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Avoiding Double Mismatches and Withstanding Regional Financial Crises: The Singapore Experience

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Avoiding Double Mismatches and Withstanding Regional Financial Crises: The Singapore Experience

Khee-Giap Tan, T. Karigane, and M. Yoshitomi

December 2001

By examining Singapore's successful experience, this paper identifies policies and factors that can avoid or mitigate the borrowing dilemma of double mismatches of currency and maturity.

The authors conclude that there are common core principles that could be adopted by other emerging economies, with modifications to reflect their local context and circumstances.

Such core policies could include: (i) conservative prudential safeguards, such as higher capital adequacy ratios for banks; (ii) proper sequencing of financial development and spacing of domestic and external financial market liberalizations; and (iii) possibly a credible dichotomized financial system encouraged by reasonable fiscal incentives and management of foreign bank participation.



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PREFACE

The ADB Institute aims to explore the most appropriate development paradigms for Asia composed of well-balanced combinations of the roles of markets, institutions, and governments in the post-crisis period.

Under this broad research project on development paradigms, the ADB Institute Research Paper Series will contribute to disseminating works-in-progress as a building block of the project and will invite comments and questions.

I trust that this series will provoke constructive discussions among policymakers as well as researchers about where Asian economies should go from the last crisis and recovery.

Masaru Yoshitomi
Dean
ADB Institute

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Executive Summary

Introduction: Identifying Policies, Factors and Conditions that Mitigated or Avoided Double Mismatches

1. The main objectives of this report are to identify and propose **policies, factors** and **conditions** that could mitigate or avoid double mismatches. It recognizes that not all policies can be replicated as they are very much affected by prevailing factors and conditions. By *policies* we mean any course of action pursued and adopted by the governing authorities as advantageous or expedient, that directly or indirectly alleviated double mismatches and paralysis in the financial system and financial institutions. *Factors* refers to the circumstances, facts or influences that have helped to mitigate or avoid double mismatches. *Conditions* refers to something that is a prerequisite to the granting of resultant stability and hence avoiding double mismatches.
2. In examining Singapore's experience, we began by giving some background about the nature of the East Asian financial turmoil and the high costs paid by the region's economies after undergoing hasty financial liberalization. We then identified the prerequisite conditions under the dichotomized financial system that help to avoid or mitigate the dilemma of double mismatches. We subsequently singled out major policies undertaken by the central bank that directly and effectively mitigated double mismatches. Moves such as the establishment of the existing large pool of multinational corporations (MNCs) and setting up of government-linked companies (GLCs), which happened for other reasons but nevertheless contribute significantly to mitigation of double mismatches, were also discussed. We extended our arguments to encompass broader general conditions undertaken sequentially and consistently at the national level that laid the foundation for minimizing system-wide instability.

Capital-Account Crisis and Double Mismatches

3. The East Asian financial turmoil has been particularly serious, because it was derived from a **twin crisis**, combining an externally driven currency crisis with an internally induced banking crisis. In other words, it is *capital account shortfall* coupled with *domestic credit contraction*, which is distinct from the traditional current account crisis caused by a deterioration in domestic macroeconomic factors, such as inflation, fiscal deficits and low savings rates. Vulnerable banking institutions and financial systems were further typified and exacerbated by **double mismatches**, referred to as *currency* and *maturity* mismatches.
4. Although it is widely acknowledged that the East Asian financial crisis was essentially private sector-induced, we believe the governing authorities play the most critical role in *creating, confronting* and *overcoming* crises. Therefore, the respective regulatory authorities clearly should be held responsible for the imbalanced growth between the real and financial sectors as well as the ensuing financial tumult.
5. Regional governments often like to direct resources to promote financial centers and hasten the pace of financial liberalization. It is often overlooked that speedy capital

growth through nonmarket-oriented promotions such as preapproved loans, directed lending, noncompetitive-priced borrowings and nonmarket evaluation assets are sure recipes for financial market instability.

6. Financial sequencing and spacing of policies between domestic and external financial market liberalization are typically ignored. Unsophisticated local corporations and indigenous financial institutions, in the midst of exuberant growth, have assumed sudden financial leverage or gearing without fully grasping the risks incurred. Regulatory authorities in particular did not realize or understand the grave implications of hasty financial liberalization and therefore failed to put in place the necessary institutional safeguards. The distortion in money market activities and currency funding exposures due to government interventions and caused by activities not motivated by market-oriented business considerations contributed to maturity and currency mismatches.

Buffer Impact of the Dichotomized Financial System

7. The terms Asian Currency Unit (ACU) and Domestic Banking Unit (DBU) are potentially confusing. It is not known why they were coined in Singapore and became the subject of legislation. Often, the ACU and the DBU are misunderstood as currency units like the European Currency Unit (ECU, now euro) 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 guidelines laid down by the Monetary Authority of Singapore (MAS). Technically, what distinguishes ACUs from DBUs is that the former are allowed to deal in any currency except the Singapore dollar. The two-tier financial entity serves to encourage foreign capital inflows to stay within the minimum-regulated offshore financial sector (i.e., ACU); while it also cushions foreign capital outflows, which are in the first instance discouraged but not prevented from flowing into the domestic financial sector (i.e., DBU).
8. Such accounting conventions, operated according to strict guidelines within financial institutions, are facilitated by the comprehensive disclosures of information by banks on their financial activities. Such information matrixes are later used by the regulatory authority in its setting and fine-tuning of policies. This shows that from the early stage of development, when the authority had little experience, it focused on establishing an extensive matrix of data and monitoring information on financial activities within the two-tiered financial system.
9. Clearly such a dichotomized financial system assumes a unique role where financial institutions are expected to observe not just the letter but also the spirit of all rules, regulations and guidelines laid down by the regulatory authority. This “uneven handed” relationship between financial institutions and the regulatory authority is expected to be maintained at least during the initial period of financial development before the rules of the game can take shape. Such conditions tend to put more emphasis on the micro approach of protecting individuals, products and projects, in contrast to systemic risk monitoring, as the financial system and institutions mature.

Effectiveness of the Monetary Authority of Singapore in Mitigating Double Mismatches

10. Singapore has always stood for free trade and free market competition. It has also been at the forefront of liberalization and has benefited from it. Could not the same principles apply to financial services? However, because money is the lifeblood of the economy, the governing authorities regard institutions offering financial services in a different light from manufacturing companies.

Setting Prudential Safeguards

11. MAS is able to mitigate double mismatches through effective policies such as prudential safeguards, incentive measures and an unorthodox non-internationalization of the local currency. The requirement of a high capital adequacy ratio (CAR) of 12%, exceeding the 8% minimum set by the 1988 Basle Capital Accord, reflects MAS's conservative attitude. Local banks, in particular, operate with CARs of about 20%, which is consistent with their risk-averse attitudes, given the protected and lucrative domestic financial sector and tightly monitored internationalization of financial intermediation by the regulatory authority.

Introducing Fiscal Incentives

12. Incentives refers to measures that help to promote market development, strengthen market forces and stimulate participants' interest. To spur greater participation in ACUs, the concessionary corporate tax on income was reduced from 40% to 10% in 1973. This made participation in DBUs relatively less attractive. Although the corporate tax on income was steadily reduced to 25% in 1999, it is still much higher than the 10% imposed on ACUs. The success of fiscal incentives can be seen from changes in the shares of "out-out" transactions and "out-in" transactions when comparing Singapore's two-tier financial system with Thailand's Bangkok International Banking Facilities (BIBF). While "out-out" transactions in Singapore's ACU market have exceeded 90% since 1994, the pattern in the BIBF market is relatively low, ranging from 16% to 43%

Gradual Internationalization of the Singapore Dollar

13. To deter currency speculation, distinguishing between residents and nonresidents enables the authority to demarcate the financial activities of bank and nonbank customers between DBUs and ACUs. This policy is known as the restrictive usage of the Singapore dollar for nonresidents and by geographical boundary. However, as the strength of indigenous financial institutions and the local economy grows, MAS should gradually relax the limits on Singapore dollar financing to residents for overseas projects, in a **gradual internationalization of the Singapore dollar**.
14. Putting it another way, the primary concern is not with internationalization per se. In fact, Singapore's move towards liberalization and deregulation should not follow the

free and open “big bang” approach adopted by London and Tokyo. Singapore’s economic circumstances, institutional features and monetary policy design impose constraints that would limit the effects of a full relaxation of the role of the Singapore dollar.

Shaping the Banking Industry’s Assets-Liabilities Structure and the Corporate Sector’s Financial Requirements

15. To comprehend how financial institutions within the dichotomized financial system “evade” maturity and currency mismatches, we need to examine the subtle measures that significantly affect the domestic banking industry’s assets and liabilities structure, which in turn shield or cushion financial institutions from double mismatches and external shocks. While we are able to argue that such measures effectively enable local banks to “evade” double mismatches, it is much more difficult to establish that it is indeed MAS’s explicit policy objective.

“Nurturing” Domestic Banking Institutions and “Evading” Double Mismatches

16. 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 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 utilized. Such an argument is technically valid since the credit ceiling has been steadily revised upwards over the years.
17. On the liability management side, the relative inaccessibility of local deposits to restricted banks and offshore banks also discourages foreign participation in DBUs. 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. In addition, offshore banks are not allowed to accept savings deposits, fixed deposits and other interest-bearing deposits in Singapore dollars from Singapore residents.
18. 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. These factors have, naturally, discouraged offshore banks from participating in DBUs. 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 as constituting a cartel to keep them out of DBUs.
19. The inertia of foreign banks when it comes to participating in DBUs cannot be explained by the interplay of market forces and competition. Rather, it has arisen as a result of the government’s policy-inspired regulations to nurture local banks and to insulate the domestic financial sector from foreign participation. This strategy, while having its upsides, nevertheless discourages competition and does not make financial services more efficient. After decades of nurturing by MAS, the five major local banks

have grown in size and are among the top 20 in Asia based on tier-1 capital. Although the limit on foreign shareholdings of locally incorporated banks was raised from 20% to 40% in the 1990s, these local banks are still considered small when compared with global players.

Multinational Corporations, Government-Linked Companies and their Financial Requirements

20. MNCs have contributed more than 50% to Singapore's gross domestic product (GDP) since the middle of 1990s. They also accounted for 63% of the total assets of businesses involved in manufacturing in 1995. Hence, Singapore's foreign direct investment (FDI) as a percentage of GDP is the highest in Asia, often exceeding 10% of GDP, in contrast with some other Asian countries such as Indonesia, Republic of Korea and Thailand. MNCs tend to utilize equity financing from their parent company, so the funds committed to Singapore can be viewed to be stable and long term. Furthermore, MNCs listed on the Singapore Exchange (SGX) are able to raise funds via share issuances. Thus, external shocks such as the recent East Asian financial crisis would not result in a large-scale withdrawal of loans from Singapore.
21. The call for domestic enterprises to be more competitive against MNCs led to the government initiative to set up GLCs, which were intended to be later transformed into indigenous MNCs. Initially, the funds required by GLCs were raised through long-term loans made available by cash-rich local banks. In such cases, borrowings were in Singapore dollars as were repayments, eliminating the possibility of a currency mismatch. Since these businesses received income in foreign currencies, they were capable of making repayments in foreign currencies as well. In addition, several GLCs have been successful and have significant cash piles. Therefore, large borrowings have not been required. Even in cases where they were needed, it is believed that relatively cheaper funds were available from the government trust. We can conclude that a currency mismatch or a maturity mismatch could not have arisen in GLCs.

Mitigating Double Mismatches vis-à-vis Sequencing of Financial Development and Liberalization

22. **Liberalizing the pricing mechanism for basic monetary aggregates in the 1970s.** If the underlying principles of the regulatory framework and the way in which it has evolved over time are examined, 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.
23. **Restructuring the monetary policy framework in the 1980s.** Singapore has adopted an exchange rate arrangement in which MAS concentrates on a single nominal anchor instead of monitoring several intermediate targets or control measures at the same time. Singapore also will 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, which is essentially exchange rate management. Empirical studies suggest that the hypothesis known as the triad of incompatibilities,

that is, the noncoexistence of exchange rate stability, free capital mobility and monetary autonomy, does not hold true, at least in Singapore.

24. Deepening further financial markets and revamping bond activities in the 1990s.

Financial liberalization and reform programs have been vigorously implemented in Singapore since the East Asian currency crisis. The key strategic thrusts of MAS's policy reforms are to further develop deep and broad capital markets in debt, equity and derivatives. One of the main focuses of reform is the Singapore dollar-denominated bond market. One objective of the reform effort has been to mitigate or avoid the problem of double mismatches, accomplished by expanding the options available for raising long-term funds.

25. Challenges from cross-border financial activities, cyber-banking and further deregulation measures beyond 2000.

In the interests of effective banking supervision, central banking authorities should seriously take into account the characteristics and impact of online financial services (OFS). Issues pertaining to maturity and currency mismatches may become more ambiguous since electronic money, which cuts across borders and is more fluid in nature, may attract further gapping risks and invite greater currency exposure, which will be even harder to understand, assess and trace. Yet OFS features high on the agenda of financial innovation, which will inevitably lead changes in financial markets and financial institutions.

26. Minimizing double mismatches through balanced and sustainable macroeconomic policies.

According to our econometric estimation, Singapore's potential output is about 8% per annum. As long as Singapore grows within its potential output path, avoiding overheating, the economy would be the best focus to minimize double mismatches. Exchange rate policy, therefore, should be 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. The rationale is that rapid appreciation of the Singapore dollar within a short time span may not allow the benefit of the lower inflation to feed through to lower production costs in order to offset the higher export prices resulting from swift exchange rate appreciation. Thus, swift internationalization of the Singapore dollar would undermine MAS's sovereignty over exchange rate policy, hampering the achievement of its twin objectives of price stability and noninflationary growth. One of the key factors for effective exchange rate management must therefore be a "healthy or comfortable" level of foreign reserves accumulation.

Conclusion: Some Recommendations and Lessons Based on Identified Policies, Factors and Conditions

27. To sum up, Singapore has built up a credible dichotomized financial system. A more pragmatic approach to financial liberalization is to work according to the established regulatory framework by initiating changes from within. The tight or "high-handed" micro supervisory approach adopted by the regulatory authority towards financial institutions is to be expected, especially when MAS is pushing ahead on uncharted ground in turbulent periods. Conservative attitudes in the form of the higher CAR that is required for banks, reflect ample prudential safeguards. Government initiatives, such as

attractive fiscal incentives in support of the various financial activities of ACUs, have formed the basis of the marketing effort. Foreign financial participation in ACUs was successfully expanded and encroachment on DBUs 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. **Pull factors**, such as abolition of the withholding tax on the interest income of nonresidents, waiver of the statutory reserve requirement, plus 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.

