

Rising to the Challenge in Asia: A Study of Financial Markets

Volume 3
Sound Practices

Asian Development Bank
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Foreword

The Asian currency and financial crisis has had far-reaching effects on the regional economies and their trading partners. These effects have threatened to wash away the region's significant social and economic advancement achieved during the preceding years of rapid growth. The crisis has also unveiled many intricate problems and challenges in macroeconomic management, banking and capital markets management, institutional capacity, and governance of the financial systems in the region.

Recognizing the urgency of addressing these problems and challenges, the Economics and Development Resource Center of the Asian Development Bank undertook a regional study of financial markets in nine developing member countries: People's Republic of China, India, Indonesia, Republic of Korea, Malaysia, Pakistan, Philippines, Thailand, and Viet Nam. The objectives of the study were to analyze and deepen the understanding of the sources of the crisis in currency and financial markets, to provide a useful basis for designing and implementing preventive measures and refocused country strategies, and to help the Bank and its member countries build robust and sustainable financial systems in the region.

The study was designed, supervised, and coordinated by S. Ghon Rhee, Resident Scholar, 1997–1999. A large number of Bank staff and renowned scholars and experts contributed to this study.

Regional policy issues and recommendations based on the findings of the study were discussed at the High-Level Workshop on the Asian Financial Crisis in Tokyo, on 25–26 March 1999. This workshop was hosted by the Bank, the ADB Institute, and the Institute of Fiscal and Monetary Policy of the Ministry of Finance of Japan.

The present series of publications seeks to bring the research findings to a much wider audience and hopes to contribute to a better understanding of the Asian financial crisis and how its recurrence can be prevented in the future.

Jungsoo Lee
Chief Economist

Preface

Rising to the Challenge in Asia: A Study of Financial Markets presents the findings of a study carried out under *Regional Technical Assistance 5770: Study of Financial Markets in Selected Member Countries*. Many Asian Development Bank staff members and outside experts contributed to the study's successful completion.

The core members for the study were Ramesh Adhikari, David Edwards, Tobias Hoschka, Sudipto Mundle, Soo-Nam Oh, Pradumna Rana, Yutaka Shimomoto, Reza Siregar, Peggy Speck, Ramesh Subramaniam, and Vo Van Cuong. The outside experts were Stephen Cheung (Hong Kong, China), Yoon Je Cho (Republic of Korea), Jang-Bong Choi (Republic of Korea), Catherine Chou (Hong Kong, China), G.H. Deolalkar (India), Maria Socorro Gochoco-Bautista (Philippines), Akiyoshi Horiuchi (Japan), Masahiro Kawai (Japan), Mohammad Zubair Khan (Pakistan), Joseph Y. Lim (Philippines), Sang-Koo Nam (Republic of Korea), Anwar Nasution (Indonesia), Edward Ng (Singapore), Jaeha Park (Republic of Korea), Mohd. Haflah Piei (Malaysia), Ken-ichi Takayasu (Japan), Khee Giap Tan (Singapore), S. K. Tsang (Hong Kong, China), Stephen Wells (United Kingdom), Richard Werner (Germany), Min-Teh Yu (Taipei, China), and Barents Group LLC (KPMG).

Thirty-seven reports are contained in a series of 12 volumes:

Volume 1: Regional Overview

- Macroeconomic Policy Issues
- Banking Policy Issues
- Capital Market Policy Issues

Volume 2: Special Issues

- Asset Management Entities
- Deposit Protection Schemes

Volume 3: Sound Practices

- Corporate Governance (Hong Kong, China)
- Currency Board (Hong Kong, China)
- Central Provident Fund (Singapore)
- Dichotomized Financial System (Singapore)
- Banking Sector (Taipei, China)

Volumes 4–12: Country Studies

- Macroeconomic Policy Issues
- Banking Policy Issues
- Capital Market Policy Issues

The volumes benefited extensively from constructive comments from the Bank interdepartmental working group, and the ministries of finance, central banks, and securities and exchange commissions of the nine member countries that participated in the regional technical assistance study program and in the High-Level Workshop on the Asian Financial Crisis in Tokyo, on 25–26 March 1999. Mitsuo Sato, former President of the Asian Development Bank; Bong-Suh Lee, former Vice-President (Region West); and Peter Sullivan, Vice-President (Region East) provided strong support and guidance throughout this project.

Soo-Nam Oh coordinated the research and publication activities. Wilhelmina Paz, Lagrimas Cuevas, Anthony Ygrubay, Ruben Mercado, Virginia Pineda, and Rosalie Postadan provided administrative and technical support. The volumes were edited by Gloria Argosino, Mary Ann Asico, Graham Dwyer, and Muriel Ordoñez. Typesetting, computer graphics, and conceptualization of the cover design were done by Segundo de la Cruz, Jr.

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(June 1997–June 1999)

Contents

<i>Foreword</i>	iii
<i>Preface</i>	v
<i>Acronyms and Abbreviations</i>	x

Corporate Governance in Hong Kong, China: Rising to the Challenge of Globalization	1
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Stephen Y. L. Cheung

INTRODUCTION	2
STATE OF CORPORATE GOVERNANCE	2
Characteristics of Firms	2
Regulatory Framework	3
PROBLEMS ENCOUNTERED AND MEASURES UNDERTAKEN	6
Ensuring Independence of Management	6
Disclosure and Transparency	7
Financial Disclosure of People's Republic of China Companies Listed on the Stock Exchange of Hong Kong, China	8
MAJOR CASES OF POOR CORPORATE GOVERNANCE	9
The Peregrine Case	9
The CA Pacific Securities Case	10
POLICY RECOMMENDATIONS	11
PROSPECTS FOR THE ENHANCEMENT OF CORPORATE GOVERNANCE	12
APPENDIX	15
NOTES	17
REFERENCES	17

The Currency Board Arrangement in Hong Kong, China: Viability and Optimality Through the Crisis	21
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Shi-ki Tsang

SUMMARY	22
Overview	22
The Currency Board Arrangement in Hong Kong, China	22
Technical Assessment	23
Economic Optimality	24
Relevance of Hong Kong, China's Experience for Asia	24

TECHNICAL FEASIBILITY AND OPTIMALITY: AN OVERVIEW	25
Currency Board Arrangements: Three Anchors for Fixing the Exchange Rate	25
Economic Optimality of Fixing the Exchange Rate Through a Currency Board Arrangement	27
THE CURRENCY BOARD ARRANGEMENT IN HONG KONG, CHINA	27
How the System Began	27
Initial Operations of the Link	28
Toward the Establishment of a Central Bank	30
The Strengthening of the Market Exchange Rate in the 1990s	31
The Real-Time Gross Settlement System	32
The Monetary Base and the Currency Board Arrangement	33
Autopilot(?) Developments after the October 1997 Attack	35
TECHNICAL ASSESSMENT	37
Vulnerability, Strength, and Uniqueness of the Currency Board Arrangement	37
Cash Arbitrage as a Nonstarter	37
The Argentina, Estonia, Lithuania Model of a Convertible Monetary Base	38
Reservations about the Argentina, Estonia, Lithuania Model	40
Overall Comments on Technical Feasibility	42
ECONOMIC OPTIMALITY	42
Williamson's "Four Virtues and Seven Vices" of Currency Board Arrangement	42
The Economics of Small Open Economies: Fixed versus Floating Exchange Rate	44
Growth and Inflation in Hong Kong, China	45
Inflation and Asset Price Bubbles	46
Overall Comments on Optimality	48
RELEVANCE OF HONG KONG, CHINA'S EXPERIENCE FOR ASIA	49
Hong Kong, China's System as an Idiosyncratic Currency Board Arrangement	49
Can Hong Kong, China's System or the Argentina, Estonia, Lithuania Model Be Imitated?	49
Indonesia as an Example	50
NOTES	52
REFERENCES	52
 Central Provident Fund in Singapore: A Capital Market Boost or a Drag?	 55
<i>Edward Ng</i>	
 A BRIEF HISTORY	 56
Central Provident Fund as a Financing Tool	56
CHANGES IN THE CENTRAL PROVIDENT FUND SCHEME	57
THE CENTRAL PROVIDENT FUND SCHEME AND THE DEVELOPMENT OF THE GOVERNMENT BOND MARKET	59
ISSUANCE OF GOVERNMENT SECURITIES	60
The Secondary Market and Trading System	62
Holdings of Singapore Government Securities	62
Turnover of Singapore Government Securities	62

THE CENTRAL PROVIDENT FUND SCHEME AND THE DEVELOPMENT OF THE EQUITY MARKET	64
Government Philosophy on Risky Investments with Central Provident Fund Savings	65
Central Provident Fund-Approved Investment Schemes	66
Impact of Central Provident Fund-Approved Investments on Trading Volume and Prices	68
MACROECONOMIC POLICY IMPLICATIONS OF THE CENTRAL PROVIDENT FUND'S ROLE	68
CONCLUSION	69
APPENDIXES	72
NOTES	80
REFERENCES	80

Singapore's Dichotomized Financial System 81

Tan Khee Giap and Chen Kang

SUMMARY	82
THE MACROECONOMIC CONTEXT AND ITS EFFECT ON FINANCIAL SECTOR POLICIES	84
THE DICHOTOMIZED FINANCIAL SYSTEM AND ITS EVOLUTION SINCE THE 1960s	85
Contribution of Financial and Business Services to Economic Growth	87
The Dichotomized Financial Structure: Conceptual Framework and Rationale	90
The Dichotomized Financial Sector: A Performance Review	91
A Two-Tier Financial Entity: The Domestic Banking Unit vs. the Asian Currency Unit	92
Regulatory Rules	95
Prudential Safeguards	98
The Dichotomized Financial System: Issues and Policy Implications	104
Management and Transmission Mechanism of the Singapore Dollar	104
Trade Competitiveness and Current- and Capital-Account Liberalization	107
Domestic Banking Unit vs. Asian Currency Unit: A Flow-of-Funds Analysis	112
Noninternationalization of the Singapore Dollar and Its Implications	120
Some Popular or Persuasive Arguments for Internationalization	123
Rules of the Game and the Role of Financial Institutions	125
CONCLUDING REMARKS: SOME OBSERVATIONS AND LESSONS	127
APPENDIXES	130
REFERENCES	139

Banking Environment and Reform Measures of Taipei, China 141

Min Teh Yu

INTRODUCTION	142
FINANCIAL INSTITUTIONS	143
Banking Institutions	144
Nonbanking Financial Institutions	150

CURRENCY RISK OF BANKS	151
Foreign-Exchange Market Development and Recent Changes	151
SUPERVISION AND EXAMINATION	153
Deposit Insurance System	153
BANKING BUSINESS ENVIRONMENT	156
Asset and Liability Management Standard for Most Banks	156
RECOMMENDATIONS	162
Close Insolvent Institutions Immediately	162
Convert Community Financial Institutions Into Commercial Banks	163
Institute a More Accountable Regulatory Framework and Transparency of Information	163
Privatize Government-Owned Institutions	163
Deal with the Problem of Lack of Confidence	163
Check Government Guarantees	163
Develop Regional and International Economic Coordination	164
REFERENCES	165

Acronyms and Abbreviations

ACU	Asian currency unit
ADM	Asian dollar market
AEL	Argentina, Estonia, Lithuania model
AES	Approved Education Scheme
ALCO	asset-liability management committee
ALM	asset-liability management
ANRPS	Approved Nonresidential Properties Scheme
ARPS	Approved Residential Properties Scheme
ASEAN	Association of Southeast Asian Nations
BCCS	Board of Currency Commissioners, Singapore
BIS	Bank for International Settlements
BIS	Basic Investment Scheme
BOT	build-operate-transfer
CAMEL	capital adequacy, asset quality, management, earnings, and liquidity
CBA	Currency Board Arrangement
CBC	Central Bank of China
CDC	China Development Corporation
CDIC	Central Deposit Insurance Corporation
CDP	central depository
CEO	chief executive officer
CI	certificate of indebtedness
CMU	Central Moneymarket Unit
CPF	Central Provident Fund
CPFAIS	Central Provident Fund-Approved Investment Scheme
CPFIS	Central Provident Fund Investment Scheme
CPI	consumer price index
CRPRS	Call Report Percentile Ranking System
CSFC	Committee on Singapore's Financial Competitiveness
CSRC	China Securities Regulatory Commission
DBU	domestic banking unit
DCB	domestic commercial banks
DSPI	domestic supply price index
DITIC	Dalian International Trust and Investment Company
DvP	delivery versus payment
EC	effective cost
EDI	electronic data interchange
EDRS	Examination Data Rating System
EIS	Enhanced Investment Scheme
EMU	European Economic and Monetary Union
FCGF	Farmers Credit Guarantee Fund
FSRG	Financial Sector Review Group
GDP	gross domestic product

GIC	Government Investment Corporation
GITIC	Guangdong International Trust and Investment Corporation
GLC	government-linked companies
HDB	Housing and Development Board
HIBOR	Hong Kong interbank offered rate
HKAB	Hong Kong Association of Banks
HKMA	Hong Kong Monetary Authority
HKSA	Hong Kong Society of Accountants
HPIS	Home Protection Insurance Scheme
HSBC	Hongkong-Shanghai Banking Corporation
HUDC	Housing and Urban Development Company
IAS	International Accounting Standards
ICBC	International Commercial Bank of China
IFIEWS	Insured Financial Institutions' Early Warning System
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commission
IPO	initial public offering
ISA	International Standards on Auditing
ITIC	international trust and investment company
JTC	Jurong Town Corporation
LAF	liquidity adjustment facility
LIBOR	London interbank offered rate
LOLR	lender of last resort
M&A	merger and acquisition
MAS	Monetary Authority of Singapore
MCB	minimum cash balance
MINDEF	Ministry of Defense
MNC	multinational corporation
MOF	Ministry of Finance
MSS	Minimum Sum Scheme
MTI	Ministry of Trade and Industry
NBFI	nonbanking financial institution
NC	nominal cost
NCD	negotiable certificate of deposit
NDF	nondeliverable forward
NEER	nominal effective exchange rate
NER	nominal exchange rate
NFIEWS	National Financial Institutions' Early Warning System
NIB	note-issuing bank
NIE	newly industrialized economy
NIWM	note-issuance and withdrawal mechanism
NPL	nonperforming loan
NRPS	Nonresidential Properties Scheme
NT	New Taiwan
OBSA	off-balance-sheet activities

OBU	offshore banking unit
OECD	Organization for Economic Cooperation and Development
OECDF	Overseas Economic Cooperation Development Fund
OHQ	operating headquarters
OTC	over the counter
P/E	price/earnings
PECC	Pacific Economic Cooperation Council
PHS	Provident Housing Scheme
PRC	People's Republic of China
PSS	postal savings system
PvP	payment versus payment
RC	reserve cost
RECI	relative export competitiveness index
REER	real effective exchange rate
RER	real exchange rate
ROA	return on assets
ROE	return on equity
RTGS	real-time gross settlement
RULC	relative unit labor cost
SAR	Special Administrative Region
SBS	Singapore Bus Service Ltd.
SDIO	Securities Disclosure of Interest Ordinance
SE	Singapore Exchange
SEHK	Stock Exchange of Hong Kong
SES	Stock Exchange of Singapore
SESDAQ	Stock Exchange of Singapore Dealing and Automated Quotation
SFC	Securities and Futures Commission
SGSM	Singapore government securities market
SGS	Singapore government securities
SIMEX	Singapore International Monetary Exchange
SMBCGF	Small and Medium Business Credit Guarantee Fund
SOTUS	Share Ownership Top-Up Scheme
SSAP	Statements of Standard Accounting Practice
ST	Singapore Telecommunications
ULC	unit labor cost
UVI	unit value index
VAR	value at risk

Korea refers to the Republic of Korea.



Corporate Governance in Hong Kong, China

Rising to the Challenge of Globalization

Stephen Y. L. Cheung

Introduction

Corporate governance refers to the rules and incentives by which the management of a company is directed and controlled to maximize the profitability and long-term value of the firm for shareholders while taking into account the interests of other legitimate stakeholders (Stone, Hurley, and Khemani 1998).

Corporate governance mechanisms may be broadly classified as external and internal mechanisms (Agrawal and Knoeber 1996). External mechanisms are determined by outsiders. These include institutional shareholdings, outside block holdings, and takeover activity. Internal mechanisms are decided by the firm's decision makers. These consist of insider shareholding, board membership and characteristics (such as size of the board, number of outside independent directors, and remuneration committees), debt financing, and the use of outside markets for managerial talent.

Good corporate governance, complemented by a sound business environment, can strengthen private investment, corporate performance, and economic growth. A comparison of corporate governance among Asian economies¹ indicated that Hong Kong, China (along with Malaysia and Singapore) maintains significantly higher standards of corporate governance and at the same time has developed more sophisticated and adequate legal systems to protect property rights than the rest of the countries in the region (Nam, Kang, and Kim 1999).

Although Hong Kong, China was also hard hit by the Asian financial turmoil, it has weathered the storm strongly and confidently. Between June 1997 and March 1998, the market capitalization of the Stock Exchange of Hong Kong (SEHK) shrank by 24 percent while that of other regional securities markets lost from 15 to 79 percent in US dollar terms.²

Hong Kong, China's trading, settlement, and risk management systems continued to work well throughout the period of volatility in the securities and futures markets. The institutional and regulatory frame-

work put in place in the last 10 years have proved to be effective in providing an open, fair, and orderly market. In the two cases where provisional liquidators had to be appointed in respect of Peregrine and CA Pacific, the failure of these companies did not cause any substantive systemic problem, nor did they lead to further volatility in the market (Financial Services Bureau 1998).

This study documents the corporate governance system in Hong Kong, China, to draw lessons from its strengths and weaknesses. It discusses the characteristics of the economy's firms, the regulatory framework, the problems encountered, and the measures undertaken, as well as additional recommendations to address them. Major cases of financial collapse arising from poor corporate governance are presented along with government actions to deal with them. The study provides specific policy recommendations and concludes with a discussion of prospects for the further enhancement of corporate governance in Hong Kong, China.

State of Corporate Governance

Characteristics of Firms

OWNERSHIP

In Hong Kong, China, most listed companies tend to be controlled by families. According to a survey of the ownership structure of 553 listed companies in the economy in 1995 and 1996 (Hong Kong Society of Accountants [HKSA] 1997b), 53 percent have one shareholder or one family group of shareholders owning more than half of the entire issued capital. Control by a single shareholder or family group extends to more than 35 percent of issued capital in 77 percent of the companies, and more than 25 percent of issued capital in 88 percent of the companies. The fact that a single shareholder or family group has majority ownership in most of the listed companies reflects the dominance of family-owned companies in the economy of Hong Kong, China.

MANAGEMENT

Typical of the tight control of the owner groups over the listed companies is the majority shareholder also serving as the chief executive officer (CEO) of the company. The board of directors is also dominated by family members. The HKSA report shows that in 9 percent of the companies, at least half of the directors are family members. Among the companies in which more than 50 percent of issued capital is controlled by a single shareholder or family group, 73 percent have boards where 50 percent or more of the directors are family members. In 30 percent of the companies surveyed, family members hold 50 percent or more of the executive director positions.

Regulatory Framework

The current framework of corporate governance in Hong Kong, China includes both statutory and nonstatutory requirements. Statutory requirements consist of the Companies Ordinance, Securities (Disclosure of Interests) Ordinance, Securities (Insider Dealing) Ordinance, and Takeover Codes. Nonstatutory requirements are those specified under the Listing Rules covering the number of independent non-executive directors, disclosures of connected transactions, and disclosures of the different components of directors' remuneration.

REGULATORY BODIES

The Stock Exchange of Hong Kong is the primary front-line regulatory organization responsible for the day-to-day supervision and regulation of listed companies, their directors and controlling shareholders, and market users generally in respect of all listing-related matters. It performs a self-regulatory function, overseeing the conduct of its members, and operates a stock market providing a wide variety of products ranging from ordinary shares to options, warrants, unit trusts, and debt securities.

The Securities and Futures Commission (SFC) exercises prudential supervision over the securities,

futures, and financial investment industries. All rules made by the two exchanges (SEHK and Hong Kong futures Exchange [HKFE]) and the clearing houses are subject to SFC approval.

SFC administers statutory requirements to ensure full disclosure and fair treatment of the investing public. It regularly monitors trading in the securities and futures markets to detect possible malpractices. It also conducts periodic inspection visits of registered persons and makes inquiries in response to public complaints about misconduct by intermediaries and market malpractice.

SFC is empowered to inspect a listed company's books and records if its directors and officers are suspected of impropriety in the management of a company's affairs. Disciplinary actions and civil and criminal sanctions range from private or public censure to suspension or revocation of a license. Regarding criminal actions, SFC is responsible for the investigation of various criminal offenses and while it prosecutes minor offenses, serious matters are prosecuted at the independent discretion of the Director of Public Prosecutions.

SFC also has frontline regulatory responsibility for takeovers and mergers, offers of investment products, and financial intermediaries other than SEHK and HKFE members. Executive rulings at the request of any dissatisfied party and disciplinary matters are heard by the Takeovers and Mergers Panel, a committee established by SFC. The panel consists of representatives of SFC, SEHK, financial institutions, and other constituencies with an interest in takeovers and mergers.

Hong Kong, China's securities market regulations fully comply with the principles of the International Organization of Securities Commission (IOSCO).

ORDINANCES

To ensure that listed companies are properly run and the rights of minority shareholders are protected, Hong Kong, China has various rules and codes for

specific areas of abuse. The following are the statutory requirements relating to corporate governance.

SEHK's Listing Rules are the main instrument for strengthening the principles and practice of corporate governance in listed companies. The rules state that directors are responsible for the management and operations of the listed companies, and are expected to fulfill their fiduciary duties (both collectively and individually) with as much skill, care, and diligence as commensurate at least with the standards set by the laws of Hong Kong, China. At least two nonexecutive directors must sit on the board of a company to ensure its independence and to minimize the influence of majority shareholders. Important amendments to the Listing Rules require the disclosure of directors' emoluments and other information, and a statement of directors' interests in the companies' five largest suppliers or customers. However, the Listing Rules have no legal effect, the most severe form of punishment being public censure and a period of cold shouldering.

SEHK's Code of Best Practice (see Box) serves as a guide for directors of listed companies. Although compliance with the code is voluntary, listed companies are required to state in their interim reports the extent of their compliance with the code during the accounting period covered.

The Companies Ordinance has important provisions regarding the establishment, organization, and management of companies, including such aspects as the issuance of shares and bonds, auditing, annual meetings, and the accountability of directors and other officers. These provisions apply to SEHK members and to corporations registered with SFC.

Under the Companies Ordinance, statutory reports are required annually for companies incorporated in Hong Kong, China and for overseas companies listed on SEHK. There are special accounting requirements for regulated entities, such as banks, securities dealers, and insurance companies. The Companies Ordinance stipulates the minimum disclosures that should be made in financial statements.

The Securities (Disclosure of Interests) Ordinance (SDIO) requires directors (including their spouses and children) and substantial shareholders (those holding at least 10 percent of the company's relevant share capital) to disclose their interest in the listed companies to SEHK. The aim is to provide a fair, orderly, transparent, and efficient market for listed securities. Substantial shareholders are required to notify SEHK of any additional acquisition or disposal of relevant shares.

SDIO also provides a regulatory framework and disclosure requirements for connected transactions. The Listing Rules define a connected transaction as a transaction between a listed issuer or its subsidiary and a connected person. If the transaction primarily involves financial assistance by a connected person to a listed issuer, the shareholders' interests must be protected. SEHK normally requires connected transactions to be approved by the shareholders in a general meeting, and restrains the connected person from voting on the issue. Once the terms of the connected transaction are agreed, the issuer must inform SEHK as soon as possible. Moreover, an independent expert acceptable to SEHK should affirm in a separate letter the fairness and reasonableness of the transaction where the shareholders are concerned. The reasons for the transaction and some key assumptions made must be stated in the letter.

