.3 | (1.2) | 64.2 | 30.3 | 13.6 | (2.7) | 6.6 |
| 1984 | 16.2 | 6.7 | 35.1 | 9.8 | 38.2 | 44.1 | 13.3 | 0.0 | 3.9 |
| 1985 | 7.5 | 2.6 | 16.2 | 33.9 | 15.9 | 10.6 | (1.2) | (6.6) | 7.1 |
| 1986 | 8.8 | 6.5 | 12.8 | 19.4 | 10.5 | 11.7 | (1.7) | (24.9) | 28.1 |
| 1987 | 12.6 | 18.9 | 9.3 | 25.3 | (4.9) | 12.0 | 19.1 | (49.3) | 11.0 |
| 1988 | 11.5 | 16.7 | 8.1 | 3.5 | 0.0 | 14.8 | 5.4 | (10.1) | 10.8 |
| 1989 | 31.9 | 25.6 | 46.1 | 84.9 | 37.2 | 33.8 | 17.9 | (5.7) | 8.1 |
| 1990 | 5.3 | 19.9 | (8.3) | (11.5) | 9.6 | (15.6) | 8.2 | (11.2) | 5.0 |
| 1991 | 1.6 | 12.9 | (14.6) | (28.2) | (13.1) | (7.0) | 13.0 | 28.5 | 2.6 |
| 1992 | 12.6 | 8.6 | 20.9 | 13.8 | 20.2 | 24.7 | 16.7 | 24.9 | (3.4) |
| 1993 | 11.1 | 8.8 | 14.5 | 40.2 | 27.9 | (5.1) | 16.8 | 0.5 | 3.0 |
| 1994 | 18.6 | 16.0 | 24.1 | 51.1 | 22.2 | 7.9 | 18.0 | 21.4 | 5.1 |
| 1995 | 11.2 | 9.9 | 11.4 | 18.9 | 5.2 | 10.0 | 20.5 | 2.4 | 8.8 |
| 1996 | 12.5 | 8.6 | 18.0 | 14.9 | 19.0 | 20.3 | 11.0 | 3.9 | 12.7 |
| 1997 | 14.6 | 5.0 | 23.9 | (9.3) | 59.9 | 24.2 | 13.0 | (7.5) | 38.2 |
| 1998 | (3.4) | 5.0 | (13.1) | 4.7 | (11.1) | (27.7) | 0.1 | 0.5 | 2.0 |

() negative values are enclosed in parentheses.

na = not available.

ACU = Asian currency unit.

^a End-December except for 1998 whose reported figures are for end-March.

^b Figures for 1971–1976 are reported as "Net balances due to banks."

^c "Other liabilities" include "S\$NCDs issued," "Bills payable," and other liabilities.

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Table 18: Annual Change in Assets of Asian Currency Units, 1971–1998 (percent)

| Year ^a | Total Assets | Loans to Nonbank Customers | Total Interbank Funds | Interbank Funds | | | Other Assets ^c |
|-------------------|--------------|----------------------------|-----------------------|-----------------|------------|--------------------------------|---------------------------|
| | | | | In Singapore | Inter-ACUs | Outside Singapore ^b | |
| 1971 | 172.7 | 1,258.3 | 129.8 | 193.9 | 0.0 | 127.5 | 307.0 |
| 1972 | 180.0 | 218.3 | 174.0 | 158.2 | 0.0 | 174.7 | 90.1 |
| 1973 | 110.9 | 102.1 | 112.9 | 163.2 | 0.0 | 110.6 | 129.0 |
| 1974 | 65.0 | 116.5 | 51.7 | (14.8) | 0.0 | 55.4 | 97.9 |
| 1975 | 21.6 | 25.6 | 20.9 | 21.1 | 0.0 | 20.9 | (2.2) |
| 1976 | 37.8 | 22.5 | 42.3 | 53.4 | 0.0 | 42.0 | 81.1 |
| 1977 | 21.1 | 18.1 | 21.6 | 38.4 | 0.0 | 21.1 | 36.9 |
| 1978 | 28.7 | 33.4 | 25.9 | 51.1 | 0.0 | 0.4 | 71.9 |
| 1979 | 41.1 | 33.1 | 41.7 | 27.0 | 61.3 | 37.7 | 90.1 |
| 1980 | 42.5 | 46.2 | 40.8 | (1.4) | 65.9 | 35.8 | 53.8 |
| 1981 | 57.7 | 56.8 | 57.2 | 37.8 | 55.9 | 58.4 | 70.2 |
| 1982 | 20.4 | 41.9 | 11.9 | 16.3 | 23.8 | 7.7 | 47.6 |
| 1983 | 8.3 | 10.1 | 7.0 | 60.6 | 2.5 | 6.9 | 14.8 |
| 1984 | 14.5 | 11.1 | 14.6 | 37.3 | 11.0 | 14.8 | 27.5 |
| 1985 | 21.3 | 10.9 | 23.0 | 20.5 | 23.5 | 23.0 | 45.1 |
| 1986 | 29.1 | 3.5 | 39.7 | 6.7 | 13.4 | 51.5 | 17.3 |
| 1987 | 22.1 | 42.0 | 16.7 | 3.1 | (14.9) | 26.0 | 23.0 |
| 1988 | 14.5 | 21.0 | 13.8 | 3.4 | (1.0) | 17.0 | 2.2 |
| 1989 | 20.0 | 29.8 | 17.4 | 39.5 | 6.8 | 18.4 | 12.0 |
| 1990 | 16.0 | 45.3 | 4.5 | 19.3 | 24.9 | 1.1 | 20.0 |
| 1991 | (8.4) | 6.8 | (17.6) | (6.0) | (22.7) | (17.2) | 3.3 |
| 1992 | (0.7) | 0.1 | (1.2) | 6.1 | 0.4 | (2.4) | (0.7) |
| 1993 | 8.6 | 2.0 | 10.0 | 45.7 | 18.6 | 7.3 | 32.3 |
| 1994 | 7.8 | 6.6 | 9.4 | 34.5 | 14.6 | 6.5 | 3.5 |
| 1995 | 14.9 | 18.8 | 10.4 | 8.7 | 9.1 | 10.9 | 27.7 |
| 1996 | 6.0 | 4.2 | 7.7 | 20.3 | 1.4 | 7.8 | 3.1 |
| 1997 | 9.9 | (4.0) | 18.6 | 33.5 | 21.5 | 16.6 | 11.8 |
| 1998 | (7.9) | (12.1) | (6.3) | (7.3) | (6.4) | (6.1) | (4.0) |

() = negative values are enclosed in parentheses.

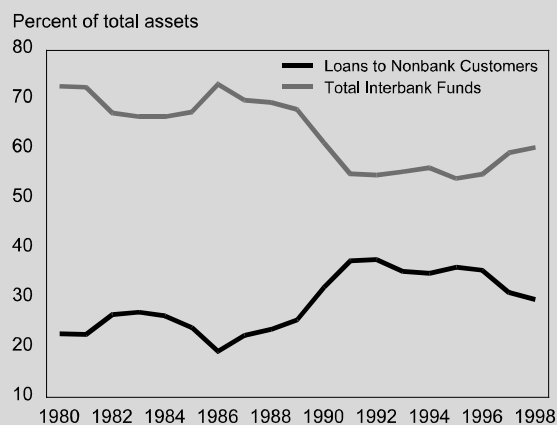
ACU = Asian currency unit.

^a End-December except for 1998 whose reported figures are for end-March.

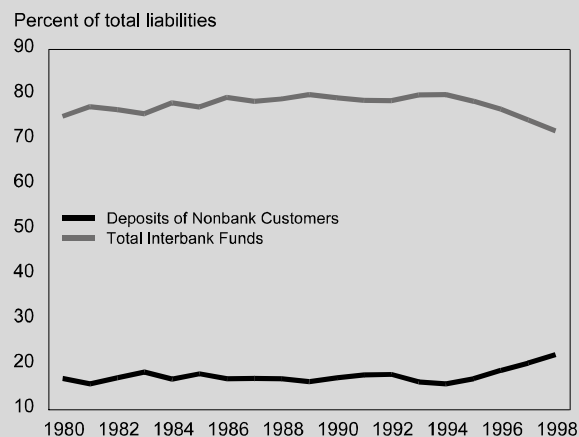
^b Percentages for 1971–1977 include Inter-ACU transactions.

^c "Other assets" include "S\$NCDs held" and other assets.

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Figure 9: Composition of the Assets of Asian Currency Units: Nonbank Customers and Total Interbank Funds, 1980–1998

Source: Monetary Authority of Singapore.

Figure 10: Composition of the Liabilities of the Asian Currency Units: Nonbank Customers and Total Interbank Funds, 1980–1998

Source: Monetary Authority of Singapore.

Table 18a: Annual Change in Liabilities of Asian Currency Units, 1971–1998 (percent)

| Year ^a | Total Liabilities | Deposits of Nonbank Customers | Total Interbank Funds | Interbank Funds | | | Other Liabilities ^c |
|-------------------|-------------------|-------------------------------|-----------------------|-----------------|------------|--------------------------------|--------------------------------|
| | | | | In Singapore | Inter-ACUs | Outside Singapore ^b | |
| 1971 | 172.7 | (2.4) | 475.3 | 889.5 | 0.0 | 457.9 | 168.6 |
| 1972 | 180.0 | 67.6 | 214.4 | 157.1 | 0.0 | 218.6 | 99.3 |
| 1973 | 110.9 | 128.9 | 105.8 | 179.7 | 0.0 | 101.4 | 321.6 |
| 1974 | 65.0 | 76.8 | 62.5 | 66.6 | 0.0 | 62.2 | 83.9 |
| 1975 | 21.6 | 28.1 | 20.7 | (13.6) | 0.0 | 23.6 | 11.2 |
| 1976 | 37.8 | (5.2) | 46.4 | 36.8 | 0.0 | 46.9 | 38.7 |
| 1977 | 21.1 | 15.0 | 21.8 | 73.0 | 0.0 | 18.9 | 26.6 |
| 1978 | 28.7 | 59.7 | 19.8 | 4.3 | 0.0 | (0.8) | 251.5 |
| 1979 | 41.1 | 60.3 | 33.8 | 30.5 | 61.3 | 28.0 | 104.2 |
| 1980 | 42.5 | 60.3 | 38.9 | (30.7) | 65.9 | 37.5 | 43.7 |
| 1981 | 57.7 | 46.5 | 62.3 | 39.3 | 55.9 | 65.5 | 37.3 |
| 1982 | 20.4 | 30.1 | 19.4 | (17.6) | 23.9 | 19.3 | 10.1 |
| 1983 | 8.3 | 17.0 | 7.0 | 19.4 | 2.5 | 8.1 | 0.9 |
| 1984 | 14.5 | 4.4 | 18.2 | 64.6 | 11.0 | 19.2 | (2.4) |
| 1985 | 21.3 | 30.2 | 19.8 | 41.8 | 23.4 | 17.9 | 15.5 |
| 1986 | 29.1 | 20.6 | 32.8 | 16.5 | 13.4 | 39.4 | 1.4 |
| 1987 | 22.1 | 23.0 | 20.8 | 34.5 | (14.9) | 29.0 | 45.5 |
| 1988 | 14.5 | 14.1 | 15.2 | 29.1 | (1.0) | 17.3 | 3.8 |
| 1989 | 20.0 | 15.9 | 21.5 | 49.5 | 6.8 | 22.3 | 6.8 |
| 1990 | 16.0 | 21.6 | 14.8 | (5.3) | 24.9 | 14.7 | 17.5 |
| 1991 | (8.4) | (5.1) | (8.9) | 19.3 | (22.7) | (8.4) | (11.9) |
| 1992 | (0.7) | 0.2 | (0.7) | 27.6 | 0.4 | (2.5) | (3.8) |
| 1993 | 8.6 | (1.5) | 10.4 | 1.7 | 18.6 | 10.1 | 21.3 |
| 1994 | 7.8 | 5.0 | 8.0 | 22.6 | 14.6 | 6.1 | 17.4 |
| 1995 | 14.9 | 22.5 | 12.8 | 10.8 | 9.1 | 13.4 | 26.5 |
| 1996 | 6.0 | 18.3 | 3.6 | 0.5 | 1.4 | 4.1 | 2.3 |
| 1997 | 9.9 | 19.2 | 6.4 | 27.8 | 21.5 | 2.9 | 31.6 |
| 1998 | (7.9) | 0.3 | (10.9) | (32.4) | (6.4) | (9.5) | 3.0 |