28. However, the authority's efforts to "nurture" indigenous banks into bigger international players initially through domestic market protection for the past three decades will not be continued indefinitely. The recent attempt by MAS to entice foreign competition into the DBUs, with approval planned of another six full-licensed banks, is meant to "force" modernization and innovation of indigenous banks but not to do away with the demarcation approach to "cushion" fund flows. The "nurturing approach" that has been adopted does entail a tradeoff. In exchange for nurturing indigenous banks so that they can be sufficiently large to compete internationally, protectionist measures will inevitably result in lower quality, fewer choices and less competitiveness in financial services for consumers.
29. Factors such as the presence of GLCs and MNCs are peculiar to Singapore, as are broad conditions such as sequencing of financial development and spacing of financial markets liberalization. However, given Singapore's extensive experimentation and positive results, we tend towards the view that there are common core principles that can be adopted by other emerging economies, with modifications to reflect local context and circumstances. We believe that certain measures, if adopted as part of the postcrisis financial architecture reform, would enhance regional financial stability.

Avoiding Double Mismatches and Withstanding Regional Financial Crises: The Singapore Experience

Khee-Giap Tan, T. Karigane, and M. Yoshitomi

1. Introduction: Identifying Policies, Factors and Conditions that Mitigated or Avoided Double Mismatches

Further general debate on the causes of the East Asian financial crisis has no doubt been reduced to academic interest to be included in textbooks for future students. But for some economies the fallout is more serious, as the inflicted social costs on the population at large and their wider implications will continue for many years to come. It is, therefore, more meaningful to deal with post-crisis measures and reform lessons that could mitigate if not avoid another financial crisis. It would be foolish to believe that the current recovery by Asian economies would be sustainable if the resolve to carry out tough policy reform programs begins to waiver in the wake of an earlier and stronger-than-expected swift regional economic rebound. It is crucial to press on with in-depth studies to identify *policies, factors and conditions* that could mitigate or avoid a double mismatch, that is a mismatch in terms of maturity and currency. Such financial exposures contributed to economic contraction and financial paralysis in Indonesia; Hong Kong, China; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand, to varying degrees of severity.

By *policies* we mean any course of action adopted and pursued by the governing authorities as advantageous or expedient, that has directly or indirectly alleviated paralysis or double mismatches in the financial system and financial institutions. *Factors* refers to circumstances, facts or influences that have helped to mitigate or avoid double mismatches. *Conditions* refers to something demanded or required as a prerequisite to attaining stability and avoidance of future double mismatches.

We recognize that while not all proposed policies can be replicated, understanding the policy principles allows modified measures to be applied to reflect local contexts. In fact, policies are very much affected by prevailing factors and conditions.

In analyzing Singapore's experience as a possible lesson for other emerging economies, it is most important to distinguish policies from factors and conditions. Policy measures may be easier to formulate, but their effectiveness would depend on prevailing factors and conditions that may require effort and time to reshape. Some factors and conditions may be impossible to replicate or will be politically unattractive to pursue. These are among the challenges confronting emerging economies. A deeply structured reform program involving financial markets, institutions and systems would need to be consistent, broad based and persistent in order to bear fruit. It has taken about three decades of consistent financial development and sequencing to build up Singapore's resilience, notwithstanding some of the remaining weaknesses. In the process it has undergone several severe financial crises.

Our studies are organized as follows: In section 2, without extensively examining the causes of the East Asian financial crisis, we quickly recap the nature of the crisis and the extent of double mismatches. We also question the sequencing and spacing of financial liberalization in many emerging economies that exacerbated the already fragile

financial systems. Section 3 looks into how Singapore's unique dichotomized financial system has acted as a buffer on capital flows, with offshore and onshore financial activities segregated through a carefully designed regulatory framework, which clearly pinned down rules of the game and hence shaped the role of financial institutions. Thus, we are highlighting prerequisite **conditions** that have been created. Section 4 evaluates the role and effectiveness of the central bank, the Monetary Authority of Singapore (MAS), in mitigating double mismatches through prudential safeguards, fiscal incentives, gradual internationalization of the Singapore dollar and coping with greater regionalization of trade and fund flows across borders. These are important **policies** that were not just instituted but painstakingly implemented.

The role of government in shaping the banking industry's funding structures and corporate sector's financial requirements are investigated in section 5. Singapore's strategy in attracting multinational corporations (MNCs) and the financial management of government-linked companies (GLCs) has been designed to attract longer-term fund raising. Recent measures on banking disclosures, corporate governance and reporting transparency also have had far-reaching implications for the problem of double mismatches. These are crucial **factors** that are prevailing in Singapore but also exist in varying degrees within quite a few emerging market economies. Section 6 highlights an important lesson on sequencing and spacing in stages the development of the financial markets and liberalization programs throughout the 1970s, 1980s, 1990s and beyond 2000, which among other benefits, mitigates or avoids double mismatches. We also state the case for minimizing double mismatches through a balanced and sustainable economic growth path in line with the potential output of the economy. These are broader **general conditions** undertaken consistently through an explicit development framework that we believe provide a useful reference case, at least in terms of core principles, for emerging market economies and transition economies.

In the concluding section 7, we appraise the applicability, problems and challenges to emerging economies arising from policies, factors and conditions in Singapore. Without presuming to have answers to all the questions raised, we hope to provoke discussion, stimulate interest and make tentative recommendations on how major economies in East Asia can play a more pivotal role and develop robust and internationalized financial sectors, in line with their increasingly efficient export-driven manufacturing sector.

2. Capital Account Crisis and Double Mismatches

After decades of rapid economic growth, which in the emerging economies of East Asia averaged 6% to 9% per annum during the 1980s and 1990s, it has become apparent that high efficiency in their export-driven manufacturing sector has not been matched by internationalization in their financial sector (see Tan 1999). An overview of the macroeconomic health, vital financial aggregates and ratios in Asian economies prior to and immediately after the financial crisis is shown in tables 1 to 4. In the wake of the East Asian financial crisis, among other factors, it is often argued that the swift opening up of domestic financial markets, cross-border transactions, freer flows of capital across national boundaries and capital account convertibility create added risks that have led to tumult in the financial markets.

We are not dismissing these arguments as irrelevant and in fact the true extent of their impact still remains an open verdict. Nevertheless, such financial tumult can be mitigated through carefully formulated policies, taking into account positive factors and creating conducive conditions through a consistent, broad-based and long-term reform program. In this regard, Singapore's experience provides an instructive perspective. In terms of resiliency, Singapore evidently has stood up well compared to the rest of the East Asian economies in terms of economic fundamentals and financial ratios in the years since July 1997, when the crisis was first triggered in Thailand.

2.1. Nature of the East Asian financial crisis and extent of double mismatches

East Asia's financial turmoil was particularly serious because it arose out of a twin crisis, which combined an externally driven currency crisis with an internally induced banking crisis. In other words, it is a *capital account shortfall* coupled with a *domestic credit contraction*, distinct from the traditional current account crisis caused by a deterioration in domestic macroeconomic factors, such as inflation, fiscal deficits and low savings rates. The trigger mechanism in the capital account shortfall comes in four stages, usually beginning with overborrowing followed by increasing vulnerability until reversal sets in and ends with recourse to international rescue. Fiscal and monetary tightening, policies promoting high interest rates, cutbacks on bank loans, sudden closures of financial institutions and plunging currency values contribute to the acceleration of financial disintermediation and credit contraction (see Yoshitomi and Ohno 1999).

Comparing the situation before and after the financial turmoil, evidence of the twin crisis can be vividly seen in the affected Asian economies. Typically, we see high ratios of foreign debts to gross domestic product (GDP), declining exchange rate values, high short-term interest rate policies, plunging foreign reserves, capital account shortfalls and excessive nonperforming loans. These factors were experienced by Indonesia, Republic of Korea, Malaysia, Philippines and Thailand, as shown in tables 1 and 2. In contrast, in Singapore, the impact of the financial turmoil was relatively mild as measured by macro indicators such as GDP growth, unemployment, inflation rate and the stock price index. In fact, Singapore has shown the most pronounced recovery among the regional economies since the first quarter of 1999 and went on to achieve almost 10% GDP growth in the year 2000.

Vulnerable banking institutions and financial systems were further typified and exacerbated by double mismatches of currency and maturity. As shown in tables 2 to 4, foreign debt as a percentage of GDP trended upwards during 1990-1996 in Republic of Korea, Malaysia and Thailand, but declined in Indonesia and the Philippines. However, over the same period, foreign short-term debt, both as a percentage of total debt or total foreign reserves, accelerated significantly in all of these countries. Such trends have been typically absent in Singapore, where foreign debt and short-term debt components, expressed either as a percentage of GDP, total debt or total foreign reserves, remained relatively steady throughout the 1990s.

The nature of financial crises may vary from one to another, while the characteristics of financial systems and institutions evolve gradually. It is, thus, relevant to examine the Singapore perspective, not only in terms of its overall resilience

throughout the recent crisis, but also how it has coped with previous crises. Of paramount importance among the factors we must seek to understand is the following: are there specific or unique policies, factors and conditions that have enabled Singapore to cope with the crisis and devise post-crisis responses? We have compared and contrasted Singapore's unpopular but mostly sound post-crisis measures, which were so often at variance with other affected Asian economies. Although it is widely acknowledged that the East Asian financial crisis was essentially private sector-induced, we believe the governing authorities play the most critical role in creating, confronting and overcoming crises. The respective regulatory authorities and central banks, therefore, should be held responsible for the imbalanced growth between the real and financial sectors as well as the ensuing financial tumult.

2.2. Hasty financial liberalization and fragile financial systems

The rationale for countries promoting the growth of financial centers is obvious. An international financial center contributes not just to its local economy but also facilitates the financial intermediation of economies surrounding it. A financial center supports and services its local economy through a variety of channels. One that plays the funding role of inwards financial intermediation helps to pool savings, integrates capital markets and creates employment opportunities in all related sectors. It also promotes cross-border trade and foreign direct investment, supports economic activities across sectors and serves as a reliable framework for monetary and fiscal policies. In both Hong Kong, China and Singapore, the financial sector has been an important source and engine of growth. However, the question remains as to how to promote or liberalize the financial sector without jeopardizing its stability in the face of volatile capital flows and cross-border trading.

It is often not fully appreciated that establishment of a successful center not only needs to be timely, it also requires continuing investment in terms of money and effort. Setting up a financial center can be a costly exercise since the financial infrastructure encompasses more than just physical buildings and sophisticated telecommunication facilities, as some failed ones have quickly realized. It must first be situated at a geographical location and time zone that fills a gap in international trading hours and serves the needs of regional economies. It entails also an internationally recognized accounting standard and legal system, calling for a strong local economy with a stable currency. An international financial center presumes a harmonious political environment with effective government. It should be served by an international airport and suitable accommodation facilities, in the interests of mobility and comfort. An international financial center also demands a quality workforce with English as the *lingua franca*. Singapore has gone a long way towards satisfying this list of requirements.

It is widely accepted that economies of scale exist in the provision of financial services. But it is little recognized that there has been much duplication of financial services in the Asian region. Thus the viability of an efficient financial center to cater for the needs of regional economies must be based on the principle of comparative advantage through market pricing mechanisms and a level playing field of competition. Regional governments often like to direct resources to promote financial centers and

hasten the pace of financial liberalization. It is often overlooked that speedy capital growth through nonmarket-oriented promotions such as preapproved loans, directed lending, noncompetitive-priced borrowings and nonmarket evaluation assets are sure recipes for financial market instability. Financial sequencing and policy spacing in domestic and external financial market liberalization are typically ignored. Unsophisticated local corporations and indigenous financial institutions, in the midst of exuberant growth, have assumed sudden financial leverage or gearing without fully grasping the risks incurred. Regulatory authorities in particular have failed to realize or understand the grave implications of hasty financial liberalization and therefore have not put in place the necessary institutional safeguards. The distortion in money market activities and currency funding exposures due to government interventions and activities not motivated by market-oriented business considerations has contributed to maturity and currency mismatches.

However, despite the East Asian turmoil, financial liberalization *per se* is still a valid concept to enhance efficiency. The problem is the haste and the nonmarket approach with which this liberalization process is being brought about. Hence, effective banking supervision and efficient financial intermediation tend to be compromised. In the era of booming growth since the 1980s, competing financial centers have included Bangkok; Hong Kong, China; Jakarta, Kuala Lumpur, Manila, Singapore, Sydney, Taipei, China and Tokyo. Assuming Asian's long-term growth prospects are still intact, we believe there are important empirical issues as to how many major financial centers are sustainable in East Asia. The ignoring of appropriate financial sequencing and appropriate policy spacing when carrying out domestic and external financial market liberalization can be most disturbing. The classic example must be the 'big bang' approach adopted by Thailand under the Bangkok International Banking Facilities (BIBF), which resulted in a typical double mismatch that contributed to financial paralysis. Singapore, by contrast, has taken a gradual, measured and sequenced approach to liberalizing its financial system, as can be seen from the chronology of measures and events in the financial markets (see Appendix 1).

3. Buffer Impact of the Dichotomized Financial System

Over the past three decades, Singapore has faced various internal and external shocks to its financial system. Internal disturbances have included the Pan-El incident of 1985, a brief economic recession in 1986 and the collapse of Barings Bank in 1995. Singapore has also experienced several external shocks. Among these are the international monetary crisis of 1971-1973, the stagflation of 1974-1975 induced by oil-price hikes and the global stock crash of 1987. Other external shocks included the substantial contraction of offshore financial activities in 1992, after the imposition of the capital adequacy ratio (CAR) requirement, and East Asian financial turmoil that began in 1997. The way in which the dichotomized financial system operates must, therefore, be clearly understood and the features that allow the system to cope with such shocks, cushion against the adverse effect of swift capital flows and mitigate or avoid the double-mismatch dilemma must be identified. However, no study to date has systematically explained how a built-in mechanism within the dichotomized financial system or the two-tier financial entity contributes to such resiliency.

3.1. The two-tier financial entity: conceptual framework and rationales

From a country 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 (see table 5). As of 1998, Singapore 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 relatively stable since the 1970s. The number of foreign restricted-license banks stands at 13 and has also remained largely unchanged since the 1970s. What are the rationales behind such maintenance of the status quo?