The Securities (Inside Dealing) Ordinance supervises the use of price-sensitive information in securities trading. Common examples of price-sensitive information are the signing of an important contract, the establishment of a significant joint venture, a fundraising exercise, and statements regarding the company's prospective earnings and dividends. To ensure an objective and orderly market, the ordinance imposes heavy penalties for serious offenses.

The Code on Takeovers and Mergers is a good example of self-regulation. Among its provisions is the concept of perfect secrecy up to the time a takeover or merger is completed. The code also ensures a high standard of accuracy and fair presentation in

Code of Best Practice for Listed Companies of the Stock Exchange of Hong Kong, China

The following guidelines are intended to form the skeleton of a code of best practice at which listed issuers should aim. They are not intended to be rules that are to be rigidly adhered to. All issuers are encouraged to devise their own codes of practice in the interest not only of their independent nonexecutive directors but of the board of directors as a whole.

- Full board meetings shall be held at least every six months. “Full” board meetings are meetings at which directors are physically present and not “paper” meetings or meetings by circulation.
- Except in emergencies, an agenda and accompanying board papers should be sent in full to all directors at least two days before the intended date of a board meeting (or such other period, as the board agrees).
- Except in emergencies, adequate notice of a board meeting should be provided to give all directors an opportunity to attend.
- All directors, executive and nonexecutive, are entitled to have access to board papers and materials. Where queries are raised by nonexecutive directors, steps must be taken to respond as promptly and fully as possible.
- Full minutes shall be kept by a duly appointed secretary of the meeting and such minutes shall be open for inspection at any time during office hours with reasonable notice by any director.
- The directors’ fees and any other reimbursement or emolument payable to an independent nonexecutive director shall be disclosed in full in the annual report and accounts of the issuer.
- Nonexecutive directors should be appointed for a specific term and that term should be disclosed in the annual report and accounts of the issuer.
- If, in respect of any matter discussed at a board meeting, the independent nonexecutive directors hold views contrary to those of the executive directors, the minutes should clearly reflect this fact.
- Arrangements shall be made in appropriate circumstances to enable the independent nonexecutive directors of the board, at their request, to seek separate professional advice at the expense of the issuer.
- Every nonexecutive director must ensure that he can give sufficient time and attention to the affairs of the issuer and should not accept the appointment if he cannot.
- If a matter to be considered by the board involves a conflict of interest for a substantial shareholder or a director, a full board meeting should be held and the matter should not be dealt with by circulation or by committee.
- If an independent nonexecutive director resigns or is removed from office, the exchange should be notified of the reasons for such action.
- Every director on the board is required to keep abreast of his responsibilities as a director of a listed issuer. Newly appointed board members should receive an appropriate briefing on the issuer’s affairs and be provided by the issuer’s company secretary with relevant corporate governance materials currently published by the exchange on an ongoing basis.
- The board should establish an audit committee with written terms of reference that deal clearly with its authority and duties. Among the committee’s principal duties should be the review and supervision of the issuer’s financial reporting process and internal controls. For further guidance on establishing an audit committee, listed issuers may refer to *A Guide for the Formation of an Audit Committee* published by the Hong Kong Society of Accountants in December 1997. Listed issuers may adopt the terms of reference set out in that guide, except that the committee may have a minimum of two members, or they may adopt any other comparable terms of reference for the implementation of audit committees. The committee should be appointed from among the nonexecutive directors and a majority of the nonexecutive directors should be independent.

Source: Stock Exchange of Hong Kong, China.

all communications to shareholders during the take-over or merger. Persons who acquire more than 35 percent of the shares of a company, for example, must extend an offer to all voting shareholders.

Other regulations that have a bearing on the listing of securities on SEHK are the Protection of Investors Ordinance, the Stock Exchanges Unification Ordinance, the Code on Unit Trusts and Mutual Funds, and the Code on Share Repurchases. These regulations set guidelines for Hong Kong, China’s

securities market to prevent improper trading and increase investors’ confidence.

ACCOUNTING AND AUDITING STANDARDS³

Companies make mandatory disclosures as specified by HKSA’s Statements of Standard Accounting Practice (SSAPs). In addition, there are accounting standards and guidelines that, unlike the SSAPs, are not mandatory but that define best practices and should normally be followed.

Before 1993, Hong Kong, China's accounting and auditing standards and guidelines were primarily based on equivalent UK standards. Since 1993, HKSA has modeled its SSAPs on the International Accounting Standards (IAS) and its statements of auditing standards on the International Standards on Auditing (ISA), with the long-term objective of achieving full harmonization with IAS and ISA.

HKSA promulgates accounting and auditing standards after detailed evaluation of the relevant international standard and the preparation of an Exposure Draft incorporating any additional guidance or amendments arising from Hong Kong, China legislation or regulations. The Exposure Draft is released to all members, listed companies, regulators, chambers of commerce, and academics (and posted on HKSA's website on the Internet) for comment, and finalized after a review of the comments. Compliance with accounting standards is enforced by the Hong Kong Monetary Authority (HKMA) (for authorized banking institutions), SFC (for securities dealers), Insurance Authority (for insurance companies), and SEHK (for listed companies).

Accounting firms are selected for review at random and not in response to any complaint or referral. Reviewers are full-time employees of HKSA, and undertake on-site visits to the firms. They are given statutory powers of access to files and other information generated by the auditors. In appropriate cases, disciplinary action is taken to deal with cases of non-compliance with professional standards. Sanctions include fines and the suspension of licenses.

Problems Encountered and Measures Undertaken

Ensuring Independence of Management

Effective corporate governance depends on the separation of authority between a firm's managers, board of directors, and majority and minority shareholders. Managers are held accountable when there is inde-

pendent oversight by the board and an external auditor (Organisation for Economic Co-operation and Development [OECD] 1998).

Independent nonexecutive directors are seen to bring independent judgment to the overall strategy of the company, including key appointments and performance standards. To ensure their independence, they should be free of any business or financial connections with the company apart from their fees and shareholdings.

In Hong Kong, China, where most listed companies are dominated by one individual or family, the functions of chairman and chief executive officer are often difficult to separate in practice. Companies also have difficulty recruiting truly independent nonexecutive directors. In some cases, CEOs select the nonexecutive directors, compromising their independence.

Hong Kong, China has adopted the following recommendations of the UK Cadbury Report (1992) relating to boards of directors: mixing executive and nonexecutive directors on the board and guaranteeing the quality and quantity of nonexecutive directors; enabling independent nonexecutive directors to seek separate professional advice; and requiring regular board meetings, including two meetings to announce the interim and the annual results. Amendments made to the Listing Rules in 1993 require all listed companies to have at least two independent nonexecutive directors. SEHK guidelines clarify the qualifications, appointment, and role of these directors. Taking another step toward better corporate governance, SEHK published the *Guide for Directors of Listed Companies* in December 1996 to remind directors of their duties under the Listing Rules and the listing agreement. The guide even suggests what directors can say in front of reporters and analysts, and what they can do when remarks are inaccurately reported. Both issuers and directors are required to comply with the provisions of the guide.

The government should also consider adopting the other recommendations of the Cadbury Committee.

One such recommendation is the separation of the roles of CEO and chairman in large companies. There is no such listing requirement yet in Hong Kong, China. Another recommendation is the establishment of a nomination committee by the board of directors. The nomination committee can enhance the independence of the board structure. The boards of directors should also make efforts to improve their standards and procedures so as to strengthen the status and independence of nonexecutive directors.

Disclosure and Transparency

Corporations must provide adequate, accurate, and timely information to shareholders and the public regarding financial performance, liabilities, ownership, and corporate governance issues. This is critical if investors are to be able to make informed judgments on the risks and rewards of any investment (OECD 1998).

DIRECTORS' PAY

In Hong Kong, China, as in many Asian countries, the board generally determines its own remuneration. Without effective monitoring mechanisms, company directors may decide on excessive compensation that is totally unrelated to performance. The disclosure of executive remuneration is a key element in effective corporate governance. Minority shareholders can use this information to see whether senior management is deciding judiciously on executive compensation. This should also be an important portfolio selection criterion for institutional investors.

Disclosure of directors' compensation is an effective way of improving the corporate governance structure in Hong Kong, China. The rapid increase in directors' pay during the 1990s, associated particularly with stock options, has heightened the need for disclosure of directors' emoluments. To improve accountability and transparency in directors' remuneration, SEHK, since 1990, has urged listed companies to disclose their directors' remuneration on a voluntary basis. It has ruled that annual reports from

1995 onward must disclose information on the compensation of the top executives of listed companies. The information includes the total cash compensation for each of the five highest-paid directors and for the directors as a group. In addition to disclosure, it would be advisable for senior management to form an independent remuneration committee with nonexecutive board members to make remuneration decisions, as recommended in the Cadbury Report.

CONNECTED TRANSACTIONS

In the early 1980s, banks in Hong Kong, China, which were then mostly owned by families, encountered difficulties. Reckless lending to connected parties was the major factor behind the banking problems. In order to deal with such abuses, the power to regulate bank ownership structure was strengthened and restrictions on connected lending were implemented under the Banking Ordinance in 1986. Since then, various legislative provisions and policy guidelines have been continuously updated by HKMA to achieve internationally accepted standards. Currently, most banks belong to financial groups, and the approval of HKMA is required in order to acquire 10 percent or more shares. Any person who exercises indirect control over the directors, even without voting rights, is also subject to approval by HKMA. With these efforts, the banking sector has played an important role in corporate governance. Banks are allowed to have equity shares in nonfinancial businesses of only up to 25 percent of their capital base. Despite this restriction on banks' equity ownership of nonfinancial businesses, banks have been able to effectively control corporate governance through efficient lending practices based on prudent risk assessment and reliable financial information (Nam, Kang, and Kim 1999).

Hong Kong, China requires shareholder approval and disclosure of connected transactions. SEHK tracks companies and directors who fail to notify shareholders about connected transactions. In early June 1995, Cheerful Holdings (which was listed in

April 1994) announced its failure to disclose a major connected transaction correctly. Its subsidiary, Cheerful Finance, had lent a total of HK\$197 million to International Cheerful (Holdings), a firm controlled by husband-and-wife directors Johnny Chee Jing-yin and Lisa Chee Siu-ling, although Cheerful Holdings made net profits of only HK\$24.98 million in 1994, and had net current assets of only HK\$128.3 million. The firm, in effect, had lent cash in excess of its net assets through its subsidiary company. This was revealed in its annual report, and the company was asked to make a statement by the SEHK Listings Division (*South China Morning Post [SCMP]*, 2 June 1995). The recommended practice is for a company to avoid any connected transactions.

OTHER MEASURES TO IMPROVE TRANSPARENCY AND DISCLOSURE

Improvements in the Listing Rules in April 1995 tightened the internal controls of companies. Listed companies must now disclose tax charges, changes in the provision for bad and doubtful debts, and capital adequacy and liquidity ratios.

To make corporate boards more effective, SEHK has likewise announced that annual and interim reports for accounting periods ending on or after 31 December 1995 should include a statement of compliance with the Code of Best Practice and give reasons for noncompliance.

The demand for greater corporate accountability has led some listed companies to adopt or to consider adopting audit committees. According to HKSA, only 2 percent of listed companies had audit committees in 1995. Although the concept is still evolving, the role of the independent auditor is considered vital to corporate governance and accountability.

On 30 June 1998, SFC issued a consultation paper on the revision of the Securities (Disclosure Interests) Ordinance. The main purpose of the consultation is to improve transparency. SFC suggests changing the substantial shareholding disclosure threshold from 10 to 5 percent, and shortening the

notification period from five calendar days to three business days.

Financial Disclosure of People's Republic of China Companies Listed on the Stock Exchange of Hong Kong, China

In step with the steady growth of H-shares and red chips, many investors have paid a great deal of attention to People's Republic of China (PRC)-listed companies in recent years. H-shares and red chips are shares in PRC enterprises or PRC-related enterprises listed in Hong Kong, China. The term "red chip" refers to PRC enterprises that have listed through acquisition and asset injection.

International investors often criticize PRC companies for their lack of transparency. Tougher guidelines introduced by the China Securities Regulatory Commission (CSRC) require companies to include accounting footnotes and a review of their business with the financial statements in their annual report to give a clearer picture of their financial status.

Most H-share companies were state-owned enterprises before their listing and still have the state as majority owner. They do not fully understand their obligations to their shareholders. Some of them seem uncertain about what constitutes price-sensitive information and how SEHK can be notified of this in a timely manner. These H-share companies, most of which are new to the market, have difficulty communicating effectively with the international investment community. Some tend to announce only good news, while others avoid communicating with the public altogether for fear of making inappropriate statements.

To protect investors, the Listing Rules for issuers from the PRC were amended in November 1994 and now require that PRC issuers comply with the same standards as those that apply to other companies listed in Hong Kong, China.

H-share companies need to improve in the following aspects:

- Understanding the obligations of a listed company toward its shareholders;
- Complying with disclosure requirements under the Listing Rules;
- Understanding the importance of effective communication with the international investment community; and
- Complying with other laws and regulations of Hong Kong, China.

The regulators of Hong Kong, China should monitor the performance of H-share companies and work effectively with the PRC regulatory authority to ensure the integrity of these companies.

Major Cases of Poor Corporate Governance

The Peregrine Case

BACKGROUND

Peregrine Investments Holdings Ltd. (Peregrine) was Asia's largest home-grown investment house outside Japan. The major activities of the Peregrine Group were investment holding, securities and equity brokerage, commodities and foreign-exchange brokerage, equity derivatives dealing, direct investments, and other financial services.

A major part of Peregrine's operations were in the equity market, but the company also issued and traded debt securities for Asian corporations. The Peregrine equity business earned a respectable US\$50 million a year, possibly the highest for any investment house in the region. The company's problems came mainly from concentrating its efforts in building up a fixed-income business, most of it in Asia. Peregrine generated most of its profit from Hong Kong, China with increasing contributions from other Asian countries. Hong Kong, China and other Asian economies accounted for 97 percent of the firm's total profit in 1996.

A major factor that contributed to the firm's collapse was its dealings with an Indonesian taxi company, Steady Safe. By mid-December 1996, Per-

egrine held US\$265 million worth of US dollar-denominated promissory notes from Steady Safe. The sum represented a third of Peregrine's total asset value. As the Indonesian rupiah began its precipitous fall in July 1997, trouble loomed. The rupiah hit 15,000 to the US dollar in January 1998, compared with a rate of about 2,200 a year earlier. This heralded a sharp drop in investor confidence. The dramatic plunge of the local currency rendered Steady Safe incapable of repaying the debt. In addition, there was no market for the debt issue because investors lacked confidence in Indonesia at that time. In the aftermath of the rupiah's plunge and investors' loss of faith in Indonesia, Peregrine's position in Steady Safe was worth only a small fraction of its original value. As it turned out, Steady Safe was not Peregrine's only problem. Even before Steady Safe's debt issue, the company had a huge position in Indonesian debt securities. Its debt equity-ratio had been very high—111 percent in 1996. At the time of the company's liquidation, Peregrine's debt portfolio amounted to US\$1 billion.

FAULTY RISK MANAGEMENT AND INTERNAL CONTROL SYSTEMS

One important question was who should be responsible for the large amounts advanced by the Peregrine fixed-income group. The amount involved was US\$265 million, and it is difficult to believe that anybody could make such a decision without the knowledge of the board or other senior management. Peregrine's risk management system must have been extremely lax. Under normal circumstances, a deal of this size would be considered a substantial transaction and should have been disclosed to the public under the listing regulations of SEHK. However, because this transaction involved an overseas party, it fell outside the regulatory framework.

According to an interview published in the *SCMP*, the chairman was not too familiar with the bond business. He had allowed his equity managers a great deal of freedom, and this freedom had simply been

extended to the fixed-income business. The managing director and another cofounder later stated that they had learned of the Steady Safe case at a very late stage, since they had been spending much of their time on the equities business and had not overseen the fixed-interest operations. However, if a business is moving into new areas or is developing new strategies, the board should be able to monitor and supervise the executive management in the new initiatives. If the senior management of Peregrine were not aware that this huge sum of money had been allocated to an Indonesian taxi company, then the internal controls were clearly faulty.

DISCLOSURE FAILURE

The information that Peregrine had built up fatally large exposures in the debt market became public just before the liquidation, showing that its officials had failed to disclose the true situation of the company to both SEHK and the company's shareholders. This is an inherent danger of the lack of transparency that is characteristic of many Asian businesses.

ACTION TAKEN AND RECOMMENDATION

The government of Hong Kong, China has hired an independent consultant to examine the Peregrine case and ascertain the lessons to be learned from it. The company's shareholders are the victims of the whole incident. It seems that the senior management did not fulfill their duty properly as directors, but it is not yet clear whether they will be prosecuted.

Financial institutions should be required to disclose more investment information, particularly on potential market risk. While it may not be realistic to expect these financial institutions to disclose the details of their investment strategies, it may be useful for investors if financial institutions were to include in their annual report a description of their risk management practices and the potential market risk of their portfolios.

The CA Pacific Securities Case

BACKGROUND

There are two types of investment accounts in Hong Kong, China: cash accounts and margin accounts. Cash accounts involve no leverage financing, and a brokerage house has no right to use a client's shares in a cash account as collateral for bank loans. The usual practice is for an affiliated finance company in the group to bridge the financial arrangement between banks and margin-account clients. These finance companies are not regulated by SFC. Since they are not involved in the banking business, they are also not regulated by HKMA.

CA Pacific Finance transferred shareholdings of cash accounts to margin accounts without the investors' knowledge. The investors' shares were used as collateral to secure bank loans. The company ran into liquidity problems because of the drop in the property and share markets. Shares used as collateral had been sold by the bank. Thus, investors in both cash and margin accounts lost their shares. CA Pacific Finance should have notified investors that their shareholdings were being used to secure bank loans. A detailed breakdown of the company's investment portfolio should also have been made known to investors, who could then have evaluated the risk of the brokerage house and decided whether or not to withdraw their shares.

As a result of the CA Pacific incident, public confidence in small- and medium-size brokerage houses dropped. Rumors of other houses in similar trouble spread. Investors rushed to liquidate their shares, causing chaos and showing a decline of public confidence in the financial market of Hong Kong, China. This problem was not new, as it had been mentioned in the Davison Report on the crash of the stock market in Hong Kong, China in October 1987.

In early May 1998, a small brokerage house, Forlux Securities, misused clients' shares to obtain margin financing without seeking approval, and conducted a money-lending business through a finance

arm. The owner disappeared, together with more than HK\$20 million worth of clients' shares. The crash of Forlux, coming as it did after the CA Pacific incident, further undermined public confidence in brokerages.

ACTIONS TAKEN AND RECOMMENDATIONS

After the CA Pacific and Forlux incidents, SEHK and SFC started conducting regular visits to selected brokerage houses and their associated finance companies that were thought to have the same potential problems. The objective of these visits is to ensure the financial soundness of the houses. Sixty houses have been selected for inspection to determine the adequacy of their risk management procedures related to share-margin financing.

Eventually, the Financial Services Bureau, SEHK, and SFC set up a special task force to ensure a proper monitoring system for brokerage houses. There is undoubtedly a need to strengthen control of finance companies affiliated with brokerage houses as, under the present regulatory structure, they are regulated by neither SFC nor HKMA. The current suggestion is that SFC will be responsible for monitoring the financial activities of these companies.

The regulatory framework should be improved to distinguish clearly between cash and margin accounts. Brokerage houses should be strictly prohibited from transferring shares from cash accounts to margin accounts. Clear guidelines on share-margin financing should be issued to brokerage houses. Indicators such as capital adequacy and risk management practice should be used to determine the financial stability of these houses. These information should be reported regularly to the regulator and eventually disclosed to the public in a timely manner. Finally, the regulator should spend more effort on investor education.

Policy Recommendations

In the long term, the globalization of financial markets will eventually shape corporate governance in

Hong Kong, China. Companies have to compete for capital. The international investment community will select companies with good corporate governance standards and good information disclosure. Then professional managers will play a more important role in running the company. To further improve corporate governance in Hong Kong, China, the following measures are recommended.

ENCOURAGE INCREASED PARTICIPATION FROM INSTITUTIONAL INVESTORS

Increased participation from institutional investors will definitely help protect the rights of minority shareholders. As minority shareholders are more interested in short-term capital gains than in the company's affairs, most will not even attend the company's annual meeting and their views will never be heard. Institutional investors, on the other hand, tend to have a longer-term interest in the company, and will take a more active role in the annual meeting. The launch of the Mandatory Provident Fund in Hong Kong, China in 2000 will definitely help in shaping the economy's standards of corporate governance.

PROMOTE INVESTOR EDUCATION

The general public should be continuously educated about shareholders' rights to enable them to participate effectively and vote in general meetings. Regulators should also ensure that shareholders are given enough information on the management and operations of the company and have enough time to digest this information before the meeting.

INCREASE FREQUENCY AND AVAILABILITY OF REPORTS

Major world markets are moving toward semiannual or quarterly reporting. Currently, Hong Kong, China's listed companies are required to report interim semiannual and annual accounts. SEHK may require more frequent disclosure of company accounts by listed companies. Listed companies should also make their annual reports available on their websites.

Disclosure of more information will enhance the transparency of the company.

PROMOTE GREATER TRANSPARENCY AND PROVIDE TRAINING FOR NONEXECUTIVE DIRECTORS

Procedures should be instituted to ensure that nonexecutive directors act in the best interest of the shareholders. For example, their remuneration and attendance at board meetings should be disclosed. Some of these nonexecutive directors come from different backgrounds and the board should provide them with the necessary training and support. In addition, the board should give them enough information on the operations of the company.

Prospects for the Enhancement of Corporate Governance⁴

In March 1999, the Financial Secretary announced a market reform package with three sets of objectives. The first objective is to modernize the regulatory framework by putting in place a new framework with clearer regulatory objectives and strengthened supervisory and investigative powers for SFC.

The second objective is to further enhance market infrastructure by setting up a single clearing arrangement for securities, stock options, and futures transactions; enhancing the financial technology architecture to facilitate direct processing of transactions across the financial markets; and moving toward a secure, scripless securities market through the use of robust networks. A Steering Committee on the Enhancement of the Financial Infrastructure was appointed to look at these issues and report to the Financial Secretary by September 1999.

The third objective of the market reform package is to modernize the market structure through the demutualization, merger, and public listing of the two exchanges and their clearing houses and the separation of ownership from trading rights. These changes

are aimed at enhancing responsiveness to market forces, bringing about economies of scale in terms of operational efficiency and infrastructure investment, facilitating risk management, and boosting Hong Kong, China's competitive position vis-à-vis other international markets. Public listing is also expected to enhance market discipline. The separation of ownership and trading rights is expected to bring about greater financial flexibility for members of the new entity, since the reforms would allow existing members to sell their shares in the company while retaining their trading rights.

The proposed new regulatory framework is embodied in the Securities and Futures Bill. The bill consolidates the existing laws governing the securities and futures markets, which are currently spread over some 10 ordinances and parts of the Companies Ordinance. In addition, it seeks to update certain terms and definitions to reflect developments in the financial markets, thereby simplifying the law and making it more user-friendly for market practitioners and users.