() = negative values are enclosed in parentheses.

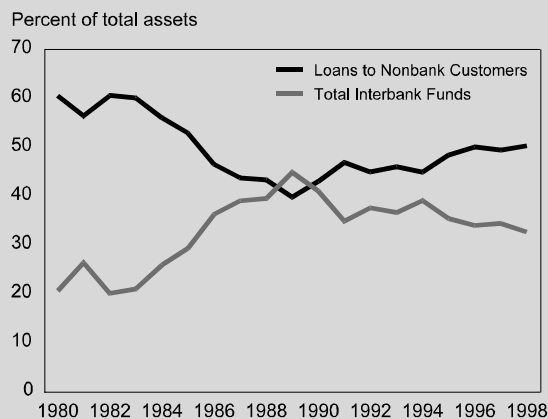
ACU = Asian currency unit.

^a End-December except for 1998 whose reported figures are for end-March.

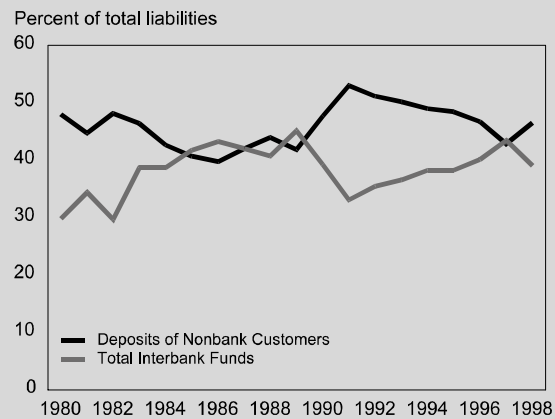
^b Percentages for 1971–1977 include Inter-ACU transactions.

^c "Other liabilities" include "S\$NCDs issued" and "Other liabilities."

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Figure 11: Composition of the Assets of Domestic Banking Units: Nonbank Customers and Total Interbank Funds, 1980–1998

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Figure 12: Composition of the Liabilities of Domestic Banking Units: Nonbank Customers and Total Interbank Funds, 1980–1998

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Table 19: Asian Dollar Market: Maturity Classification of Assets and Liabilities, 1970–1998

| Maturity Classification | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 1997 | 1998 ^a |
|---------------------------------------|--------------|-----------------|-----------------|------------------|------------------|------------------|------------------|-------------------|
| Amount (US\$ million) | | | | | | | | |
| Assets | | | | | | | | |
| Up to 7 days | 197.5 | 942.2 | 7,918.4 | 29,130.6 | 71,920.0 | 89,709.1 | 131,356.6 | 133,192.0 |
| Over 7 days to 1 month | | | 9,814.2 | 34,338.2 | 82,234.9 | 84,731.7 | 106,318.6 | 98,689.0 |
| Over 1 month to 3 months ^b | 76.8 | 4,736.1 | 14,552.0 | 33,846.7 | 102,193.3 | 116,031.0 | 115,402.8 | 106,464.2 |
| Over 3 months to 12 months | 105.7 | 4,873.3 | 11,746.8 | 28,765.2 | 67,399.9 | 102,093.3 | 112,918.7 | 92,481.3 |
| More than 1 year | 4.1 | 1,850.3 | 10,361.2 | 29,293.5 | 66,647.4 | 85,667.7 | 91,196.8 | 82,516.0 |
| Liabilities | | | | | | | | |
| Up to 7 days | 30.4 | 1,856.3 | 11,830.4 | 39,182.3 | 99,804.7 | 123,729.0 | 165,240.8 | 161,077.0 |
| Over 7 days to 1 month | | | 12,293.7 | 42,373.3 | 104,839.1 | 129,946.3 | 150,252.5 | 137,051.9 |
| Over 1 month to 3 months ^b | 238.1 | 5,161.1 | 16,372.9 | 40,546.7 | 104,664.5 | 129,254.7 | 136,103.3 | 125,653.3 |
| Over 3 months to 12 months | 114.0 | 5,087.2 | 11,126.6 | 28,381.6 | 61,433.3 | 81,408.7 | 87,882.6 | 72,009.1 |
| More than 1 year | 2.2 | 282.0 | 2,769.0 | 4,890.3 | 19,653.8 | 13,894.2 | 17,714.3 | 17,551.3 |
| Total Assets/Liabilities | 384.7 | 12,386.6 | 54,392.6 | 155,374.2 | 390,395.5 | 478,232.9 | 557,193.5 | 513,342.6 |
| Percent of Total | | | | | | | | |
| Assets | | | | | | | | |
| Up to 7 days and | | | | | | | | |
| Over 7 days to 1 month | 51.3 | 7.6 | 32.6 | 40.8 | 39.5 | 36.5 | 42.7 | 45.2 |
| Over 1 month to 3 months ^b | 20.0 | 38.2 | 26.8 | 21.8 | 26.2 | 24.3 | 20.7 | 20.7 |
| Over 3 months to 12 months | 27.5 | 39.3 | 21.6 | 18.5 | 17.3 | 21.3 | 20.3 | 18.0 |
| More than 1 year | 1.1 | 14.9 | 19.0 | 18.9 | 17.1 | 17.9 | 16.4 | 16.1 |
| Liabilities | | | | | | | | |
| Up to 7 days and | | | | | | | | |
| Over 7 days to 1 month | 7.9 | 15.0 | 44.4 | 52.5 | 52.4 | 53.0 | 56.6 | 58.1 |
| Over 1 month to 3 months ^b | 61.9 | 41.7 | 30.1 | 26.1 | 26.8 | 27.0 | 24.4 | 24.5 |
| Over 3 months to 12 months | 29.6 | 41.1 | 20.5 | 18.3 | 15.7 | 17.0 | 15.8 | 14.0 |
| More than 1 year | 0.6 | 2.3 | 5.1 | 3.1 | 5.0 | 2.9 | 3.2 | 3.4 |
| Total Assets/Liabilities | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

^a Figures for 1998 are for end-March, the rest are for end-December.

^b Figures for 1970 and 1975 are classified as "Over 7 days to 3 months."
Source: Monetary Authority of Singapore, *Annual Report*, various issues.

sector over the last three decades. There appears to be a trade-off between stability and efficiency in domestic banking activities, as the low productivity in financial and business services has shown.

Since ACU assets and liabilities were three to five times those of DBUs over the 1980s and 1990s, unrestricted flows of largely US dollar-denominated foreign funds between ACUs and DBUs can themselves be destabilizing. Therefore, in a two-tier financial system, not only must the local currency's value be relatively stable to discourage currency arbitrage and to prevent financial round tripping, the regulations, safeguards, and incentives designed for the two units must remain consistent, with only infrequent revisions, since stability itself would obviate

the need for tighter regulations. Free movements of capital are obvious when we note that the three-month interbank Singapore dollar money-market interest rate has moved in tandem with the three-month interbank US dollar interest rate (SIBOR [Singapore interbank offer rate]) in ACUs over the last two decades. Local interest rates tend to be lower than their US dollar counterparts, partly because of lower domestic inflation. Still, the interest-rate differentials have narrowed since the 1990s, indicating the internationalization or dominance of the US dollar in the ACU (Figure 13).

The only known massive speculative attempts on the Singapore dollar took place in September 1985. The Singapore dollar was sold short against the green-

Table 20: Distribution of Assets of Asian Currency Units, 1970–1998 (percent)