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 active financial participation of offshore-license banks and merchant banks can be seen from the swift rise in the number of Asian Currency Units (ACUs) established, from 14 in 1970 to 227 in 1998. What should we make of this phenomenal rise in the number of ACUs? How do banks with ACUs perform compared with those with Domestic Banking Units (DBUs)? More fundamentally, what are these ACUs and DBUs and why were they created? What have been their impact and implications on banks' gapping strategies and exchange rate risk, and hence on the dilemma of double mismatches, especially among the full-license indigenous banks, which tend to have the lion's share of domestic banking activities?

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 European Currency Unit (ECU). 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 crowded out by foreign participation and are insulated from external shocks through strict regulations.

Restricted, offshore and merchant banks in Singapore are subject to rigid guidelines when operating in DBUs. 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 for 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 towards 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 ACUs, while merchant banks are deliberately kept from competing with commercial banks.

At the same time, MAS encourages 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 ingenious response and subtle implementation. The authority has to tread a fine line between instituting controls and ensuring market efficiency. Two overriding concerns have justified this demarcation in 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 Dr. K. S. Goh 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” (see Goh 1984). By strictly regulating DBUs, on the other hand, the then chairman of MAS Dr. Hu openly admitted 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” (see Hu 1997). It is, therefore, important to understand the government’s policy objectives and policy priorities from the outset. Yet these two basic concerns tend to be overlooked or give rise to confusion. On liberalizing offshore banking activities, Dr. 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.

It has been MAS’s longstanding concern not to allow overcrowding in the small domestic banking sector. The recent trend towards mergers of local banks, encouraged by the governing authorities may reduce further the number of such banks. The attempt by MAS since 1999 to further open up the DBU 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.

3.2. Shaping the regulatory framework

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. 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 Notice 601, November 1983). Monthly reports included a first schedule showing the DBUs’ or ACUs’ 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 of 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 1983).

In terms of the regulatory framework, the initial strategy is geared towards comprehensive information gathering and compulsory reporting by financial institutions. This would form the basis of information matrixes to be used for subsequent setting and fine-tuning of policies. This shows that from the early stage of development, when the authority had little experience, it focused on establishing an extensive matrix of data and information on financial activities within the two-tier financial system. The authority seriously began regulation and supervision by imposing strict or even excessive rules that would be in danger of eventually stifling financial activities and institutions. Effective regulation demands a unique working relationship between financial institutions and the supervising authority where the former are market players and the latter is the referee.

Financial sector deregulation needs to be carefully sequenced to reflect 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.

3.3. Rules of the game and the role of financial institutions

MAS’s earnestness in governing 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 emphasized 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.

A key speech of Deputy Prime Minister Lee (see Lee 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 a gradual internationalization policy by further deepening and broadening the capital markets. The Financial Sector Review 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 two 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 the authority and local banks’ management style would evolve only gradually, especially in periods of turmoil and uncertainty. Even the Hong Kong Monetary Authority appears to have moved away from its tradition of nonintervention during the recent financial turmoil. To put it differently, local financial institutions are expected to perform a “national service” whenever MAS deems that the “national interest” is at stake, since MAS has no hold over foreign financial institutions. Such is the reality, and this assumed “special relationship” of moral suasion is unlikely to change.

The Government of Singapore Investment Corporation (GSIC), given its statutory responsibility to preserve and safeguard the nation’s precious financial reserves, has made a positive contribution to the stability of the two-tier financial system. It is not known, though, to what extent the GSIC 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, GSIC is beginning to pass on some of its large financial turnover to international fund managers who are prepared or have made the commitment to locate to Singapore on a longer-term basis.

To sum up, prerequisites for mitigating maturity and currency mismatches involve first a dichotomized financial system with a demarcation between onshore financial sector (DBU) and offshore (ACU), with the latter dealing in all foreign currencies except local Singapore dollars. The two-tier financial entity serves to encourage foreign capital inflows to stay within the minimum-regulated offshore financial sector (i.e., ACUs); while it also cushions foreign capital outflows, which are in the first instance discouraged but not prevented from flowing into the domestic financial sector (i.e., DBUs). Such accounting conventions are facilitated by the comprehensive disclosures of information by banks of their financial activities. These information matrixes are later fully used by the regulatory authority in its setting and fine-tuning of policies. Such a dichotomized financial system assumes a unique role in which financial institutions are expected to observe not just the letter but also the spirit of all rules, regulations and guidelines laid down by the regulatory authority. This “uneven handed” relationship between financial institutions and the regulatory authority is expected to be maintained at least during the initial period of financial development before the rules of the game can take shape. Such conditions tend to put more emphasis on the micro

approach of protecting individuals, products and projects, in contrast to systemic risk monitoring as the financial system and institutions mature.

4. Effectiveness of the Monetary Authority of Singapore in Mitigating Double Mismatches

Singapore has always stood for free trade and free market competition. It has also been at the forefront of liberalization and has benefited from it. Could not the same principle apply to financial services? When the issue was put to the then Chairman of MAS, Dr. 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 in a different light from manufacturing companies.

4.1. Setting prudential safeguards

The conservative stance taken by MAS towards 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 have maintained a CAR of between 15% and 18%, despite their relatively limited international dealings in the early 1990s. This is notwithstanding the fact that MAS requires a ratio of 12%, of which 10% must be from tier-1 capital, while the Bank for International Settlements (BIS) set a minimum guideline of only 8%. In fact, as of 1999, following the regional recovery, the total reserves consisting mainly of capital reserves, statutory reserves and undistributed profits for the five major local banks grew by 9%, amounting to S\$26 billion. The average CAR of the five major local banks has also increased from 18.5% in 1998 to 20.4% in 1999. This means Singapore banks are among the strongest in the world, with CARs ranging from 18% for Overseas United Bank to 24.4% for Overseas Chinese Banking Corporation (see table 6).

Whether a bank can have adequate capital to support assets expansion and undertake such assets risk would be reflected by the CAR. According to BIS, there are six categories of risk-weighted assets (RWA). The CAR is simply the ratio of capital base over RWA, which includes market risk and risks associated with items other than those within the assets and liabilities accounting. Since shareholders' funds have made up most of the tier-1 capital, coupled with the steady increase in reserves over the past few decades as a result of MAS's "nurturing" policy, the ability of the five major local banks to withstand risks has correspondingly strengthened.

Compared with regional banks, Singapore banks have a relatively low level of nonperforming loans, standing at between 5% and 10% during August 1998, the height

of the East Asian financial crisis, according to MAS. In any case, MAS and Singapore banks are renowned for their conservative stance in classifying and grading loans (MAS Notice 612, November 1983). In fact, even before the East Asian financial 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% 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 the Asian Currency Unit under the 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). The total ACU assets and liabilities of a bank are subject to a maximum limit fixed by MAS (item 3 of Appendix 2). The bank must keep its DBU and ACU accounts separate (item 2). These provisions are classic examples of caution in demarcating the two units to promote supervision and 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 requirements discourage the operation of financial institutions whose clients require confidentiality and, to some extent, prevent financial activities that thrive on anonymity.

A definite distinction between residents and nonresidents enables the authority to demarcate the financial activities of bank as well as nonbank customers between the DBUs and the ACUs. This policy is known as the non-internationalization of the Singapore dollar, and is described more fully later. Such a policy, which can be traced to the earliest MAS Notice 621, September 1981, is indispensable to "throwing sand into the wheels" of perfect capital mobility. MAS can monitor sources and uses of funds as well as influence demand for the Singapore dollar, but without restricting flows of capital between DBUs and ACUs.

4.2. Introducing 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. They also directly reflect the government's determination to promote ACUs. Demarcating between DBUs and ACUs aims 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. This is discussed in greater detail below.

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. Foreign banks face a disadvantage in the cost of funds in operating in the DBU, unlike participants in the ACU, who bear no extra reserve cost that would denote 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% in 1973. This immediately made participation in the DBU relatively less attractive. Although the corporate tax on income was steadily reduced to 25% in 1999, it is still much higher than the 10% 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% 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% 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% for the incremental increase in taxable income over the preceding qualifying year.

4.3. Gradual internationalization of the Singapore dollar

Recapping, to deter currency speculation, the 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 restrictive usage of the Singapore dollar for nonresidents and by geographical boundary. Such a policy, which can be traced to the earliest MAS Notice 621, September 1981, is indispensable to "throwing sand into the wheels" of perfect capital mobility. MAS can monitor 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 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” in Singapore comprise Singapore citizens and permanent residents of Singapore. “Nonresidents” comprise companies that were incorporated in Singapore and are jointly owned, majority-owned, or otherwise controlled by foreigners (MAS Notice 621, July 1992 version). 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).

MAS Notices to Banks, which under the terms and conditions of operation for ACUs (see Appendix 2) have not been revised since first issued, contain a clause on the prohibited use of the Singapore dollar in nine out of its 18 items. These nine 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.

The thrust is, therefore, to restrict nonresidents’ use of Singapore dollar credit facilities and restrict use of the currency by residents outside Singapore. However, as the strength of indigenous financial institutions and the local economy grows over time, the authority should slowly relax limits on Singapore dollar financing to residents for overseas projects, thus leading to a 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 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 and the 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 internationalization of [the] Singapore dollar.” Residential status was not specifically defined and the economic activities for which Singapore dollars could be used were not mentioned at all. Only a blanket requirement of a detailed written proposal in direct consultation with MAS was imposed.

As noted above, MAS Notice 621, July 1992, spelled out residential status and economic activities in greater detail, which was followed by a stern warning that the 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, spelled out the instances in which 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. MAS’s 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 recent revision, MAS Notice 757, November 1999, is just another attempt to gradually internationalize the Singapore dollar through policy fine-tuning (see notice in Appendix 3).

As the government’s push for further financial liberalization in Singapore intensifies, calls for a review of the controversial policy will resurface. MAS noted the tradeoff between the non-internationalization policy and the development of the capital markets, particularly the bond market, in Singapore. The controversy was put to rest when MAS’s Chairman revealed that a systematic internal study undertaken 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 non-internationalisation policy has an important deterrent effect, signalling the MAS’ determination not to tolerate speculation in the Singapore dollar.... We do not plan to change our policy on the non-internationalisation 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 (Lee 1998).

This must be the clearest official policy signal to the markets and the international financial community that some degree of monetary autonomy would be maintained, and the effects of such an announcement should be taken seriously if the policy is to remain credible.

4.4. Regionalization drive and the external economy

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 since the early 1990s, constitutes only a quarter of the total trade in the Association of Southeast Asian Nations (ASEAN). Furthermore, with the present small size of Singapore’s economy, which is only 15% of the combined ASEAN economies, the limited supply of Singapore dollars in circulation would result in a swift appreciation of the currency because of excess demand.

On the domestic side, a 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 the 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 its international competitiveness, at least in the medium term, thus forcing trade deficits with its neighbors.

A simple and popular—but less convincing argument against the non-internationalization of the Singapore dollar—is that Singapore cannot be a global financial center if the currency does not take on an international profile. Singapore 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% of that of the US and 1.6% 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 more 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 attributable to their good time-zone location, effective dealers and operators, efficient telecommunication and transparent rules.

MAS's policy of discouraging internationalization is sometimes seen to contradict the government's efforts to develop an external wing for Singapore's economy, which includes 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 replighted.

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 replighted, it is an issue of credit, not MAS's 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's policy of non-internationalization of the Singapore dollar. The main 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.

With the rapid growth of the Asian dollar market (ADM) since its establishment in 1968, the case for internationalization to support the regionalization drive does not seem valid. Regional trade and investment activities can still flourish with funding requirements being met by the ADM. As of December 1997, the total assets of Asian currency units stood at US\$557 billion, but Singapore's broad money supply (M3) was

only US\$92 billion. Given the sizes of Singapore's economy and 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 potential highly destabilizing effect of internationalizing the Singapore dollar on the financial sector and the real economy.

To summarize the arguments put forward so far, MAS is able to mitigate double mismatches through a series of effective policies such as prudential safeguards, incentive measures and the unorthodox non-internationalization of the local currency. The requirement of a high CAR of 12%, exceeding the 8% minimum set by the 1988 Basle Capital Accord, clearly reflects MAS's conservative attitude. Local banks, in particular, operate on a CAR of about 20%, consistent with their risk-averse attitude given the protected and lucrative domestic financial sector and tightly scrutinized and monitored internationalization of financial intermediation by the regulatory authority.

As for fiscal incentives to attract foreign capital flows into ACUs, their success can be seen from changes in the shares of "out-out" transactions and "out-in" transactions when comparing Singapore's two-tier financial system with Thailand's BIBF. While "out-out" transactions in Singapore's ACU market have exceeded 90% since 1994, the pattern in the BIBF market is relatively low, ranging from 16% to 43% (see table 7). Although "out-in" transactions are about the same in terms of scale between the ACU and BIBF markets, there is a strong possibility that foreign currency once flown into domestic banks in Singapore were lent out to enterprises in neighboring countries. The "out-in" transaction could also be loaned to Singapore residents for investing in overseas securities or perhaps for direct investment by businesses based in Singapore. Therefore, it could be concluded that a potential currency mismatch resulting from the use of foreign currencies swapped for domestic currency for domestic activities was averted. In fact, between 30% and 40% of the ACU loans are being granted to nonbank customers from ASEAN who are nonresidents of Singapore.

Perhaps the more commonly cited argument against objections to the non-internationalization of the Singapore dollar is that it will promote broader and deeper financial markets for Singapore. Promoting 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 the currency. 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.

Putting it another way, the primary concern is not with internationalization of the Singapore dollar *per se*. Rather, Singapore's move to liberalize and deregulate should not follow the free and open "big bang" approach adopted by London and later Tokyo. In any case, its 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. 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 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] internationalization 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.

5. Shaping the Banking Industry's Assets-Liabilities Structure and Corporate Sector's Financial Requirements

To comprehend how financial institutions within a dichotomized financial system “evade” maturity and currency mismatches, we need to examine the subtle measures that significantly affect the domestic banking industry's assets and liabilities structure. These in turn shield or cushion financial institutions from double mismatches and external shocks. While such measures effectively enable local banks to “evade” the double mismatch, it is much more difficult to establish that these are indeed MAS's explicit policy objectives.

5.1. “Nurturing” domestic banking institutions and “evading” double mismatches

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 utilized.” Such an argument is technically valid since the credit ceiling has been steadily revised upwards over the years (see table 8).