Major new regulatory measures include the following:

- *Introduction of a single license for market intermediaries to streamline regulatory arrangements and bring in new licensing requirements to enhance protection of clients' assets.*
- *Establishment of a civil Market Misconduct Tribunal (MMT) and expanding the existing criminal route to combat market misconduct.*
 - The bill will build on the strength of the Insider Dealing Tribunal and expand it into a Market Misconduct Tribunal. MMT will handle specified market misconduct activities, including insider dealing, and will apply the civil standard of proof, i.e., a balance of probabilities, in determining whether it is satisfied that cases referred to it have been proved.
 - MMT may order disgorgement of profits, order payment of legal costs and investigation

expenses, issue a “disqualification” order to disqualify a director from being a director of any listed company, issue a “cold shoulder” order (i.e., an order denying a person access to market facilities), issue a “cease and desist” order (i.e., an order not to breach the provisions of the bill again), and refer the possibility of disciplinary action to a body in which the person who has engaged in market misconduct is a member. Due care has been exercised in calibrating these civil sanctions to ensure that they are compatible with human rights requirements.

- As an alternative to the civil proceedings before MMT, the bill preserves and expands the existing criminal route for dealing with market misconduct activities, to be resorted to when there is sufficient evidence to meet the criminal standard and it is in the public interest to bring prosecution before the courts. The maximum penalty under the criminal route is 10 years’ imprisonment or a fine of up to US\$10 million. The rule against double jeopardy applies. A person cannot be tried in MMT and the courts for the same market misconduct.
- *Modernization of the disclosure regime for more timely dissemination of price-sensitive information to enable investors to make better informed decisions.* The bill reduces the disclosure threshold (from 10 to 5 percent) and time limit for disclosure (from five days to three business days). For greater transparency, certain disclosure requirements are also extended to securities interests held through derivative products. To reduce the compliance burden, the bill has also removed or simplified certain disclosure requirements.
- *Provision of assistance to investors in seeking compensation by creating specific private causes of action against market misconduct and false disclosure of information.* Under common law, a person who suffers loss as a re-

sult of market misconduct may be able to seek redress through civil action against a person responsible for the misconduct. The path to civil redress under common law can be costly and riddled with obstacles. The bill will create a right of civil action in respect of market misconduct for which the plaintiff can claim compensation for loss and other remedies. The relevant provisions will stipulate that a person may sue another person to recover losses resulting from the latter’s market misconduct if the court is satisfied that it is fair, just, and reasonable for him to do so. It will also allow the findings of MMT and criminal convictions of market misconduct to be admitted as evidence if they are relevant and probative to these civil proceedings.

- *Institution of a flexible framework for the regulation of automated trading services to facilitate market innovation.*

The bill provides the following new powers to SFC:

- *Allowing SFC to require access to the working papers of an auditor of a listed corporation in a preliminary inquiry into alleged misconduct of the corporation.* Current law authorizes SFC to review the books and records of a listed company when there is alleged misconduct in its management. Under the bill, SFC will be entitled to seek explanations of an entry from the listed company. It may also request access to the working papers of the company’s auditors. In addition, SFC may make inquiries of counterparties to transactions that the company has entered into. These enhancements will enable SFC to inquire more effectively into allegations of fraud or other misconduct in respect of listed companies. Particular efforts have been made to raise the thresholds required for the exercise by SFC of these new inquiry powers to ensure that they are reasonable and in line with present-day legal conventions in respect of the rights of third parties. The bill also contains provisions to implement an earlier proposal to

provide auditors of listed companies who report to SFC any suspected fraud or misconduct in the management of a listed company with statutory immunity from liability under common law. The choice to report is entirely voluntary. The bill intends only to give immunity from the threat of civil liability to auditors who choose to sound such a warning to SFC in the course of their auditing work.

- *Enabling SFC to impose civil fines on intermediaries as a more proportionate disciplinary sanction.* Currently, when a licensed person engages in any misconduct, the disciplinary sanctions that SFC may administer are public or private reprimands, and suspension or revocation of the intermediary's registration. Reprimands could be too light in many cases, yet suspending or revoking an intermediary's registration might be excessive. The bill will give SFC two additional sanction options which may be calibrated in accordance with the gravity of the misconduct. They are civil fines of up to US\$10 million or three times the amount gained or loss avoided, whichever is higher; and suspension or revocation of an intermediary's licence in respect of part of its business only.
- *Granting SFC standing to intervene in civil proceedings between third parties to protect*

the public interest. As the financial market and its infrastructure become increasingly complex, what appear to be disputes between private parties are more and more likely to have an impact on the rest of the market system. The bill will give SFC standing to intervene in civil proceedings between third parties to provide its regulatory perspective and expert opinion. As safeguards, the bill will require that SFC must satisfy the court that such intervention is in the public interest; parties to the litigation will have the right to challenge SFC's intervention; and the intervention will be subject to such terms as the court considers just.

- *Allowing SFC to take custody of clients' assets from intermediaries to prevent dissipation of such assets.*

After a three-month consultation with the public and market participants and subsequent refinements, the government aims to introduce the composite Securities and Futures Bill to the Legislative Council in early 2000. With the legislation of the new regulatory framework, the government expects to achieve higher standards of transparency, accountability, and disclosure that are on a par with international standards and practices, thus making Hong Kong, China better equipped to face the challenges of the new millennium.

Appendix

Executive Remuneration in Hong Kong, China

Many corporate executives in Hong Kong, China receive compensation packages on a par with those of the heads of large firms in the United States. In some extreme cases, the combined pay of executives may even exceed the net profits of the entire firm. Also, it is generally believed that top executives often decide their own pay at will. Such a contention raises doubts about the corporate governance of companies listed in Hong Kong, China. In a study of 1,518 companies for which executive compensation data were available for the period from 1990 to 1994, we looked at the level of executive pay and how it relates to a set of determining factors.

THE OWNER-DIRECTOR-MANAGER

In the US, top corporate officials typically own a small portion of the stock of the company. Also, these managers are, at least in theory, monitored by the board of directors, which sees to it that the overall performance of the firm is in line with shareholders' interests. US companies are also subject to a more restrictive environment for setting compensation levels. Relevant factors include the presence of active groups of shareholders who are more aware of their rights.

In Hong Kong, China, listed companies tend to be dominated by major shareholders, either individual investors or family members. These shareholders usually hold executive positions and directorships in the companies. In other words, the monitor and the monitored are the same people. In the sample of companies, median ownership of the board of directors was 47.3 percent.

COMPONENTS OF COMPENSATION

Because company directors in Hong Kong, China wear the hats of director and manager at the same time, they are also compensated in the same fashion.

The take-home element of compensation consists of two parts: the director's fee and emoluments. The former is a sum, usually a relatively fixed amount for all directors of the same firm, in compensation for their service on the board. Emoluments are similar to a salary plus bonus, and may differ significantly among directors of the same firm.

The pay for the role of director is lower than the reward for the role of manager. In the sample of companies, the median of the directors' fee was HK\$100,000 while the median of emoluments was HK\$4.5 million. These figures represented the combined amounts for a typical group of four or five directors. In terms of the relative significance of these figures, the median company paid out about 8 percent of its net profits to its directors.

MEASURES OF CORPORATE PERFORMANCE

In attempting to relate directors' pay to company performance, we chose to use stock return and the "q-ratio." Stock return is taken as the sum of dividends and stock price appreciation in a one-year period. In other words, we tried to measure how well managers performed in terms of the return they generated for shareholders. The q-ratio is an indicator of management quality. The value of the q of a firm is defined as the ratio of the stock price to the book value of equity, or net assets free of debt. In general, the higher the stock market values a firm for its management rather than its assets, the higher the q-ratio.

We analyzed directors' compensation using compensation as a percentage of net profits, and compensation as a percentage of operating income. Our sample period was from 1990 to 1994. In order to put the figures on a common basis, we adjusted all variables to the price level of 1990. (See Table for a summary of these data.)

We divided our sample of 1,518 firms into three subgroups: small, medium, and large. In general, we found that firm size is a significant determinant of directors' compensation. The larger the firm, the

Directors' Compensation by Company Group

Company Group	Median Market Equity Value (HK\$ million)	Directors' Compensation (HK\$ million)	Directors' Compensation/ Net Profit (%)	Directors' Compensation/ Operating Income (%)
Small	183	2.5	11	10
Medium	571	4.0	6	5
Large	2,902	6.4	2	2

Sources of basic data: Annual reports of listed companies; Datastream.

higher is the pay level. This finding is consistent with that for other markets. Furthermore, there is strong evidence that compensation as a percentage of net profits is inversely related to firm size. A similar result is obtained for compensation as a percentage of operating income. These results imply that smaller companies were paying out a larger portion of their income in the form of directors' compensation.

Another interesting issue is the relationship between director compensation and company performance. The question is simply whether the chief executive officer is rewarded according to firm performance. Our analysis showed that firm performance does not affect directors' compensation except in the large-firm subgroup in which pay was positively related to performance. Finally, we found

that directors' remuneration was sometimes larger than the profit of a company: directors continued to draw large compensation even when the company was losing money. In the sample group of companies, there were 132 such cases.

One indicator of good corporate governance practices is how directors are rewarded. The related question is how directors' performance should be measured. One possible solution is to set up a remuneration committee composed of independent nonexecutive directors. The evaluation criteria should include participation at board meetings, firm performance, and market situation. The criteria should be disclosed to shareholders. Besides cash remuneration, other noncash items, such as options scheme, should also be considered as part of the incentive package.

Notes

¹Hong Kong, China; Indonesia; Korea; Malaysia; Philippines; Singapore; and Thailand.

²Compared with end-June 1997 and expressed in US dollar terms, the Taipei, China market lost 15 percent; Singapore and Tokyo shrank by 27 and 31 percent, respectively; while the Philippines lost 45 percent and Indonesia 79 percent (Financial Services Bureau 1998).

³This section draws largely from the International Monetary Fund 1999.

⁴This portion is based on IMF (1999) and the Securities and Futures Bill.

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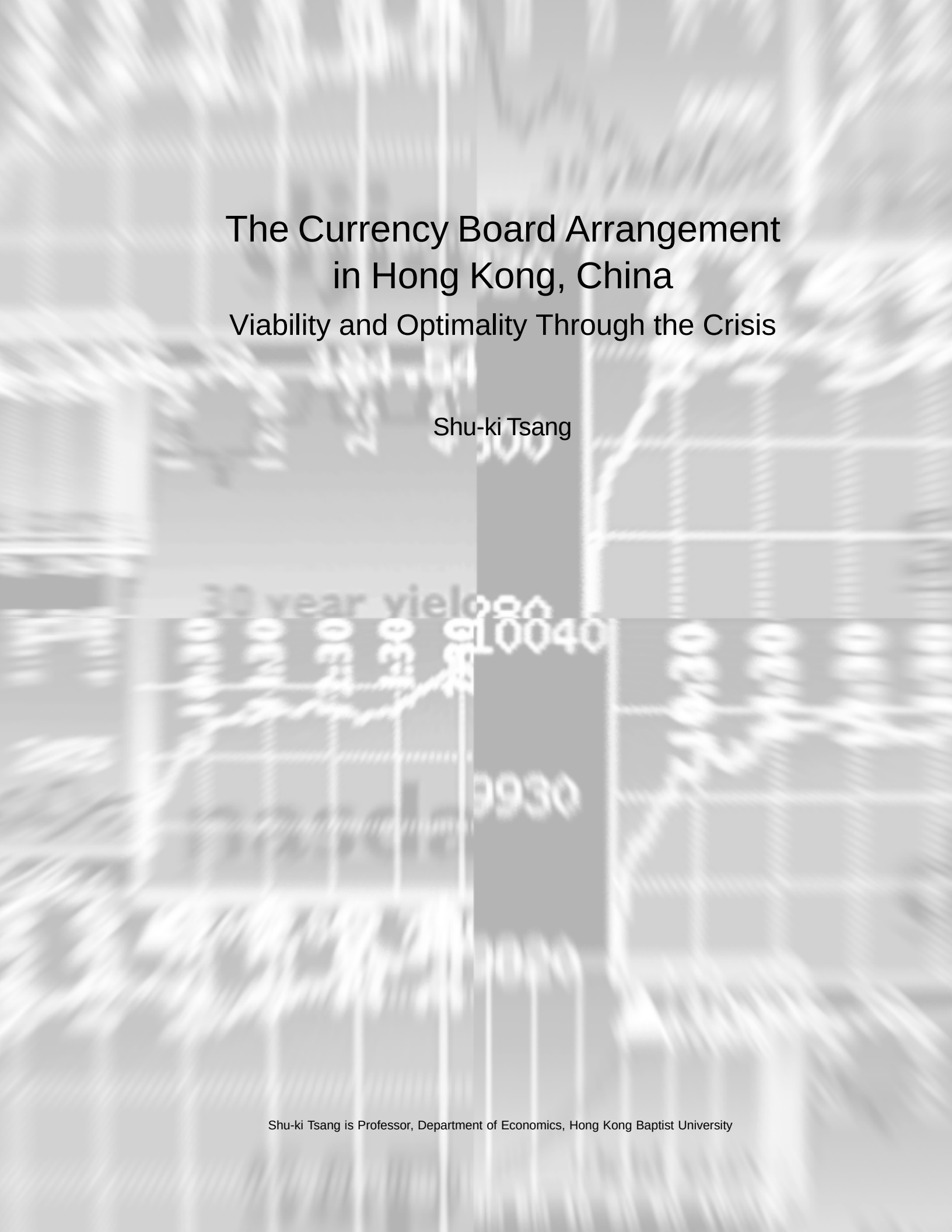
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The background of the slide is a grayscale collage of various financial charts and graphs. These include line graphs showing trends over time, bar charts, and tables of data. Some text from the charts is visible, such as '30 year yield' and '10040'. The overall theme is financial and economic data.

The Currency Board Arrangement in Hong Kong, China

Viability and Optimality Through the Crisis

Shu-ki Tsang

Summary

Overview

Currency board arrangements (CBAs) are a very strong form of fixed exchange rate regime. Like the gold standard, they rely on market forces, rather than on foreign exchange controls or interventions, to fix the exchange rate. CBAs have been adopted in a variety of institutional forms and with varying degrees of success in a number of economies.

In theory, the classical CBA, which originated in the 19th century, uses three anchors to fix the exchange rate: (i) economic discipline, because of the requirement that currency issues should be fully backed by foreign reserves; (ii) specie flow and interest arbitrage; and (iii) currency (cash) arbitrage, which binds the spot exchange rate. In practice, not all three anchors function effectively in every CBA.

Regarding economic optimality, the case for or against CBAs is broadly similar to the debate on fixed versus floating exchange rate, but the link between the narrower monetary aggregate and the balance of payments in a CBA tends to be even closer than in other fixed rate regimes. Williamson (1995) has identified some advantages and disadvantages of CBAs.

Insofar as a great deal of resources have been committed to CBAs to make them more credible and robust, they may have difficulty adjusting to major structural changes and irreversible divergence in the longer run. Modifying or abandoning them would carry very high adjustment cost or exit cost. In the extreme, total commitment begs the question of why the “dollarization” option—replacing the home currency with the foreign currency to which it is pegged—was not adopted instead.

The Currency Board Arrangement in Hong Kong, China

The CBA in Hong Kong, China, locally known as the “linked exchange rate system,” or the “link” for

short, was instituted on 17 October 1983 as a rescue measure in a currency crisis caused by Sino-British political conflict over the future of the territory. It is an idiosyncratic system since there is actually no currency board, and bank notes are issued by a few designated commercial banks, which alone deal directly with the monetary authority at the fixed exchange rate of HK\$7.80 to the US dollar. This arrangement has given rise to a multilayered mechanism involving the monetary authority, the note issuing banks (NIBs), other commercial banks, and the general public, which largely explains the “imperfect” performance of the system. The market exchange rate has deviated from the official rate of 7.80 by an average of slightly less than 1 percent in the years since the inception of the system.

The link has evolved through several stages. From October 1983 to 1987, the Hong Kong government could not even define the monetary base, and the theoretical forces of bank note arbitrage and competition did not seem to work. The exchange rate was underpinned by government intervention in the foreign exchange market and interest rate manipulation. In the period from 1988 to 1993, the imposition of the “accounting arrangements” gave the government a handle for the monetary base through the Hongkong and Shanghai Banking Corporation (HSBC) as the ultimate clearing bank. The launching of the Exchange Fund bills and notes, as well as the creation of the liquidity adjustment facility (LAF) as a kind of discount window strengthened the ability of the monetary authority to influence interbank liquidity and interest rates in the two-tier system.

On 1 April 1993, the central bank, the Hong Kong Monetary Authority (HKMA), formally came into existence. In December 1996, a system of real time gross settlement (RTGS) was established, replacing the two-tier accounting arrangements in existence since 1988. Thenceforth, HKMA, like any other central bank, could transact directly with each commercial bank and influence interbank liquidity and

interest rates more effectively, with a view to maintaining exchange rate stability.

In October 1997, the Hong Kong dollar came under powerful speculative attack, as a result of the contagion effect of the Asian financial turmoil. Interbank interest rates shot up to unprecedented levels, and then showed substantial risk premiums, generating unpalatable consequences for the financial and property markets, as well as the real economy. A controversy arose as to the role of HKMA in handling the turbulence.

HKMA later clarified that as the link was on “autopilot” during the attack, the interest rate adjustments were part and parcel of a CBA, and therefore an inevitable “pain.” The *Report on Financial Market Review* released by the government in April 1998 promised a firm commitment to the currency board principle of specie flow, namely, letting the flows of funds determine interest rate movements and refraining from manipulating the monetary base, other than necessary sterilization measures to offset exceptional domestic events. At the same time, though, HKMA reserved the option of intervening in the foreign exchange market at unspecified levels close to the rate of 7.80.

Technical Assessment

The post-1997 CBA in Hong Kong, China still uses the first two anchors of the classical currency board, i.e., (i) economic discipline based on adequate reserves, and (ii) specie flow. However, no effective mechanism for currency arbitrage has been put in place. Instead, HKMA has opted for discretionary foreign exchange market intervention, playing on “constructive ambiguity” or “the surprise element.” The system is the only one of its kind in the world.

The government’s *Report on Financial Market Review* confirmed the impracticability of bank note arbitrage in fixing the exchange rate in its CBA, a fact that had long been suspected since the start of the link in 1983. Indeed, cash arbitrage is incon-

sistent with modern financial development as the cash base represents a diminishing share of total money supply. Moving cash around to exploit arbitrage opportunities creates hazards for the banking system.

To deal with the ineffectiveness of cash arbitrage, Tsang (1996a, 1996b, 1997) proposed to the government the modern CBA version of Argentina, Estonia, and Lithuania (the AEL model). Under such a system, the monetary authority would guarantee not only the convertibility of the cash base at the fixed exchange rate, but also the convertibility of the reserves of the banking system, i.e., the whole monetary base, at that rate. Arbitrage could then be carried out electronically without any movement of cash. This would help minimize the efficiency risk of the exchange rate system, although perceived systemic risk could still result in risk premiums in interest rates. However, the government had reservations about such a way of strengthening arbitrage. Instead, it opted for discretionary market intervention at unspecified levels close to the 7.80 rate.

The key question is whether the combination of the “autopilot” specie flow mechanism and discretionary intervention in the foreign exchange market provides an effective defense of the CBA of Hong Kong, China. A related question is what the least-cost option is. In any case, just as the link was not overturned in the unprecedented speculative attack in October 1997, the probability that it will be derailed in the future remains small, unless external shocks of a much bigger scale emerge. The well-tested commitment of the government to the linked rate of 7.80, buttressed by one of the largest foreign reserves in the world should be able to see Hong Kong, China through.

Nevertheless, whether and how the cost of defense can be further reduced is still an open issue. The persistently high and volatile interest rates since October 1997 have led to a credit crunch and generated serious adverse impact on the economy

of Hong Kong, China. There seems to be a strong case for adopting the AEL model and instituting a system of deposit reserves whereby the excess reserves of banks could be used to ease the interest rate pain in case of a speculative attack on the Hong Kong dollar.

Economic Optimality

On the basis of Williamson's (1995) characterization of the "four virtues and seven vices" of a typical CBA, Hong Kong, China has been in a position to capitalize on the advantages and to minimize the potential harm caused by the disadvantages. A key factor is the healthy fiscal and international reserves position of Hong Kong, China. The huge reserves accumulated since the start of the link, however, highlight seigniorage and transition problems—the difficulties of earning sufficient returns on foreign assets during high domestic inflation. On the other hand, the lack of instruments to offset the inflationary pressure in the 1990s, especially asset inflation, points to a management problem.

Theoretically, the more flexible the real sector of an economy is, the more suitable is a fixed exchange rate, as the real sector will adjust quickly. A floating exchange rate system may bring instability to a small open economy with a huge financial sector, as speculative capital movements and attacks on the currency will be difficult to contain. A fixed exchange rate regime has the advantage of diverting pressure away from the exchange rate to other aspects of the economy and providing an important anchorage.

The major drawback of a fixed exchange rate regime is that while it requires stricter economic discipline, it does not serve as a very good barometer of imbalances that are building up in the economy. Bubbles could emerge, and the consequences might be very serious if the fixed rate collapses, as in the case of several economies in the East Asian region. Under the CBA, the economy of Hong Kong has shown some worrying signs of slower growth and

asset-inflationary pressure in the 1990s, and of a bubble in the run-up to 1997.

As a very strong form of fixed exchange rate regime, a currency board system may find it hard to deal with major external shocks, structural divergence, and deep-seated economic imbalances that do not show up easily. A key issue is the exit cost of quitting the peg. If more is invested in building confidence in the system, more has to be foregone when it is finally deemed necessary to change track. Therefore, a balance has to be struck between the conflicting considerations of ensuring short-term stability and maintaining long-term flexibility.

Relevance of Hong Kong, China's Experience for Asia

Like most other modern CBAs, the Hong Kong link was a crisis response. This means that the fixed exchange rate chosen might not necessarily be appropriate in the long run, unless the real economy is flexible enough to adjust even to major external shocks and structural divergence.

The idiosyncratic Hong Kong CBA has gone through several stages of evolution. As it stands, it is probably a model only for strong economies. For weaker economies, the AEL version is the only CBA that may be used to solve a currency crisis, given that the classical CBA based on cash arbitrage is a nonstarter, and that a CBA with credibility and discretion like that of Hong Kong, China cannot be easily imitated. In any case, the AEL model requires a relatively robust banking system or measures by the monetary authority to strengthen or protect it.

If Indonesia wishes to adopt a CBA to solve the country's currency crisis, two questions need to be asked: (i) Is the country ready to adopt the AEL model to minimize the efficiency risk associated with the exchange rate? (ii) What measures must be carried out to reduce the perceived systemic risk in the system, without unduly increasing the exit cost in the future?

There are four varieties of CBAs: (i) the classical currency board system found in many former British colonies, which relied on cash arbitrage; (ii) the Hong Kong CBA in the 1980s, in which there were no effective currency board or central banking defense mechanisms; (iii) the Hong Kong CBA as presented in the *Report on Financial Market Review* (FSB 1998); and (iv) the AEL model of Argentina, Estonia, and Lithuania, with deposit reserves as liquidity buffers. The first option is hopelessly outdated. The second option was a fluke for Hong Kong, China. In the contemporary context, the third option is a choice only for a strong economy with very large reserves. Yet the cost of defense could be huge, if speculators hold the view that the fixed exchange rate is out of line with the rapidly changing external environment. The fourth option therefore appears to be the only relevant model for an aspiring economy in the region.

An Asian economy that wants to adopt the AEL model has to make sure that it has the appropriate infrastructure. Moreover, the government must think very carefully about the level of the peg that it wants to lock in, in a world of uncertainty and dramatic exchange rate realignments. If the central bank regards the fall in its home currency as totally unjustified, far beyond any economic fundamentals, then fixing the spot exchange rate through the electronic arbitrage mechanism of the AEL model could generate a turnaround effect that might help to stabilize the system.