| Year ^a | Total Assets | Loans to Nonbank Customers | Total Interbank Funds | Interbank Funds | | | Other Assets ^c |
|-------------------|--------------|----------------------------|-----------------------|-----------------|------------|--------------------------------|---------------------------|
| | | | | In Singapore | Inter-ACUs | Outside Singapore ^b | |
| 1970 | 100.0 | 3.6 | 95.0 | 3.4 | 0.0 | 91.6 | 1.5 |
| 1971 | 100.0 | 17.8 | 80.1 | 3.6 | 0.0 | 76.4 | 2.2 |
| 1972 | 100.0 | 20.2 | 78.3 | 3.3 | 0.0 | 75.0 | 1.5 |
| 1973 | 100.0 | 19.3 | 79.0 | 4.2 | 0.0 | 74.9 | 1.6 |
| 1974 | 100.0 | 25.4 | 72.7 | 2.2 | 0.0 | 70.5 | 1.9 |
| 1975 | 100.0 | 26.2 | 72.2 | 2.1 | 0.0 | 70.1 | 1.6 |
| 1976 | 100.0 | 23.3 | 74.6 | 2.4 | 0.0 | 72.2 | 2.0 |
| 1977 | 100.0 | 22.8 | 74.9 | 2.7 | 0.0 | 72.2 | 2.3 |
| 1978 | 100.0 | 23.6 | 73.3 | 3.2 | 13.8 | 56.4 | 3.1 |
| 1979 | 100.0 | 22.2 | 73.6 | 2.9 | 15.7 | 55.0 | 4.2 |
| 1980 | 100.0 | 22.8 | 72.7 | 2.0 | 18.3 | 52.4 | 4.5 |
| 1981 | 100.0 | 22.7 | 72.5 | 1.7 | 18.1 | 52.6 | 4.8 |
| 1982 | 100.0 | 26.7 | 67.3 | 1.7 | 18.6 | 47.1 | 5.9 |
| 1983 | 100.0 | 27.2 | 66.6 | 2.5 | 17.6 | 46.5 | 6.3 |
| 1984 | 100.0 | 26.4 | 66.6 | 3.0 | 17.1 | 46.6 | 7.0 |
| 1985 | 100.0 | 24.1 | 67.5 | 3.0 | 17.4 | 47.2 | 8.4 |
| 1986 | 100.0 | 19.3 | 73.1 | 2.5 | 15.3 | 55.4 | 7.6 |
| 1987 | 100.0 | 22.5 | 69.9 | 2.1 | 10.6 | 57.2 | 7.7 |
| 1988 | 100.0 | 23.7 | 69.4 | 1.9 | 9.2 | 58.4 | 6.8 |
| 1989 | 100.0 | 25.7 | 68.0 | 2.2 | 8.2 | 57.6 | 6.4 |
| 1990 | 100.0 | 32.2 | 61.3 | 2.2 | 8.8 | 50.2 | 6.6 |
| 1991 | 100.0 | 37.5 | 55.1 | 2.3 | 7.4 | 45.3 | 7.4 |
| 1992 | 100.0 | 37.8 | 54.8 | 2.5 | 7.5 | 44.8 | 7.4 |
| 1993 | 100.0 | 35.4 | 55.5 | 3.3 | 8.2 | 44.0 | 9.1 |
| 1994 | 100.0 | 35.0 | 56.3 | 4.1 | 8.7 | 43.4 | 8.7 |
| 1995 | 100.0 | 36.2 | 54.1 | 3.9 | 8.3 | 41.9 | 9.7 |
| 1996 | 100.0 | 35.6 | 55.0 | 4.4 | 7.9 | 42.6 | 9.4 |
| 1997 | 100.0 | 31.1 | 59.3 | 5.4 | 8.8 | 45.2 | 9.6 |
| 1998 | 100.0 | 29.7 | 60.4 | 5.4 | 8.9 | 46.1 | 10.0 |

() = negative values are enclosed in parentheses.

ACU = Asian currency unit.

^a End-December except for 1998 whose reported figures are for end-March.

^b Percentages for 1971–1977 include Inter-ACU transactions.

^c "Other assets" include "\$NCDs held" and other assets.

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Figure 13: SIBOR and Three-Month Interbank Interest Rates, 1980–1997

SIBOR = Singapore interbank offer rate (US dollar interest rate), 3-month interbank = Singapore dollar money market interest rate.

Source: International Monetary Fund, *International Financial Statistics*, various issues.

back in the foreign-exchange market, resulting in a 5 percent depreciation of the local currency in just a few weeks (Figure 14). MAS successfully fended off the attacks by tightening the short-term money-market liquidity in DBUs, pushing the overnight interest rate past 120 percent. Such a move hurt speculators who needed short cover for their exchange positions from the local money market (*The Straits Times*, 19 September 1985). The effectiveness of this strategy presupposed that the ability of MAS to tighten the liquidity in the local money market was not neutralized by a matching pool of Singapore dollars offshore. This, indeed, is the essence of the noninternationalization policy.

Table 20a: Distribution of Liabilities of Asian Currency Units, 1970–1998 (percent)

| Year ^a | Total Liabilities | Deposits of Nonbank Customers | Total Interbank Funds | Interbank Funds | | | Other Liabilities ^c |
|-------------------|-------------------|-------------------------------|-----------------------|-----------------|------------|--------------------------------|--------------------------------|
| | | | | In Singapore | Inter-ACUs | Outside Singapore ^b | |
| 1970 | 100.0 | 62.5 | 36.2 | 1.5 | 0.0 | 34.7 | 1.3 |
| 1971 | 100.0 | 22.4 | 76.3 | 5.3 | 0.0 | 71.0 | 1.3 |
| 1972 | 100.0 | 13.4 | 85.7 | 4.9 | 0.0 | 80.8 | 0.9 |
| 1973 | 100.0 | 14.5 | 83.6 | 6.5 | 0.0 | 77.2 | 1.8 |
| 1974 | 100.0 | 15.6 | 82.4 | 6.5 | 0.0 | 75.8 | 2.0 |
| 1975 | 100.0 | 16.4 | 81.7 | 4.6 | 0.0 | 77.1 | 1.9 |
| 1976 | 100.0 | 11.3 | 86.8 | 4.6 | 0.0 | 82.2 | 1.9 |
| 1977 | 100.0 | 10.7 | 87.3 | 6.6 | 0.0 | 80.7 | 2.0 |
| 1978 | 100.0 | 13.3 | 81.3 | 5.3 | 13.8 | 62.2 | 5.4 |
| 1979 | 100.0 | 15.1 | 77.1 | 4.9 | 15.7 | 56.5 | 7.8 |
| 1980 | 100.0 | 17.0 | 75.2 | 2.4 | 18.3 | 54.5 | 7.8 |
| 1981 | 100.0 | 15.8 | 77.4 | 2.1 | 18.1 | 57.2 | 6.8 |
| 1982 | 100.0 | 17.1 | 76.7 | 1.4 | 18.6 | 56.6 | 6.2 |
| 1983 | 100.0 | 18.4 | 75.8 | 1.6 | 17.6 | 56.6 | 5.8 |
| 1984 | 100.0 | 16.8 | 78.2 | 2.3 | 17.1 | 58.9 | 5.0 |
| 1985 | 100.0 | 18.0 | 77.3 | 2.7 | 17.4 | 57.2 | 4.7 |
| 1986 | 100.0 | 16.9 | 79.4 | 2.4 | 15.3 | 61.8 | 3.7 |
| 1987 | 100.0 | 17.0 | 78.6 | 2.7 | 10.6 | 65.3 | 4.4 |
| 1988 | 100.0 | 16.9 | 79.1 | 3.0 | 9.2 | 66.9 | 4.0 |
| 1989 | 100.0 | 16.3 | 80.1 | 3.7 | 8.2 | 68.2 | 3.6 |
| 1990 | 100.0 | 17.1 | 79.3 | 3.1 | 8.8 | 67.4 | 3.6 |
| 1991 | 100.0 | 17.8 | 78.8 | 4.0 | 7.4 | 67.4 | 3.5 |
| 1992 | 100.0 | 17.9 | 78.7 | 5.1 | 7.5 | 66.1 | 3.4 |
| 1993 | 100.0 | 16.2 | 80.0 | 4.8 | 8.2 | 67.0 | 3.8 |
| 1994 | 100.0 | 15.8 | 80.1 | 5.4 | 8.7 | 65.9 | 4.1 |
| 1995 | 100.0 | 16.9 | 78.6 | 5.3 | 8.3 | 65.1 | 4.5 |
| 1996 | 100.0 | 18.8 | 76.8 | 5.0 | 7.9 | 63.9 | 4.3 |
| 1997 | 100.0 | 20.4 | 74.4 | 5.8 | 8.8 | 59.8 | 5.2 |
| 1998 | 100.0 | 22.2 | 72.0 | 4.3 | 8.9 | 58.8 | 5.8 |

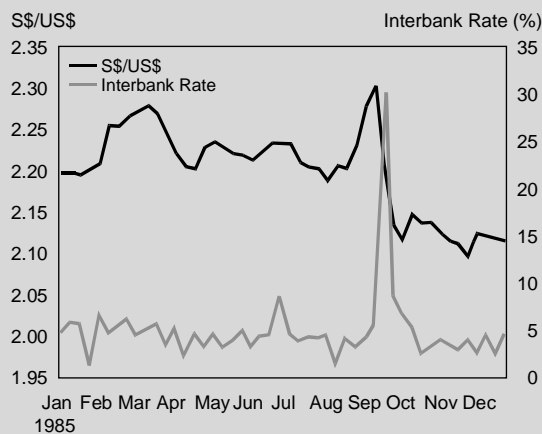
ACU = Asian currency unit.

^a End-December except for 1998 whose reported figures are for end-March.

^b Percentages for 1970–1977 include Inter-ACU transactions.

^c "Other liabilities" include "\$NCDs issued" and other liabilities.

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Figure 14: The September 1985 Exchange-Rate Episode (weekly data)

Source: Monetary Authority of Singapore.

Noninternationalization of the Singapore Dollar and Its Implications

The debate on the noninternational role of the Singapore dollar has always attracted attention and intense debate, understandably among private-sector fund managers and bankers and lately among ASEAN political leaders who advocate a regional role for the Singapore dollar amid the currency turmoil.

The policy of noninternationalization became the subject of a recent buzz within the financial community following Finance Minister Hu's announcement on 15 October 1996 that MAS would now

Table 21: Distribution of Assets of Domestic Banking Units, 1970–1998 (percent)