A rough calculation suggests that an increase in the limit by US\$30 million could increase the stake of offshore banks in DBUs by a collective US\$3 billion. 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 to DBUs. 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 discourages foreign participation in DBUs. 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. In addition, offshore banks are also 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, naturally, discouraged offshore banks from participating in DBUs (see table 9). The unequal treatment of foreign banks in the domestic sector, including exclusion from electronic point-of-sale systems and the shared ATM network restrictions on branching, is perceived by some 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). This relationship is expressed by the following formulas:

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

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

Thus, EC can be expressed as follows:

$$EC = f[R_i, Y_i, NC, X(R_i)] \quad (1c)$$

where reserve requirements comprise various percentage ratios (R_i) of a combination of returns (Y_i) on some noninterest-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, which is currently fixed at 21% of the liability base (X), of which 3% consists of the minimum cash balance (MCB) and 18% 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 equation (1a) 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 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 those of local banks (see Tan and Seow 1997). In the past, foreign banks did try to overcome such a costs disadvantage by "round tripping" or exploiting loopholes. MAS has detected and dealt severely with

cases of “round tripping” in which a bank treats deposits made with it as balances held for banks or branches outside Singapore instead of part of its liability base. Thus avoiding the statutory reserve provision and, hence, evading the additional reserve cost which otherwise would have been incurred (See further 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. In fact, it is not uncommon for local banks to request from MAS permission to launch long-term nonnegotiable certificates of deposit, which are reserve-free in order to match a specific long-term funding requirement. So the inertia of foreign banks when it comes to participating in DBUs cannot be explained by the interplay of market forces and competition. Rather, it has arisen as a result of the government’s policy-inspired regulations to nurture local banks and to insulate the domestic financial sector from foreign participation.

5.2. Multinational corporations (MNCs), government-linked companies (GLCs) and their financial requirements

In studying Singapore’s corporate structure and financial requirements, one needs to look closely at the role of MNCs and GLCs. Although development of the financial center has been part of the government’s overall industrialization policy strategy for some time. Singapore’s potential as a full-fledged financial center became apparent to policymakers only in the 1980s. In fact, the sector was initially meant to provide infrastructure support to foreign direct investment (FDI) brought in by MNCs, which Singapore has successfully attracted since the establishment of its Jurong Industrial Park after independence in 1965. Tax exemptions and tax incentives such as pioneer industry (PI) status, operational headquarter (OHQ) status and business headquarter (BHQ) status were introduced for MNCs.

MNCs have contributed more than 50% to Singapore’s gross domestic product (GDP) since the mid-1990s. They also accounted for 63% of the total assets of businesses involved in manufacturing in 1995. Hence, Singapore’s FDI as a percentage of GDP is the highest in Asia, often exceeding 10% of GDP, in contrast with Asian countries, such as Indonesia, Republic of Korea and Thailand (see figure 1). MNCs tend to utilize equity financing from their parent company, so the funds committed to Singapore can be viewed to be stable and long term. Furthermore, MNCs listed on the Singapore Exchange (SGX) are able to raise funds via share issuances. Thus external shocks such as the East Asian currency crisis would not result in large-scale withdrawals of loans from Singapore.

Started as an entrepot economy, Singapore is seen as essentially a nation of immigrants who are highly enterprising and adventurous. But within three decades—as Singapore evolved rapidly into a developed nation—a new generation of Singaporeans is fast losing its entrepreneurial talent and adventurous spirit, as has been recognized by the Report of the Committee (see Ministry of Trade and Industry 1986). Granted, it was of the utmost priority for the government to attract and cultivate MNCs, since they spark growth, create jobs, transfer technology, provide management expertise and bring

about social stability. In retrospect, pursuance of a successful MNC strategy appears to have crowded out the indigenous small and medium enterprises (SMEs), particularly since the 1987 economic recovery, despite support of the Economic Development Board through the Government Development Assistance Programs (see Tan and Chen 1992). The call for domestic enterprises to be more competitive against MNCs led to the government initiative to set up GLCs, which were intended to be later transformed into indigenous MNCs. We, therefore, need to examine GLCs' role and the way in which they have been set up, financed, managed and leveraged in order to understand their implications to the double mismatch problem.

The structure and respective ownership of GLCs consist of government holding companies and an assortment of first-, second- and third-tier enterprises (see figure 2a). The control hierarchy of GLCs under the multi-tiered control structure enables checks and balances in monitoring their management and performance directly and indirectly (see figure 2b). A body called the Directorship and Consultancy Appointments Council comprised of seven influential ministers and technocrats handles the appointment and removal of directors at the four government holding companies and large GLCs. The minister in charge of the relevant ministry is directly responsible for managing government holding companies. Officers of government holding companies maintain close relationships through information exchange with the respective minister. They monitor the financial standing of GLCs and set up management information systems for the upper Coordination Panel and the Prime Minister. The chairmen of first-tier GLCs and subsidiaries manage their respective GLCs; while CEOs of leading GLCs are appointed by the government. Top management teams of GLCs are responsible for reporting the company's performance to Parliament.

In other words, confronted with MNCs, whose presence was expanding rapidly, the government, in the public interest, became directly involved in the management of businesses, given that SMEs were too weak to compete. First, by focusing on the sectors that require large amounts of capital and are too risky for private-sector enterprises to enter, GLCs attempted to fill the gap left by SMEs as supporting industries to provide a whole range of vital parts and components. Second, the privatization program implemented for GLCs since the second half of the 1980s aims to eventually develop and increase competitiveness of indigenous private enterprises in the international markets.

According to a comparative study between GLCs, MNCs and local SMEs, average sales and profits at GLCs are far in excess of the other two groups and their profit margins are also superior (see Low, Soon and Toh 1989). While such comparisons are not very meaningful since GLCs enjoy monopoly status, the first-tier GLCs such as Singapore Airlines, Neptune Orient Line, Development Bank of Singapore (DBS) and Singapore Technology Holdings are indeed subject to international competition. In Singapore, where the influence of GLCs is significant and the effects of government controls are easily discernible, corporate governance is effective in preventing irresponsible management such as overleveraged or unrealistic gearing. This is in contrast to family-owned businesses where irregularities are bound to arise from the cozy relationships within, further leading to a lack of transparency in corporate behavior, as was the case in Indonesia, Republic of Korea, Malaysia and Thailand. What this suggests is that if the family influence is strong where corporate governance

does not function properly, then application and execution of laws become difficult and corruption is likely. Such problems are at the core of the recent East Asian currency crisis—the inability of the authorities to control the situation and a lack of risk management by companies.

Initially, the funds required by GLCs were raised through long-term loans made available by DBS and the Postal Savings Bank. In such cases, borrowings were in Singapore dollars as were repayments, eliminating the possibility of a currency mismatch. In addition, in the long-term offshore bond market, referred to as the Asian Dollar Bond Market (ABM), which was established simultaneously with the short-term offshore market, DBS and Singapore Airlines were able to raise long-term funds via the issue of Asian Dollar Bonds in the early 1970s. Since these businesses received income in foreign currencies, they were capable of making repayments in foreign currencies as well. In addition, several GLCs have been successful and have significant cash piles. Therefore, large borrowings were not required; even in cases where they were needed, it is believed that relatively cheaper funds were available from the government trust. We can conclude that a currency mismatch or a maturity mismatch could not have arisen in GLCs.

Ordinary private sector enterprises were also able to raise long-term funds through the domestic stock market. The stock market of Singapore gained independence from Malaysia in 1973, and with the computerization of settlements, strong capital positions achieved by securities companies and privatization of GLCs contributed to the market's amazing growth. Accordingly, fund raising through the stock market increased in the 1990s, rising from a yearly average of S\$850 million in the 1980s to S\$3.5 billion per annum for the period 1990-1996. Figure 3 shows the aggregate stock market capitalization as a percentage of GDP. This ratio has remained below 50% of GDP for Indonesia, Republic of Korea and Thailand, while Singapore's ratio has stayed at about 200% throughout the period.

A business enterprise's leverage can be calculated using the debt-to-equity (D/E) ratio and/or the gearing (G) ratio, which is long-term debt less cash, divided by capital. These ratios show the scale of total debt in relation to the scale of the enterprise's equity capital, whereby the larger the D/E ratio, the larger the debt burden. Over the 10-years between 1986 and 1995, the D/E ratio for all companies ranges between 60% and 90%, averaging 72% (see figure 4). For local companies, the D/E ratio ranges between 80% and 110%, averaging 92% (see figure 5). For foreign-controlled companies, the D/E ratio ranges from 55% to 70%, averaging 63% (see figure 6). In other words, Singapore businesses have kept their debt burden within equity capital, and the debt burden of foreign-controlled companies is around half of their equity capital. Narrowing the focus to companies listed on Singapore's stock exchange, D/E ratios of less than 30% in 1995 have been reported (see Guan 1998). GLCs are included in local companies and if D/E ratios are calculated for cash-rich GLCs alone, the figure would likely fall still further. Compared with the D/E ratios of 140%-160% in the Republic of Korea and Thailand for the same period, the corporate debt burden in Singapore seems very low.

Crucial factors that have helped in the shaping of the banking industry's assets-liabilities structure and corporate sector's financial requirements have been the policy of "nurturing" domestic banking institutions, and efforts to attract MNCs and establish GLCs, which may not have been intentional but served to mitigate double mismatches.

Such a nurturing strategy, while having its upsides, nevertheless discourages competition and does not make financial services more efficient. After decades of nurturing by MAS, the five major local banks have grown in size and are among the top 20 in Asia, based on tier-1 capital. Although the limit on foreign shareholdings of locally incorporated banks was raised from 20% to 40% in the 1990s, these local banks are still considered small when compared with global players. MNCs and GLCs account for a substantial portion of Singapore's economic activities. MNCs were able to raise funds locally through the stock market or received equity injections from parent companies at home. The main GLCs were provided with a variety of vehicles for raising long-term funds, of which the ABM was one. Good corporate governance and prudent management avoided irresponsible leverage and overgearing. As GLCs grew, they became cash rich. This is also one of the reasons why Singaporean companies were able to avoid a maturity mismatch, in addition to a currency mismatch.

6. Mitigating Double Mismatches vis-à-vis Sequencing of Financial Development and Liberalization

If the underlying principles of the regulatory framework and the way in which it has evolved over time are carefully examined, 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.

6.1. Liberalizing the pricing mechanism for basic monetary aggregates in the 1970s

In June 1967, almost two years after Singapore's independence, the Board of Commissioners of Currency, Singapore (BCCS), started issuing Singapore dollars, which were fully backed by gold and foreign reserves. This was followed by 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 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 quotations 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.

6.2. Restructured monetary policy framework in the 1980s

It is widely accepted in the literature and among central banking authorities, and confirmed by international experience, that a monetary authority cannot persist in trading inflation against higher economic growth. Although the dominance of money supply is recognized, money supply targeting has not been successful worldwide because of the long lag in monetary impact. In fact, according to a study by the International Monetary Fund (IMF) (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 towards a flexible, independent floating exchange regime, in which the authorities act only to “smooth” fluctuations but not to target a particular level.

Singapore has adopted an exchange rate arrangement in which 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 DBUs and ACUs, coupled with the segregation of local and foreign banks, make exchange rate management more effective by helping to regulate liquidity in the domestic financial sector? These are relevant issues to consider. An affirmative answer connotes rejection of the hypothesis of the triad of incompatibilities, which argues against the coexistence of exchange rate stability, free capital mobility and monetary autonomy.

The longstanding budgetary policy of Singapore is to maintain operating and development expenditures at levels that can be financed with government revenues. The role of active fiscal stabilization is, therefore, 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 (CPF) make liquidity management and the implementation of an exchange rate policy unique. 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 often purchases US dollars and sells Singapore dollars in the currency swap market in amounts that depend on its exchange rate objective.

If MAS wishes 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” exchange rate movements, the 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, to promote 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 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 [the] 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 tradeoff, lasting no more than a year, between inflation and trade competitiveness (see Teh and Shanmugaratnam 1992).

In Singapore, 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 controls and with 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 difficult to achieve if the

money multiplier, which tends to become more unpredictable if capital flows are not contained within ACUs, frustrated liquidity management in DBUs.

Exchange rate management would have been less effective if its short-term 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 the full-license banks that have no long-term business interests of Singapore at heart controlled liquidity in the local interbank money market.

This must be the essence of the dichotomized financial system. The abilities to correctly identify the monetary transmission mechanism and appropriately restructure the framework of monetary policy since the 1980s have, therefore, paved the way for financial and banking stability.

6.3. Deepening further financial markets and revamping bond activities in the 1990s

After three decades in which the foundations were laid to develop Singapore as a world-class financial center, MAS announced an important policy reform milestone in July 1999. Among the key strategic thrusts of policy reforms were the further development of the depth and breadth of capital markets in debt, equity and derivatives. Such strategic thrusts would support efforts to promote a vibrant asset management industry. This was a turning point in the sense that Singapore would now aim to be not just a center for regional fund sourcing but also aspire to be a global fund management center. The latter objective to increase trading volume is to be achieved through a two-pronged approach. It would be achieved, first, by introducing new products into the SIMEX such as the MSCI Singapore stock index future contract, the Dow Jones Thailand stock index futures contract and the Euroyen London interbank offered rate (LIBOR) futures and options contract. Second, there would be strategic international linkages with SIMEX forming part of a global electronic trading alliance with the Chicago Mercantile Exchange and the Société des Bourses Françaises in the demutualization and merger of Stock Exchange of Singapore (SES) and SIMEX.

Similar to the situation in other Asian countries, the bond market in Singapore, in particular the corporate bond market, is underdeveloped. MAS has attempted on several occasions since the 1980s to revamp the Singapore government securities market but has made little headway. Notwithstanding the absence of an active market to raise long-term funds, Singapore was able to avoid a double mismatch. If Singapore's domestic corporate bond market had been bigger or more liquid compared with those in developed countries, its financial system would have been much more resilient and complete.

Data reveal that almost all corporate bonds listed on Singapore's stock exchange are Asian dollar bonds denominated in US dollars, and that there have been virtually no issues of Singapore dollar-denominated bonds, particularly long-term bonds of more than five to seven years' maturity. Issuers are limited to GLCs and large enterprises. As for the secondary market, there is a lack of liquidity and limited trading activities, in sharp contrast to the stock market. The trading turnover ratio in the bond market (annual turnover divided by the average of aggregate market capitalization at the beginning and end of the year), including government bonds, is only a few percent compared to the

20% to 30% in the stock market. The scale of issues in the government bond market is growing, but like the corporate bond market, trading is sporadic at best.