Technical Feasibility and Optimality: An Overview

Currency Board Arrangements: Three Anchors for Fixing the Exchange Rate

Currency boards are a peculiar form of fixed exchange rate system. An exchange rate can be fixed in either of two ways: (i) foreign exchange con-

trols or government interventions in the market or both, or (ii) arrangements that directly harness self-interested market forces. In many developed economies, the first method has been the norm. On the other hand, market-driven systems include the gold standard (Officer 1989, 1993) and currency boards.

Currency boards have a long history, dating back to the 19th century when they were mainly adopted in the British colonies. The first one was established in Mauritius in 1849 (Schwartz 1993). Eventually, as many as 70 economies implemented similar arrangements and the system reached its heyday in the 1940s (Hanke, Jonung, and Schuler 1993; Williamson 1995). After the Second World War, they went out of fashion as newly independent territories sought monetary autonomy by setting up their own central banks, and floating-exchange regimes replaced the Bretton Woods system.

Currency board economics has been enjoying some kind of a revival (Liviatan 1993). Hong Kong resurrected it in 1983. Then Argentina adopted a similar scheme in 1991, Estonia in 1992, Lithuania in 1994, and Bulgaria and Bosnia in 1997. In early 1998, Indonesia thought of using a currency board to solve its economic crisis. More than a dozen economies now host currency board arrangements (CBAs), which vary substantially in institutional form, as well as relative performance.

A typical currency board issues cash (notes and coins) fully backed by foreign exchange reserves at a fixed exchange rate against a designated foreign currency (Schwartz 1993). Hence, in theory the board cannot issue any new cash without a balance of payments surplus. This supposedly leads to economic discipline in monetary and fiscal policymaking, which in turn can instill confidence and contribute to exchange rate stability (Hanke and Schuler 1994).

However, it is too far-fetched to argue that an exchange rate can be “fixed” by discipline-generated

confidence. There need to be practical mechanisms that bind the exchange rate. On a more technical level, a currency board differs from a pegged-rate regime based on bureaucratic intervention by the monetary authority. Like the gold standard, it relies on two automatic stabilizers to anchor the exchange rate: (i) specie flow, and (ii) arbitrage.

The specie flow process works like this: an outflow of capital, as a result of weaknesses in the economy or doubts about the exchange rate, would cause the money supply to contract, push up interest rates, and induce a counterflow of funds. The whole event is automatic and speedy, and the exchange rate can be fixed without government intervention (Hanke, Jonung, and Schuler 1993). A pitfall, however, exists in this process. Under normal circumstances, there is no denying that interest rate hikes may help stabilize a currency. However, if the exchange rate is itself fluctuating or seen to be insecure, higher interest rates would not necessarily induce a counterflow of capital. Exchange rate risk would necessitate an interest rate premium, and higher interest rates in turn might be regarded as a sign of weakness, leading to a vicious circle. In this sense, therefore, the specie flow process is not a very reliable mechanism for fixing an exchange rate.

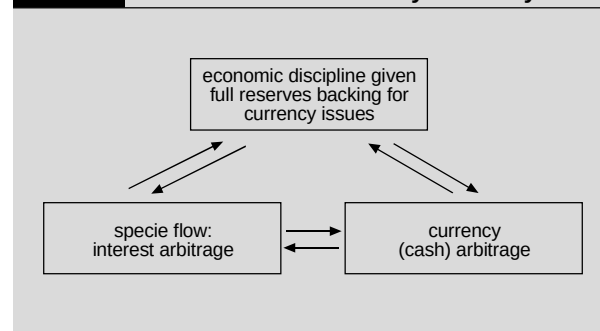
Hence, the need for the second mechanism of the CBA: currency arbitrage (alternatively known as exchange rate arbitrage) which directly binds the exchange rate. Since the board has foreign reserves to cover all of the cash in circulation, cash arbitrage can be carried out. If the market exchange rate weakens below the official rate, people can first convert their bank deposits into cash, then go to the currency board to exchange the cash into foreign currency at the stronger official rate, and sell the foreign currency in the market, fetching an arbitrage profit. Like arbitrage under the gold standard where people shipped gold bullion between countries (Officer 1989, 1993), exchange rate arbitrage appeals to the self-interest of market participants. The selling pressure on the

foreign currency will bring the market exchange rate back to the level of its official counterpart.

Let us look at a hypothetical example. Suppose a currency board in country A fixes its currency, the peso, at parity against the US dollar. If the market exchange rate weakens to P1.1 to the dollar, anyone can withdraw cash from his peso account in the bank, surrender the paper money to the currency board, and get US dollars at the fixed rate of 1.0. One million pesos in cash will fetch US\$1 million. By selling the US\$1 million in the market, he earns a riskless profit of P100,000. That is exchange rate arbitrage. When it unfolds on a large scale, the market exchange rate should align with the official parity.

In short, there are three anchors for a CBA: (i) economic discipline, because of the requirement that currency issues should be fully backed by foreign reserves; (ii) specie flow in the form of interest arbitrage; and (iii) currency (cash) arbitrage, which binds the spot exchange rate. As shown in Figure 1, these three anchors reinforce one another.

Figure 1: Three Anchors for Fixing the Exchange Rate Under the Currency Board System



A “perfect” CBA would allow all three anchors to function effectively. In reality, different CBAs have different institutional, policy, and macro-economic drawbacks which prevent that from happening. As will be analyzed in detail below, while the CBA in Hong Kong, China has scored well regarding the first two anchors, it is still lacking in arbitrage efficiency.

Economic Optimality of Fixing the Exchange Rate Through a Currency Board Arrangement

From the perspective of economic optimality, whether the link has served Hong Kong, China well in terms of growth and price stability has been a matter for debate. Some have accused the link of adding to local inflationary pressure because of an undervalued Hong Kong dollar, while others, taking the opposite view, have argued that the real appreciation of the Hong Kong dollar since 1983 (as a result of the nominally fixed exchange rate being offset by inflation higher than that of the US) has undermined Hong Kong's competitiveness.

These two contrasting viewpoints hinge on the alleged lack of leeway in macroeconomic control in the form of exchange rate adjustment or monetary targeting (theoretically possible in a floating regime). Some, however, see this as a virtue because the government cannot meddle in a small open economy noted for its flexibility in real-sector adjustment.

As to the optimality of CBAs in general, the debate is broadly similar to that of fixed versus flexible exchange rates, except that the link between the monetary aggregate (at least its narrower definitions) and the balance of payments tends to be even closer in the case of a currency board compared with other measures to fix the exchange rate. In this regard, Williamson (1995) has identified four advantages and seven disadvantages concerning the system, to which this study will refer in evaluating the case of Hong Kong, China.

Nevertheless, a longer-run problem for a CBA is whether it can handle major structural changes and irreversible divergence. Insofar as a great deal of resources (foreign exchange reserves) and commitments (economic discipline, or even legal and monetary guarantees) have been built into the system to buttress the fixed exchange rate, modifying the system (e.g., changing the peg rate) may entail high adjustment cost, while abandoning it outright may result in rather heavy exit cost (Tsang 1998). Alter-

natively, target zoning or managed float, while not guaranteeing the "fixity" of the exchange rate, would involve lower costs in that regard. If it is argued that a CBA at a fixed exchange rate should never be changed, i.e., exit is ruled out, then the question is, why not simply adopt the counterpart foreign currency as one's currency—the so-called "dollarization" option. There will then be no need to defend the exchange rate.

The Currency Board Arrangement in Hong Kong, China

How the System Began

Hong Kong first established a CBA in 1935, following the collapse of the silver standard in the People's Republic of China (PRC) (see Nugée 1995). The Hong Kong dollar was pegged to the British pound sterling until 1972, with the exception of the war years of 1941 to 1945. Then it was pegged briefly to the US dollar, and floated from late 1974 until 1983, when the "linked exchange rate system," or the "link," was established.

The link, launched on 17 October 1983, was a reaction to the currency crisis arising from the Sino-British dispute concerning the political future of Hong Kong after 1997. Negotiations between the PRC and the United Kingdom (UK) regarding Hong Kong began in 1979 to 1982. Sino-British diplomatic jitters and confrontation in 1983 caused the local currency to plunge in the foreign exchange market, reaching a low of HK\$9.60 to the US dollar in September 1983. The Hong Kong government was desperate to find a way to stabilize the exchange rate. In the end, it revived the currency board system, with the rate fixed at HK\$7.80 to the US dollar, a substantially weaker rate compared with the year-end rates of 5.675 in 1981 and 6.495 in 1982.

The link works through a complicated system of bank note issuance and withdrawal, operated by a

few authorized note-issuing banks in the territory. The scheme has existed up to now, with some modifications in the course of the emergence of the Hong Kong Monetary Authority (HKMA) as the de facto central bank of the territory. HKMA was formally set up in 1993.

The link is essentially similar to the CBA of 1935–1972, except for two major differences: (i) the Hong Kong dollar is pegged to the US dollar instead of the British pound sterling as it was in the previous period, and (ii) the foreign exchange controls of the pre-1972 years have been totally dismantled and international capital flows are now much more significant.

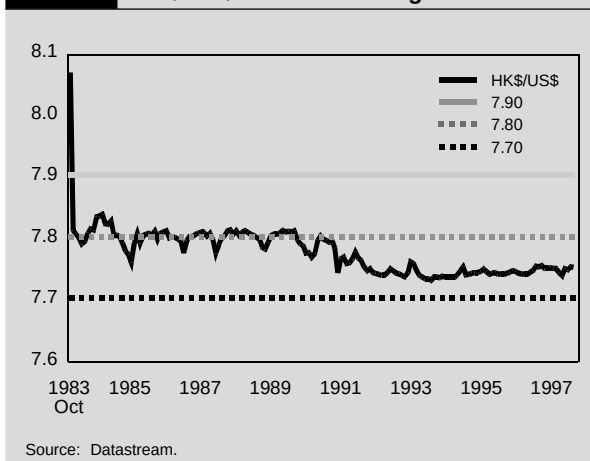
It must be pointed out immediately that the CBA in Hong Kong, whether it be the pre-1972 scheme or the present linked rate system, has one outstanding, atypical, feature compared with traditional systems. Currency notes were, and are, issued by a few designated commercial banks instead of a currency board.¹ This gives rise to an indirect, multitiered mechanism involving the monetary authority, the note-issuing banks, other commercial banks, and the general public, which largely explains the “imperfect” performance of the system.

The imperfection is reflected by the fact that the market exchange rate still deviates by a non-negligible degree from the official rate despite the supposedly powerful forces of specie flow and arbitrage. The deviations have averaged slightly less than 1 percent in the years since the inception of the link (Figure 2). In the 1990s, the market rate has been on the strong side of the rate of 7.80. A strong rate is not necessarily a welcome phenomenon in a fixed exchange rate regime. As will be explained below, the government had to fend off speculative pressure for a revaluation of the Hong Kong dollar in 1987–1988.

Initial Operations of the Link

The core of the link is a note issuance and withdrawal mechanism (NIWM), which had two tiers at

Figure 2: Monthly Average Movement of the HK\$/US\$ Market Exchange Rate



first, given the peculiarity that in Hong Kong, China notes are issued not by a currency board but by a few designated commercial banks:

- The note issuing banks (NIBs) have to deposit with the Exchange Fund of the government (which holds the territory's foreign exchange reserves) an equivalent amount of US dollars at the 7.80 rate to obtain certificates of indebtedness (CIs) for issuing Hong Kong dollar bank notes. The US dollar deposit earns no interest, but NIBs presumably get all kinds of goodwill in exchange. NIBs can withdraw the bank notes by surrendering CIs to the Exchange Fund and claim back the US dollar deposit. There were two NIBs at the time the system started in 1983: the Hongkong and Shanghai Banking Corporation (HSBC) and the Chartered Bank. There are now three: the Hongkong Bank, the Standard Chartered Bank, and the Hong Kong, China Branch of the Bank of China.
- Other banks in the territory obtained bank notes from NIBs and returned notes to the latter by a similar arrangement up to 1994. These banks had to place a noninterest-bearing US dollar deposit at the 7.80 rate with NIBs to obtain Hong Kong dollar notes; and the US dollar deposit was returned to them when they surrendered the notes. However, in the 1990s, the market

exchange rate was persistently on the strong side of 7.80, and banks suffered an exchange loss in receiving cash deposits from customers and redeeming them with NIBs, which they tried to recover by imposing unpopular handling charges on customers. To rectify the situation, HKMA decided to modify the system in February 1994 to allow banks to obtain Hong Kong dollar bank notes from NIBs by placing Hong Kong dollar deposits with them, and to return the notes to NIBs by receiving their Hong Kong dollar deposits (HKMA 1994, pp. 19–20).

Aside from this two-tier mechanism, there is obviously the wider foreign exchange market where no interbank transactions in Hong Kong dollar bank notes are involved, e.g., retail sales of notes by banks to customers and interbank foreign exchange transactions in Hong Kong dollars versus Hong Kong dollars that are settled by accounting. At the time the system began, the government did not call it a kind of CBA. Instead, it invented the name “linked exchange rate system.” According to top financial officials at the time (including the then Financial Secretary John Bremridge and Secretary for Monetary Affairs D.W.A. Blye), the market rate of these activities would converge toward the “linked” rate for note issuance and withdrawal by a mechanism that supposedly had two facets:

- *Arbitrage*: Any deviation of the market rate from 7.80 would generate a profitable arbitrage opportunity. For example, if the market rate was HK\$7.90 to the US dollar, anyone who had access to the NIWM could obtain US\$1 with HK\$7.80 in cash, and could then sell the US\$1 for HK\$7.90 in the market, thus fetching a profit of HK\$0.10 for every US dollar. It was the same as the cash arbitrage mechanism of the classical CBA described above.
- *Competition*: Access to the NIWM was not universal, under the two-tier system. In other words, arbitrage efficiency was not guaranteed, unlike an ideal currency board system, where every-

body has direct access to foreign exchange at the officially announced rate. However, since all banks had access, a retail customer presumably could approach any bank, pay a fee, and connect with the NIWM. The more competitive the banking system is, the lower will be the access cost to the NIWM, and thus the total transaction cost for arbitrage, for any nonbank party. Hence, competition would increase arbitrage efficiency.

The fact that top officials did not present the link as a CBA, and placed little emphasis on either economic discipline or the specie-flow process—CBA’s two other hallmarks—is understandable. Hong Kong in the first half of the 1980s was in political uncertainty; it went through three consecutive years of fiscal deficits that had set in starting in 1982–1985 after the bursting of an economic bubble; and the high interest rates during the currency crisis were exacting their toll. It was hardly a time to boost the territory’s fiscal and monetary prudence, or to be optimistic about the effectiveness of high interest rates in fixing the exchange rate.²

Nevertheless, even the twin forces of bank note arbitrage and competition did not work to fix the link rate of 7.80 in the years after 1983, because of an intrinsic problem with engaging in cash arbitrage in a modern financial economy with a very small cash base. If the market rate were on the strong side of 7.80, say 7.75, a bank could theoretically sell a deposit of HK\$775 in the interbank market to acquire US\$100, which it could then transfer to NIBs to obtain HK\$780 in cash, for a profit of HK\$5. Unlike nonbank customers, however, the bank had no way of converting the cash into a deposit without reversing the foreign exchange transaction. Indeed, it would be burdened with a non-interest-bearing balance of HK\$780. NIBs face the same problem when engaging in arbitrage with the Exchange Fund.

Should the bank find the extra cash really bothersome, it could, of course, redeem it at the 7.80 rate with an NIB and get back US\$100 (reversing the

foreign exchange transaction). But then its arbitrage profit of HK\$5 would immediately evaporate as it exchanged the US\$100 back to an interbank deposit of HK\$775 at the market rate of 7.75!

In the opposite case where the market rate of the HK dollar weakens to above 7.80, say 7.85, a bank (NIB) could sell US\$100 in the market for HK\$785 in the form of an interbank deposit, but then it would have difficulty converting the amount into cash, which theoretically it could transfer to NIBs (the Exchange Fund) for US\$100.64 ($785/780$), for a profit of US\$0.64. It might, of course, use its own vault cash to engage in arbitrage. But that would lower its cash-deposit ratio below the desired level.

Because of these problems of cash flood or cash drain, banks in Hong Kong were not keen to engage in any arbitrage despite the deviation of the market exchange rate from the official parity (Greenwood and Gressel 1988; Tsang 1996a, 1996b).

Hence, when there were speculative attacks on the Hong Kong dollar in the summer of 1984, with the spot exchange rate weakening briefly to 8.05, the monetary authority at the time—the Monetary Affairs Branch—had little choice but to intervene on behalf of the Exchange Fund in the market by selling US dollars. Moreover, despite doubts about their effectiveness, interest rate hikes had to be engineered. In contrast, when there were speculative pressures on the currency in anticipation of a revaluation in 1987–1988, the government had to counter by buying US dollars (selling Hong Kong dollars) and legally incorporating negative interest rates to discourage capital inflow. According to Nugée (1995), the government purchased US\$2.7 billion in 1987 and US\$3.1 billion in 1988. There was no “automaticity” to Hong Kong’s currency board system at that time.

As the political situation gradually calmed down, the government began looking for ways to use interest rate tools more effectively, other than direct intervention in the foreign exchange market. The key problem in those years right after the establishment

of the link was the lack of a leverage for the government to affect interbank liquidity and thereby interbank interest rates. HSBC, the territory’s largest commercial bank which had been playing the role of pseudo central bank, clearing interbank settlements and providing last-resort liquidity, was under no obligation to place any reserves with the monetary authority. In contrast, it was the monetary authority that placed funds with HSBC and other selected banks. Given the size of the territory’s reserves at the time, the placement and withdrawal of Exchange Fund deposits from the interbank market had rather limited effects. HSBC was expected to cooperate by raising or lowering interest rates as the macroeconomic situation warranted.

Toward the Establishment of a Central Bank

To end such anomalies, the government proceeded from 1988 onward to establish a central banking system alongside the idiosyncratic CBA to strengthen its control. In July 1988, the “accounting arrangements” were established. HSBC had to keep in the Exchange Fund through the Monetary Affairs Branch a reserve deposit equivalent in amount to its net clearing balance, i.e., the net amount of funds that the banking system placed with it for settlement purposes. Through this two-tier system, the Monetary Affairs Branch was able to manipulate the liquidity of the banking system through open-market operation. The efficiency of this process was greatly enhanced when the government started issuing Exchange Fund bills in March 1990 and Exchange Fund notes in May 1993.

In June 1992, the liquidity adjustment facility (LAF) was set up, and it has since played the role of lender of last resort by providing short-term liquidity to banks in trouble through collateral lending. The LAF bid and offer rates have become the benchmark interest rates, reflecting the authority’s monetary stance. Finally, on 1 April 1993, HKMA was formally established by partly merging various

branches of the government including the Office of the Exchange Fund, the Monetary Affairs Branch, and the Office of the Commissioner of Banking (HKMA 1994b). In late 1996, HKMA established a real-time gross settlement (RTGS) system through a new clearing company, the Hong Kong Interbank Clearing Ltd. RTGS is an accounting mechanism between HKMA and all commercial banks, which allows the former to deal directly with the latter.

The idea of a currency board is lauded by its supporters precisely because it does away with the necessity of having a central bank which might mess up the economy by pursuing independent but ultimately unworkable or counterproductive monetary policies (Hanke and Schuler 1994). The setting up of a parallel central bank was regarded by some (e.g., Greenwood 1988) as a betrayal of the “automaticity” inherent in a currency board system.

The establishment of a central bank in Hong Kong may be less “embarrassing” if we look closer at the actual functions of HKMA. Rather than pursuing a monetary targeting function typical of advanced market economies, HKMA carries out monetary policy at the macroeconomic level to help stabilize and defend the linked exchange rate. This has been repeatedly stressed by top monetary officials (see, for example, Sheng 1995 and Nugée 1995).

The Strengthening of the Market Exchange Rate in the 1990s

Into the 1990s, the market exchange rate of the Hong Kong dollar has persistently been on the strong side of 7.80 (Figure 2). A key factor has been the turnaround in Hong Kong, China’s economy and the large-scale capital inflow in 1992–1994, which led to the strengthening of the Hong Kong dollar. Under such circumstances, HKMA seems to have settled for a range of 7.72–7.75 as acceptable. An added dimension to the problem, however, involves the profits or losses incurred in the NIWM when the market rate deviates from the peg.

As discussed above, in February 1994, HKMA modified the note issuance and withdrawal system by allowing banks to obtain Hong Kong dollar bank notes from NIBs by placing Hong Kong dollar, rather than US dollar, deposits with them, and to return Hong Kong dollar notes to NIBs by receiving Hong Kong dollar deposits from them. However, this means that while NIBs still have access to the fixed rate of 7.80 at the Exchange Fund, the transactions between them and other banks are no longer based on the pegged rate. To obtain HK\$780 in bank notes from any NIB, a bank only needs to place an interbank deposit of HK\$780 with it. As a result, all non-note-issuing banks in Hong Kong can no longer engage directly in arbitrage, irrespective of how the market exchange rate behaves. Direct arbitrage has been confined to NIBs.

The irony is that, with the market rate on the strong side of 7.80, NIBs are earning a profit from note issuance, which also removes any incentive on their part to engage in arbitrage that will push the market rate toward 7.80. Suppose that the market rate is 7.75. Any one of the three NIBs can sell an interbank deposit of HK\$775 for US\$100, which it can then transfer to the Exchange Fund for the right to issue HK\$780 in cash. When NIB disburses the notes to the other banks, it obtains an interbank deposit of HK\$780 from them, hence fetching a profit of HK\$5 (HK\$780 minus HK\$775).

Note that this profit is totally risk free, just like that from arbitrage. Moreover, the opportunity loss is borne by the Exchange Fund: when an NIB transfers US\$100 to it, the Fund has to let go of HK\$780 in cash; but with the US\$100 it can only get back HK\$775 in the foreign exchange market, i.e., it foregoes HK\$5 which ends up in NIB’s coffers.

Of course, when it redeems the notes with the Exchange Fund, NIB incurs a loss. For every HK\$780 of cash it surrenders, it gets back US\$100 which it can sell for only HK\$775 in the interbank market. Before that, though, NIB would have returned

HK\$780 in deposit to the other banks that started the redemption process. However, since the demand for cash in absolute size, and hence the total amount of currency in circulation, have been rising with time, in any one year (neglecting seasonal fluctuations) there is usually a net issuance (issuance minus withdrawal) of bank notes. NIBs thus stand to profit if the market exchange rate stays on the strong side of the peg.

If NIBs were to engage in arbitrage to bring the market rate back to the 7.80 level, such profits from net note issuance will disappear. Of course, one can argue that with the small amount of bank notes in NIBs' possession, they may not be able to push the rate back to 7.80 through arbitrage, even if they were altruistic enough and willing to do so. On the other hand, the other banks are deprived of direct access to the Exchange Fund. Although in theory they could ask NIBs to engage in arbitrage for them as an agent, for a fee, that is a bit too far-fetched. The banks have apparently been indifferent to such a phenomenon.

The Real-Time Gross Settlement System

The establishment of the RTGS system in late 1996 represented a milestone in the history of the CBA of Hong Kong, China. The system allows HKMA to deal with each bank directly, replacing the two-tier accounting arrangements in use since 1988. It was instituted through a new clearing company, the Hong Kong Interbank Clearing Ltd., jointly and equally owned by HKMA as "the settlement institution, the provider of intraday liquidity, the current operator of the Central Moneymarkets Unit (CMU), the regulator of the payment system and the lender of last resort" (HKMA 1995), on the one hand, and the Hong Kong Association of Banks (HKAB) as "the institution responsible for interbank payment and clearing," (HKMA 1995) on the other.

According to HKMA (1995, 1997), the RTGS system incorporates the following core features:

- compliance with international standards;
- final settlement across the books of HKMA;
- a single-tier system in which all licensed banks will open clearing accounts with HKMA;
- banks would be able to obtain intraday liquidity through repurchase agreements (repo) with HKMA, using Exchange Fund bills and notes; and
- allowance for domestic and international linkages to facilitate real-time delivery versus payment (DvP) and real-time payment versus payment (PvP).