| Year ^a | Total Assets ^b | Loans to Nonbank Customers | Total Interbank Funds ^c | Other Interbank Funds | | | Money-Market Investments | Total Other Investments | Other Investments | | Balances with MAS | Other Assets ^d |
|-------------------|---------------------------|----------------------------|------------------------------------|-----------------------|------------|-------------------|--------------------------|-------------------------|-------------------|-------------------|-------------------|---------------------------|
| | | | | In Singapore | Inter-ACUs | Outside Singapore | | | In Singapore | Outside Singapore | | |
| 1970 | 100.0 | 55.1 | 18.6 | na | na | na | 14.1 | 5.1 | 5.1 | 0.0 | 2.7 | 4.4 |
| 1971 | 100.0 | 53.7 | 0.0 | 0.0 | 0.0 | 0.0 | 17.3 | 8.9 | 6.9 | 2.1 | 3.0 | 5.7 |
| 1972 | 100.0 | 55.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.5 | 8.5 | 6.7 | 1.8 | 3.6 | 5.3 |
| 1973 | 100.0 | 57.8 | 0.0 | 0.0 | 0.0 | 0.0 | 7.8 | 9.2 | 8.2 | 1.0 | 6.7 | 6.7 |
| 1974 | 100.0 | 59.2 | 0.0 | 0.0 | 0.0 | 0.0 | 7.4 | 9.6 | 8.6 | 0.9 | 4.6 | 7.6 |
| 1975 | 100.0 | 68.5 | 0.0 | 0.0 | 0.0 | 0.0 | 7.0 | 9.6 | 8.9 | 0.7 | 4.0 | 7.5 |
| 1976 | 100.0 | 68.4 | 0.0 | 0.0 | 0.0 | 0.0 | 6.3 | 11.1 | 10.5 | 0.6 | 3.9 | 7.3 |
| 1977 | 100.0 | 55.8 | 20.4 | 6.9 | 5.9 | 7.6 | 5.1 | 8.8 | 8.4 | 0.4 | 3.0 | 5.8 |
| 1978 | 100.0 | 57.6 | 20.4 | 7.6 | 4.0 | 8.8 | 4.5 | 7.9 | 7.6 | 0.3 | 3.0 | 5.6 |
| 1979 | 100.0 | 59.8 | 21.1 | 7.4 | 4.7 | 9.0 | 4.0 | 6.3 | 6.1 | 0.2 | 2.7 | 5.4 |
| 1980 | 102.9 | 60.7 | 20.7 | 8.3 | 5.0 | 7.4 | 4.7 | 5.7 | 5.5 | 0.2 | 2.8 | 8.4 |
| 1981 | 100.0 | 56.5 | 26.5 | 9.4 | 6.9 | 10.2 | 5.1 | 4.4 | 4.2 | 0.2 | 2.7 | 4.7 |
| 1982 | 100.0 | 60.7 | 20.2 | 7.7 | 6.3 | 6.2 | 5.1 | 6.4 | 6.2 | 0.3 | 2.9 | 4.5 |
| 1983 | 100.0 | 60.2 | 21.1 | 6.5 | 6.8 | 7.7 | 4.4 | 7.0 | 6.8 | 0.2 | 2.8 | 4.3 |
| 1984 | 100.0 | 56.1 | 26.0 | 6.2 | 8.7 | 11.1 | 4.1 | 6.2 | 6.0 | 0.2 | 2.7 | 4.7 |
| 1985 | 100.0 | 53.0 | 29.4 | 7.6 | 9.7 | 12.2 | 3.6 | 6.8 | 6.5 | 0.3 | 2.6 | 4.5 |
| 1986 | 100.0 | 46.6 | 36.4 | 8.7 | 10.8 | 16.9 | 3.7 | 6.4 | 5.9 | 0.5 | 2.5 | 4.2 |
| 1987 | 100.0 | 43.8 | 39.1 | 10.7 | 11.5 | 16.9 | 2.8 | 7.1 | 6.8 | 0.3 | 2.5 | 4.6 |
| 1988 | 100.0 | 43.4 | 39.6 | 9.2 | 14.3 | 16.1 | 2.2 | 7.1 | 6.9 | 0.3 | 2.5 | 5.1 |
| 1989 | 100.0 | 39.9 | 45.0 | 11.9 | 16.8 | 16.2 | 1.8 | 7.1 | 6.9 | 0.2 | 2.6 | 3.7 |
| 1990 | 100.0 | 43.1 | 41.2 | 13.8 | 12.6 | 14.8 | 1.5 | 7.7 | 7.5 | 0.3 | 2.6 | 3.7 |
| 1991 | 100.0 | 47.0 | 35.0 | 8.9 | 13.2 | 13.0 | 2.5 | 8.0 | 7.7 | 0.2 | 3.1 | 4.2 |
| 1992 | 100.0 | 45.1 | 37.7 | 7.8 | 14.8 | 15.1 | 3.0 | 7.6 | 7.5 | 0.2 | 3.1 | 3.3 |
| 1993 | 100.0 | 46.1 | 36.7 | 10.2 | 12.5 | 14.0 | 2.8 | 7.7 | 7.5 | 0.2 | 3.1 | 3.5 |
| 1994 | 100.0 | 45.0 | 39.2 | 14.1 | 13.1 | 12.1 | 2.4 | 7.2 | 6.7 | 0.6 | 2.8 | 3.3 |
| 1995 | 100.0 | 48.5 | 35.5 | 13.8 | 11.3 | 10.5 | 2.5 | 7.4 | 6.9 | 0.5 | 2.9 | 3.1 |
| 1996 | 100.0 | 50.2 | 34.1 | 13.3 | 9.8 | 11.0 | 2.4 | 7.4 | 6.9 | 0.5 | 2.8 | 3.0 |
| 1997 | 100.0 | 49.5 | 34.5 | 10.4 | 11.9 | 12.2 | 2.3 | 6.8 | 6.3 | 0.5 | 2.7 | 4.2 |
| 1998 | 100.0 | 50.4 | 32.8 | 11.3 | 8.1 | 13.5 | 2.7 | 7.3 | 6.8 | 0.5 | 2.8 | 3.9 |

na = not available.

ACU = Asian currency unit, MAS = Monetary Authority of Singapore.

^a End-December except for 1970 and 1998 whose reported figures are for end-March.^b The numbers may not add up to 100 during the early years due to incomplete data series.^c Figures for 1971–1976 are reported as "Net balances due to banks."^d "Other assets" include "Cash in hand," "\$NCDs held," and "Fixed and other assets."Source: Monetary Authority of Singapore, *Annual Report*, various issues.

Table 21a: Distribution of Liabilities of Domestic Banking Units, 1970–1998 (percent)

| Year ^a | Total Liabilities | Deposits of Nonbank Customers | Total Interbank Funds ^b | Interbank Funds | | | Paid-up Capital and Reserves | Amount Borrowed from Other Creditors | Other Liabilities ^c |
|-------------------|-------------------|-------------------------------|------------------------------------|-----------------|------------|-------------------|------------------------------|--------------------------------------|--------------------------------|
| | | | | In Singapore | Inter-ACUs | Outside Singapore | | | |
| 1970 | 100.0 | 67.4 | 19.3 | 0.0 | 0.0 | 19.3 | 6.1 | 0.0 | 7.2 |
| 1971 | 100.0 | 76.9 | 7.1 | 0.2 | 1.2 | 5.7 | 7.2 | 2.8 | 6.0 |
| 1972 | 100.0 | 74.1 | 11.0 | 0.2 | 2.3 | 8.5 | 6.5 | 3.0 | 5.4 |
| 1973 | 100.0 | 65.2 | 14.8 | 1.0 | 3.9 | 9.8 | 8.9 | 4.5 | 6.7 |
| 1974 | 100.0 | 68.5 | 8.4 | 0.3 | 1.0 | 7.2 | 9.6 | 6.8 | 6.7 |
| 1975 | 100.0 | 67.8 | 5.7 | 0.3 | 0.3 | 5.2 | 9.7 | 5.9 | 10.9 |
| 1976 | 100.0 | 65.3 | 6.9 | 0.0 | 0.4 | 6.5 | 9.8 | 6.0 | 12.0 |
| 1977 | 100.0 | 49.2 | 27.7 | 7.0 | 12.1 | 8.6 | 7.4 | 4.3 | 11.4 |
| 1978 | 100.0 | 47.3 | 31.2 | 8.1 | 9.2 | 14.0 | 7.1 | 4.0 | 10.4 |
| 1979 | 100.0 | 45.5 | 32.2 | 9.0 | 9.0 | 14.2 | 7.0 | 3.9 | 11.4 |
| 1980 | 100.0 | 48.1 | 29.8 | 8.7 | 6.8 | 14.4 | 8.0 | 4.7 | 9.4 |
| 1981 | 100.0 | 44.8 | 34.4 | 9.5 | 6.8 | 18.1 | 8.5 | 4.7 | 7.5 |
| 1982 | 100.0 | 48.2 | 29.7 | 8.1 | 7.6 | 14.0 | 8.9 | 5.4 | 7.8 |
| 1983 | 100.0 | 46.5 | 38.7 | 6.9 | 10.7 | 21.2 | 8.6 | 4.5 | 1.6 |
| 1984 | 100.0 | 42.7 | 38.7 | 6.5 | 12.7 | 19.4 | 8.4 | 3.9 | 6.4 |
| 1985 | 100.0 | 40.7 | 41.8 | 8.1 | 13.7 | 20.0 | 7.8 | 3.4 | 6.3 |
| 1986 | 100.0 | 39.8 | 43.3 | 8.9 | 13.9 | 20.5 | 7.0 | 2.3 | 7.5 |
| 1987 | 100.0 | 42.1 | 42.1 | 9.9 | 11.8 | 20.4 | 7.4 | 1.0 | 7.4 |
| 1988 | 100.0 | 44.0 | 40.8 | 9.2 | 10.6 | 21.0 | 7.0 | 0.8 | 7.3 |
| 1989 | 100.0 | 41.9 | 45.2 | 12.9 | 11.0 | 21.3 | 6.3 | 0.6 | 6.0 |
| 1990 | 100.0 | 47.7 | 39.3 | 10.8 | 11.4 | 17.1 | 6.4 | 0.5 | 6.0 |
| 1991 | 100.0 | 53.1 | 33.1 | 7.7 | 9.8 | 15.6 | 7.2 | 0.6 | 6.0 |
| 1992 | 100.0 | 51.2 | 35.5 | 7.7 | 10.4 | 17.3 | 7.4 | 0.7 | 5.2 |
| 1993 | 100.0 | 50.2 | 36.6 | 9.8 | 12.0 | 14.8 | 7.8 | 0.6 | 4.8 |
| 1994 | 100.0 | 49.0 | 38.3 | 12.4 | 12.4 | 13.4 | 7.8 | 0.7 | 4.3 |
| 1995 | 100.0 | 48.5 | 38.3 | 13.3 | 11.7 | 13.3 | 8.4 | 0.6 | 4.2 |
| 1996 | 100.0 | 46.8 | 40.2 | 13.6 | 12.4 | 14.2 | 8.3 | 0.6 | 4.2 |
| 1997 | 100.0 | 42.9 | 43.5 | 10.8 | 17.3 | 15.4 | 8.2 | 0.5 | 5.0 |
| 1998 | 100.0 | 46.6 | 39.1 | 11.7 | 15.9 | 11.6 | 8.5 | 0.5 | 5.3 |

ACU = Asian currency unit.

^a End-December except for 1970 and 1998 whose reported figures are for end-March.

^b Figures for 1971–1976 are reported as “Net Balances due to banks.”

^c “Other liabilities” include “\$NCDs issued,” “Bills payable,” and other liabilities.

Source: Monetary Authority of Singapore, *Annual Report*, various issues.

allow Singapore-dollar listing for foreign companies on the Stock Exchange of Singapore (SES). At a press briefing on 8 November, then Deputy Managing Director of MAS, Koh Beng Seng, clarified that the policy of noninternationalization remained unchanged, notwithstanding efforts to regionalize SES and to develop the fund management industry. The critical term in Hu’s announcement was “gradual internationalization.” The qualifying criteria spelled out for foreign stocks will provide ample safeguards to this end.

There was more buzz in the financial sector when there was no mention of the international role of the Singapore dollar in the recommendations proposed on 2 February 1998, by the government-appointed Committee on Singapore’s Financial Competitiveness (CSFC) headed by Peter Seah. Only a day earlier, Deputy Managing Director Koh, a known proponent of “gradual internationalization,” had resigned.