Lack of interest from institutional investors explains why the secondary market is not developed for Singapore bonds. The CPF, a compulsory savings-pension system, invests its funds mainly in government bonds, and the CPF board has purchased nearly 80% of the outstanding government bonds. Commercial banks come next at a little less than 20%. The CPF board channeled household savings into long-term government bond investments and retains most of the bonds until maturity. Because banks set aside government bonds to fulfil MAS's mandatory liquid asset reserve requirements, those bonds are also typically not traded. On the other hand, the government constantly runs a surplus and is not necessarily obliged to issue additional government bonds. The issuance of government bonds has continued in order to provide the CPF board with an investment vehicle; the development of the bond market was of less importance. A portion of the CPF, siphoned off by the government through the issuance of government bonds, was channeled to foreign investment through GIC. The maintenance of such a system to increase net foreign assets was required in order to limit the supply of Singapore dollars. Looking at it from a different perspective, the bond market was a type of intermediary through which the CPF board's risk management function relating to investment assets was transferred to the GIC (see the World Bank 1995).

The fact that businesses could raise funds from other sources such as internal reserves, bank loans or equity finance; coupled with the lack of interest among citizens for bond investments and the limited need for corporate bond issuance, explained why the corporate bond market failed to develop. From the investors' point of view, it is believed that the CPF board's and financial institutions' buy-and-hold attitude in a market with few bond issues further impeded the development of bond trading skills and portfolio strategies of institutional investors.

Financial liberalization and reform programs have been vigorously pursued in Singapore in the wake of the East Asian currency crisis. One of the main focuses of reform is the Singapore dollar-denominated bond market. An objective of the reform effort is to mitigate or avoid the problem of double mismatches and this has been accomplished by expanding the options available for raising long-term funds. The significant shift has concerned both domestic and overseas investment funds by making the domestic bond market more substantial and further developing Singapore as an international financial center. The objective was to do away with the "fund raising in Singapore" and "fund managing in Hong Kong, China" syndrome that was prevalent at the time, with the intention of promoting "Singapore for both fund raising and fund managing."

Since 1998, three major measures have been taken. First was the periodic issue of 10-year government bonds to create a benchmark in the bond market. This made it possible to draw both long-term and short-term yield curves for the bond market, and that has contributed to increased bond trading and assists in the pricing of corporate bonds. Second, issuance of bonds denominated in Singapore dollars by government agencies, foreign businesses and international agencies was approved to increase bond issues. Tables 10 and 11 show recent bond issues that have taken place, with government agencies issuing bonds totaling S\$2.3 billion and foreign corporations (particularly US entities) along with international agencies such as the International

Financial Corporation (IFC) issuing bonds totaling S\$2.85 billion. Considering the non-internationalization policy for the Singapore dollar, the issue of bonds by foreign businesses and international agencies in Singapore dollars is significant.

Up to this point, MAS had prohibited foreign issuers from issuing Singapore dollar-denominated bonds in order to prevent as much as possible the outflow of Singapore dollars. However, due to the process of internationalization engulfing Singapore, a move was made to relax the non-internationalization policy of the Singapore dollar. This step was taken in connection with the development of its own bond market, thereby gradually making the Singapore dollar an easier currency to use. Again, one interpretation is that this led to the diversification of potential investments for domestic savings. If the range of investment vehicles denominated in Singapore dollars is expanded, it helps to alleviate exchange risks incidental to overseas investment. Nevertheless, foreign currency swaps are required in the event that Singapore dollars raised by foreign issuers are to be used overseas; and in this context there is no change regarding the basis of the non-internationalization policy of the Singapore dollar.

Moreover, in order to generate investment in the bond market by individual retail investors from the previous low level, the purchase of bonds issued by government agencies using CPF savings was permitted. In fact, S\$10 million of the S\$300 million JTC medium-term bonds issued in November 1998 were sold to individual investors. Authorization to purchase government agency bonds through CPF accounts that cover all workers in Singapore expanded the investor base, and this is expected to energize the secondary market. If the primary bond market can expand through the vitalization of the secondary market, this would certainly stimulate corporate bond issues by domestic companies, thereby eliminating or mitigating double mismatches. When encouraging the Singapore dollar listing of foreign companies on the Singapore Exchange (SGX), MAS nevertheless is still in the position to judge whether the economy and the respective governing authorities can cope with the liberalization, and introduce measures with ample safeguards.

6.4. Challenges from cross-border financial activities, cyber-banking and further deregulation beyond 2000

In the aftermath of the East Asian financial turmoil, MAS recognized some of the system weaknesses revealed by the crisis and the major challenges posed by cross-border financial activities and cyber-banking. After three decades of financial development and consolidation, MAS feels Singapore is ready to make a bid to become the major financial center in East Asia. Unlike many regional financial centers in the postcrisis era, MAS took a bold step forward in 1998 to further deregulate, although using a steady and incremental approach.

The global banking industry has gone through a series of lending excesses over the past three decades, such as the international bad debts of the 1970s, energy and real estate crisis of the 1980s and Asian emerging markets of the 1990s. For the year 2000 and beyond, the path is clear to erase financial barriers in the creation of 'financial super-markets'. Reforms in the US financial sector are supposed to lead to major improvements in financial services, promote financial innovations, lower capital costs, increase the variety of financial products for consumers and strengthen international

competitiveness in the wake of the repeal of the US 1933 Glass-Steagall Act and the 1956 Bank Holding Company Act.

Intensified competition worldwide had led to a series of mergers and acquisitions (M&As), which begun in the US and subsequently took place among European and Japanese banks. The Financial Service Modernization Act of 1999 would set the train of M&As moving across bank and nonbank financial institutions and produce vast service-based conglomerates. The major rationales for M&As are essentially to tackle overcapacity, to realize costs savings, promote greater business synergies, allow cross selling of services and, of paramount importance, Web-based Internet technology-driven consolidation.

Overcapacity in the banking industry leads to a lowering of lending criteria and irrational pricing of credits, which can weaken the financial system. M&As will, therefore, mean substantial losses of jobs, at least in the shorter-term, as well as further investments and new technology advancement, responding to demand for specialists in newer businesses under a new competitive environment and coping with the mammoth task of business consolidation and management restructuring. From the investors' or consumers' perspective, intensified competition had led to increasing emphasis on high growth/high yield instruments. Given the Asian economic crisis and financial paralysis, the global interest rate environment has remained benign. Greater financial deregulation worldwide and freer flows of financial information enhance financial innovations and cross-border financial investments.

Notwithstanding the East Asian financial turmoil whose recovery momentum and strength have exceeded expectation, wealth accumulation in Asia after prolonged years of growth has significantly changed investors' expectations concerning the returns of Western traditional pension funds. To meet the demands of high net-worth Asian individuals, commercial banks are shifting their traditional emphasis on financial intermediation of deposit-taking corporate lending business to investment portfolios, fund managing and private banking. Hence, there has been a rapid growth of "target" funds, boutique fund managers and a facelift for private banking with highly tailor-made structured financial products to cater for individual investor's requirements and expectations.

Such a changing landscape in the global banking industry is altering the approach with which central bankers think about supervision, in view of the worldwide trends of convergence among financial institutions and blurring of product boundaries. It is, therefore, logical to consider an Omnibus Act to streamline and consolidate the existing supervisory role, regulate structure and introduce financial services legislation, which are deemed to be more cost effective and prevent regulatory arbitrage. Examples of possible changes include a single authorization or license for all financial institutions and a bottom-up approach where capital is required for different regulated activities within a financial institution.

As the demarcation lines between bank and nonbank financial institutions, such as securities firms and insurance companies, are blurring, competition and market encroachment from nonbank financial institutions, which are also strong branded market players, on commercial banks in terms of the traditional financial intermediation are intensifying. Web-based online financial services (OFS) with virtual branches and specialist services outsourcing such as mortgage processing companies are becoming

new marketing and sales channels, with contracting or closure of bricks-and-mortar branch networks to be expected.

The exponential growth of Internet users worldwide since the middle of 1990s shows that this is indeed a business phenomenon never before witnessed. The filtering of Internet banking through to mainstream commercial banking is a fairly new development. In Asia, Hong Kong, China and Singapore are among the leaders in the provision of OFS. In Singapore, OFS, including commercial banking, securities brokerage services and insurance services, have been gaining momentum in recent years. Almost all of the major local banks such as DBS, Overseas Chinese Banking Corporation, United Overseas Bank, Overseas Union Bank and Keppel Tat Lee Bank are already involved in Internet banking.

MAS announced on July 2000 its strategy on the licensing, regulation and supervision of Internet banking in Singapore, observing in its policy statement that

The risks considerations inherent in Internet banking are not new or fundamentally different from those posed in other forms of banking. MAS will therefore subject Internet banking, including Internet-only banks, to the same prudential standards as traditional banking. MAS' admission criteria for new license applicants, and its regulatory and supervisory approach, will apply across the board.

In the interests of effective banking supervision, central banking authorities should seriously take into account the characteristics and impact of OFS. Issues pertaining to maturity and currency mismatches may become more ambiguous since electronic money, which cuts across borders and is more fluid in nature, may attract further gapping risks and invite greater currency exposure, which will be even harder to understand, assess and trace. Yet OFS features high in the agenda of financial innovation and will inevitably lead changes in financial markets and financial institutions.

6.5. Minimizing double mismatches through balanced and sustainable macroeconomic policies

“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.

Our studies have shown that the steady appreciation of the Singapore dollar by 2.5% per 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% a year for two consecutive years would have a negative impact on export growth (see Chen and Tan 1996). The rationale is that rapid appreciation of the Singapore dollar within a short time span may not allow the benefits of lower inflation to feed through to lower production costs in order to offset the resulting higher export prices. 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 marginal export demand. Thus, swift internationalization of the Singapore dollar would undermine MAS's sovereignty over exchange rate policy, hampering the attainment of its twin objectives of price stability and noninflationary growth. According to our econometric estimation, Singapore's potential output is about 8% per annum (see Tan and Lee 1998). As long as Singapore grows within the potential output path, avoiding overheating, the economy would be the best focus to minimize double mismatches. The *sine qua non* for effective exchange rate management must therefore be a "healthy or comfortable" level of foreign reserves accumulation (see figure 7).

We highlighted earlier the unique dichotomized financial system that segregates offshore financial activities from onshore domestic banking businesses, hence cushioning the Singapore economy from external shocks and mitigating double mismatches. It is paramount to recognize that the resiliency of the dichotomized system, which essentially still allows free flow of funds between ACUs and DBUs, is highly dependent upon the pursuance of balanced and sustainable macroeconomic policies. To appreciate this core principle we need to go into the flow-of-fund analysis within the two-tier financial entity. MAS needs to tread carefully a fine line through tradeoff between further liberalization of the financial center and greater internationalization of the domestic banking sector. The demarcation line between DBUs and ACUs is expected to thin over time. Gradually, as residents gain greater access to ACUs and wider participation in DBUs is allowed for nonresidents, market rates and competitiveness will increasingly govern the flow of funds between the two units. *Regulations, safeguards and incentives, however well they are being designed, influence or distort market rates and competitiveness.*

In a two-tier financial system government by competition, there is always the danger of the foreign currency ACUs overwhelming the local currency DBUs, or vice versa. Some economists have warned that since the ACU is dominated by the US dollar, fiscal incentives could make "dollarization encroachment" on DBU assets and liabilities likely. This later may, in turn, destabilize DBUs and hence the real economy (see Bryant 1985). Our study has shown that between 1980 and 1998, assets and liabilities of DBUs and ACUs grew by 17% and 25%, respectively. No encroachment took place, since there was no apparent "round tripping" of deposits from DBUs to ACUs, probably reflecting the confidence of residents in the local currency. 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% than those of the ACUs at 5.1%. Gradual strengthening of the Singapore dollar against the US dollar since the early 1990s could have also contributed to this reversal

in growth momentum. As more than 70% of the ACU liabilities and more than 65% of the ACU assets have tenures of three months or less, the essentially short-term Asian dollar market depicts the volatile nature of fund flows. The important lesson is that market forces, not just MAS alone, will affect the pace of internationalization of the Singapore dollar as the economic structure of Singapore evolves.

In view of the fact that ACU assets and liabilities were about three to five times those of DBUs during 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, the local currency value needs to be relatively stable to discourage currency arbitrages and to prevent financial round-tripping. Regulations, safeguards and incentives designed for the two units must be consistent, with 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 money market interest rate has moved in tandem with the three-month interbank US dollar interest rate in ACU over the last two decades, whereby local interest rates tend to be lower than US counterparts. Partly this is due to lower domestic inflation in Singapore. Still, interest-rate differentials have narrowed since the 1990s, indicating dominance of the US dollar in ACUs.

Singapore has been careful with assets inflation and has since explicitly incorporated it as one of the policy targets of MAS after the last round of the property sector boom in 1995 (see figure 8). In order to prevent overdevelopment in the property sector, regulations were imposed on loans for property purchases, which cannot exceed 80% of property prices. Banks are also not allowed to process immovable property worth more than 40% of their capital funds and loans secured by immovable property cannot exceed 30% of the bank's total deposits. To guard against overheating of the real estate market, MAS did not fail to monitor residential investments by foreigners, despite the presence of financing regulations through which real estate investments by residents could also be controlled.

Measures to cool the property sector were introduced in 1996. These prohibited Singapore dollar loans for residential property investments by foreigners or by corporations whose main shareholders are not Singapore citizens, and where the purchased residential property was sold within three years, capital gains tax was applicable. In retrospect, real estate market cooling measures introduced in 1996 did indeed mitigate the plunge in property prices in the aftermath of the East Asian currency crisis. Liberalization of financing rules in October 1993, in which members who had used their CPF saving up to 100% of the property value were allowed to use another 80% of their gross savings in excess of the required minimum sum to service their housing loans, appears to be unsustainable. An important lesson learnt is that plausible and sustainable public policy is still preferable to cooling measures to curb escalating housing prices that erode affordability.

7. Conclusion: Some Recommendations and Lessons based on Identified Policies, Factors and Conditions

This report began by highlighting the nature of the East Asian financial turmoil and the high price paid by East Asian economies that underwent hasty financial liberalization. We then identified the *sine qua non*, or prerequisite conditions under the dichotomized

financial system, that helps to avoid or mitigate the dilemma of double mismatches. We subsequently singled out major policies undertaken by the central bank that directly and effectively mitigated double mismatches. Factors such as the large pool of MNCs and setting up of GLCs, which were intended for other objectives but nevertheless contributed significantly to the mitigation of double mismatches, were also discussed. We further extended our arguments to encompass broader conditions undertaken consistently at the national level that laid the foundation for minimizing system-wide instability. We referred to sequencing of financial development, spacing of markets liberalization and sustainable macroeconomic policies that seem so logical but are often overlooked during policy implementation.