RTGS, one of the most advanced payment systems in the world, allows interbank transactions to be settled on a continuous gross basis in the general ledger of the Exchange Fund, which is managed by HKMA, and provides an interface with CMU's real-time book-entry clearing of government and private securities (DvP) and real-time settlement in foreign currency transactions (PvP). To facilitate uninterrupted settlement, banks could arrange auto intraday repo facilities with HKMA in case of insufficient funds to handle debit instructions in a queue management mechanism. The facilities have to be backed by authorized collateral of Exchange Fund paper (HKMA 1997a). At the end of the day, banks that fail to clear all debit instructions could go to LAF, which is open between 4:30 p.m. and 5:30 p.m. from Monday to Friday, and between 11:30 a.m. and 12:00 noon every Saturday.

LAF, established in 1992, is a kind of lender of last resort (LOLR) mechanism. Nevertheless, LAF in Hong Kong is unique in that it is an LOLR that receives deposits as well as lends out funds. Hence, it has both bid and offer rates. The practice is intended to facilitate liquidity management of licensed banks and orderly interbank market activities, such that banks with surplus funds, for example, can simply place them with HKMA. However, with RTGS in place, the bidding of funds by LAF seems increasingly unnecessary.

The Monetary Base and the Currency Board Arrangement

The CBA of Hong Kong, China has evolved since it began in October 1983. Interestingly, it has not functioned strictly according to theory. As discussed above, in the initial period (1983–1988), neither economic discipline nor specie flow was depended upon. The presumed bank note arbitrage process also did not work. The link rate of 7.80 was kept intact, albeit imperfectly, thanks to a combination of government intervention in the foreign exchange market, manipulation of interest rates, and administrative measures (e.g., the incorporation of negative interest rates in 1987).

One critical weakness of the CBA then was that the government could not even manage interbank liquidity and interest rates as banks did not have any account with it. Hence, the accounting arrangements were imposed in 1988. For the first time, the Monetary Affairs Branch could define the monetary base in Hong Kong: the amount of cash in circulation, plus the clearing balance of the banks. Nugée (1995), who was with the Reserves Management Department of HKMA at the time, said of the significance of the change:

- With this arrangement, the Government acquired control over the level of interbank liquidity, and the Exchange Fund effectively became the ultimate provider of liquidity to the banking system. This marked a significant change in official thinking, which hitherto had eschewed any significant central banking role for the Government or the Exchange Fund. Also at this time, the Government introduced legislative changes to remove statutory ceiling (of 60 percent) on interest rates...and...for charging negative interest rates. These changes gave the Government *total flexibility in raising or lowering interest rates in their defence of the exchange rate*.
- The Government next sought to extend its influence over the money markets beyond the very

short overnight rate. The classic way for monetary authorities to influence interest rates is through *open market operations*, but in the case of Hong Kong, there were no official money market instruments or debt securities available for use as the Government had traditionally run a fiscal surplus. (*italics added*)

To provide the Exchange Fund with the necessary instruments to conduct “open market operations,” the Hong Kong government embarked on a series of programs to introduce Exchange Fund bills (from March 1990) and notes (from May 1993). On the other hand, the LAF, set up in June 1992, allowed the Exchange Fund to supply additional liquidity to the banking system or absorb excess liquidity from it. “By varying the bid and offer rates of the LAF, the Government can influence short-term interest rates directly” (Nugée 1995, p. 13). The formation of HKMA in 1993 further modernized the territory’s central banking operations. A revision introduced in March 1994 shifted HKMA’s focus from targeting interbank liquidity to targeting interbank interest rates.

A parallel development since the 1980s has been the accumulation of huge fiscal and foreign exchange reserves by the government. Cumulative fiscal reserves represented about six months of annual government expenditure, on the average, in the 1980s, and went up to over one year of expenditure in the early 1990s. By official arrangement, the fiscal reserves were transferred to the Exchange Fund for the defense of the currency. As can be seen in Table 1, the CBA already had over 400 percent in reserves for its currency note issue by 1990—a phenomenon rather rare among CBAs.

These developments and evolving mechanisms enabled HKMA to modify its characterization of the link. The inhibitions of the 1980s were gone, and HKMA was confident enough to present the link as a currency board system (Latter 1993). Adequate reserves and economic discipline were then emphasized. However, “automaticity” was not yet on the agenda.

Table 1: Balance Sheet of the Exchange Fund of Hong Kong, China, End 1986–1997 (HK\$ million)

Item	1986	1990	1994	1997
Assets				
Foreign-currency assets	84,715	192,323	381,233	523,891
Hong Kong dollar assets	3,876	3,874	24,126	44,863
Total	88,591	196,197	405,850	568,754
Liabilities				
Certificates of indebtedness	20,531	40,791	74,301	91,985
Fiscal reserves account	23,359	63,226	131,240	182,168
Coins in circulation	1,441	2,003	3,372	4,564
Exchange Fund bills and notes		6,671	46,140	89,338
Balance of banking system		480	2,208	480
Other liabilities	4,103	391	22,815	18,332
Total	49,434	113,562	280,076	386,867
Accumulated earnings	39,157	82,635	125,774^a	181,887
Ratio of reserves to currency in circulation	3.78	4.45	4.88 ^a	6.30

^a Figures for 1994 reflect accounting policies adopted in 1995. No adjustments were made on data for prior years.
Source: Hong Kong Monetary Authority, *Monthly Statistical Bulletin*, various issues.

Indeed, after its formal establishment, HKMA openly declared that it would defend the Hong Kong dollar through flexible ways of manipulating the monetary base and influencing interest rates. Deputy Chief Executive of HKMA Andrew Sheng said in February 1995 on the heels of the Mexican crisis:

... In recent years HKMA has introduced various reforms to its monetary management tools, or more aptly, our monetary armoury, to maintain exchange rate stability.... As was seen in January [1995], our determination to use the interest rate tool was sufficient to deter further speculation against the HK dollar. In fact, currently, the HK dollar is at a stronger level than it was at 1994 year end. (Sheng 1995, p. 60)

Sheng (1995) was quite explicit about the activism of HKMA in defending the link:

To the extent that HKMA intervenes through the use of foreign exchange swaps, any increase in the monetary base is fully backed by foreign exchange. We use a whole range of instruments in influencing the level of interbank liquidity to manage interbank interest rates, and consequently, maintain exchange rate stability. (p. 61)

There was, however, one remaining problem: under the two-tier accounting arrangements, the clearing balance of the banks showed some wide fluctuations “because banks on the odd occasion miscalculate their own liquidity position. That is why we need and are developing a new RTGS payment system to manage funds flow more efficiently” (Sheng 1995, p. 61).

As mentioned, the RTGS system was installed in December 1996, replacing the previous two-tier arrangements. It was the first time that the government could directly manage the clearing balance of the whole banking system in a transparent manner (HKMA 1997a). HKMA did not, however, make any major pronouncements about any fundamental changes in the link’s mode. On an interactive CD-ROM (1997 edition), HKMA discussed the history of Hong Kong’s monetary system and reforms in the following terms:

The main thrust of most of these reform measures is to strengthen the capability of HKMA to influence interbank liquidity and interbank interest rate for the purpose of ensuring exchange rate stability. (HKMA 1997b)

In explaining its stance toward the first signs of East Asian financial troubles in mid-1997, HKMA described its monetary policy operations as follows:

Money market conditions were tightened on 21 July [1997] on signs of some speculative pressure on the exchange rate. As the exchange rate of the Hong Kong dollar quickly stabilised to close at 7.740 level on 25 July, liquidity was recycled back to the market and overnight Hong Kong interbank offered rate [HIBOR] eased to around 6.13 percent–6.25 percent at the end of July. (HKMA 1997c, pp. 117–118)

Autopilot(?) Developments after the October 1997 Attack

In October 1997, the Hong Kong dollar came under strong speculative attack, as a result of the contagion effect of the East Asian turmoil. The attack cast doubt on the nature and the robustness of the link.

Overnight interbank rates were up to 280 percent briefly on 23 October, and the spot exchange rate of the Hong Kong dollar strengthened at one point to 7.60, a record since the start of the link in 1983. To many observers, it appeared that the territory had to struggle to protect the fixed exchange rate through proactive actions by the monetary authority, with rather unpalatable consequences. Although the link remained intact, interest rates stayed at uncomfortably high levels afterward. The local stock and property markets plunged, sending shock waves around the world, and even causing a sharp fall on Wall Street (another first). Into 1998, the depressing effects of the episode on the local economy began to unfold as forecast growth rates were revised downward. Financial Secretary Donald Tsang predicted in his February budget speech a real gross domestic product (GDP) growth rate of 3.5 percent for the year, compared with 5.2 percent for 1997, but the Organisation for Economic Co-operation and Development (OECD) released a gloomy forecast of only 0.9 percent in April.

A controversy arose concerning the extent of HKMA's intervention in the markets and its respon-

sibility for the unprecedented high interest rates. HKMA later argued that the system was on "autopilot" at the time of the attack in late October 1997 and that the Authority was just "sitting there passively" (Yam 1998, p. 13). Some critics countered by pointing out that HKMA had openly warned banks in the morning of 23 October that those that repeatedly used the LAF to borrow Hong Kong dollar funds would be penalized. This, in the critics' view, touched off a strong "announcement effect" that made banks scramble for funds. There were also reports of HKMA intervening in the foreign exchange market, selling US dollars and buying Hong Kong dollars.

To clarify the situation, HKMA and the government took a big step in defining the link as an automatic currency board system. HKMA Chief Executive Joseph Yam made an important speech on 3 March 1998 in Japan (Yam 1998). Then on 23 April 1998, the government published its report on the October 1997 turbulence, the *Report on Financial Market Review* (FSB 1998).

A key change was HKMA's announced commitment not to actively manage the monetary base to defend the exchange rate. The monetary base of Hong Kong, China has two components: (i) cash in circulation, and (ii) the clearing balance of the banking system. Since bank notes are issued and withdrawn by NIBs according to classical currency board principles, the first component is beyond the control of the government. Before the October 1997 turbulence, HKMA did try to influence the second component, the clearing balance, in its defense of the link. In the *Report on Financial Market Review* (FSB 1998, paras. 3.36–3.41, Annex 3.5), it was made clear that HKMA would follow the rule of automatic specie flow:

In line with the discipline of the currency board system, the clearing balance will be affected by the flow of funds into or out of the Hong Kong dollar. When there is an inflow of funds involving HKMA passively buying US dollars

sold to it by the banks and providing the Hong Kong dollars, the clearing balance of the banking system will rise....Conversely, when there is an outflow of funds involving HKMA passively selling US dollars and buying Hong Kong dollars from the banks, the clearing balance of the banking system will fall....

HKMA adheres strictly to this discipline which in effect involves the clearing balance of the banking system varying with the amount of US dollars sold to or brought from HKMA at the initiatives of the banks....(FSB 1998, paras. 3.36–3.37)

HKMA has chosen to abandon the proactive manipulation of interbank liquidity (the clearing balance) and interbank interest rates as a means of defending the link. In effect, HKMA will allow the specie flow process—one of the two automatic stabilizers of the classical currency board system—to unfold naturally in the future. This is a major policy shift. Nevertheless, HKMA will maintain the option to sterilize the monetary effect of several types of “exceptional circumstances,” including:

- Occasions when initial public offerings (IPOs) of shares and other large-scale Hong Kong dollar transactions risk creating extreme conditions in the interbank market.
- The necessity of entering into intraday repos (of eligible papers) and overnight repos (through the LAF) to “smooth the settlement of interbank transactions.”
- Activities that may inadvertently affect the clearing balance, e.g., a transfer of fiscal surpluses from the government to HKMA.

In all these circumstances, HKMA will undertake to neutralize their effects on the monetary base by recycling or offsetting interbank liquidity through appropriate actions, so that the clearing balance remains the same. Note that these are sterilization measures to contain domestic rather than international shocks. Hence, the tricky question of whether

sterilization is possible for a small open economy under a fixed exchange rate regime is not directly relevant here.

In terms of the triangular scheme for a CBA to fix its exchange rate that was presented at the beginning of this study (Figure 1), HKMA seems to have finally arrived at a situation where two of three anchors can be effectively used: (i) economic discipline on the basis of adequate reserves, and (ii) automatic specie flow. The problem lies with the third anchor—exchange rate arbitrage.

In its *Report on Financial Market Review*, the government rejected bank note arbitrage—a key pillar of the classical currency board system—as an effective mechanism for binding the exchange rate (FSB 1998, para. 3.34). This is consistent with the view of Tsang (1997, 1998), and should have very significant implications for the theory of how CBAs can fix the exchange rate on “autopilot.” However, HKMA has not put in place an alternative arbitrage mechanism, rejecting the proposal by Tsang (1996a, 1996b, 1997) of adopting the AEL (Argentina, Estonia, Lithuania) model of convertible reserves under which arbitrage can be performed without bank notes or cash (FSB 1998, paras. 3.64–3.65).

Instead, HKMA has opted for a tactic of “constructive ambiguity” (Yam 1998, p. 24), under which it would choose the level of exchange rate at which it intervenes directly in the foreign exchange market. As can be noted from Table 1, Hong Kong, China has huge foreign exchange reserves. At the end of 1997, these were more than six times the currency in circulation—far exceeding the 100 percent coverage sought for the classical CBA. In fact, including the Land Fund, which was transferred to the management of HKMA in September 1997, Hong Kong, China had the third largest foreign exchange reserves in the world, representing over 40 percent of M3 in Hong Kong dollars—a comfortable position which few, if any, other CBAs are in.

Under the strategy of “constructive ambiguity”:
... HKMA will need to decide which particu-

lar level to enter the foreign exchange market to support the exchange rate. This involves judgement by HKMA as to whether or not the circumstances have become abnormal, for example, when there is speculation.... Furthermore, the intervention level may not exactly be at 7.80, although very close to it. For instance, when there are signs of speculative pressure, HKMA may establish its presence in the foreign exchange market even though the exchange rate is on the strong side of the link. (FSB 1998, para. 3.43)

This will enable HKMA to play on “the surprise element” (FSB 1998, para. 3.44c). It is, however, unclear whether HKMA will attempt to sterilize the monetary effects of its future foreign exchange market interventions to defend the link against speculative attack, so as to follow strictly the principle of maintaining intact the clearing balance of the banking system and therefore the monetary base.

Technical Assessment

Vulnerability, Strength, and Uniqueness of the Currency Board Arrangement

The link has evolved through different stages since it began in October 1983. In a number of major ways, it is not what it used to be. The official subscription to currency board principles should not be taken at face value.

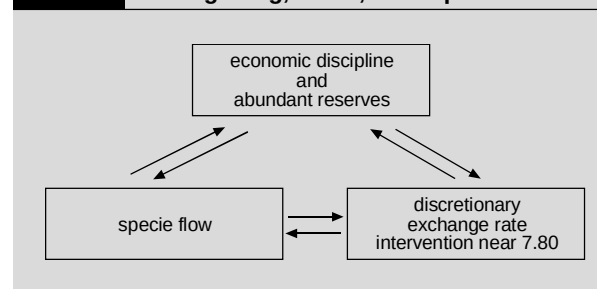
The link is still vulnerable to speculative attack. There is no currency board, and notes are issued by designated NIBs, which alone can deal with the Exchange Fund at the fixed exchange rate. Note-based arbitrage has not been practicable, rendering one of the two automatic stabilizers inoperative (Tsang 1996a, 1996b). Since the other stabilizer is in theory highly dependent on the efficiency of arbitrage, it also has not functioned very well. Hence,

the market exchange rate has persistently strayed from the official rate of 7.80.

However, the economic fundamentals in Hong Kong, China are relatively better than in most economies with CBAs. The territory also has ample ammunition against speculators and nonbelievers, as evidenced by its huge international reserves. It can augment the link through its central bank (HKMA), which has made known its clear commitment to the fixed exchange rate. The system has therefore survived major attacks.

As the CBA stands, instead of the traditional triangle of currency board anchorage presented in Figure 1, HKMA relies on a new triangle, as shown in Figure 3. It is a unique currency board arrangement, with the arbitrage anchor replaced by discretionary intervention in the foreign exchange market to buttress an officially committed exchange rate: HK\$7.80 to the US dollar.

Figure 3: The Currency Board Arrangement Triangle in Hong Kong, China, as of April 1998



Cash Arbitrage as a Nonstarter

As far as currency board economics is concerned, a clear lesson from the experience of Hong Kong, China is that cash arbitrage is hopeless in defending a modern-day CBA. Greenwood and Gressel (1988) detected the problem sometime ago, and Tsang (1996a, 1996b) tried to tackle it. The idea of cash arbitrage has actually been banished from official discussions, and the *Report on Financial Market Review* ruled out its practicability in Hong Kong, China (FSB 1998, para. 3.34). In a banking system with fractional cash reserves, allowing depositors to

convert deposits into bank notes for the sake of engaging in arbitrage is hazardous business.

The cash base in the territory has been contracting in relative size. By the end of 1997, “authorized institutions” (including licensed banks, restricted license banks, and deposit taking companies) had a Hong Kong dollar cash-deposit ratio of less than 1 percent, while the territory wide ratio of notes to deposits was only about 5.6 percent (Table 2).³ Banks would hardly want to facilitate arbitrage activities that required first of all the conversion of deposits into currency notes, as large conversions could turn into a bank run. (Shipping gold bullion around has no similar hazardous consequence.) This is a definite drawback of the currency board system vis-à-vis the gold standard. Actually, bank note arbitrage was rarely observed in the territory, and certainly not during the attack in October 1997.

Worse still, modern financial developments point irreversibly to a further diminishing cash base, and the cashless society is widely predicted to arrive sometime in the 21st century. How then would a currency board be able to fix its exchange rate through cash arbitrage?

Table 2: HK\$ Cash-to-Deposit Ratios in Hong Kong, China, End 1985–1997 (percent)

Year	Ratio of Notes in Circulation to Total HK\$ Deposits for Whole Economy to Total HK\$ Deposits	Ratio of Notes and Coins (i.e., cash) Held by All “Authorized Institutions”
1985	7.60	1.10
1986	7.55	1.14
1987	8.14	1.21
1988	8.15	1.08
1989	8.27	1.22
1990	7.86	1.07
1991	7.70	1.09
1992	8.51	1.31
1993	8.03	0.99
1994	7.32	1.02
1995	6.63	0.88
1996	5.90	0.76
1997	5.59	0.84

Source: Census and Statistics Department, *Annual Digest of Statistics*, various issues; Hong Kong Monetary Authority, *Monthly Statistical Bulletin*, various issues.

The Argentina, Estonia, Lithuania Model of a Convertible Monetary Base

One way out is to modernize the CBA and adopt the convertible reserves mechanism of the AEL model, under which interbank exchange rate arbitrage can be performed without cash.

In practice, Hanke, Jonung, and Schuler (1993, p. 5 and Appendix A) observed that “in some cases,” a currency board “issues deposits” fully backed by foreign reserves, and in their recommended “model constitution” for a currency board in Russia, they allowed for such a possibility. Baliño and Enoch (1997) noted that there is a central bank in quite a few modern CBAs, and that the central bank in several cases (such as in Argentina, Estonia, and Lithuania) takes deposits from commercial banks and holds foreign exchange reserves beyond the amount of notes and coins in circulation to cover those deposit liabilities. Unfortunately, Baliño and Enoch did not point out the operational differences between a CBA that guarantees the convertibility only of notes and coins and one that guarantees the convertibility of the entire banking reserves (or the monetary base in the modern context) as well. In fact, there are very significant implications, particularly with regard to arbitrage efficiency and the stability of the exchange rate.

Singling out Argentina, Estonia, and Lithuania for detailed investigation, Tsang (1996a, 1996b) found that the AEL model overcame the problems of cash-based arbitrage. Argentina began a currency board-type system in 1991, Estonia in 1992, and Lithuania in 1994 (Bennett 1994; Enoch and Gulde 1997). Although these countries were latecomers compared with Hong Kong, China, their improved arrangement has shown a much higher degree of arbitrage efficiency and exchange rate stability, with the spot exchange rate invariably quoted around the official rate, despite political and economic turbulence.

In the AEL model, banks have an account with the central bank, to hold their deposit reserves and

other balances. The central bank guarantees the full convertibility of these bank balances at the fixed exchange rate. This setup avoids the problem of moving cash around for arbitrage.

Suppose we are in a country where the domestic currency, the peso, is pegged to the US dollar at parity under a convertible reserves scheme. Banks must quote the official rate of P1 per US dollar. But if Bank A were to quote an exchange rate of P1.1 to the dollar, Bank B could sell US\$1 million to Bank A for P1.1 million, ask A to transfer the pesos to B's account at the central bank, and transfer US\$1 million to A's account. On demand, the central bank would convert the pesos into US\$1.1 million for Bank B, which then fetches an arbitrage profit of US\$100,000. Bank A, on the other hand, suffers a loss of P100,000 as it receives only P1 million for its US\$1 million at the central bank. An unrepentant Bank A stands to lose unlimited sums in the inter-bank market.

No cash movements are involved, as the central bank clears the arbitrage transactions between the two banks (Tsang 1997). Note that after settlement, the central bank's foreign reserves will be reduced by US\$100,000, i.e., the central bank risks losing reserves if a commercial bank like A were to rebel against the peg. However, that loss is matched by a corresponding shrinkage (P100,000) in Bank A's balance sheet. Since the deal is settled by accounting transfers through telephone calls and electronic means, the transaction cost is reduced to an absolute minimum. This arrangement for cashless or electronic arbitrage is obviously superior to the cash-based arbitrage mechanism under the classical currency board.

In reality, under the convertible reserves system, no bank would dare to quote an exchange rate different from the official rate. All commercial banks are bound by the rules of the game to quote the official exchange rate, within a very narrow buying and selling spread that truly reflects petty transac-

tion cost; otherwise they will be hit by their market rivals. Therefore, no actual arbitrage needs to take place, and the central bank is in no fear of losing foreign reserves.⁴ With this improved form of CBA, Argentina, Estonia, and Lithuania have been able to literally fix their spot exchange rates despite serious economic or political instability (Tsang 1997). Hong Kong, China can adopt the convertible reserves system to rein in the market exchange rate and defend itself more firmly against currency attacks.

On 1 April 1993, the central bank, HKMA, came into existence. In late 1996, the RTGS system was instituted. On top of the normal clearing balance, HKMA could ask each bank to submit to it an equivalent amount of US dollars to obtain notes from NIBs.⁵ At the same time or alternatively, HKMA may impose a deposit reserve ratio requirement on the banks. To overcome possible resistance from the banking sector, the ratio, which is interpreted in some quarters as a financial tax, should be kept small, and interests might be paid on a part of those reserve deposits beyond a certain ratio. The idea is not to tax the banks, but to ensure suitable liquidity in the reserve account to minimize any possible impact on the interest rate. As explained above, if the system works, no actual arbitrage occurs and the spot exchange rate can still be perfectly fixed. In that situation of benign equilibrium, the deposit reserve ratio might be very small, even approaching zero. In reality, though, for a modern financial center like Hong Kong, China, where large cross-border flows of funds are a fact of life and speculative attacks on the currency can occur at any time, a deposit reserves system does have the merit of providing a reservoir of reserve funds to help ease the interest rate pain.