The current debate on the internationalization of the Singapore dollar has gained a new dimension. On a visit to Singapore on 8 February 1998, Malay-

sian Prime Minister Dr. Mahathir Mohamad suggested a regional role for the Singapore dollar in intra-ASEAN trade to offset regional dependence on the greenback. Similar views were also expressed at around this time by political leaders from Brunei, Philippines, and Thailand.

The fact that top ASEAN leaders had proposed a regional role for the Singapore dollar amid the currency crisis showed their confidence in the relative resiliency of the Singapore dollar. Singapore leaders, however, have shown reluctance in responding to the proposal. On 22 January 1998, Senior Minister Lee Kuan Yew expressed reservations on the practicality of the proposal and noted that the use of the Singapore dollar as a base currency in ASEAN would place a heavy burden on Singapore. Later, in response to the proposal and despite MAS' willingness to study its feasibility, Finance Minister Hu also expressed doubts on its practicality, given the small size of the economy.

On 13 August 1998, Deputy Prime Minister Lee, who is also the Chairman of MAS, made it clear that, although the government was reviewing some specific restrictions on the use of the Singapore dollar, the basic rationale for not encouraging the internationalization of the Singapore dollar remained sound. He went on to say that:

Caution is especially necessary in a sensitive and vital policy area like [the] internationalisation of [the] Singapore dollar. We must not inadvertently create an impression that it is now open season for speculation in the Singapore dollar, especially in the present external environment, where exchange rates of the Asian countries have far from stabilized.

Some Popular or Persuasive Arguments for Internationalization

Up to now at least, the authorities have been reluctant to see the "swift" internationalization, regionalization (in the context of ASEAN), or even triangularization (in the context of the growth triangle) of the

Singapore dollar. MAS Notice 757, November 1999, does indicate that more than S\$5 million in Singapore-dollar credit facilities for the use of nonresidents or residents outside Singapore would be considered on a case-by-case basis. Therefore, the MAS' policy is to "discourage" but not to "disallow" internationalization of the Singapore dollar.

Our studies have shown that the steady appreciation of the Singapore dollar by 2.5 percent a year between 1985 and 1995 has, in fact, enhanced export competitiveness by lowering import prices, costs of intermediate goods, wage costs, and, hence, overall production costs. On the other hand, swift appreciation of 5 percent a year for two consecutive years would have a negative impact on export growth. The rationale is that rapid appreciation of the Singapore dollar within a short span of time may not allow the benefit of the lower inflation to feed through to lower production cost in order to offset the higher export prices resulting from swift exchange-rate appreciation.

The exchange rate is therefore used as a tool not only to keep import prices stable but also to cool down the economy when it gets overheated by choking off the marginal export demand. Thus, internationalizing the Singapore dollar would undermine MAS' sovereignty in exchange-rate policy, hampering the achievement of its twin objectives of price stability and noninflationary growth. Those who argue for the internationalization of the Singapore dollar should be made to realize the magnitude of the costs of compromising control over the exchange rate.

However, the proposal made by regional leaders to use the Singapore dollar as a common currency for trading in ASEAN deserves serious attention and objective assessment. We may look at the issues at stake and the various implications, both domestic and regional. More importantly, in the context of the regional currency turmoil, we must attempt to identify the original concerns that gave rise to the proposal and determine whether there is a better or more feasible alternative to address such concerns.

BROADER AND DEEPER FINANCIAL MARKETS FOR SINGAPORE

This is perhaps the more commonly cited argument against the noninternationalization of the Singapore dollar. Promoting the use of the currency both within and outside Singapore would widen financial markets in terms of the range of products or financial instruments denominated in Singapore dollars, as well as deepen financial markets by generating more volume of activities traded in Singapore dollars. The recent policy to allow the Singapore-dollar listing of foreign companies is a case in point. Foreigners raising funds in Singapore dollars for use outside Singapore can help deepen the currently shallow capital markets for Singapore government securities and private-sector corporate bonds.

The proposal to use the Singapore dollar as the ASEAN trading currency would leave the country with no direct influence or effective control over the extent, pace, or timing of internationalization. However, in the case of the Singapore-dollar listing of foreign companies on SES or the development of the bond market, MAS can decide whether the economy and the respective governing authorities can cope with the liberalization, and work out carefully calculated steps and measures with ample safeguards.

INTRA-ASEAN TRADE INVOICED IN SINGAPORE DOLLARS

The call to use the Singapore dollar as a common currency for trading within Southeast Asia arises from the need to reduce the overdependence of the region's economies on the US dollar. At least for the medium term, any exchange-rate stability resulting from such a move is unlikely to be substantial since intra-ASEAN trade, although increasing fast since the early 1990s, constitutes only a quarter of the total trade in ASEAN. Furthermore, with the present small size of Singapore's economy, which is only 15 percent of the combined ASEAN economies, the limited supply of Singapore dollars in circulation would

result in swift appreciation of the currency because of excess demand.

On the domestic side, the move to invoice regional trade in Singapore dollars would no doubt reduce transaction costs and hedging costs for Singapore traders. However, such gains to the country would be negligible if one were to consider the destabilizing impact on its economy when the Singapore dollar inevitably becomes a reserve currency for ASEAN members. Not only would Singapore lose its independence in monetary policy and exchange-rate management, the swift appreciation of the Singapore dollar would impair the country's international competitiveness, at least in the medium term, thus forcing trade deficits with its neighbors.

SINGAPORE AS AN INTERNATIONAL FINANCIAL CENTER

A simple and popular but less convincing argument against the noninternationalization of the Singapore dollar is that Singapore cannot be an international financial center if the Singapore dollar does not take on an international profile. The country will lose out to other major financial centers by turning away even those businesses with a Singapore-dollar base. If Singapore, whose gross domestic product is merely 1 percent of the US' and 1.6 percent of Japan's, aims to be an international financial center in the true sense of the word, Singapore-dollar-based businesses are far too small to consider.

A successful international financial center requires many other contributing attributes; an internationalized currency may help to achieve the objective but it is neither a necessary nor a sufficient prerequisite. Take, for example, the Singapore foreign-exchange market, which is the fourth largest in the world, and the highly successful Singapore International Monetary Exchange (SIMEX). The success of these markets is very much attributed to their good time-zone location, effective dealers and operators, efficient telecommunications, and transparent rules.

REGIONALIZATION DRIVE AND THE EXTERNAL ECONOMY

The MAS policy of discouraging internationalization is sometimes seen to contradict the government's efforts to develop an external wing for the economy, efforts that include pushing local companies to venture abroad. It is argued that discouraging the regionalization of the Singapore dollar will mean that local credit lines cannot be used for overseas expansion and that Singapore banks tend to insist on local collateral that would already have been put to use and therefore could not be re-pledged.

The two arguments cited appear to assume that one needs the Singapore dollar to venture abroad. This is clearly not so. In any case, it is standard banking practice to convert local credit lines to the equivalent in any acceptable foreign currency for business ventures abroad. If local collateral has already been put to use and cannot be re-pledged, it is an issue of credit, not the MAS policy. However, if local businesses would like to pledge their foreign collateral to obtain foreign business funding, Singapore banks usually have no problems financing the business venture in the same foreign currency as the collateral.

Failure to obtain financing in this case would be a question of the banks' adopted risk profile, which may or may not be linked to MAS. The issue, however, is not connected to MAS policy of noninternationalization of the Singapore dollar. The point to note here is that arguments for the internationalization of the Singapore dollar must be built on valid grounds, not on the back of the "go regional" bandwagon.

In conclusion, Singapore has built up a credible financial structure with effective policy instruments. A preliminary and more pragmatic approach to financial liberalization is to work according to the established framework by considering changes from within, since MAS is pushing ahead on uncharted ground in the present turbulent time.

With the rapid growth of the ADM since its establishment in 1968, the case for internationaliza-

tion to support the regionalization drive does not seem valid since regional trade and investment activities can still flourish with funding requirements being met at the ADM. As of December 1997, the total assets of ACUs stood at US\$557 billion, but Singapore's broad money supply (M3) was only US\$92 billion. Given the size of the Singapore economy and its money supply, meeting loan demand for the ADM alone, not to mention the funding requirements for ASEAN, would be a tall order. Policy simulations by Chen and Tan (1992) have shown the highly destabilizing effect of internationalizing the Singapore dollar on the financial sector and the real economy.

Put another way, the primary concern is not with internationalization or regionalization itself. Rather, Singapore's move to liberalize and deregulate should not follow the free and open "big bang" approach adopted by London and Tokyo. In any case, the country's economic circumstances, institutional features, and monetary policy designs impose certain constraints which would limit the effects of even a full relaxation on the role of the Singapore dollar.

Rules of the Game and the Role of Financial Institutions

The Monetary Authority of Singapore (MAS) is the central bank of Singapore. It formulates and executes Singapore's monetary and exchange rate policies. As banker and financial agent to the government, it manages the country's official foreign reserves and facilitates the issuance of government securities. As supervisor and regulator of Singapore's financial services sector, MAS has prudential oversight over the banking, securities, futures and insurance industries. It is also responsible for the development and promotion of Singapore as an international financial center.— Monetary Authority of Singapore, Annual Report 1997/98

In its mission and objectives, MAS has always pledged commitment to the promotion of sustainable

noninflationary economic growth. It acts as a banker and financial agent to the government by protecting the value of its accumulated reserves and developing a competitive and progressive financial services sector through prudential oversight. It is interesting to note, however, that MAS, in 1997, officially registered its new mission to project Singapore as an international financial center. In 1998, MAS, for the first time, was formally declared the central bank of Singapore.

The seriousness of MAS in supervising and regulating financial institutions and markets is reflected on the cover page of the *Notices to Banks on Compliance with Rules, Regulations and Guidelines*, where it is stated that:

The Authority has since 1981 emphasised the importance of self regulation by financial institutions. Banks are expected to run their operations prudently and to comply with both the letter and the spirit of all rules, regulations and guidelines laid down by the Authority.

By emphasizing both “the letter and the spirit” of its regulations, MAS is sending a signal to financial institutions that it will not tolerate attempts to exploit or profit from loopholes in the system. The soundness of the financial system and the resiliency of the financial institution are always paramount considerations. In particular, in extreme circumstances where loss of confidence can turn into self-reinforcing panic, a sound and resilient financial system is all the more essential.

The speech of Deputy Prime Minister B.G. Lee on 4 November 1997 may be viewed as the watershed in the development of the policy role of MAS, from regulator to supervisor of financial institutions. MAS now gives more emphasis to monitoring systemic risks, in contrast to its previous micro approach of protecting individuals, products, and projects. It is also carrying out the gradual internationalization policy by further deepening and broadening the capital markets. The Financial Sector Re-

view Group was set up to help look for catalysts and to promote Singapore as a truly international financial center.