To sum up, Singapore has built up a credible dichotomized financial system with effective policy instruments. A pragmatic approach to financial liberalization best works according to the established regulatory framework by considering changes from within. The tight or “high-handed” micro supervisory approach adopted by the regulatory authority to financial institutions is to be expected, especially when MAS is pushing ahead on uncharted ground in turbulent periods. Conservative attitudes in the form of the higher CAR required for banks, reflect ample prudential safeguards. Government initiatives, such as attractive fiscal incentives in support of the various financial activities of ACUs, have formed the basis of its marketing effort. Foreign financial participation in ACUs was successfully expanded and encroachment on DBUs 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. *Pull factors*, such as abolition of withholding tax on the interest income of nonresidents, waiver of the statutory reserve requirement plus 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 sword. 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 towards 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, and effective gradual internationalization of the Singapore dollar. These can provide an effective buffer against internal and external shocks.

With domestic financial activities segregated from offshore participation, Singapore is unlikely to do away with the dichotomized financial system in the foreseeable future. It is likely to continue to insulate the domestic banking sector against the international environment in the context of fund flows. DBUs and ACUs will continue to operate on the basis of a nonlevel playing field in segregated financial entities but increasingly not between local and international players. As reaffirmed by the Chairman of MAS and Deputy Prime Minister Lee, in November 1997, “so far, this approach has promoted rather than hindered our growth.” Such a strategy is crucial to systemic stability as Singapore’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, the authority's efforts to "nurture" indigenous banks into bigger international players initially through domestic market protection for the past three decades will not be maintained indefinitely. The recent attempt by MAS to entice foreign competition into DBUs, with approval planned of another six full licensed banks, is meant to "force" modernization and innovation of indigenous banks but not to do away with the demarcation approach to "cushion" fund flows. The "nurturing approach" that has been adopted does entail a tradeoff. To nurture indigenous banks so that they can be sufficiently large to compete internationally, the outcome from protectionist measures will inevitably result in lower quality, fewer choices and less competitive financial services for consumers.

Factors such as the presence of GLCs and MNCs are peculiar to Singapore, as are the broad conditions such as sequencing of financial development and spacing of financial markets liberalization. However, given Singapore's extensive experimentation and positive results, we tend towards the view that there are common core principles that could be adopted by other emerging economies with modifications to reflect local context and circumstances. We believe that various measures, if adopted as part of the post-crisis financial architecture reform, would enhance regional financial stability.

Given the policy on restrictive usage of the Singapore dollar for nonresidents and partly due to the lack of the natural need to borrow through government bond issuance, the rudimentary domestic capital market may well be just another price Singapore has had to pay under the dichotomized financial system. The sequencing approach adopted on financial deepening also involves a tradeoff: the domestic long-term capital market remains relatively underdeveloped during its early stages in exchange for an orderly and sustainable growth environment. While the policy dilemma is recognized, recent efforts to develop the Singapore dollar-denominated bond market is being experimented with, involving its "freer use" for nonresidents and Singapore dollar proceeds to be used outside Singapore. Statutory boards and GLCs are also being encouraged to raise funds directly through market bond issuance instead of resorting to government funding.

Prima facie evidences suggests that the hypothesis known as the triad of incompatibilities, that is, the noncoexistence of exchange rate stability, free capital mobility and monetary autonomy, does not hold, at least in Singapore. Three strands of empirical results that do not lend support to the hypothesis include, first the two decades of exchange rate stability and steady appreciation of the Singapore dollar under the "guided" exchange rate management by MAS. Second, strong econometric evidence of "dominantly active" impulses from both the broad and narrow money aggregates in affecting the real economy were detected (see Chen and Tan 1996). And third, a high level of capital mobility was statistically verified, particularly in the category of "other investments" as classified by IMF, which includes all other capital transactions of the private sector, mainly but not exclusively bank lending and depositing (see Tan 1999).

Amid an international environment of volatile fund flows, important policy implications under the dichotomized financial system must surely arise from the restrictive usage of the local currency for nonresidents, which basically is the equivalent to "throwing sand into the wheels" of perfect capital mobility. The central bank can then monitor sources and uses of funds and have some "leverage" over the local currency,

but should not restrict capital movements under the two-tier financial entity. ACUs and DBUs, with their regulatory rules, prudential safeguards and fiscal incentives, practically function as a “porous wall” in which movements of capital are uninhibited but adverse capital flows are mitigated and exogenous shocks are cushioned.

The post-crisis challenges for central banks must be to ensure balanced, sustainable economic growth, enforce effective supervision of financial institutions and adequately cope with internationalized fund flows resulting from Internet technology and globalization. Prior to the recent financial turmoil, many Asian countries aspired to be among the major financial centers, notwithstanding the obvious economies of scale on financial activities and duplication of financial services. Robust economic expansion carries with it rapid capital flows, leaving many financial institutions overexposed and exerting on the relatively less mature ones more stress than they can bear. Healthy foreign exchange reserves accumulated over decades were eroded within a few months or weeks. Weaknesses and instability of the regional financial system were revealed following the ensuing currency turmoil and volatile capital mobility, with even established financial centers such as Hong Kong, China and Singapore, which have relatively strong economic fundamentals, not being spared.

The effectiveness of IMF’s rescue programs in East Asia has been questioned on many fronts. The IMF’s failure in its financial relief packages to reflect more realistic conditions and providing sufficient contingency supplies of liquidity rather than credit restraint have been the major criticisms leveled (see Stiglitz 1999; Yoshitomi and Ohno 1999). It is in this context that a regional financial arrangement was proposed to complement IMF in areas where its responses may not be apt and readily available (see Asian Policy Forum Report 2000, Sakakibara 2000).

In the effort to better deal with international capital movements, empirical studies to identify components or sources of investment fund flows in each economy as classified by IMF under the three broad categories of direct investment (DI), net portfolio investment (PI) and other net investment (OI) would be useful. In fact, recent studies on ASEAN-5 and 22 economies, which are also members of the World Trade Organization, have revealed that the source of volatility indeed could be traced to the OI category. Contrary to general perception, PI and DI in most economies are relatively stable (see Tan 1999 and Kono and Schuknecht 1998, respectively). The important policy implication is that non-internationalization of the local currency under the dichotomized financial system in which the offshore and onshore financial activities are demarcated may be a useful tool to consider for relatively small open but high growth export-oriented economies.

There are some useful lessons to be learnt. First, it is clear that to curb financial activities directly will be a costly process and moreover direct and massive intervention in the market-place tends to cause distortion. It may be more efficient and less arbitrary to aim for a resilient financial structure to 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 political environments are not created to attract excessive inflows or exacerbate volatile outflows. Third, while waiting for international monetary reforms to take shape, individual economies should seek initiatives to buffer their own systems by working within the requirements of the international financial community and global monetary order. A regional initiative

towards core principles for effective banking supervision consistent with Basle Initiatives 2000 may be a realistic and efficient way of pushing ahead.

More care should be taken in the formulation of policy strategies and direction of resources by regional authorities to promote growth of financial centers. The authorities should explore and compete based only on comparative advantages of the respective economies in Asia instead of pursuing policies of unwarranted duplication. It may be more productive to seriously consider sequencing and spacing of reforms in the area of financial structure and financial institutions. It may also be warranted to review the effectiveness of checks and balances for excesses within the central banking and other governing authorities.

Instead of being overly concerned with or complaining about what could be the dynamic behaviors and consequences of a more swiftly integrated market pricing mechanism, the phenomenon may well be the new global financial order that we all must learn to live with.

Alternatives may not perhaps be found in the free market-driven system of Hong Kong, China, which has proven to function well only during normal times; nor the total market insulation approach of capital controls adopted by Malaysia, which is a short-run remedy to buy time but with long-term costs. However, looking at Singapore's restrictive usage of the local currency for nonresidents under a trade weighted basket of managed float exchange rate regime, in which the 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, as Malaysia; Philippines; Taipei, China; and Thailand have recently gone in this direction.

As to future lessons for the IMF, the former deputy managing director Dr. Stanley Fischer admitted that failure to appropriately judge members' readiness prior to giving advice on capital account liberalization was a serious policy oversight. Weak financial institutions and a rudimentary financial system can evolve only through a gradual process of financial liberalization consistent with economic development. Effective mobilization of domestic savings through an extensive network of financial intermediaries may be an important source of funding for investment projects.

Given the recent trends towards convergence within the global banking industry, for efficiency and streamlining of regulation, an Omnibus Act for all financial institutions may be the inevitable way forward. Developments in Internet driven-online financial services pose serious challenges to central banking authorities in terms of effective banking supervision. The more fruitful approach is perhaps not to attempt to regulate or control these activities but allow the market to dictate instead. However, to effectively monitor their impact on financial services and financial institutions calls for a more comprehensive financial information system. In this sense, we may concur with some market observers that "it is a fallacy to speak of the wisdom of the market place at all times," especially where efficiency of the market place prevails through regulations and institutions set up by the international policy authorities and financial agencies.

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Appendices

Appendix 1

Chronology of Financial Markets Related Measures and Events

June 1967	The Board of Commissioners of Currency, Singapore (BCCS), starts issuing the Singapore dollar.
August 1968	Withholding tax on interest income of nonresidents abolished.
November 1968	Bank of America first to be granted approval to operate in the Asian Currency Unit (ACU).
January 1971	The Monetary Authority of Singapore (MAS) begins operations.
June 1972	MAS decides to exempt ACUs from statutory reserve requirements.
July 1972	Cartel system for exchange rate fixing formally abolished.
January 1973	Concessionary corporate tax on income reduced from 40% to 10%.
May 1973	Singapore terminates the currency interchangeability arrangement between the Malaysian ringgit and the Singapore dollar while maintaining par interchangeability with the Brunei dollar.
June 1973	Stock Exchange of Singapore (SES) Ltd. inaugurated.
July 1973	MAS removes the cartel system of foreign exchange quotations among banks and the Singapore dollar allowed to float “freely” but on an unofficial level, though this floating system is managed.
July 1975	Cartel system of interest rate determination abolished as stated in MAS Notice 620.
January 1976	Approved Asian dollar bonds and nonresident ACU deposits exempted from estate duty.
June 1978	Exchange controls completely abolished.
April 1980	Stamp duty on ACU offshore loan agreements and Asian dollar bond certificates abolished.
January 1981	Managed-float regime officially adopted and exchange rate management announced.

September 1981	The policy of restrictive usage of the Singapore dollar for nonresidents appears in MAS Notice 621.
April 1983	Five-year tax holiday granted for all income derived from syndicated offshore loans; tax exemption scheme 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	Singapore International Monetary Exchange (SIMEX) introduces trading in International Gold Future Contracts.
September 1984	Financial Futures Trading launched with a mutual offset Link between SIMEX and the Chicago Mercantile Exchange.
December 1984	ACUs allowed to issue negotiable-certificate-of-deposits denominated in Japanese yen.
May 1987	MAS attempts to revamp the Singapore government securities market.
June 1991	10% concessionary tax rate extended to the lending and borrowing activities of foreign securities and transactions in ACU with approved fund managers.
April 1993	Concessionary tax rate of 5% granted to the trading of 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 investors by ACUs granted concessionary tax rate of 5% 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	Fundamental review of MAS's policies in regulating and developing Singapore financial sector announced and Financial Sector Review Group (FSRG) appointed.
February 1998	Committee on Singapore's Financial Competitiveness appointed.
March 1998	Tax exemption given for fee income earned by financial institutions arranging debt securities in Singapore.
August 1998	Policy of restrictive usage of the Singapore dollar for nonresidents reiterated.

July 1999	To develop deep and broad capital markets in debt, equity and derivatives, and sharpen the competitive edge of the domestic banking industry, foreign participation further enticed.
December 1999	SES merged with SIMEX to form the Singapore Exchange (SGX).
April 2000	Model Omnibus Act adopted to streamline and consolidate the existing supervisory role, regulating structure and financial services legislation.
June 2000	New measures introduced to separate financial and nonfinancial activities of banking groups, with greater emphasis on core competence.
July 2000	Licensing, regulation and supervision of Internet banking announced by MAS.

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 (excluding 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 interbank 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 exercising 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 residents.

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.

Appendix 3

Notices to Banks

MAS 757

26 Nov 1999

NOTICE TO BANKS BANKING ACT, CAP 19

Notice to Banks MAS 757 dated 13 August 1998 is cancelled.

Issued by Monetary Management Division

Internationalization of the Singapore Dollar (S\$)

Overview

1. The Monetary Authority of Singapore (the Authority)'s policy is not to encourage the internationalization 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.

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 Appendix II, 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 Appendix III. 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 Appendix II, 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 Appendix II. 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 Appendix II. 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;
 - 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 Appendix III. A nil return is required.
 3. Banks must consult the Authority before transacting with nonresidents all other S\$ financial derivatives not specified above.

Reporting

1. All information required in Appendix III should be submitted to the Authority no later than 15 days after the reporting month.

Consultation Procedure

1. 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: 229 9491) to the Monetary Management Division, MAS.
2. When consulting the Authority, banks should provide relevant information, e.g., the extent of the nonresident 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.