Under the RTGS system, the aggregate banking balance with HKMA should theoretically be zero, since one bank's receipt is another's expenditure. Banks also need not deposit any money at HKMA as the balance is non-interest bearing. In practice,

because of imperfect information and precautionary liquidity management on the part of banks, as well as unplanned inflow and outflow of funds, the aggregate balance usually fluctuates between a few billion Hong Kong dollars and may even turn negative. Suppose there is a deposit reserves system at 5 percent, i.e., for every HK\$100 of deposit that a bank receives, it should keep a reserve of HK\$5 with HKMA. Because banks would be penalized if their reserves fell below the required level as a result of an unanticipated increase in deposits, they would keep 1 to 2 percent in excess reserves (assuming that reserves are interest bearing). At 2 percent, this excess would be about HK\$30 billion, since licensed banks have about HK\$1,500 billion in Hong Kong dollar deposits. If liquidity in the clearing account were to dry up suddenly, banks could transfer any portion of the HK\$30 billion in their reserves account to the clearing account. Interest rate pressures might then be reduced.

Alternatively, HKMA can allow for an averaging provision in the deposit reserves requirement. For example, the stipulated 5 percent will be a monthly average of daily balances. On any business day, a bank may lower it down to, say, 2 percent, i.e., only 40 percent of the required level. It will, of course, need to ensure that in the subsequent days, higher than 5 percent of reserves have to be kept at HKMA, so that the monthly average can be achieved. This arrangement will also provide banks with a liquidity buffer.

With huge foreign exchange reserves, HKMA would have little problem in settling electronic arbitrage at the fixed exchange rate among financial institutions. The AEL model requires an even lower degree of activism on the part of HKMA. The results would be less unpalatable for the economy of Hong Kong, China if the speculators were to return, as the latter would see that all the banks are bound by self interest to quote around the rate of 7.80. In other words, speculators would have to fight the whole banking system, not just HKMA, in their bid to derail the link.

Reservations about the Argentina, Estonia, Lithuania Model

Tsang (1997) proposed the AEL model for Hong Kong, China during the consultation exercise of the Hong Kong, China government after the October 1997 turbulence (FSB 1998). However, the government, in its *Report on Financial Market Review*, rejected the proposal, as it regarded the distinction between the monetary arrangements in Hong Kong, China and those in the AEL model as “relatively minor”—a point on which it did not elaborate (FSB 1998, para.3.65). Moreover, the report raised a number of concerns (FSB 1998, paras. 3.44 and 3.65):

- The AEL model “will not protect the economy from the interest rate pain” resulting from speculative attack. Argentina in 1995 was cited as an example of high interest rates. Moreover, “since there is no scope for the exchange rate to move, the impact of the flow of funds will fall entirely upon interest rates,” thus leading to greater interest rate volatility.
- There are “transitional problems of moving the exchange rate from the present level to 7.80.”
- The “proposed statutory reserve requirement will be very unpopular among banks.” Moreover, the LAF mechanism already provides a cushion against sharp interest rate movements.

These concerns are legitimate, but should be analyzed from the appropriate perspective. There is no denying that even the AEL model cannot escape interest rate pain; which system can?⁶ Although the spot exchange rate is fixed, the forward rate is not. Local interest rates could still be higher than those of the foreign counterpart, along with weak forward exchange rates. Nevertheless, it is important to distinguish between two different types of perceived risk: (i) efficiency risk, and (ii) systemic risk.

One reason for the interest rate pain may be that market participants are not sure whether the allegedly fixed exchange rate system could really fix the spot rate. In other words, there is an efficiency risk regarding the exchange rate and market participants

demand an interest rate risk premium. In a small open economy that also happens to be an international financial center like Hong Kong, China, such an efficiency risk should not be underestimated as there is no recourse to any form of exchange controls. Over time, though, the fixity of the spot exchange rate under an effective arrangement should lead to a consolidation of confidence, and domestic-foreign interest rates and spot-forward exchange rates would converge as people dared to engage in interest arbitrage. In the case of the AEL model, such a phenomenon has occurred in Argentina, Estonia, and Lithuania, as analyzed by Baliño and Enoch (1997, Appendix 1).

Convergence has, however, not been perfect in the three countries: local interest rates have remained higher than those of the US dollar (to which the Argentine peso and the Lithuanian litas are pegged) and the German deutschemark (to which the Estonian kroon is linked). This is due to the existence of systemic risk (Tsang 1998b). Although market participants observe the fixity of the spot exchange rate, they are not sure that such a “perfect” system that is working so well will not be abandoned in the future, not because it is defective, but because of other economic or political factors. No matter how good it is in anchoring the exchange rate, whether a fixed-rate regime is best for the economy is always a controversial issue. Commentators familiar with the situation in the three AEL countries also understand why some people there might be nervous, justifiably or otherwise, about the possibility of a coup d’état or external invasion. The choice of Argentina in 1995 (in the aftermath of the Mexican crisis and in the midst of presidential elections) was a perfect counterexample for the government of Hong Kong, China to cite: it was a time when systemic risk was so huge in the country. However, the question can be reversed: without the AEL model fixing the exchange rate of the peso against the US dollar, would the situation not have been even more disastrous?

If Hong Kong, China adopts the convertible reserves system of the AEL model, the efficiency

risk should be eliminated rather quickly. Interest rate convergence could unfold at a faster pace than that observed in the three countries. As to the systemic risk, the political and economic situation in Hong Kong, China is far more stable than in those countries: no one in the territory would seriously fear the possibility of a coup d’état or invasion, although repegging or refloating for optimality considerations can never be entirely ruled out.

Let us return to the specifics of applying the AEL model to Hong Kong, China. It has already been pointed out that the required reserve ratio could be set at low levels and banks may be paid some interest to reduce their resistance. With the spot exchange rate locked at 7.80 and quoted by all banks, speculators will have to think very carefully before launching any attack, as they will be working against the whole banking system. Such hesitation should reduce the pressure on the link, and hence on interest rates through the specie-flow process.

The present deviation of the market exchange rate from 7.80 seemingly provides a “scope of adjustment” other than interest rate movements. However, it is relatively small in magnitude (less than 1 percent). Alongside “constructive ambiguity” (Yam 1998, p. 24) or “the surprise element” (FSB 1998, para. 3.44), such a deviation actually introduces uncertainty into the system. Under the present circumstances, whenever the market rate breaches 7.75, people would, justifiably or otherwise, regard it as a sign of weakness (despite the rate being on the strong side of 7.80) and expect HKMA to intervene. There is a danger that 7.75 will become a self-imposed defense line if the authority is excessively concerned about the transitional problems of moving the market rate to 7.80.

The nonalliance of the market exchange rate with the official rate could also have been the source of the problem: in the heat of the East Asian crisis, speculators might have regarded the “nonfixity” as a sign of insecurity of the link, and therefore decided to have a go at it. If there had been no such deviations,

because of, say, a more robust arbitrage mechanism, speculators might not have come in, or might not have been so aggressive.

Overall Comments on Technical Feasibility

The key question is whether the combination of the “autopilot” specie flow mechanism and discretionary foreign exchange market intervention in the CBA of Hong Kong, China, as shown in Figure 3, provides an effective defense of the link. A related question is what the least-cost option is. HKMA obviously thinks that the answer to the first question is yes. According to a press report, the answer to the second question seems to focus on reducing the impact of interbank transactions and settlements on the clearing balance, i.e., improving the mechanism of RTGS, so as to smooth out interest rate movements in the specie flow process (*Ming Pao*, Hong Kong, 17 February 1998). The *Report on Financial Market Review* also discussed deepening the fixed interest rate market to increase “the ability of the economy to tolerate the interest rate pain” (FSB 1998, paras. 3.123–3.125).

In any case, just as the unprecedented speculative attack in October 1997 did not overturn the link, the probability that the East Asian financial turmoil will derail it remains small, unless external shocks of a much bigger scale emerge. The well-tested commitment of the government to the link rate of 7.80, buttressed by the third largest foreign reserves in the world (and over 40 percent of M3 in Hong Kong dollars), should be able to see Hong Kong, China through.

Nevertheless, whether and how the cost of defense can be further reduced is still an important and unsettled issue. The crux of the matter apparently is: Should this be done through an effective exchange rate arbitrage mechanism, or through measures that reduce the impact of movements of funds on interest rates? The very high and volatile interest rates witnessed since 23 October 1997 have become a serious factor depressing the banking sector. A credit crunch seems to be unfolding. After reaching a peak

of HK\$1,609 billion in September 1997, the stock of Hong Kong dollar loans and advances by licensed banks fell and stagnated around HK\$1,550 billion in the first four months of 1998. This would have had a very adverse effect on the real economy. If the situation is not rectified, the economy of Hong Kong, China might be headed for a deep recession.

Hence, there is a real need to improve the CBA in Hong Kong, China because the Hong Kong dollar has become a speculators’ target: it is the only currency in the East Asian region, other than the PRC yuan, that has not succumbed and been devalued. We can put forth a strong case for adopting the AEL model of instituting an effective electronic arbitrage mechanism, as well as a deposit reserves system that enlarges the pool of interbank funds and helps to reduce interest rate pressures.

Economic Optimality

Williamson’s “Four Virtues and Seven Vices” of Currency Board Arrangement

In his studies on currency boards, Williamson (1995) succinctly listed four advantages and seven (potential or actual) disadvantages of CBAs. It may be useful to briefly review them here before looking at the case of Hong Kong, China. A currency board may have the following advantages and disadvantages:

Advantages

- it assures *convertibility* because of the requirement of full reserve cover;
- it instills *macroeconomic discipline* by preventing the monetization of fiscal deficits and the pegging to a presumably low-inflation currency;
- it provides a guaranteed *payments adjustment mechanism* under which monetary flows become endogenized at the fixed rate, hence inducing balance in the real sector;
- because of the above three features, it creates *confidence* in the monetary system and therefore promotes trade, investment, and growth.

Disadvantages

- the *seigniorage* problem: because of the necessity of keeping assets in foreign currency as reserves, a currency board may earn less if domestic investments give a better yield;
- the *startup* problem: a currency board may not have enough foreign assets for the initial launching;
- the *transition* problem: a currency board may start from a highly inflationary situation and the transition to a fixed exchange rate may result rapidly in an overvaluation of the domestic currency;
- the *adjustment* problem: a currency board cannot resort to exchange rate changes to secure balance-of-payments adjustments even in the case of external shocks; the problems will be acute if flexibility in the real sector is not high;
- the *management* problem: a currency board cannot run an independent monetary policy; moreover, it tends to produce aggravating procyclical effects (unless the economy to whose currency the domestic one is pegged happens to behave in offsetting cyclical patterns);
- the *crisis* problem: a currency board may not be able to act as a lender of last resort to financial institutions, because it violates the “basic precept of issuing domestic currency only in exchange for foreign currency rather than against domestic assets”;
- the *political* problem: a currency board may not be able to impose fiscal discipline because politics may weigh in favor of the finance ministry.

Taking Williamson’s “four virtues and seven vices” about currency boards as aggregate assessment criteria, Hong Kong, China’s CBA should obviously be endorsed. First, the territory has been able to capitalize on the major advantages of a currency board because of:

- much more than 100 percent reserves to cover for currency issuance and *convertibility*;

- remarkable domestic *fiscal surpluses* and the choice of the US dollar as the peg (as the US entered into a period of low inflation);
- flexibility in the real sector which adjusts quickly to the *payments mechanism* under a fixed exchange rate;
- the “China factor” (economic linkage between the PRC and the territory after 1978) which has so far augmented *confidence* in the linked rate in promoting trade, investment, and growth.

Second, the peculiar situation of Hong Kong, China means that the seven disadvantages raised by Williamson are offset to a significant extent:

- the *start-up* problem has not been an issue for Hong Kong, China given its huge international reserves;
- the *adjustment* problem has been rectified to a certain extent by flexibility in the real sector;
- the *crisis* problem is not a real problem given Hong Kong, China’s foreign exchange and fiscal reserves (the monetary authority can spare reserves to carry out the role of lender of the last resort);
- the *political* problem: politically backed fiscal nondiscipline has not been, and is unlikely to become, a problem in Hong Kong, China as the Basic Law governing Hong Kong as a Special Administrative Region (SAR) under Chinese sovereignty after 1997 stipulates rather stringent standards of fiscal behavior for the government.

But there are still three problems to deal with, i.e., the *seigniorage* problem, the *transition* problem, and the *management* problem. The first two problems do point to a controversial issue in the management of Hong Kong, China’s foreign exchange reserves: given the credibility of the linked exchange rate of 7.80, and yet the high inflation rate in Hong Kong, China vis-à-vis the US, it may not be advisable for Hong Kong, China to keep such a high percentage of investment in foreign assets. What was the point in having a 630 percent cover

for currency notes (see the 1997 figures in Table 1). It appears that in their preoccupation with building up reserves to defend the link, the Hong Kong, China authorities have not paid enough attention to optimality considerations. From this perspective, Hong Kong, China should have invested more in itself.

Regarding the *management* problem, there have been some controversial issues for Hong Kong, China, which Williamson (1995, p. 25) has singled out:

Another clear example of the costs of being unable to run a monetary policy tailored to local needs is to be found in the recent experience of Hong Kong. During the US recession of the early 1990s, Hong Kong imported low interest rates from the United States because of its link to the US dollar at a time when its own domestic situation cried out for monetary restraint in order to try to break an asset price boom before it led to the sort of disaster experienced by Japan. Hence the Hong Kong authorities were relieved when US interest rates rose in 1994. Yet it would have been much better if they had been able to act to raise their own interest rates ahead of the US decision.

This passage highlights the lack of instruments in Hong Kong, China to offset inflationary pressure, given the commitment to defend the linked rate of 7.80.

Williamson (1995) also discusses the issue of a “natural candidate,” i.e., to which foreign currency should the local currency be pegged? The Hong Kong dollar has been pegged to the US dollar since 1983. But from 1935 to 1972, the local currency was pegged to the pound sterling (Nugée 1995). In general, the “natural candidate” should be the currency of the foreign economy with which the domestic economy has the closest economic relations. Before the territory was industrialized in the postwar period, its most important economic partner was obviously the UK. The US took over that position after the economic takeoff. In the 1980s, over one third of the territory’s manufacturing exports were absorbed

by the US market. Moreover, about 70 percent of its exports (including those to non-US destinations) were priced in US dollars. So the choice of the link seemed “natural.” Of course, in the future, when the PRC currency, the renminbi, becomes a fully convertible currency and Hong Kong, China’s economic integration with the PRC further develops and matures, a repegging of the Hong Kong dollar to the yuan can be considered.

The Economics of Small Open Economies: Fixed versus Floating Exchange Rate

The debate between the relative merits of fixed versus floating exchange rate regime is still unsettled, and will probably never be settled. In general, the more flexible the real sector of an economy is, the more a fixed exchange rate is suited to it because nominal prices do not have to be changed through exchange rate movements in case of external shocks. The real sector will do the job by quickly adjusting. Hong Kong, China is noted for flexibility in the production responses of its enterprises and in the labor market. Given the economic link between the territory and the PRC (the former has relocated massive production facilities to the Pearl River Delta to make use of its much lower-cost labor and other resources), local growth may also not be very sensitive to movements in the exchange rate of the Hong Kong dollar.

Moreover, for a small open economy like Hong Kong, China, a floating exchange rate regime may not bring much monetary autonomy. Local interest rates cannot deviate significantly from foreign ones, especially those of the US dollar. Historically, in both the floating-rate era (late 1974 to September 1983) and the fixed-rate regime (October 1983 to December 1997), the differential between three-month Hong Kong dollar HIBOR (Hong Kong interbank offered rate) and US dollar LIBOR (London interbank offered rate) was not wide. In terms of standard deviation, it was 1.89 percent in the former period, and 1.44 percent in the latter (on the basis of

average monthly figures). In the more recent period of January 1996 to April 1998, the standard deviation went up to 1.86 percent. Of course, after the speculative attack on the Hong Kong dollar in October 1997, HIBORs have stayed at very high levels and have shown large volatility. The monthly average standard deviation between three-month Hong Kong dollar HIBOR and US dollar LIBOR in the six months of November 1997 to April 1998 turned out to be 2.16 percent, while the daily average was 2.57 percent.

To look at the matter from another angle, a floating exchange rate system for a financial center like Hong Kong, China carries considerable instability risk, particularly as the territory is going through a very sensitive period of political transition. Speculative capital movements and attacks on the currency are difficult to contain in a floating-rate regime. A fixed-rate regime does have the advantage of diverting pressure away from the exchange rate to other aspects of the economy that are less vulnerable to financial fluctuations and “hit and run” activities. It thus serves an important anchorage function.

Nevertheless, the above considerations have to be cast in the proper perspective: if the external shocks are really big, it may be too much to ask the real economy to do all the adjusting. Even for a financial center, a floating exchange rate would give useful information about the unfolding imbalances in the economy. London, New York, Singapore, and Tokyo all operate under floating exchange rates. In the longer run, there is the problem of whether the fixed rate or even the peg itself should be modified at all, should there be an irreversible structural divergence between the home economy and the foreign economy to whose currency the domestic one is pegged (Tsang 1998a). One obvious example is the divergence between the British economy and the Hong Kong economy in the postwar years. The British economy was on the decline, while Hong Kong was witnessing an economic takeoff. The peg

of the Hong Kong dollar to the pound sterling became increasingly untenable. Even after the Hong Kong dollar was revalued against the pound sterling in 1967, the pressure continued. After a brief period of repegging to the US dollar (1972–1974), the local currency had to float at the end of 1974 (Nugée 1995).

As a very strong form of fixed exchange rate regime, a currency board system may find it hard to deal with major external shocks, structural divergence, and deep-seated economic imbalances that do not show up easily. A key issue, which was not discussed by Williamson (1995), is that of exit cost: the cost of quitting the peg. If more is invested in building confidence in the system, more has to be forgone when it is finally deemed necessary to change track.

Growth and Inflation in Hong Kong, China

While the nominal exchange rate of the Hong Kong dollar against the US dollar has remained around the 7.80 level, the cumulative inflation differential between Hong Kong and the US was about 90 percent in 1984–1997 (i.e., the Hong Kong consumer price index rose by 90 percent more than its US counterpart in the period). Hence, the Hong Kong dollar has appreciated substantially in real terms against the US dollar. Even if we consider that both the nominal and real exchange rates of the Hong Kong dollar were undervalued at the time the link began, the discounted real appreciation (compared with an equilibrium level) would still be notable. This has been cited as one reason why real GDP growth has declined under the link rate, as shown in Tables 3 and 4.

Table 3 shows some worrying statistics. The problem seems to lie in the 1990s when low GDP growth has combined with high inflation. Table 4 gives a historical comparison for the past three decades. Common perception has it that the “China factor” lifted the economy of the territory, particularly after

Table 3: Hong Kong, China's Real Gross Domestic Product Growth and Inflation Rate in Historical and Comparative Perspectives, 1976–1997 (%)

Year	Real GDP Growth		Inflation Rate				
	Hong Kong, China	Hong Kong, China	Industrialized Countries	Korea	Singapore	Taipei, China	United States
1976	17.1	3.5	7.9	15.3	(1.9)		5.7
1977	12.5	5.7	8.2	10.2	3.2	7.0	6.5
1978	9.5	6.1	7.3	14.5	4.8	5.8	7.6
1979	11.7	11.6	8.9	18.3	4.1	9.8	11.3
1980	10.9	15.5	11.6	28.7	8.5	19.0	13.5
1981	9.4	15.4	10.1	21.3	8.2	16.2	10.3
1982	3.0	10.5	7.6	7.2	3.9	3.1	6.2
1983	6.5	9.9	5.3	3.4	1.2	1.3	3.2
1984	9.5	8.1	4.7	2.3	2.6	0.0	4.3
1985	0.4	3.2	4.0	2.5	0.5	(0.2)	3.6
1986	10.8	2.8	2.3	2.8	(1.4)	0.7	1.9
1987	13.0	5.5	2.9	3.0	0.5	0.5	3.7
1988	8.0	7.5	3.3	7.1	1.5	1.2	4.0
1989	2.6	10.1	4.5	5.7	2.4	4.4	4.8
1990	3.4	9.8	5.0	8.6	3.4	4.2	5.4
1991	5.1	12.0	4.4	9.3	3.4	3.5	4.2
1992	6.3	9.4	3.2	6.2	2.3	4.5	3.0
1993	6.1	8.5	2.8	4.8	2.2	2.9	3.0
1994	5.4	8.1	2.3	6.3	3.1	4.1	2.6
1995	3.9	8.7	2.5	4.5	1.7	3.7	2.8
1996	5.0	6.0	2.3	5.0	1.4	3.1	2.9
1997	5.2	5.7	2.0	4.5	2.0	0.9	2.3

() = negative values are enclosed in parentheses.

GDP = gross domestic product.

Sources: International Monetary Fund, *International Financial Statistics*, various issues; Bank of Taiwan, *Financial Statistics Monthly*, various issues.**Table 4: Average Real GDP Growth and Consumer Inflation, 1961–1997 (percent)**

Year	Real GDP Growth per Year	Average Annual Consumer Inflation Rate
1961–1970	8.8	5.3
1970–1980	9.0	8.7
1980–1990	6.5	8.1
1990–1997	5.2	8.3

GDP = gross domestic product.

Source: Census and Statistics Department, 1998. Estimates of GDP 1961–1997. Hong Kong, China Special Administrative Region.

the “Deng whirlwind” of 1992, when paramount leader Deng Xiaoping made a tour to southern PRC and enjoined the government to speed up economic growth and reform. In Hong Kong, China, however, the whirlwind has apparently resulted in more inflation, both consumer and asset inflation, than growth.

Inflation and Asset Price Bubbles

It is necessary to look at the inflation issue more closely. We can investigate it from two angles:

(i) inflation transmitted through trade, and (ii) asset inflation.

As far as inflation transmitted through trade is concerned, there is little evidence that the link has been the culprit, as Table 5 shows. The unit value index (UVI) of imports is the deflator for imports, and it has not shown any serious upward pressure since the start of the linked rate system. Of course, the deflator is determined by two factors: (i) the exchange rate, and (ii) foreign inflation. While foreign inflation has remained low, one could always say that a stronger exchange rate would have kept an even tighter rein on the UVI.

A more subtle argument against the link involves the concept of asset inflation. Insofar as the linked rate underreflected the fundamental strength of the economy of Hong Kong, China in the light of its rapid linkage with the PRC economy and the tremendous potential of the latter, local assets might look exceptionally attractive to foreign investors, and inflow of

Table 5: Inflation, Import Price, and Exchange Rate Indices, 1981–1997

Year	% Change in CPI	% Change in Unit Value Index of Import	Import-weighted Effective Exchange Rate Index (year-end)
1981	15.4	11.0	125.0
1982	10.5	5.6	117.7
1983	9.9	12.1	101.1
1984	8.1	11.0	116.5
1985	3.2	(2.6)	111.8
1986	2.8	5.0	107.2
1987	5.5	4.1	94.9
1988	7.5	4.1	94.9
1989	10.1	3.6	104.6
1990	9.8	2.5	104.4
1991	12.0	1.9	103.5
1992	9.4	0.2	108.1
1993	8.5	(0.6)	107.1
1994	8.1	2.8	112.9
1995	8.7	5.0	112.8
1996	6.0	(1.3)	116.2
1997	5.7	(2.3)	131.6

() = negative values are enclosed in parentheses.

CPI = consumer price index.

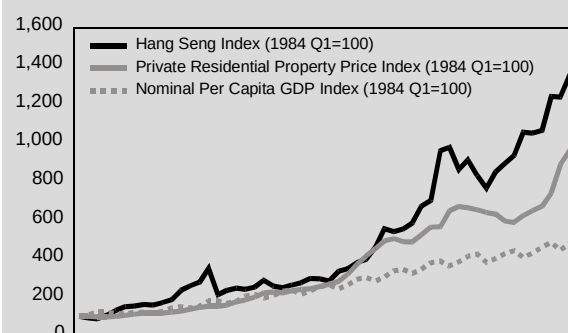
Source: Census and Statistics Department, *Hong Kong Monthly Digest of Statistics*, various issues.

outside money would cause asset inflation. Sheng (1995) tackled the hypothesis of asset bubbles and found it wanting. He argued that a flexible exchange rate might not avoid asset inflation as “recent evidence of asset price bubbles occurred mainly in countries with flexible exchange rates, such as Australia, Japan, Scandinavian countries, and UK. All these countries were free to use their interest rate tools, and yet the bubble occurred” (p. 56).