To a large extent, Hong Kong, China and Singapore are competing financial centers. “In Hong Kong, anything not expressly forbidden is permitted; in Singapore, anything not permitted is forbidden.” Such a statement, although exaggerated, is often quoted to capture the basic difference between the two systems. It is indeed quite difficult to imagine how Singapore as an international financial center can shift from the “government initiative” approach to Hong Kong, China’s more individualistic approach. The role of full-license financial institutions, as expected by MAS, and local bank management style are likely to evolve only gradually, especially during the period of turmoil and uncertainty. Even the Hong Kong Monetary Authority appears to have moved away from its known tradition of nonintervention in the recent financial turmoil. To put it differently, local financial institutions will be expected to perform “national service” whenever MAS deems that the “national interest” is at stake, since MAS will have no hold over foreign financial institutions. Such is the reality, and this assumed “special relationship” of moral suasion is very unlikely to change.

GIC, given its statutory responsibility to preserve and safeguard the nation’s precious financial reserves, is known to have made a positive contribution to the stability of the two-tier financial system. It is not known to what extent GIC has participated in the financial activities of the system, particularly in ACUs during the early 1990s, when offshore banks withdrew from ACU activities to meet the minimum capital adequacy ratio set by their home regulators. In the effort to kick-start the development of Singapore as a fund management center in the region, GIC is beginning to pass on some of its large financial turnover to international fund managers who are prepared and have made the commitment to locate in Singapore on a longer-term basis.

Concluding Remarks: Some Observations and Lessons

Given the segregation of domestic financial activities from offshore participation, Singapore is unlikely to do away with the dichotomized system in the foreseeable future. It is likely to continue insulating the domestic banking sector against the bracing international environment for fund flows. DBUs and ACUs will continue to operate in a nonlevel playing field where there is segregation between financial entities but, increasingly, not between local and international players. As reaffirmed by the new Chairman of MAS and Deputy Prime Minister B.G. Lee in November 1997, "so far, this approach has promoted rather than hindered our growth." Such a strategy is crucial to systemic stability as the country's external economy expands, its regional funding role improves, its status as a major financial center is further enhanced, and swift fund flows become the norm for capital markets that are globally integrated.

However, MAS will not always continue to nurture the development of indigenous banks into bigger international players, by protecting the domestic market, as it has done for the past three decades, or by encouraging mergers and acquisitions to foster competition, as it is now doing. The impending approval of another six full-license banks is meant to "force" indigenous banks to modernize and innovate but not to do away with the demarcation approach to "cushion" fund flows. In the context of financial liberalization theory and economic development strategy, it must be noted in retrospect that Singapore's sequencing approach does entail a necessary trade-off in exchange for stable and sustainable growth. The expected outcome of protectionist measures must be lower quality, fewer choices, and less competitive financial services for consumers within the protected domestic market.

Given the policy of noninternationalization of the Singapore dollar for exchange-rate management con-

siderations and the lack of a natural need to borrow by issuing government bonds, the rudimentary state of the domestic capital market is just another price the country has paid under the dichotomized financial system. While the policy dilemma is recognized, recent efforts to develop the Singapore-dollar-denominated bond market involve experiments with its "freer use" both by nonresidents and by residents planning to use the proceeds outside Singapore. Statutory boards and government-linked companies (GLCs) are also encouraged to raise funds directly by issuing bonds in the market instead of relying on government funding.

The evidence seems to suggest that the triad of incompatibilities—the noncoexistence of exchange-rate stability, free capital mobility, and monetary autonomy—does not hold, at least in Singapore. First, the Singapore dollar has had two decades of stability and steady appreciation under the "guided" exchange-rate management of MAS. Second, there is econometric evidence of the "dominantly active" effect of both broad and narrow money aggregates on the real economy. Third, a high level of capital mobility has been statistically detected, particularly in the category of "other investment," which, as classified by the International Monetary Fund (IMF), includes all capital transactions of the private sector other than foreign direct investment and portfolio investment. ("Other investment," in effect, refers mainly but not exclusively to bank loans and deposits.)

In the bracing international environment of volatile fund flows, the important policy implications under the dichotomized financial system must surely come from the noninternationalization of the Singapore dollar, which is basically equivalent to "throwing sand into the wheels" of perfect capital mobility. The central bank can then monitor the sources and uses of funds, and have some "leverage" on the local currency but not to restrict capital movements within the two-tier financial entity. The demarcation between ACUs and DBUs, with their

respective regulatory rules, prudential safeguards, and fiscal incentives, functions as a “porous wall” which does not inhibit movements of capital but which mitigates adverse capital flows and cushions exogenous shocks.

In dealing with international capital movements, it would be useful to have empirical studies identifying the components or sources of investment fund flows in each economy. These have been classified by the IMF into the three broad categories of foreign direct investment, portfolio investment, and other investment. In fact, recent studies on the ASEAN Five and 22 economies that are also members of the World Trade Organization have revealed that the source of volatility can indeed be traced to the “other investment” category (Tan 1999; Kono and Schuknecht 1998). In the light of Singapore’s experience, noninternationalization of the local currency under the dichotomized system in which the offshore and onshore financial activities are demarcated may be a useful system to consider for relatively small, open, but high-growth export-oriented economies.

However, we should reiterate that consistent macroeconomic policy stabilization, a strong and stable currency, “responsible” financial institutions, a healthy balance of payments, and a sustainable pace of economic growth may very well be the sine qua non for the successful implementation, as well as the maintenance, of the dichotomized financial system. Attributes and advantages such as greater openness, a market-oriented approach, clear regulatory rules, prudential safeguards, appropriate incentives, and increased transparency of financial information will also help shape Singapore into an efficient and resilient international financial center. Unanticipated shocks and future challenges under the dichotomized financial system can indeed be a steep road to climb.

Some useful lessons can be learned. First, it is quite clear that curbing financial activities directly will be a costly process, and direct massive intervention in the marketplace tends to cause distortion. It may be more efficient and less arbitrary to seek a

resilient financial structure that can better deal with capital flows. Second, instead of trying to fend off excessive capital inflows or outflows, it may be more pertinent for policy authorities to ensure that economic conditions and the political environment do not attract excessive inflows or exacerbate volatile outflows. Third, while waiting for international monetary reforms to take shape, each economy should seek initiatives to buffer its own system by working within the requirements of the international financial community and global monetary order.

We should also be more careful in the formulation of policy strategy and direction of resources by regional authorities to promote the growth of financial centers. The relevant authorities in Asia should explore opportunities to compete only on the basis of the comparative advantage of their respective economies instead of engaging in needless duplication. It may be more productive and timely to seriously consider reforms in financial structure and financial institutions. It may be warranted to review the effectiveness of checks and balances in controlling excesses in the central bank and other relevant governing authorities. Instead of being overly concerned with or denouncing what could well be the dynamic behaviors and consequences of a more swiftly integrated market pricing mechanism, we all may have to learn to live with the phenomenon, which may just be the new global financial order.

An alternative option to consider is perhaps not the entirely free market-driven system of Hong Kong, China, which has functioned well in normal times, or Malaysia’s exchange controls involving total market cut-off, a short-run remedy to buy time but with long-run costs. In the light of Singapore’s experience, noninternationalization of the local currency under an exchange-rate regime of a trade-weighted basket of managed float in which offshore and onshore financial activities are demarcated could be useful for relatively small, open, but high-growth export-oriented economies. Such a middle-path approach may help to preserve greater stability with

sustainable growth. Malaysia; Taipei, China; and Thailand have gone some way in this direction. In this sense, we may concur with some market observers that “it is a fallacy to speak of the wisdom of the

marketplace at all times,” especially where efficiency of the marketplace prevails through regulations and institutions set up by international policy authorities and financial agencies.

Appendix 1

Chronology of Financial Market-Related Measures and Events

June 1967. The Board of Commissioners of Currency, Singapore (BCCS) starts to issue the Singapore dollar

August 1968. Withholding tax on interest income of nonresidents is abolished

November 1968. Bank of America is the first to be granted approval to operate in the Asian Currency Unit (ACU)

January 1971. The Monetary Authority of Singapore (MAS) begins its operations

June 1972. MAS decides to exempt ACU from the statutory reserve requirement

July 1972. The cartel system for exchange-rate fixing is formally abolished

January 1973. The concessionary corporate tax on income is reduced from 40 to 10 percent

May 1973. Singapore ends the currency interchangeability arrangement between the Malaysian ringgit and the Singapore dollar while maintaining par interchangeability with the Brunei dollar

June 1973. The Stock Exchange of Singapore (SES) Ltd. is inaugurated

July 1973. MAS removes the cartel system of foreign-exchange quotation among banks and the Singapore dollar is allowed to float “freely” but on an unofficial level although this floating system is managed

July 1975. The cartel system of interest-rate determination is abolished, as stated in MAS Notice 620

January 1976. Asian dollar bonds are approved and nonresident ACU deposits are exempted from estate duty

June 1978. Exchange controls are completely abolished

April 1980. Stamp duty on ACU offshore loan agreements and Asian dollar bond certificates is abolished

January 1981. The managed-float regime is officially adopted and exchange-rate management is announced

September 1981. The policy of noninternationalization of the Singapore dollar appears in MAS Notice 621

April 1983. MAS grants a five-year tax holiday for all income derived from syndicated offshore loans; tax exemptions for offshore fees income and commissions earned by nonresidents; and exemption from stamp duty for ACU transactions in non-Singapore-dollar securities by nonresidents

July 1984. The Singapore International Monetary Exchange (SIMEX) introduces trading in international gold futures

September 1984. Financial futures trading is launched with a mutual offset link between SIMEX and the Chicago Mercantile Exchange

December 1984. ACUs are allowed to issue negotiable certificates of deposit denominated in Japanese yen

May 1987. MAS attempts to revamp the Singapore government securities market

June 1991. A 10 percent concessionary tax rate is extended to the lending and borrowing activities in foreign securities and ACU transactions with approved fund managers

April 1993. A concessionary tax rate of 5 percent is granted for trading in foreign securities by ACU with taxable income exceeding S\$10 million

April 1995. Fund managers with managed fund sizes of at least S\$5 billion from foreign investments by ACU are granted a concessionary tax rate of 5 percent for the incremental increase in taxable income over the preceding qualifying year

October 1996. MAS allows Singapore-dollar listing for foreign companies on SES

September 1997. A fundamental review of MAS’ policies in regulating and developing Singapore’s financial sector is announced and the Financial Sector Review Group (FSRG) is appointed

February 1998. The Committee on Singapore's Financial Competitiveness (CSFC) is appointed

March 1998. A tax exemption is given for fee income earned by financial institutions arranging debt securities in Singapore

August 1998. The policy of noninternationalization of the Singapore dollar is reiterated

December 1999. SES merges with SIMEX to form the Singapore Exchange (SE)