Tables and Figures

Table 1. Comparison of Major Economic Fundamentals in Selected Asian Nations (“Before” and “After” of currency)

	GDP growth 1) (3Q,96 '1Q,98)		Exchange rate 2) (97.3 '98.1)		Interest rate 3) (97.3 '98.1)		CPI (97.3 '98.1)	
Singapore	3.7%	“ 4.5%	1.436	“1.753 (22% decline)	3.56%	“ 9.00%	1.6%	“1.2%
Thailand	7.9%	“-8.2%	25.95	“53.81 (107% decline)	11.3%	“ 19.3%	4.5%	“8.6%
Malaysia	9.7%	“-3.1%	2.479	“4.414 (78% decline)	7.36%	“ 9.35%	3.2%	“3.4%
Indonesia	8.4%	“-4.0%	2,413.8	“9,662.5 (300% decline)	11.07%	“ 20.00%	4.7%	“16.2%
Philippines	6.9%	“ 1.1%	26.33	“42.66 (62% decline)	8.88%	“ 22.69%	4.8%	“7.0%
Korea	6.5%	“ -3.6%	896.2	“1,701.53 (90% decline)	12.69%	“ 23.36%	4.5%	“8.3%
Hong Kong	5.5%	“ -2.6%	7.746	“7.742 (No change)	8.75%	“ 10.25%	5.7%	“5.1%
	Foreign reserves (US\$ bil.) (97.3 'lowest level)		Capital account 4) (3Q,96 '1Q,98)		Current account 4) (3Q,96 '1Q,98)		Stock price (97.3 '98.1)	
Singapore	78.7	“68.2 (13.3% decline)	-2.9%	“21.2% (96 '98)	15.9%	“20.9% (96 '98)	2,073.00	“1,259.92 (Straits Times, 39% decline)
Thailand	38.0	“26.1 (31% decline)	7.8%	“20.2%	-7.9%	“16.3%	705.43	“495.23 (SET index, 30% decline)
Malaysia	27.8	“20.9 (24.8% decline)	9.0%	“7.5 %	-3.6%	“6.4%	1,234.61	“542.12 (KLSE index, 56% decline)
Indonesia	20.0	“16.3 (18.5% decline)	4.8%	“28.2%	-1.6%	“0.5%	662.24	“485.94 (BEJ index, 27% decline)
Philippines	12.0	“8.6 (28.3% decline)	16.9%	“5.6%	0%	“0%	3,222.98	“1,948.01 (PSE index, 40% decline)
Korea	29.9	“20.4 (31.8% decline)	1.5%	“7.4%	-6.9%	“10.0%	677.34	“567.38 (KOSPI, 16% decline)
Hong Kong	6.3	“9.8 (55.6% increase)	NA		-6.0%	“-10.6%	12,534.32	“9,252.36 (Hang Seng, 26% decline)
	NPL ratio (1998)		Minimum CAR required (actual) 5)					
Singapore	5-10%		12.0%(21.0%)					
Thailand	35.0%		8.0%(10.1%)					
Malaysia	20-25%		8.0%(12.3%)					
Indonesia	50-70%		8.0%(11.7%)					
Philippines	15-20%		not introduced?(15.7%)					
Korea	25-30%		8.0%(9.5%)					
Hong Kong	6%		8.0%(18.8%)					

Note : 1) GDP growth is substantial and % changes over year

2) Exchange rate is against US dollar

3) Interest rate is short-term rate

4) Both capital account and current account are ratios against GDP

5) Capital adequacy ratios in parenthesis are as of the end of 1996

Source: Compiled by Daiwa Institute of Research based on data from CEIC data base, Bloomberg, IMF “International Financial Statistics,”

“Banking in Asia: The End of Entitlement,” Financial Times, “The Bankers,” October 1997

Table 2. Foreign Debt as a % of GDP

	1990	1991	1992	1993	1994	1995	1996
Korea	13.79	13.51	14.34	14.18	14.32	23.80	28.40
Indonesia	65.89	68.21	68.74	56.44	60.96	61.54	56.74
Malaysia	35.80	35.48	34.51	40.74	40.40	39.31	40.06
Philippines	69.02	71.45	62.29	66.09	62.42	53.21	49.75
Singapore	11.23	11.07	9.47	9.45	10.79	9.84	10.74
Thailand	32.80	38.38	37.51	34.10	33.31	33.78	50.05
Hong Kong	16.80	14.84	14.99	14.35	18.38	16.60	15.44
PRC	14.26	14.84	14.99	14.35	18.38	16.60	15.44
Taipei,China	11.04	10.73	9.37	10.44	10.87	10.40	10.07

Source: Compiled by Daiwa Institute of Research based on data from Global Development Finance (WB), IMF-IFS, Asian Development Bank, OECD

Table 3. Foreign Short-Term Debt as a % of Total

	1990	1991	1992	1993	1994	1995	1996
Korea	30.87	28.19	26.99	25.85	25.47	51.60	50.20
Indonesia	15.92	18.00	20.52	20.17	18.05	20.87	24.98
Malaysia	12.43	12.14	18.18	26.58	21.13	21.19	27.83
Philippines	14.48	15.24	15.93	14.01	14.29	13.38	19.34
Singapore	17.51	18.92	19.91	17.87	13.28	14.56	19.81
Thailand	29.63	33.13	35.22	53.01	60.67	72.36	41.41
Hong Kong	45.97	46.63	45.89	41.19	30.04	28.36	43.57
PRC	16.85	17.89	19.01	17.80	17.40	18.91	19.72
Taipei,China	88.31	86.49	86.93	84.99	76.75	72.18	68.44

Source: Compiled by Daiwa Institute of Research based on data from Global Development Finance (WB), IMF-IFS, Asian Development Bank, OECD

Table 4. Foreign Short-Term Debt as a % of Foreign Reserves

	1990	1991	1992	1993	1994	1995	1996
Korea	72.13	81.75	69.62	60.31	54.06	171.45	203.23
Indonesia	149.28	154.62	172.81	159.70	160.36	189.42	176.59
Malaysia	19.54	19.05	21.12	25.51	24.34	30.60	40.98
Philippines	479.11	152.31	119.37	107.68	95.00	82.85	79.45
Singapore	2.65	2.67	2.35	2.04	1.75	1.78	2.60
Thailand	62.55	71.31	72.34	92.49	99.48	114.21	99.69
Hong Kong	23.52	21.78	18.38	17.09	16.49	14.16	22.35
PRC	31.49	24.68	66.76	68.33	33.04	29.62	23.74
Taipei,China	21.56	20.21	21.00	23.64	21.76	21.64	21.31

Source: Compiled by Daiwa Institute of Research based on data from Global Development Finance (WB), IMF-IFS, Asian Development Bank, OECD

Table 5. Number and Types of Commercial Banks, 1970-1998

Year	Local full license	Foreign banks			Total No. of offices	Foreign rep.
		Full license	Restricted license	Offshore banks		
1970	11	26	-	-	37	8
1971	11	25	6	-	42	19
1972	11	25	8	-	44	27
1973	11	25	12	7	54	30
1974	12	24	12	14	62	36
1975	13	24	12	21	70	38
1976	13	24	12	23	72	40
1977	13	24	13	27	77	43
1978	13	24	13	31	81	44
1979	13	24	13	39	89	44
1980	13	23	13	42	91	44
1981	13	23	13	50	99	45
1982	13	23	13	62	111	48
1983	13	23	13	69	118	54
1984	13	23	14	72	122	53
1985	13	23	14	79	129	50
1986	13	23	14	85	135	47
1987	13	23	14	83	133	44
1988	13	22	14	86	135	42
1989	13	22	14	87	136	47
1990	13	22	14	92	141	45
1991	13	22	14	88	137	49
1992	13	22	14	82	131	52
1993	13	22	14	79	128	52
1994	13	22	14	83	132	50
1995	12	22	14	92	140	56
1996	12	22	13	95	142	57
1997	12	22	13	105	152	64
1998	12	22	13	107	154	69

Source: Monetary Authority of Singapore, Annual Reports, various issues

Table 6. Financial Strength of Singapore's Five Major Local Banking Groups

	Reserves	Growth rate	Shareholders fund	Growth rate	Capital adequacy ratio (%)	
	(\$ bil.)	(%)	(\$ bil.)	(%)	1997	1998
DBS	95.50	15.81	108.80	10.84	19.20	15.80
OCBC	60.90	2.01	73.80	2.62	24.20	20.70
UOB	51.40	5.22	61.90	5.32	21.70	21.40
OUB	37.30	6.88	47.20	9.61	18.00	16.30
KTB	14.90	10.81	25.80	6.43	18.80	18.50

Notes: DBS=Development Bank of Singapore

OCBC= Overseas Chinese Banking Corporations

UOB=United Overseas Bank

OUB=Overseas Union Bank

KTB=Keppel-Tat Lee Bank

Source: Zaobao Finance, Lianhe Zaobao

Table 7. Loans Outstanding from Offshore Markets in Singapore and Thailand

(US\$ million)

Year end	ACU account (Singapore)				
	Total interbank	OUT-OUT	Share(%)	OUT-IN	Share(%)
1994	234,339	217,232	92.70	17,107	7.30
1995	258,770	240,178	92.82	18,592	7.18
1996	278,743	256,386	91.98	22,357	8.02
1997	330,686	300,839	90.97	29,846	9.03
1998	330,193	304,263	92.15	25,931	7.85
1999	321,581	294,375	91.54	27,206	8.46

Year end	BIBF account (Thailand)				
	Total	OUT-OUT	Share(%)	OUT-IN	Share(%)
1994	22,219	4,019	18.1	18,200	81.9
1995	47,541	20,526	43.2	27,016	56.8
1996	50,378	18,843	37.4	31,536	62.6
1997	39,842	9,965	25.0	29,877	75.0
1998	24,952	4,047	16.2	20,905	83.8
1999	NA	NA	NA	NA	NA

Note: Figure for 1999 is as of the end of March 1999

Source: Compiled by Daiwa Institute of Research based on data from various issues

of MAS Annual Reports, Bangkok Bank, "Commercial Banks in Thailand 1996 and 1997"

Table 8. Singapore Dollar Resident Loan Limit on Offshore Banks

(\$ million)

Year	1973	1978	1988	1992	1993	1995	1996	1997	1998
\$ limit	15	30	50	70	100	120	150	200	300

Source: Monetary Authority of Singapore

Table 9. Branches and ATMs: Local Banks versus Foreign Banks, as of 1998

	No. of Branches	No. 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 Corporation	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	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

Source: Monetary Authority of Singapore

Table 10. Statutory Boards S\$ Bond Issues

	Issuer	Amount (S\$ million)	Tenor
1998 4Q	Jurong Town Corporation	300	7-Yr
1999 1Q	Jurong Town Corporation	300	10-Yr
	Housing & Development Board	300	5-Yr
1999 2Q	Housing & Development Board	500	7-Yr
	Jurong Town Corporation	300	10-Yr
1999 3Q	Land Transport Authority	300	10-Yr
	Housing & Development Board	300	10-Yr
Total		2,300	

Source: Compiled by Daiwa Institute of Research based on data from MAS homepage

Table 11. Approved Foreign Entities Issuing S\$ Bonds

	Issuer	Amount (S\$ million)	Tenor
1998 3Q	International Finance Corporation	300	3-Yr
1999 1Q	GE Capital	400 1)	3-Yr
	Nordic Investment Bank	200 2)	5-Yr
	Nordic Investment Bank	150	10-Yr
	European Bank of Reconstruction & Development (EBRD)	150	5-Yr
	Ford Motor Credit	150	5-Yr
1999 2Q	JP Morgan	100	5-Yr
	JP Morgan	100	10-Yr
1999 3Q	John Hancock	150	5-Yr
	Rabobank International	100	5-Yr
	Toyota Motor Credit	200	3-Yr
	Westpac	150	5-Yr
	International Finance Corporation	100	5-Yr
	Abbey National Treasury	100	5-Yr
	ABN Amro Bank NV	100	5-Yr
	DePfa Deutsche Pfandbriefbank AG	100	7-Yr
1999 4Q	United Parcel Service of America, Inc	100	5-Yr
	Telefonaktiebolaget LM Ericsson	100	3-Yr
	Morgan Stanley Dean Witter & Co	100	5-Yr
Total		2,850	

Note: 1) GE Capital-Original amount S\$300 million was issued in Mar. 99, S\$100

..... reopened in May

2) Nordic Investment-Original amount S\$150 million was issued in Mar.99, S\$50

..... reopened on 19 July

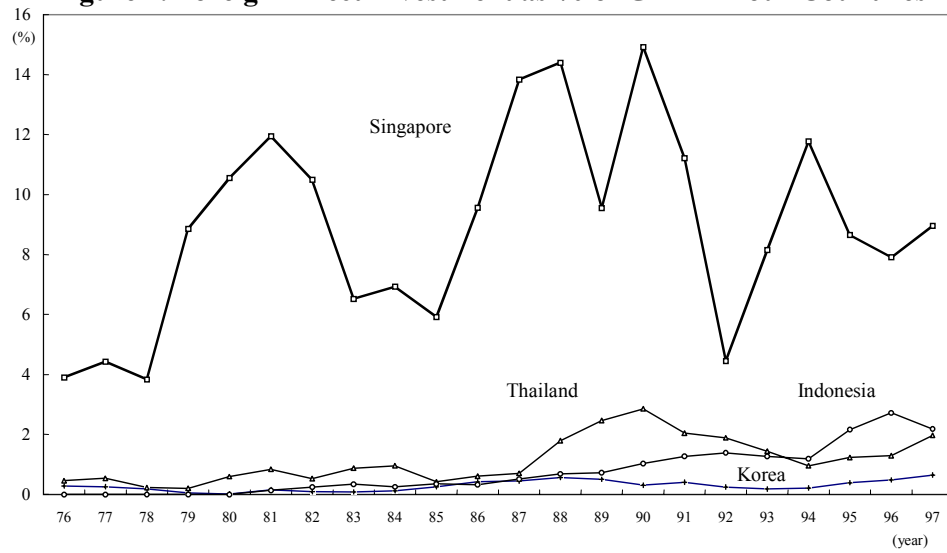
Source: Compiled by Daiwa Institute of Research based on data from MAS homepage

Table 12. Explanation of Abbreviations in Figure 2a

Abbreviation	Full Name
ALC	Automation Leasing & Consultancy Pte. Ltd.
CIAS	Changi International Airport Services Pte. Ltd.
DBS	Development Bank of Singapore
EDB	Economic Development Board
GIC	Government of Singapore Investment Corporation
HCS	Health Corp. of Singapore
HDB	Housing Development Board
INTRACO	Intraco Ltd.
JBP	Jurong Bird Park Pte. Ltd.
JEE	Jurong Environmental Engineering Pte. Ltd.
JTC	Jurong Town Corporation
MNDH	MND Holding Pte. Ltd.
NCB	National Computer Board
NOL	Neptune Orient Line Ltd.
POSB	Post Office Saving Bank
PSA	Port of Singapore Authority
PUB	Public Utility Board
SA	Singapore Aerospace Ltd.
SHP	Sembawang Holding Pte. Ltd.
SIA	Singapore Airlines Ltd.
SJP	Singapore Japan Pte Ltd.
STE	Singapore Technology Pte. Ltd.
STH	Singapore Technologies Holdings Pte. Ltd.
STIC	Singapore Technologies Industrial Corp. Pte. Ltd..
STPB	Singapore Tourist Promotion Board
TAS	Telecommunication Authority of Singapore
TDB	Trade Development Board
THL	Temasek Holdings Pte. Ltd