Nevertheless, the East Asian financial crisis does focus attention on the necessity of keeping strict economic discipline in a fixed or pseudo-fixed exchange rate regime. Overinvestment in the real estate and financial sectors had fueled bubbles in a number of economies in the region (in particular Indonesia, Malaysia, and Thailand), which unwittingly also ran considerable current-account deficits financed by capital inflows (quite a large share of which is short-term hot money). Since these economies adopted an implicit nominal or real peg to the US dollar, the underlying contradictions could

have built up over a period of years without showing explicit strains. Ironically, that is the key weakness of a successful fixed exchange rate regime: short-term problems are hidden under the superficial calm of the peg. A floating exchange rate system would be a better barometer of economic imbalances.

Hong Kong has also shown signs of an economic bubble in the 1990s. Figure 4 tracks the relative performance of the quarterly averages of per capita GDP, private residential property prices, and the Hang Seng Index of the local stock market since the first quarter of 1984 (when the indexes are normalized to 100). Per capita GDP is chosen as a proxy for average income and purchasing power. Prices of real estate and stock shares should not overshoot it by too much, even granting considerations of changes in saving behavior and portfolio selection. From Figure 4, it can be observed that while the three indices basically moved together in the 1980s, wide gaps opened up in 1992 but without any ramifications on the exchange rate, which has stayed on the strong side of 7.80 (Figure 2).

Figure 4: Quarterly Averages of the Hang Seng Index, Private Residential Property Price Index, and Nominal Per Capita GDP Index

GDP = gross domestic product, Q1 = first quarter.
Source: Datastream and Census and Statistics Department.

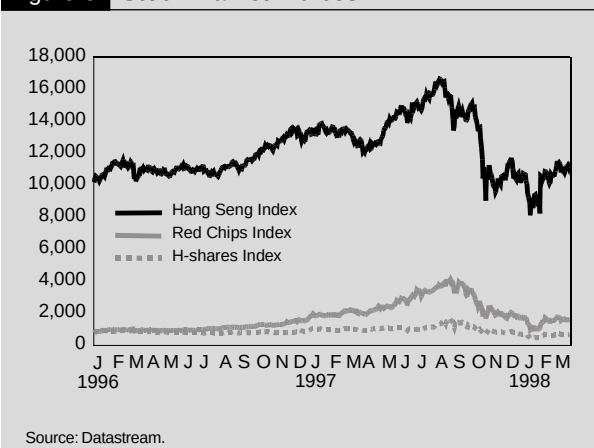
On another front, the “China factor” had apparently contributed to a financial bubble in Hong Kong. In the run-up to the resumption of sovereignty on 1 July 1997, PRC capital funds reportedly poured

into the property and stock markets in the territory, perhaps in an effort to show support for the incoming SAR, or simply as a result of uncontrolled speculation in the era of decentralization and liberalization. In any case, international financial fund managers followed suit. A bubble rapidly emerged and then became self-destructive.

Property prices put forth a dramatic upswing in the fourth quarter of 1996, when rumors about the inflow of PRC capital abounded. In the twelve months that followed, the average price index of residential property units rose by about 50 percent, while that of large units surged by almost 60 percent. Equally breathtaking was the rise in PRC-related stock shares listed in the territory. There are two types of such shares, for which price indices are compiled: (i) the China Enterprises Index, or the so called “H-shares” index; and (ii) the China-Affiliated Corporations Index, or the “red chips” index. As can be observed in Figure 5, the H-shares index and the red-chips index showed huge volatility around the 1997 transition, reflecting highly speculative activities.

All these point to one important conclusion: an economic bubble can emerge from a fixed exchange rate regime, including one that professedly follows the strong principle of the currency board system. The government should keep a keen eye on the longer-term viability of the fixed exchange rate (Tsang 1998a).

Figure 5: Stock-Market Indices



Overall Comments on Optimality

On the basis of Williamson's (1995) characterization of the “four virtues and seven vices” of a typical CBA, Hong Kong, China has been in a position to capitalize on the advantages and to minimize the harm caused by several potential disadvantages. A key factor is the very healthy fiscal and international reserves position of the government. The huge reserves accumulated since the start of the link, however, highlight seigniorage and transition problems—the difficulty of earning sufficient returns on foreign assets in a situation of high domestic inflation. On the other hand, the lack of instruments to offset the inflationary pressure in the 1990s, in particular asset inflation, points to a management problem.

The more flexible the real sector of an economy is, the more a fixed exchange rate is suited to it, as the real sector will adjust quickly, without having to go through nominal and relative price changes arising from exchange rate movements. Hong Kong, China seems to be a relatively flexible economy. For a small open economy with a huge financial sector like that of Hong Kong, China, a floating exchange rate system may bring instability, as it will be difficult to contain speculative capital movements and attacks on the currency. A fixed-rate regime does have the advantage of diverting pressure away from the exchange rate to other aspects of the economy and providing an important anchorage. Its major drawback is that while it requires stricter economic discipline, it does not serve as a very good barometer of imbalances that are building up in the economy (Tsang 1998a). Bubbles could emerge, and the consequences could be very serious if the fixed rate collapses, as has been the case in Indonesia, Malaysia, and Thailand.⁷

Nevertheless, as a very strong form of fixed exchange rate regime, a currency board system may find it hard to deal with major external shocks, structural divergence, and deep-seated economic imbalances that do not show up easily. A key issue is the exit cost of quitting the peg (Tsang 1998b). If more is invested

in building confidence in the system, more has to be forgone when it is finally deemed necessary to change track. Therefore, a balance has to be kept between the conflicting considerations of ensuring short-term stability and maintaining long-term flexibility.

Relevance of Hong Kong, China's Experience for Asia

Hong Kong, China's System as an Idiosyncratic Currency Board Arrangement

Hong Kong, China adopted its CBA in 1983 in response to a crisis. In fact, most economies hosting CBAs did so for similar reasons. Argentina used the system to end hyperinflation; Estonia and Lithuania, to enhance their fragile new national currencies after throwing out the Russian ruble. Hence the exchange rate chosen might not necessarily be appropriate in the long run, unless the real economy is so flexible that it can make all the adjustments, including adjustments to major shocks and structural changes.

From the above analysis, it can be seen that as a CBA, Hong Kong, China's regime is quite unique, after several stages of evolution since 1983. As it stands, it is neither the classical version practiced in former British or French colonies, as shown in Figure 1, nor the modern convertible reserves mechanism of the AEL model. It is presumably based on automatic specie flow, buttressed by discretionary exchange rate intervention by HKMA, at unspecified levels close to the official rate of 7.80. Behind these, of course, are huge reserves and the macroeconomic discipline of the government. This idiosyncratic system, with its latest update in April 1998, is shown in Figure 3 above.

Can Hong Kong, China's System or the Argentina, Estonia, and Lithuania Model Be Imitated?

In a way, such a system can be imitated only by strong economies, in terms of its technical viability.⁸ Other than

Singapore and Taipei, China, no other countries or territories in the region have foreign exchange reserves that cover so much of the money supply. In fact, quite a few have had so little reserves that they needed to be bailed out by the International Monetary Fund. In any case, such an observation begs the question of why a strong economy needs to establish a fixed exchange rate regime as rigid as a CBA. Both Singapore and Taipei, China have shunned the choice.

Even if a relatively weak economy gathers sufficient international reserves, it should not, in our view, adopt either the classical currency board based on cash arbitrage or Hong Kong, China's unique system. The AEL model is the only way to contain a currency crisis, because it provides an effective arbitrage mechanism that technically binds the spot exchange rate, in lieu of direct foreign exchange controls. This provides an important psychological anchor for market participants as it minimizes efficiency risk.

The drawback of the AEL model is that the banking system has to share the defense role with the monetary authority, against exogenous shocks (Tsang 1984; Santiprabhob 1997). In other words, banks cannot reduce their risk by deviating from the official spot rate, because of the threat of losing money in interbank arbitrage transactions. The impact on them may be quite heavy if there is significant systemic risk, as was true of Argentina in 1995. Hence, if an economy has a weak banking system, it has to be cautious in choosing the AEL model. At least, it should devise measures to strengthen or to protect the banking system, including a viable lender-of-last-resort facility.

The governments of the three AEL countries have tried to contain the market perception of systemic risk by legal means (Tsang 1996a; 1996b; Baliño and Enoch 1997). Argentina and Estonia have parliamentary or regulatory provisions that the central bank in effect may allow a stronger but not weaker domestic currency. In Lithuania, according to the Law on

Litas Credibility of 1994, the exchange rate can only be changed by the Bank of Lithuania, in consultation with the government, under extraordinary circumstances.

Enshrining the link in law may reduce systemic risk and lead to an even higher degree of interest rate and spot-forward exchange rate convergence. Nevertheless, the convergence will never be perfect as the law itself is still open to some residual doubts. Moreover, the exit cost will increase, if it is deemed optimal to abolish the fixed-rate regime and re-float the home currency in the future (Tsang 1998b).⁹ Alternatively, in the case of Hong Kong, China, when all conditions mature sometime in the 21st century, it may become advisable to peg the Hong Kong dollar to the then freely convertible PRC currency, the renminbi, instead of sticking to the US dollar.¹⁰

The same problem of exit cost also applies to any scheme under which HKMA issues insurance instruments (e.g., put options) to market participants to foster confidence that the linked rate will not be changed, as well as to the proposal of “dollarization,” i.e., replacing the Hong Kong dollar with the US dollar. Compensations might be huge for a permanent insurance scheme, irrespective of its actual contribution to exchange rate stability, about which the government expressed strong reservations in its *Report on Financial Market Review* (FSB 1998). On the other hand, the re-introduction of a Hong Kong currency could be a troublesome affair after “dollarization.” The government needs to strike a balance between the conflicting considerations of eliminating the systemic risk for the link and reducing the cost of exiting from it, as must any other government adopting a CBA.

Indonesia as an Example

Although Indonesia has shelved the plan to establish a CBA after strong objections by IMF and the US, we can illustrate the dilemma facing an Asian economy in the midst of a currency crisis. After all,

CBAs do have a good record of holding off speculative attacks and keeping the spot rate stable or fixed, although the cost could be considerable. Again, we can look at the matter on the basis of the twin concepts of efficiency risk and systemic risk.

- What kind of CBA is Indonesia going to adopt? The classical currency board based on specie flow and cash arbitrage? Hong Kong, China’s idiosyncratic version of “linked exchange rate”? Or the AEL model of cashless/electronic arbitrage? In other words, can the Indonesian CBA even keep the spot exchange rate firmly in line? This is the first defense. If it is not secured, the second question would be irrelevant. It appears that the country should choose the AEL model of convertible reserves, which binds the whole banking system through electronic arbitrage to quote narrowly around the official exchange rate. But is the Indonesian banking system ready for the model, in terms of the hardware and software requirements, as well as its financial viability at the pegged rate eventually chosen?
- Granted that the Indonesian CBA, whatever form it takes, can hold the spot exchange rate of the rupiah firmly through an efficient arbitrage mechanism, hence eliminating the efficiency risk, how could it inspire confidence in market participants that the CBA (especially regarding the specific fixed rate of the rupiah against the designated anchor currency, the US dollar) would not be abandoned in the future, out of economic or political considerations? This constitutes a systemic risk that must be carefully addressed, with a view to balancing short-term stability concern and long-term exit cost calculation.

OVERALL COMMENTS ON RELEVANCE

Overall, there are four technical varieties of CBAs:

- the classical currency board system as practiced by many former British colonies, which relied on cash arbitrage as well as the patronage of London to fix the exchange rate;

- the Hong Kong CBA in the 1980s under which there were no effective currency board or central banking defense mechanisms;
- the Hong Kong CBA as presented in the *Report on Financial Market Review* (FSB 1998); and
- the AEL model of Argentina, Estonia, and Lithuania.

The first option is hopelessly outdated, and is of no relevance to any economy with a substantial degree of monetization. The second option was a fluke for Hong Kong. It was sustainable because at that time speculators did not notice the territory or did not find it to be a vulnerable target. Hence US\$2.7 billion in 1987 and US\$3.1 billion in 1988 were enough to keep the link intact. In the contemporary context, the third option is a choice only for a strong economy with very large reserves. Yet the cost of defense could be huge if speculators hold the view that the fixed exchange rate is out of line with the rapidly changing external environment. The final option

therefore appears to be the only relevant model for any aspiring economy in the region. In any case, it could reduce or even eliminate the efficiency risk of a peg, but not the systemic risk.

If any Asian economy wants to adopt the AEL model, its government has to make sure that the appropriate infrastructure for arbitrage, and preferably also the LOLR facility, is there. Moreover, the government must think very carefully about the level of the peg that it wants to lock in. In a world of uncertainty and dramatic exchange rate realignments, such as the one that we are facing in the present financial crisis, that is not an easy task at all. The difference between internal and external crises is crucial here. Of course, if a central bank regards the fall in its home currency as totally unjustified, far beyond the calculation based on economic fundamentals, then fixing the spot exchange rate by adopting the electronic arbitrage mechanism of the AEL model could generate a turnaround effect that might help to stabilize the system.

Notes

¹Coins are issued by the government.

²Top officials did talk about the interest rate consequences of the lack of total confidence in the link. Interest rates would have to go up to make people want to take advantage of the “fixed” exchange rate and turn their Hong Kong dollar holdings into US dollar balances. However, at a certain point, this phenomenon would stop as rates of return on local monetary assets looked attractive, even adjusted for exchange rate risk. It is important to note that interest rate movements in such a case only equilibrated the balance of payments, or more precisely the capital account. It did not “fix” the exchange rate; arbitrage must do the job.

³This ratio, small enough as it is, is still an exaggeration, because a significant amount, popularly estimated at 20 to 30 percent of Hong Kong dollar notes, have been circulating in the southern part of the PRC.

⁴This game-theoretic setup must be the basis of the gold standard and the currency board, which rely on the self-interested activities of market participants to cancel each other out, thereby holding the exchange rate. (See Tsang 1984.)

⁵This arrangement would be similar to the pre-1994 situation, although commercial banks at that time passed their US dollar reserves on to NIBs rather than to any central monetary authority. (See Tsang 1996a.)

⁶The *Report on Financial Market Review*, in fact, criticized and rejected proposals from academics that intended to “achieve both exchange rate and interest rate stability” and attempted to avoid “interest rate pain,” including the US dollar LAF/Hong Kong dollar put option facility of the Hong Kong University of Science and Technology, and the insurance scheme of Nobel Laureate Professor Merton Miller of Chicago University. (See FSB 1998, paras. 3.47–3.63.)

⁷Indonesia maintained an implicit real peg to the US dollar before the crisis, allowing the rupiah to depreciate to keep the real exchange rate more or less constant.

⁸Note that at the time the link began, Hong Kong was not a strong economy. It was in a shaky political and economic situation, with much lower fiscal and foreign ex-

change reserves (relative to the size of government expenditure, the money supply, and GDP).

⁹It is interesting to note that both Estonia and Lithuania have started the process of applying to join the European Economic and Monetary Union (EMU). A prerequisite for eventual membership is giving up their CBAs, no matter how perfect they are, because the EMU hosts a central banking system. Lithuania has announced that it is exiting from its CBA in stages during 1997–1999. See Bank of Lithuania, *The Monetary Policy Programme for 1997–99*. This shows the importance of considering the issue of exit cost for CBAs.

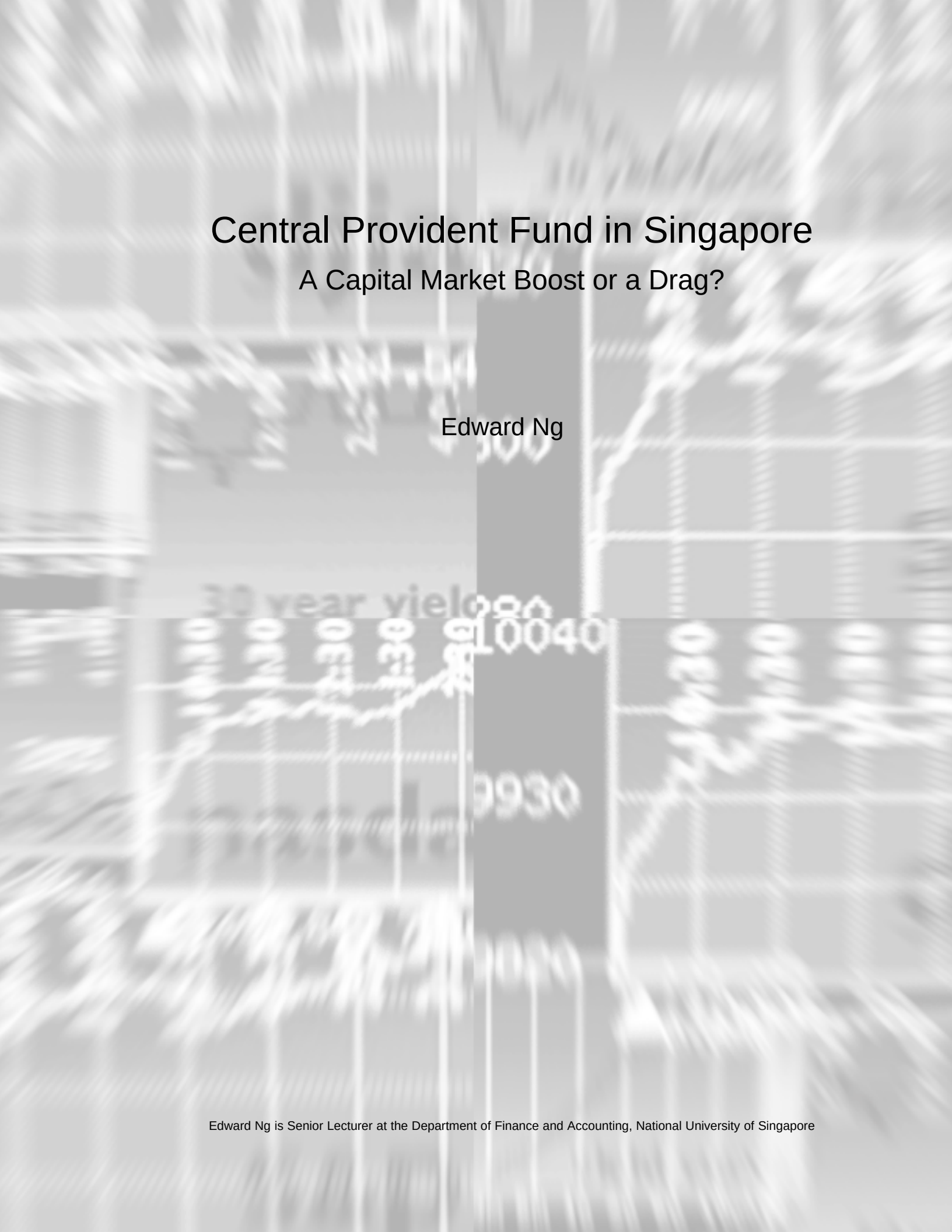
¹⁰An example will illustrate the simplicity of such a scenario of currency realignment. Suppose we are in a period when the exchange rate of the freely convertible renminbi against the US dollar has stayed at and is expected to continue to be around Rmb7.80 to the US dollar for some time, and HKMA decides that the Hong Kong dollar should be linked to the renminbi instead of the US dollar. Given the linked rate of HK\$7.80 versus the US dollar, HKMA can declare that the link is changed to HK\$1.00/Rmb1.00. This “horizontal” change of track will have no implications with regard to foreign exchange gains or losses for any party involved, at the time of the realignment. Farther down the road, it will be up to everyone to make the necessary adjustments, should the renminbi/US dollar exchange rate fluctuate.

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The background of the slide is a grayscale collage of various financial data visualizations. It includes line graphs with fluctuating lines, bar charts, and tables of numbers. Some text from the background images is visible, such as '30 year yield', '10040', '9930', and '10000'.

Central Provident Fund in Singapore

A Capital Market Boost or a Drag?

Edward Ng

A Brief History

The Central Provident Fund (CPF) scheme was introduced as the national funded pension scheme on 1 July 1955 under the British colonial government. Although it was evidently a pension fund for retirement, it was not meant to be the single social security system that it is today. Just before Singapore achieved self-government in 1959, a plan was in place to introduce a social insurance cum public assistance scheme to cater to the needy. At first, the scheme covered all employees in Singapore except those working in the civil service or contributing to other approved provident funds.¹ This plan was later scrapped, however, as the first local government in 1959 believed it would take “available capital resource from other even more pressing needs.”² While the CPF scheme has remained as Singapore’s national funded pension scheme over the past four decades, its character has substantially changed. It retains its primary role as a pension fund for retirement, but its functions have been expanded to include funding medical expenses as well as property and financial investments. Today, the CPF Board (Central Provident Fund Board is the official name) is more like a mandatory savings bank, a significant portion of whose assets can be channeled to “desirable” activities like home ownership.

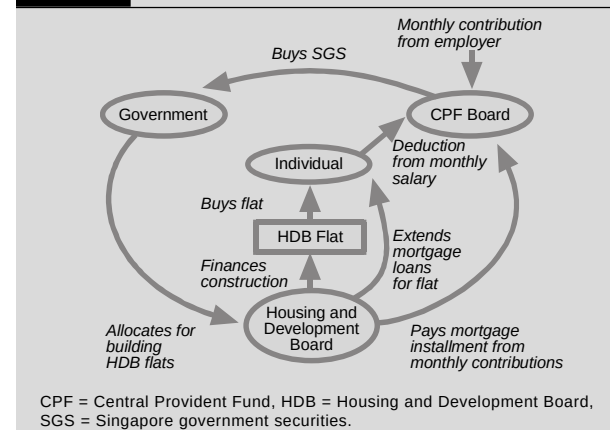
The evolution of the CPF scheme was not accidental. The scheme came about through a calibrated series of measures designed to exploit a critical pool of funds in a small developing country. However, one overriding principle that has not changed over the years is individual responsibility for one’s own future. The emphasis on individual decision making and responsibility has always been the central tenet in the management of CPF savings and had a significant influence in the development of the securities markets in Singapore.

Central Provident Fund as a Financing Tool

There are two landmark events in the development of the CPF scheme. The first took place in 1968,

three years after Singapore became independent from the Malaysian Federation, when CPF savings were allowed to be withdrawn for the first time but limited to the purchase of government flats. This was the first policy measure wherein the government used CPF savings to achieve national objectives. This period of the nation’s history was marked by political and social turmoil. Singapore did not become independent by choice and was largely considered economically unviable. Populated largely by immigrants, it faced the risk of an exodus, which would have made the country’s collapse a self-fulfilling prophecy. The government thus decided that home ownership was the way to make its citizens cast their lot with the new nation. With little surplus and private savings, the funds in the CPF accounts were identified as a source of valuable financing. Figure 1 shows how CPF savings have been used to fund the development of government housing projects.

Figure 1: Circular Flow of Central Provident Fund Savings to Finance the Construction of HDB Flats



By most measures, the policy was a great success. Today, about 80 percent of Singapore citizens and permanent residents live in government flats. The flats have also become a valuable investment as most of them command market values more than double their purchase price.