Appendix 2

Guidelines for Operation of Banks and Merchant Banks

ASIAN CURRENCY UNIT TERMS AND CONDITIONS OF OPERATION

1. The operation of the Unit shall be subject to the laws of Singapore including the Banking Act (Chapter 182) and to the following terms and conditions, which may be varied from time to time.
2. The Unit shall be part of your bank/merchant bank but it shall maintain its own separate accounting.
3. The Unit's total assets/liabilities shall not exceed the limit fixed by the Monetary Authority of Singapore from time to time for your Unit. This limit includes all contingent items.
4. The Unit is permitted to accept time and demand deposits (including savings and checking accounts) and to borrow in any currency except Singapore Dollars. Savings accounts shall be operated subject to the Authority's approval.
5. The Unit may issue fixed rate and floating rate US\$NCDs after consultation with the Authority.
6. The Unit may place deposits or extend loans and advances in any currency except Singapore Dollars.
7. The Unit may transact exchange business which does not involve Singapore Dollars directly.
8. The Unit may establish, open, advise or negotiate Letters of Credit provided that the Letters of Credit are not expressed in Singapore Dollars.
9. The Unit may issue or renew guarantees, indemnities or similar undertakings provided that such guarantees/indemnities are not expressed in Singapore Dollars.
10. The Unit may discount bills and acceptances provided that the bills or acceptances are not expressed in Singapore Dollars.
11. The Unit may act as manager, underwriter or as a member of a selling group for new issues of securities in any currency other than Singapore Dollars.
12. The Unit may transact, deal, undertake brokerage business and invest in securities in any currency except Singapore Dollars.
13. The Unit may manage investment funds denominated in any currency except Singapore Dollars.
14. The Unit may provide advisory services relating to financial matters.
15. The Unit shall furnish a satisfactory undertaking to the Monetary Authority of Singapore either from its Head Office or other parties named by the Authority that it will maintain a sound liquidity position at all times and that the Head office or other parties named by the Authority will on demand provide adequate funds to make up for any liquidity or other shortfall.
16. The Unit shall only maintain or open accounts in the actual names of the account holders. No account shall be opened with the Unit that is

identifiable by a number, code word, name other than the actual name of the account holder, or any other means. The Unit should ensure that this condition is strictly adhered to.

17. The Unit will be supervised by the Monetary Authority of Singapore and shall furnish statements of its assets and liabilities, or any other returns, which the Authority may from time to time require.
18. If the Unit contravenes or fails to comply with any of the above conditions, the approval to operate the Unit may be revoked by the Authority.

GUIDELINES FOR OPERATION OF "RESTRICTED" BANKS

1. A "restricted" bank shall not:
 - a. operate savings accounts
 - b. accept fixed deposits of less than S\$250,000 per deposit
2. It will be allowed to operate one banking office only and no sub-branches may be permitted.
3. It may operate an Asian Currency Unit subject to the ACU Terms and Conditions of Operation.

GUIDELINES FOR OPERATION OF "OFFSHORE" BANKS

1. Transactions with nonresidents of Singapore

The Domestic Banking Unit of an "offshore" bank may transact any banking business with nonresidents of Singapore (as defined below), except that it shall not accept fixed deposits of less than S\$250,000 and savings deposits from such customers.

2. Transactions with nonbank customers who are residents of Singapore

The Domestic Banking Unit of an "offshore" bank may provide normal banking services to nonbank customers who are residents of Singapore, except that it shall not accept fixed and other interest-bearing deposits in Singapore dollars and savings deposits from such customers. In addition, the total credit facilities (exclud-

ing contingent facilities) extended to such customers in Singapore dollars shall not, without the prior approval of the Authority, exceed S\$300 million at any one time.

3. Transactions with banks and other financial institutions in Singapore

The Domestic Banking Unit of an "offshore" bank may, in addition to the other inter-bank transactions, deal in the Singapore dollar money market with banks, finance companies and other approved financial institutions.

4. Asian Currency Unit

An "offshore" bank may operate an Asian Currency Unit subject to the Asian Currency Unit Terms And Conditions of Operation.

Residents of Singapore are defined as:

- a. Persons whose main centre of interests is in Singapore or whose main source of income is derived from Singapore or whose period of residence in Singapore exceeds one year;
- b. Persons who have been granted permanent residency in Singapore;
- c. Companies and other bodies whose permanent or registered address is in Singapore including branches or subsidiaries located within Singapore of overseas-registered companies of foreign institutions;
- d. Singapore embassies, consulates and armed forces including their diplomatic and military representative outside Singapore;
- e. Agents or agencies located abroad acting on behalf of or for the account of Singapore residents.

Nonresidents or residents outside Singapore are defined as:

- a. Persons whose permanent or registered address is outside Singapore including overseas residents using a bank in Singapore or a Singapore address as an accommodation address. Tourists or travellers or persons exer-

- cising employment abroad or gaining their earnings from activities and investments abroad are to be considered as nonresidents;
- b. Members of diplomatic and consular staff, foreign official missions, agencies and armed forces of foreign countries stationed in Singapore;
- c. Companies and other bodies whose permanent or registered address is outside Singapore including overseas branches or subsidiaries of Singapore-registered companies or institutions;
- d. Overseas governments, public authorities, including embassies, consulates, foreign official missions, agencies and armed forces of foreign countries stationed in Singapore;
- e. Agents or agencies located in Singapore "not being permanent establishments" acting on behalf of or for the account of overseas resident.

GUIDELINES FOR OPERATION OF "MERCHANT" BANKS

1. Merchant banks may conduct the following activities:
 - a. Floatation, underwriting, buying and selling of shares, loan stocks and bond issues and other securities.
 - b. Investment portfolio management, investment advisory services and nominee services.
 - c. Unit Trust management and sales.

- d. Advice on corporate reconstruction, takeovers and mergers.
- e. Management advisory services.
- f. Arranging finance, lending or participating in syndicated loans and acting as guarantors.
- g. Financing or lending in the institutional money markets.
- h. Discounting of negotiable securities or money market instruments in Singapore dollars.
- i. Dealing in gold and foreign exchange.
2. Merchant banks shall not:
 - a. Accept deposits or borrow from the public in any form except from banks, finance companies, shareholders and companies controlled by shareholders.
 - b. Raise monies by issuing promissory notes, commercial papers, certificates of deposit or by acceptance or endorsing of bills of exchange.
 - c. Operate an Asian Currency Unit except with specific permission from the Authority.
 - d. Merchant banks shall conduct the activities mentioned in the foregoing paragraphs with the necessary approval from the appropriate Government departments and statutory bodies and in compliance with the laws of Singapore.

Source: Monetary Authority of Singapore.

Appendix 3

Notice to Banks

INTERNATIONALISATION OF THE SINGAPORE DOLLAR (S\$)

MAS 757, 26 Nov 1999

Issued by Monetary Management Division

(NOTICE TO BANKS BANKING ACT, CAP 19 Notice to Banks MAS 757 dated 13 August 1998 is cancelled.)

Overview

1. The Monetary Authority of Singapore (the Authority)'s policy is not to encourage the internationalisation of the Singapore Dollar (S\$). Pursuant to Section 54A of the Banking Act (Cap 19), banks are required to observe the guidelines relating to this policy.
2. Transactions with Singapore residents: Banks are not required to consult MAS when extending S\$ credit facilities to or transacting S\$ financial

and derivative products with Singapore residents for any purpose, whether in Singapore or overseas. For the purposes of this Notice, Singapore residents are (i) Singapore citizens, (ii) individuals who are Singapore tax-residents, and (iii) companies incorporated in Singapore or overseas which are jointly owned or majority-owned by Singapore citizens.

3. Transactions with banks and other financial institutions: Banks are not required to consult the Authority prior to extending S\$ credit facilities to or transacting S\$ interest rate products with other banks, merchant banks, finance companies and insurance companies in Singapore. Banks are, however, required to consult the Authority before transacting S\$ currency options or option-related products with nonbank financial institutions and before extending S\$ credit facilities exceeding S\$5 million to banks and other financial institutions outside Singapore. Banks are not allowed to transact S\$ currency options or options related products with other banks.
4. Transactions with nonbank nonresidents: Banks are not required to consult the Authority when extending S\$ credit facilities to or arranging S\$ equity listings and bond issues for nonbank nonresidents if the S\$ proceeds from these are used for economic activities in Singapore. Hedging of the S\$ exchange rate and interest rate risks arising from these economic activities in Singapore is also allowed without consultation with the Authority. Banks can also extend freely S\$ credit facilities to nonbank nonresidents if these credit facilities do not exceed S\$5 million. For amounts exceeding S\$5 million, banks must consult the Authority for any purpose other than those expressly permitted in this Notice.
5. This Notice classifies what banks are freely allowed to do, not allowed to do, and need to consult the Authority on, in each of the following areas: S\$ credit facilities, S\$ equity listings, S\$ bond issues, and S\$ financial derivatives. These

are described in detail below and summarized in Schedule 1.

Extension of S\$ Credit Facilities

For the purposes of this Notice, S\$ credit facilities include, *inter alia*, bank loans, currency swaps, securities lending and repurchase agreements.

1. Banks may, without prior consultation with the Authority, extend S\$ credit facilities to:
 - a. Singapore residents for use in Singapore or overseas, for any amount and purpose;
 - b. nonbank nonresidents for any amount, if the S\$ proceeds from these credit facilities are used for economic activities in Singapore, as listed in Schedule 2, or for hedging the S\$ exchange rate and interest rate risks arising from these economic activities;
 - c. nonbank nonresidents if the credit facilities do not exceed S\$5 million in aggregate. Banks are required to report to the Authority their aggregate S\$ lending to nonresidents on a monthly basis in the format in Schedule 3. A nil return is required.
 - d. nonbank nonresidents for any amount, via repurchase agreements of Singapore Government Securities (SGS) or S\$ denominated bonds which are listed on the Stock Exchange of Singapore (SES) and cleared and settled through the Central Depository Private Limited (CDP), where there is full delivery of collateral.
 - e. Banks are not allowed to lend to nonbank nonresidents above the equivalent of S\$5 million in S\$ denominated securities or commercial papers, "clean" or in exchange for foreign currency.
2. The Authority may, upon consultation, approve the extension of S\$ credit facilities above S\$5 million to nonresidents for overseas projects. As a working guideline, the amount of S\$ financing permitted for such projects is as follows:

- a. overseas projects with Singaporean management control OR with Ministry of Trade and Industry (MTI) / Economic Development Board (EDB) sponsorship, AND Singaporean shareholding of 21 to 49 percent: up to 100 percent of the project costs;
 - b. overseas projects with Singaporean management control OR with MTI/ EDB sponsorship, AND Singaporean shareholding of up to 20 percent: up to 50 percent of the project costs; and
 - c. overseas project without Singaporean management control AND MTI/ EDB sponsorship: up to the proportion of the Singaporean shareholding only.
3. The S\$ proceeds from credit facilities extended to nonresidents for all overseas projects must be converted or swapped into foreign currency for use outside Singapore.
 4. Banks must consult the Authority before extending S\$ credit facilities of amounts exceeding S\$5 million to nonresidents for any purpose other than those expressly permitted in this Notice.
 5. Banks must not circumvent the Authority's guidelines by splitting the amounts of the S\$ credit facilities into several smaller transactions.