Source: Directory of Government-Linked Companies, 1991

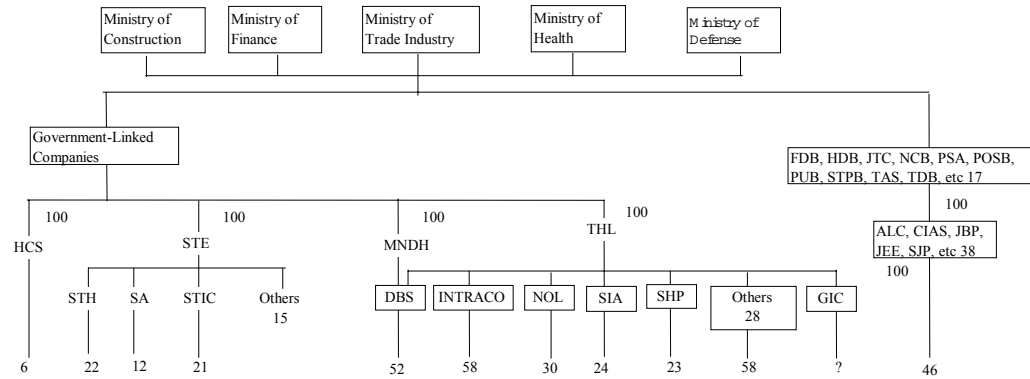
Figure 1. Foreign Direct Investment as % of GDP in Four Countries



Source: Compiled by Daiwa Institute of Research based on data from IMF "International Financial Statistics"

Figure 2a. Structure of Government-linked Corporations in Singapore

(see Table 12 for abbreviations)



Source: Directory of Government-Linked Companies, 1991

Figure2b. Control Hierarchy of GLCs

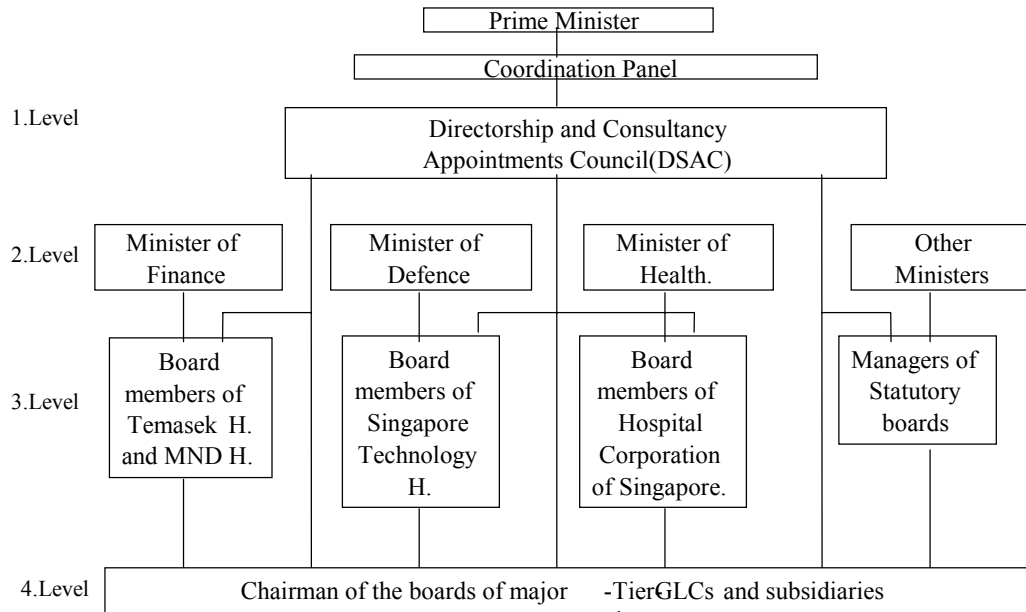
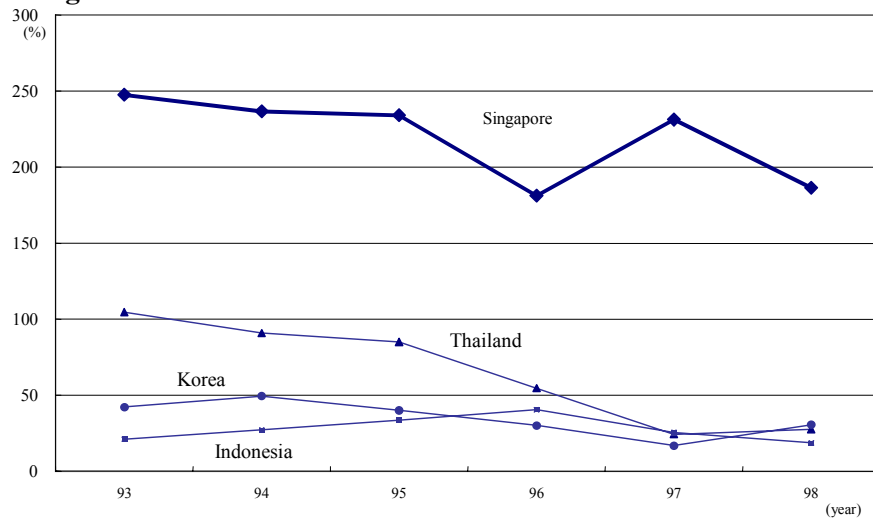
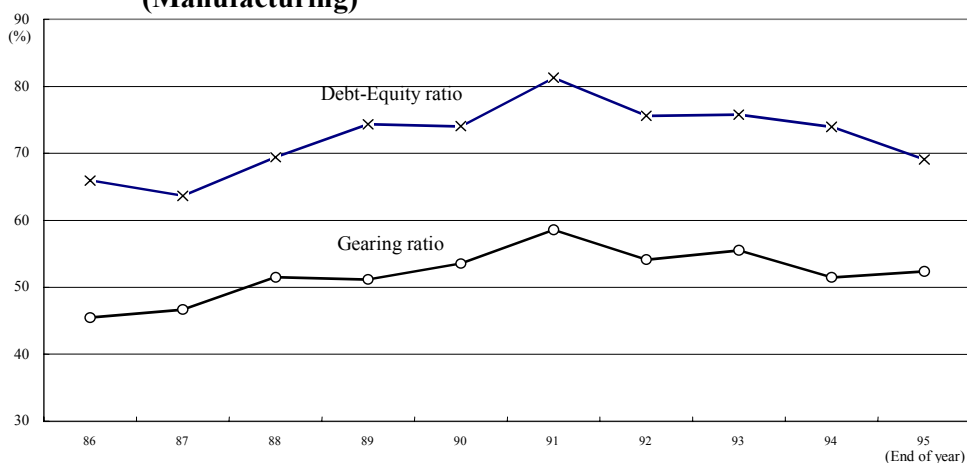


Figure 3. Size of Stock Markets as % of GDP in Four Countries



Source: Compiled by Daiwa Institute of Research based on data from IMF "International Financial Statistics"

Figure 4. Debt-Equity Ratio and Gearing Ratio of All Corporations in Singapore (Manufacturing)

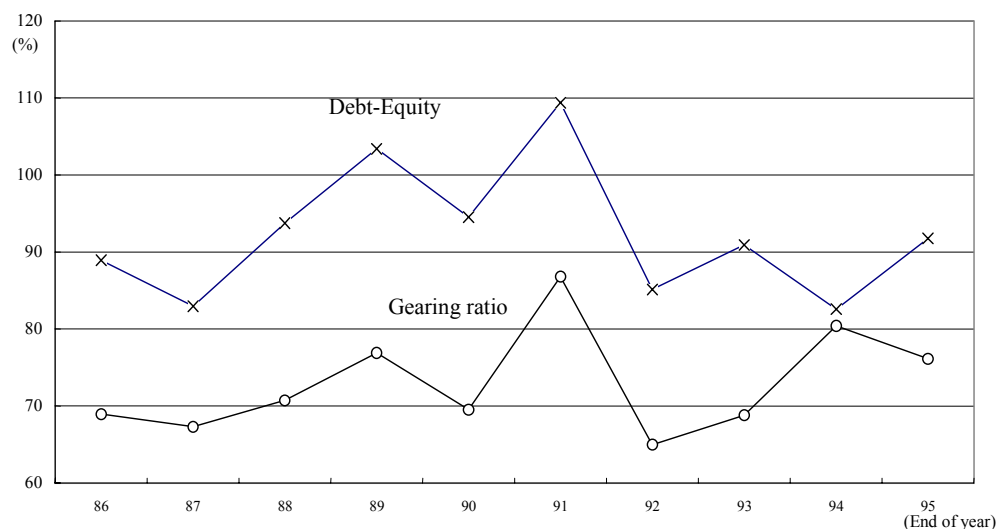


Note: D/E ratio = (current liabilities + long-term debts) / shareholders' equity

Gearing ratio = ((current liabilities + long-term debts) - cash) / shareholders' equity

Source: Department of Statistics Singapore "Singapore's Corporate Sector 1986-1995" and compiled by Daiwa Institute of Research

Figure 5. Debt-Equity Ratio and Gearing Ratio of Local-Controlled Corporations in Singapore (Manufacturing)



Note: D/E ratio = (current liabilities + long-term debts) / shareholders' equity

Gearing ratio = ((current liabilities + long-term debts) - cash) / shareholders' equity

Source: Department of Statistics Singapore "Singapore's Corporate Sector 1986-1995" and compiled by Daiwa Institute of Research

Figure 6. Debt-Equity Ratio and Gearing Ratio of Foreign-Controlled Corporations in Singapore (Manufacturing)

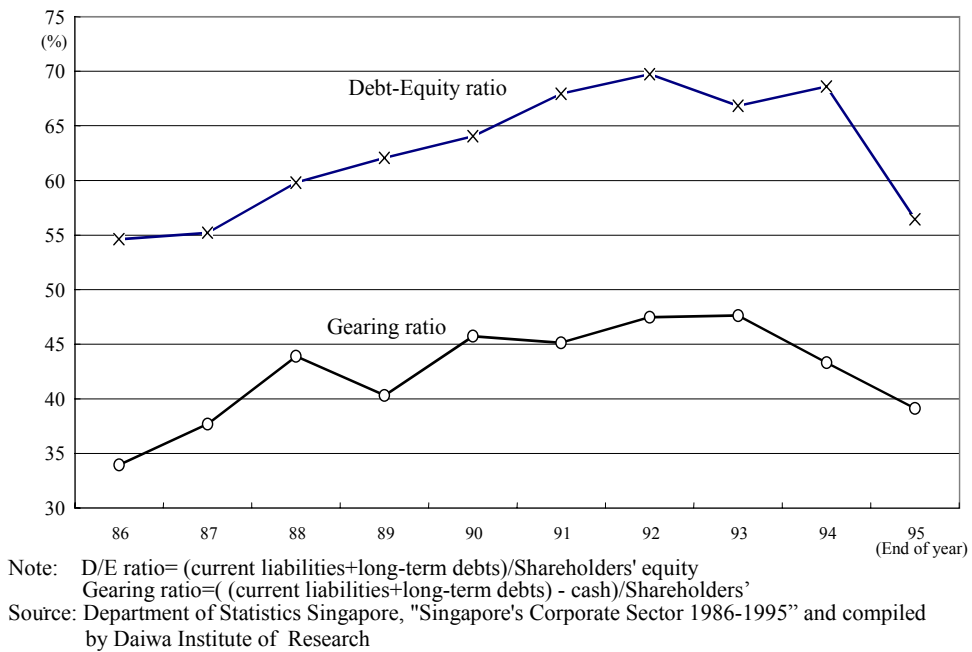


Figure 7. The Scale of Foreign Currency Reserves as % of GDP in Four Countries

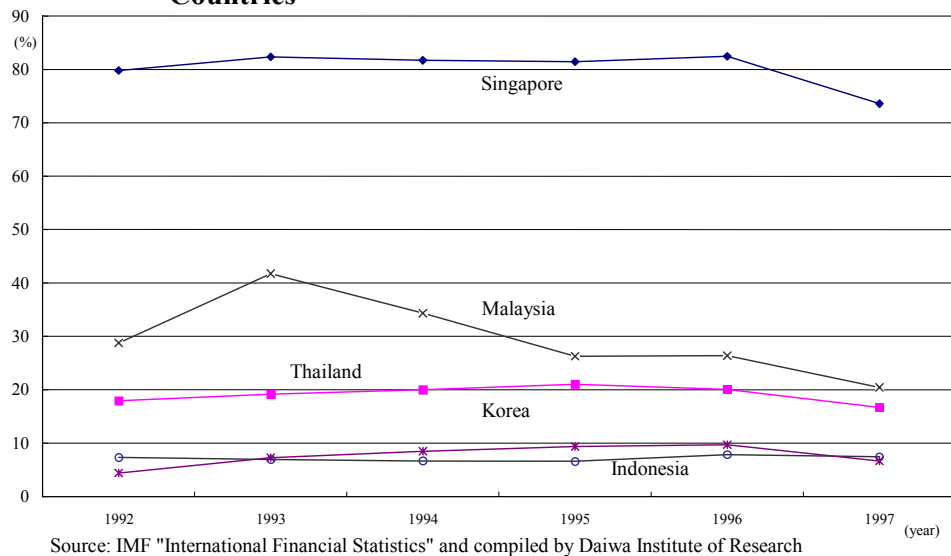
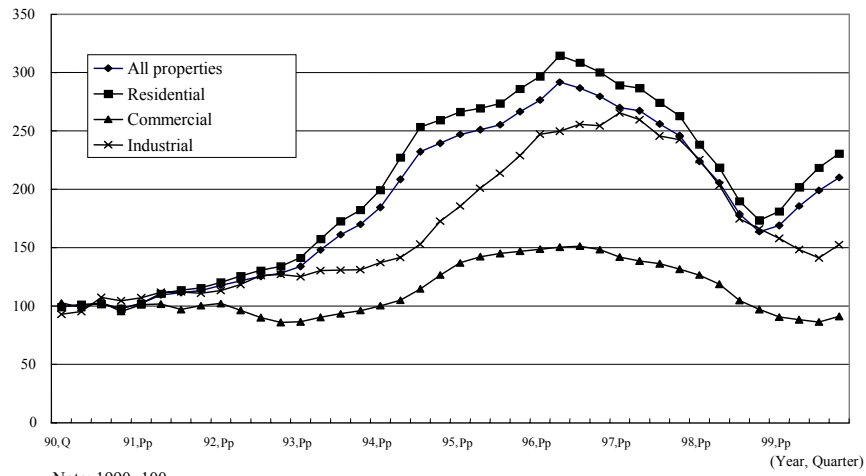


Figure 8. Property Prices Indices by Type in Singapore



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