Listing of S\$ Equities

1. Banks may, without prior consultation with the Authority, arrange S\$ equity listings for nonresidents. The arranging bank must ensure that if the S\$ proceeds raised at the initial public offering and subsequent fund raising exercises are not to be used for the economic purposes in Singapore that are listed in Schedule 2, the S\$ proceeds must be converted into foreign currency before being drawn-down by the issuer. The bank must also notify the Authority prior to any such conversion.

Issue of S\$ Bonds

1. Banks may, without prior consultation with the Authority, arrange S\$ bond issues for nonresidents if the S\$ proceeds from the issuance are used for the economic purposes in Singapore that are listed in Schedule 2. Banks are required to notify the Authority of any S\$ bond issues or commercial papers by residents and nonresidents one week prior to the proposed launch of the issue.
2. Banks must consult the Authority before arranging S\$ bond issues for nonresidents where the S\$ proceeds are to be used outside Singapore or for purposes not listed in Schedule 2. As a working guideline, the Authority may, upon consultation, approve the issue of S\$ bonds by:
 - a. all rated foreign corporates;
 - b. all sovereigns, rated or unrated; and
 - c. *unrated* foreign corporates, *provided* the investor base is restricted to sophisticated investors.
3. The S\$ proceeds from all such bond issues by nonresidents must be converted or swapped into foreign currency for use outside Singapore.

Transactions in S\$ Financial Derivatives

1. Banks may, without prior consultation with the Authority,
 - a. transact S\$ financial derivatives with Singapore residents freely;
 - b. lend in S\$ through currency swaps with nonresidents for hedging the S\$ exchange rate and interest rate risks arising from economic activities in Singapore, as listed in Schedule 2;
 - c. lend in S\$ through currency swaps or transact in S\$ interest rate swaps with Special Purpose Vehicles (SPVs) incorporated in Singapore for the express purpose of securitising S\$ assets of financial institutions in Singapore;

- d. accept S\$-denominated Singapore equity market or bond-linked deposits from nonresidents;
 - e. accept yield enhancement deposits with embedded currency options on the S\$ from nonresidents as long as the nominal amount of the embedded S\$ options purchased or sold does not exceed the amount of deposit accepted;
 - f. transact with nonresidents S\$ interest rate derivative products such as interest rate swaps, interest rate futures, forward rate agreements and interest rate options and swaptions;
 - g. buy or sell S\$ currency options (call or put options) from/to nonbank nonresidents, other than nonbank financial institutions, engaging in trade with or economic activities in Singapore provided they have a genuine commercial requirement to hedge their S\$ foreign exchange exposures, subject to the following conditions:
 - i. The S\$ option should have cashflows matching the S\$/foreign currency flows if the option is exercised;
 - ii. The S\$ option offered must not be combined with a spot or any other transaction to constitute a S\$ credit facility that would not be permitted under this Notice;
 - iii. There must be documentary evidence of the nonbank customer's need to hedge its trade with or economic activities in Singapore;
 - iv. If the bank wishes to hedge its resultant option position, it should do so in the cash market in Singapore, not with another S\$ option, no matter whom the option counterparty is; and
 - v. The bank should report to the Authority the details of the S\$ option and the name of the nonbank customer immediately after the option is transacted.
2. Banks are required to report to the Authority on a monthly basis, the details of each S\$ interest rate derivative product transacted with nonresidents outside Singapore exceeding a nominal amount of S\$5 million, in the format in Schedule 3. A nil return is required.
 3. Banks must consult the Authority before transacting with nonresidents all other S\$ financial derivatives not specified above.

Reporting

All information required in Schedule 3 should be submitted to the Authority no later than 15 days after the reporting month.

Consultation Procedure

To consult the Authority, details of the Singapore dollar credit facilities proposed should be submitted in writing by post, electronic mail (sgddiv@mas.gov.sg) or facsimile (No: 2299491) to the Monetary Management Division, MAS.

When consulting the Authority, banks should provide relevant information e.g. the extent of the non-resident shareholding in the borrower, the amount and purpose of the Singapore dollar credit facilities. Banks should keep documentary evidence supporting these Singapore dollar credit facilities for audit and inspection purposes. If in doubt, banks should consult the Authority.

Source: Monetary Authority of Singapore.

Schedule 1: Summary Table of Provisions Under MAS Notice 757

| S\$ Credit Facilities to Non-residents ^a | | Arranging Issuance for Nonresidents ^b | | | |
|---|---|---|---|---|---|
| | For Use in Singapore | For Overseas Projects | S\$ Bonds | S\$ Shares | Financial Derivatives |
| Allowed freely | <p><i>Any amount for:</i></p> <ul style="list-style-type: none"> Trade financing, performance bonds, performance/payment guarantee. Working capital, purchase of office, factory and fixed assets for own development. Purchase of land for construction. <p>All of the above S\$ loans and their hedging will be allowed without the need to consult.</p> <ul style="list-style-type: none"> Repos of SGS and/or SES-listed S\$ denominated bonds which are cleared and settled through CDP, where there is full delivery of collateral. <p><i>≤ S\$5 million for:</i></p> <ul style="list-style-type: none"> Shares, bonds, deposits, commercial properties. <p>Large amounts (>\$5 million) must not be split to circumvent.</p> | <p><i>≤ S\$5 million</i></p> <p>Large amounts (>\$5 million) must not be split to circumvent.</p> | <p><i>If S\$ proceeds are used for:</i></p> <ul style="list-style-type: none"> Trade financing, performance bonds, performance payment guarantee. Working capital, purchase of office, factory and fixed assets for own development. Purchase of land for construction. <p>All of the above and their hedging will be allowed without prior consultation.</p> <p>Banks must notify the Authority prior to the launch of any proposed S\$ bond issues or commercial papers.</p> | <p>S\$ proceeds must be converted into foreign currency for utilization outside Singapore</p> | <ul style="list-style-type: none"> S\$ currency swaps for hedging FX exposures arising from economic activities in Singapore. S\$ currency and interest rate swaps with Singapore-incorporated SPVs for securitizing S\$ assets. Singapore equity market- or bond-linked S\$ bank deposits. S\$ or foreign currency denominated yield enhancement deposits. S\$ interest rate swaps, interest rate options and swaptions, interest rate futures, forward rate agreements, caps, floors, and other S\$ interest rate derivative products.^c S\$ currency options for hedging FX exposures arising from trade with or economic activities in Singapore subject to the conditions in Para 5.1 (transactions in S\$ financial derivatives).^d |
| Consult MAS | <p><i>> S\$5 million for:</i></p> <ul style="list-style-type: none"> Other activities not specified above. | <p><i>> S\$5 million for:</i></p> <ul style="list-style-type: none"> Overseas projects with Singaporean management control or MTI/EDB sponsorship, and <ul style="list-style-type: none"> (a) Singaporean shareholding of 21% to 49% = S\$ financing up to 100% of project cost. (b) Singaporean shareholding up to 20% = S\$ financing up to 50% of project cost. Without management control or MTI/EDB sponsorship = S\$ financing up to the proportion of Singaporean shareholding. <p>S\$ proceeds above the freely approved \$5 million must be converted/swapped into foreign currency for utilization outside Singapore.</p> | <p>If proceeds are to be used outside Singapore or for purposes not specified above.</p> <p>S\$ proceeds must be converted/swapped into foreign currency for utilization outside Singapore.</p> | | <ul style="list-style-type: none"> S\$ currency options with non-bank financial institutions. All other S\$ financial derivatives not specified above. |
| Not allowed | | | | | <ul style="list-style-type: none"> S\$ currency options with other banks. |

CDP = Central Depository Private Ltd., EDB = Economic Development Board, FX = foreign exchange, MAS = Monetary Authority of Singapore, MTI = Ministry of Trade and Industry, SES = Stock Exchange of Singapore, SGS = Singapore government securities, SPV = special purpose vehicle.

^a Singapore residents are: (i) Singapore citizens; (ii) individuals who are Singapore tax-residents; (iii) companies incorporated in Singapore or overseas which are jointly-owned or majority-owned by Singapore citizens.

^b The aggregate funds raised by foreign companies through bonds and shares would be queue-managed by the Monetary Management Division, MAS, to ensure stable markets.

^c Monthly reporting of S\$ interest rate derivative transactions exceeding S\$5 million with nonresidents outside Singapore. Nil returns are required.

^d Immediate reporting upon each successful transaction.

Schedule 2:

Banks are not required to consult the Authority if the S\$ credit facilities extended to nonresidents are used for economic activities in Singapore. For example:

1. For exports from and imports into Singapore, including the sale of Singapore manufactured goods or purchase of plant, machinery, equipment, or other fixed assets for use in Singapore;
2. For construction, manufacturing, or any other economic activity in Singapore;
3. For the purchase of land for own development, development charges, construction costs, legal fees, interest on loans taken out for such purpose, and any other expenses incurred by the borrower in the development of the property;
4. For the purchase of industrial and commercial property in Singapore for borrower's own use as a factory or office or for any economic activity in Singapore; and
5. For working capital for the payment of inventories, salaries, wages of employees, utilities, rent, taxes, and other expenses arising from economic activities in Singapore.

Schedule 3:

Monthly Report for _____

Name of Bank _____ Bank Code _____
Officer-in-charge _____ Tel _____

A. Outstanding Amount of S\$ Credit Facilities to Nonresidents

| Counterparty | | Amount (S\$ m) |
|--------------------------------|--------------------|----------------|
| Nonresidents in Singapore | Nonbank and Non-FI | |
| Nonresidents outside Singapore | Bank and FI | |
| | Nonbank and Non-FI | |
| Total | Bank and FI | |
| | Nonbank and Non-FI | |
| | All Nonresidents | |

FI = financial institution.

B. S\$ Interest Rate Derivative Products (with non-residents *outside Singapore only*)

| No. | Counterparty | Product Type | Tenure (transaction date–maturity date) | Amount (>S\$5 m only) |
|--------------|--------------|--------------|---|-----------------------|
| | | | | |
| Total | | | | |

C. S\$ Currency Options (to be reported immediately after the conclusion of each deal)

| No. | Counterparty | Product Type | Strike | Tenure (transaction date–expiry date) | Amount (>S\$5 m only) |
|--------------|--------------|--------------|--------|---------------------------------------|-----------------------|
| | | | | | |
| Total | | | | | |

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