The second major policy change occurred in 1986. That year the government decided to pull the

economy out of its most serious recession since independence. “Sunrise” industries were identified but the securities markets had to be tapped for the new businesses. Thus, individuals were allowed to invest CPF savings in risky financial assets. This was not, however, the first time CPF savings could be invested in the securities market. Early in 1978, CPF members were allowed to invest their savings in shares of the Singapore Bus Service Ltd. (SBS). SBS shares were, however, not a really risky investment as the firm was a government-linked monopoly that generated healthy cash flows. Each member was also limited to the purchase of S\$5,000 worth of shares. The 1986 measure was intrinsically different in terms of the risk profile of the investments allowed. An Approved Investment Scheme was initiated and has so far been regularly updated. The original list of approved assets included selected blue chip stocks, unit trusts, and gold.

One important aspect has remained unchanged despite the measures to liberalize the use of CPF savings. The principal amount plus the accrued interest cannot be withdrawn until the member reaches the age of 55. Rather than using his own money, the CPF member is “borrowing” from his savings. Anytime an investment, whether property or securities, is liquidated, the CPF Board has the first claim to the principal amount used and any interest that has accrued over the holding period of the investment. Only after these amounts have been returned to the individual’s CPF account can any capital gain be permanently withdrawn. A capital loss, however, does not need to be reimbursed by the individual.

The CPF scheme is quite clearly not a conventional pension system. Carefully timed measures have been introduced to allow this increasingly large amount of forced savings to be productively employed to finance the nation’s development. Appendix 1 gives a chronology of these measures.

Changes in the Central Provident Fund Scheme

In its early years, the CPF scheme was largely devoted to savings for retirement. The static contribution rate of 5 percent each by the employer and the employee on the salary and the undivided individual CPF account quite clearly reflects this objective. If this contribution rate had remained, an individual would have consistently set aside 10 percent of his salary for retirement.

Not long after the country’s independence, the government implemented rapid changes. First, the contribution rate was increased almost every year. With just three increases starting in 1968, the contribution rate reached 10 percent by 1971, which was double the original rate. By 1974, the CPF contribution was 30 percent of a member’s salary. Such a high savings rate is evidence of the intent to make CPF more than a pension scheme for retirement.

The second change was the departure from the equal burden on the employee and the employer. The contribution rate first became asymmetric in 1972. While the employee’s contribution remained at 10 percent as in the previous year, the employer was made to contribute 14 percent. This marked the beginning of the fine-tuning of the CPF scheme to achieve various social and economic objectives.

The third change took place in 1977 when the individual’s CPF account was divided into two subaccounts. The Special Account was created to ensure that a minimum level of financial needs could be met at retirement. Funds in this account cannot be withdrawn except at retirement. Starting at 1 percent of salary, the contribution rate for the Special Account quickly rose to 7 percent in 1979.

The major portion of the CPF savings goes into the Ordinary Account. Since the Special Account is truly the pension savings, the Ordinary Account is aimed at other possible uses. Beyond the regulatory minimum percentage for the Special Account,

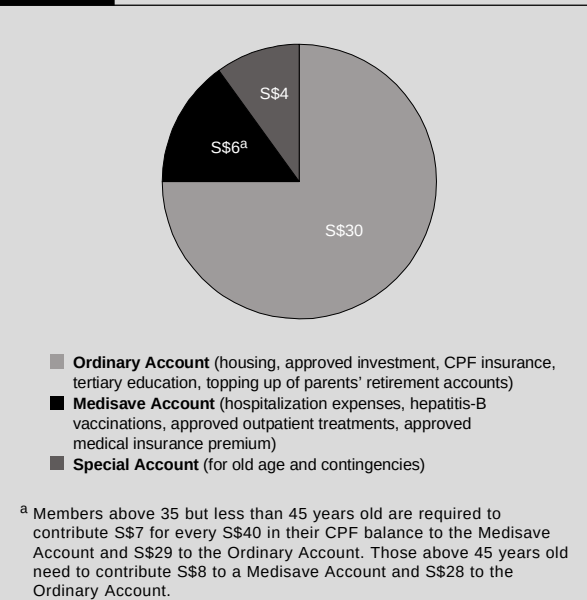
an individual has the option to transfer funds from the Ordinary to the Special Account. A transfer in the opposite direction is, however, not allowed even if it is to reverse from the Ordinary Account. On the other hand, the Special Account enjoys a slightly higher interest rate than the Ordinary Account.

In 1984, the CPF account was further divided. Besides the Ordinary and Special Accounts, a third account called the Medisave Account was created. Funds in this account were specifically targeted at medical expenses, initially for the account holder himself and later expanded to cover immediate family members.

Right from the country's independence, the government has intended the CPF scheme to be a central social and economic policy tool while preserving the savings-for-retirement purpose as much as possible.³ The present CPF scheme is far more than just a pension system. It serves three broad objectives. The first is to preserve and enhance the individual's integrity. In this respect, the CPF savings could be used for housing, health care, life and health insurance, risky investments (including property), education, or retirement. The second objective is to strengthen the institution of the family, which the government strongly believes to be essential to social stability. In this regard, an individual can use his CPF account for the well-being of his immediate family members. Figure 2 shows the various ways a member can use the CPF savings other than for retirement.

The CPF scheme was made to serve a third purpose from 1986. The Singapore economy was in the second year of its first postindependence recession. To help the country regain its competitiveness, the employer's contribution to CPF was drastically reduced from 25 to 10 percent. This translated into a 12 percent reduction in total payroll and was one reason for the quick economic recovery. That success with the use of the CPF contribution rate to regain competitiveness has made the government quite ready to use the CPF

Figure 2: Approved Uses of Central Provident Fund Savings for Every S\$40 of a Member's Balance



scheme for its economic policies. Beginning 1 August 1995, all employers were exempted from having to make CPF contributions for their new foreign employees on short-term work permits. The foreign employee may require a higher salary but is likely to accept a lower total remuneration because all his wages are now disposable.⁴ This reduces the employer's wage cost. Table 1 shows the changes in CPF contribution rates over the years.

The CPF scheme continues to provide funding security for retirement. The recent concern about individuals retiring with a valuable piece of residential property but little cash prompted the government to impose a minimum cash reserve for each account. This policy took effect on 1 July 1995 with a minimum of S\$4,000 in cash in each account. The amount would be increased by S\$5,000 every year, reaching S\$40,000 in 2003. In other words, a CPF member who retires after 2003 will have at least S\$40,000 cash in his pension account.

The CPF scheme was fine-tuned not only to boost the economic fundamentals of the country but also to provide depth to the securities markets, albeit with little success. The next section discusses

Table 1: Central Provident Fund Contribution Rates, 1955–1994 (percent of salary)

Date ^a	Contributed by		Credited to			Total
	Employer	Employee	Ordinary Account	Special Account ^b	Medisave Account ^c	
Jul 1955	5.0	5.0	na	na	na	10.0
Sep 1968	6.5	6.5	na	na	na	13.0
Jan 1970	8.0	8.0	na	na	na	16.0
Jan 1971	10.0	10.0	na	na	na	20.0
Jul 1972	14.0	10.0	na	na	na	24.0
Jul 1973	15.0	11.0	na	na	na	26.0
Jul 1974	15.0	15.0	na	na	na	30.0
Jul 1977	15.5	15.5	30.0	1.0	na	31.0
Jul 1978	16.5	16.5	30.0	3.0	na	33.0
Jul 1979	20.5	16.5	30.0	7.0	na	37.0
Jul 1980	20.5	18.0	32.0	6.5	na	38.5
Jul 1981	20.5	22.0	38.5	4.0	na	42.5
Jul 1982	22.0	23.0	40.0	5.0	na	45.0
Jul 1983	23.0	23.0	40.0	6.0	na	46.0
Jul 1984	25.0	25.0	40.0	4.0	6.0	50.0
Apr 1986	10.0	25.0	29.0	na	6.0	35.0
Jul 1988 ^d	12.0	24.0	30.0	na	6.0	36.0
Jul 1989	15.0	23.0	30.0	2.0	6.0	38.0
Jul 1990	16.5	23.0	30.0	3.5	6.0	39.5
Jul 1991	17.5	22.5	30.0	4.0	6.0	40.0
Jul 1992	18.0	22.0	30.0	4.0	6.0	40.0
Jul 1993	18.5	21.5	30.0	4.0	6.0	40.0
Jul 1994 ^e	20.0	20.0	30.0	4.0	6.0	40.0

na = not available.

^a Years in which the contribution rates were the same as the previous year's are excluded.^b Contributions to the Special Account were suspended from 1986 to 1988 when the economy was in recession.^c Since 1986, amounts above S\$15,000 in the Medisave Account have gone to the Ordinary Account.^d In 1988, contributions from the various five-year age brackets above the age of 55 were set at a declining rate.^e The contribution rate has remained unchanged from 1994.

the impact of CPF policies on the development of the government bond market, and the section after that continues the analysis with respect to the equities market.

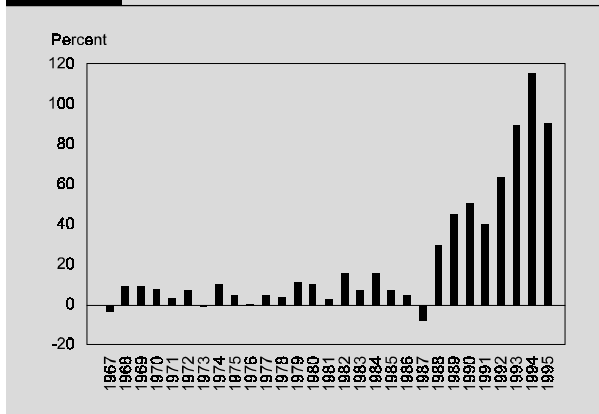
The Central Provident Fund Scheme and the Development of the Government Bond Market

The Singapore government is known for its fiscal discipline. Since independence in 1965, it has run a surplus almost every year. (Deficits were recorded only for 1967, 1973, and 1987.) This surplus does not include the profits generated by the statutory boards and government-owned or government-

linked companies. For the consolidated central government account, the noncapital revenues alone usually cover all expenditures. Even in the years of deficit, the size of the deficit in relation to total expenditure was minuscule. Figure 3 shows the surplus/deficit as a proportion of total expenditure.

The persistent fiscal surplus has had a significant impact on the development of the government and corporate bond markets. Compared with the equity market, the secondary bond market in Singapore may be considered anemic. There is virtually no secondary government bond market outside of the commercial banks. To better understand the government bond market, we should look first at the government securities market and how government securities are issued.

Figure 3: Fiscal Surplus/Deficit as a Percentage of Total Expenditure



The Singapore government issues two broad types of debt securities. Treasury bills are issued under the Local Treasury Bills Act of 1923, which was most recently amended in 1992. Up to 1974, only 91-day bills were issued. The 182-day bill was introduced in 1974, and the 273-day and 364-day bills were introduced in 1975. Bills of the latter two maturities are now issued infrequently, depending on how the Monetary Authority of Singapore (MAS) views the conditions in the market. The 91-day bill is issued weekly and the 182-day bill, monthly. Unlike the US and most other countries, Singapore does not issue Treasury bonds.

Instead of Treasury bonds, the government issues what are officially termed Singapore government securities (SGS). For a while, SGS were issued under two separate pieces of legislation. Those issued under the Government Securities Act were used to finance current expenditure and those issued under the Development Loan Act, for infrastructure development.

Before 1987, most SGS were issued to the CPF Board as tax-free registered stock. There was no active secondary market for such securities as there were no market-makers. The SGS market (SGSM) essentially took shape only in 1987. Probably in response to the recession, a plan was launched in 1986 to further develop the domestic financial markets.

A key aspect was the revamp of SGSM, with the help of experts from the US. This move to activate SGSM was also meant to boost the development of a corporate bond market. As described in the MAS Annual Report for 1986/87:

*The new Singapore Government Securities Market (SGSM), which commenced in May 1987, should provide the basis for a full-fledged market for fixed-income securities. The main purpose of the revamped SGSM is to provide a yield curve which would serve as a needed benchmark for corporate bond issues.*⁵

In 1987, a regular schedule of taxable book-entry issues was introduced. Two- and five-year notes were issued quarterly. Also, three-month Treasury bills were issued weekly and six-month bills were issued bimonthly. Except for the three-month Treasury bill, the frequency of all issues was changed in 1988 to once every four months.

A major change after 1987 was the replacement of the four discount houses by a panel of five primary and three registered dealers, who are obliged to quote two-way prices. Another 29 secondary dealers were approved to transact with nonbank customers, and trading moved to a computerized book-entry system. However, this new system applies only to taxable bonds and not to registered stock, largely held by the CPF Board. Table 2 shows the amount of SGS issued and outstanding each year.

Issuance of Government Securities

MAS manages the sale of SGS. Before 1 July 1987, four discount houses acted as dealers in SGSM. These discount houses were joint ventures between MAS and the major local banks. They were obliged to tender for every issue of Treasury bills. They then sold these bills and other SGS to financial institutions, especially commercial banks, to meet their liquidity ratios. The discount houses also acted as agents of MAS in the open market. In 1987, the dis-

Table 2: Amount of Singapore Government Securities Issued and Outstanding (S\$ billion)

Year	Amount Issued	Amount Outstanding
1967	*	0.59
1968	*	0.76
1969	*	0.97
1970	0.07	1.09
1971	0.30	1.35
1972	0.36	1.63
1973	0.75	2.37
1974	0.50	2.80
1975	1.17	3.82
1976	1.65	5.40
1977	1.74	6.97
1978	1.34	8.01
1979	1.90	9.72
1980	2.30	11.73
1981	**	*
1982	1.30	*
1983	6.15	*
1984	**	*
1985	**	18.10
1986	**	17.80
1987	30.30	34.02
1988	3.63	39.40
1989	4.35	42.40
1990	1.85	11.20
1991	2.30	13.20
1992	17.70	15.70
1993	3.26	17.20
1994	3.75	12.90
1995	7.20	14.50
1996	4.20	20.50

* Not mentioned in *Monetary Authority of Singapore Annual Report*.

** No bonds issued.

count houses were abolished. Today, the major commercial banks act as the primary dealers for SGS. Appendix 2 shows a chronology of developments in SGSM since 1987.

The consistent fiscal surplus means that the government does not need to sell SGS for public financing. A Government Securities Fund holds the proceeds from SGS sales and from the way the use of the fund is regulated it is evident that deficit financing is not its main purpose. As explicitly mandated, transfers to the Consolidated Account to finance expenditure have the last priority in the use of the

fund. The operational needs of the fund itself and repayment of principal and interest due on the SGS take precedence.

In recent years, the issuance of SGS has become obligatory rather than discretionary. The MAS Annual Report for 1997 stated that:

There were seven issues of two-, five- and seven-year book-entry Singapore government bonds altogether in 1996.... The increase in supply of government bonds was necessary to meet banks' higher demand for liquid assets arising from a growing liabilities base.... The bulk of the SGS issued were held by banks and primary dealers with the remainder held by finance companies, insurance companies, other corporations and individuals.

The primary market for SGS is similar to that for US Treasury securities. A panel of eight primary dealers⁶ tenders for each issue through a pay-as-you-bid closed auction. The minimum denomination is S\$1,000 and any individual or corporate body can submit a tender through a primary dealer.

There are two forms of tenders. The first form is only for the amount of the securities. In this case, the tenderer would accept the yield derived through the tender. The second form is for both the amount of securities and the yield.

For Treasury bills, the yield on the issue is computed as the weighted average of the yields for which successful tenders were made. This yield is applied to tenders where the yield is not specified. For bonds, the coupon rate is also determined through auction. The coupon rate is rounded to the 1/8th of a percentage point nearest to the derived yield and the price is adjusted accordingly.

Since SGS are issued more to meet the needs of commercial banks than for debt financing, the kinds of yield are quite easy to envisage. In 1996, the yield on the three-month Treasury bill spiked above 2 percent for only three months and hovered around 1 percent for the rest of the year. Over the same period, the POSBank⁷ offered tax-free

deposit rates averaging 2.5 percent while local commercial banks offered rates about 22 percent points higher. Because deposits with the POSBank are practically risk-free, the virtual absence of demand for SGS for investment comes as no surprise.

Besides their uncompetitive yields, the SGS issued did not allow the construction of a yield curve beyond seven years. Institutional investors, reluctant to consider bonds with no benchmark rates, have by and large kept away from the corporate bond market, hindering its development. Most recently, in February 1998, the new chairman of MAS, who is also the deputy prime minister, announced that the government would start issuing 10-year bonds to allow the construction of a longer-term yield curve.

The Secondary Market and Trading System

Unlike the primary market, the secondary SGSM is not a unified market. Dealers provide quotes but these are not captured in a single manual or computerized order book. The secondary SGSM is similar to the retail market for foreign currencies where individual banks transact from their own inventories at individually set prices. Some market-makers may not even be able to provide quotes for an issue if it has no inventory.⁸ Although an interdealer broking system was introduced in January 1991, the market remains fragmented. Like other fragmented markets, there is no uniform brokerage. Individual dealers may levy an administrative cost but that is usually negligible.

Holdings of Singapore Government Securities

As in most other countries, commercial banks in Singapore are required to maintain liquidity reserves. Before the SGS market was revamped in 1987, commercial banks were required to maintain a liquidity ratio of 20 percent against their liabilities base in addition to their cash reserves, half of it in primary liquid assets and the other half in secondary liquid

assets. Primary assets consisted of cash balances with MAS and SGS.

After 1987, the required liquidity ratio was lowered to 18 percent. At least 10 percent must be in SGS owned by the bank. Up to 5 percent can be in SGS held under repurchase agreements with other banks, approved dealers, and the POSBank.

Table 3 shows the percentage of SGS outstanding, held by the various financial institutions. Despite the restructuring of SGSM in 1987, a large proportion of SGS outstanding continue to be held by the CPF Board, POSBank, and commercial banks. The CPF Board alone accounts for more than 70 percent of the SGS outstanding and these are largely in the form of registered stocks not traded on the secondary market.

Turnover of Singapore Government Securities

The turnover in the secondary SGSM has not increased since the market revamp of 1987. In fact, there was a fairly significant decline from 1991 to 1992. It was only in 1995 and 1996 that the trading volume registered a more consistent year-on-year increase but even then recovering only to 1987 and 1988 levels.

The drop in trading volume was particularly severe for taxable book-entry bonds, which were introduced in 1987 to activate SGSM. In 1987, the average daily volume was 47 percent of the bonds outstanding. This fell to less than 4 percent in 1995.

Turnover as a percentage of SGS outstanding has actually declined quite substantially. Percentage turnover in the 1980s and 1990s has been even lower than in the 1970s. From 1991 to 1995, turnover was less than 1 percent (Table 4).

A daily turnover of 4 percent of the amount outstanding looks respectable compared with a ratio like 0.6 percent for an equity market.⁹ However, two aspects of SGSM need to be considered. First, this is an entirely institutional market. Institutional trade volume should therefore far exceed retail trade vol-

Table 3: Major Holders of Singapore Government Securities, 1967–1996 (percent)

Year ^a	CPF Board	Commercial Banks	POSBank	Discount Houses ^b	Insurance Companies	Total
1967	85.47	7.01	0.50	0.00	2.48	95.46
1968	71.33	4.99	1.03	0.00	3.28	80.63
1969	65.28	6.92	5.09	0.00	3.26	80.56
1970	68.93	5.51	5.66	0.00	3.30	83.41
1971	71.11	6.84	6.42	0.00	3.32	87.70
1972	71.25	8.65	5.46	0.00	3.50	88.86
1973	68.86	10.87	1.94	3.34	3.38	88.39
1974	72.96	12.30	1.59	0.79	3.20	90.84
1975	75.09	12.39	1.73	1.18	3.36	93.75
1976	69.85	14.12	5.63	1.47	2.85	93.93
1977	66.04	10.54	9.58	1.56	2.34	90.05
1978	65.57	9.77	8.59	1.55	2.39	87.87
1979	71.17	7.43	7.29	0.80	2.35	89.03
1980	77.41	7.34	6.20	0.17	1.91	93.03
1985	75.35	11.78	3.63	2.78	3.08	96.63
1986	76.62	9.96	5.29	1.18	3.67	96.72
1987	84.12	8.49	3.34	0.00	2.20	98.14
1988	76.45	8.25	2.81	0.00	2.22	89.73
1989	75.75	11.92	2.68	0.00	2.45	92.79
1990	74.15	13.70	2.60	0.00	0.00	90.44
1991	70.87	14.13	3.15	0.00	0.00	88.16
1992	74.40	11.33	3.02	0.00	0.00	88.75
1993	72.18	12.90	3.73	0.00	0.00	88.80
1994	70.90	14.11	3.87	0.00	0.00	88.88
1995	71.77	16.13	4.17	0.00	0.00	92.07
1996	71.57	16.37	3.91	0.00	0.00	91.84

CPF = Central Provident Fund.

^a No data available for 1981–1984.^b Discount houses became defunct in 1987.

Source: Monetary Authority of Singapore.

ume. Second, the amount of taxable book-entry SGS outstanding is quite limited. These two factors, together with the fact that government bonds are more homogeneous than equities, should favor a higher trading volume. But that is not the case, and it is generally agreed that given its few participants, the SGS market is not really liquid.

The CPF Board is undoubtedly the largest holder of SGS (Table 3). This may have a negative, rather than a positive, impact on the development of SGSM. Having generated persistent fiscal surpluses, the government has no need for debt financing. All the SGS issued to the CPF Board are solely meant to absorb the increasingly large balances of CPF members. Even then, the amount of registered stock issued is not sufficient. In 1981, the CPF Board began investing in other forms of securities like

floating-rate notes, negotiable certificates of deposit, and even equities. The amounts placed in such securities are, however, minuscule compared with the size of the balance. Appendix 3 details the efforts made by the CPF Board to find other investments for its funds. Quite evidently, its initial entry into the secondary SGSM in 1978 met with limited success, if any, and there has been no mention since then of further attempts to trade in the market.

The CPF Board did not begin to sell the SGS in its portfolio until 1978. The stated purpose for trading was to help develop the secondary market. Quickly realizing the nature of the market, the board reported in its 1978 annual report that “Market activity in these stocks had so far been limited as financial institutions generally held such investments to meet statutory requirements.”

Table 4: Turnover of Singapore Government Securities, 1967–1997

Year	Daily Outright Turnover (\$ million)	Daily Repo Turnover (\$ million)	Total Turnover (\$ million)	Outstanding (\$ million)	Turnover/ Outstanding (%)
1967	na	na	na	585	na
1968	na	na	na	757	na
1969	na	na	na	965	na
1970	na	na	na	1,088	na
1971	na	na	na	1,350	na
1972	na	na	na	1,628	na
1973	na	na	na	2,367	na
1974	371	na	371	2,796	13.3
1975	399	na	399	3,822	10.4
1976	434	na	434	5,397	8.0
1977	405	na	405	6,966	5.8
1978	1,127	na	1,127	8,007	14.1
1979	1,048	na	1,048	9,720	10.8
1980	672	na	672	11,729	5.7
1981	328	na	328	na	na
1982	472	na	472	na	na
1983	620	na	620	na	na
1984	3	na	3	na	na
1985	7	na	7	18,100	0.0
1986	3	na	3	17,800	0.0
1987	460	340	800	34,021	2.4
1988	450	700	1,150	39,400	2.9
1989	250	790	1,040	42,400	2.5
1990	225	430	655	43,320	1.5
1991	210	200	410	45,320	0.9
1992	280	150	430	61,320	0.7
1993	370	160	530	61,820	0.9
1994	300	160	460	61,520	0.7
1995	404	260	664	71,900	0.9
1996	442	590	1,032	72,100	1.4

na = not available, repo = repurchase agreement.
Source: Monetary Authority of Singapore.

The Central Provident Fund Scheme and the Development of the Equiy Market

The immense soaking up of investable funds from the CPF scheme was recognized quite early. The plan to channel CPF savings into equities was initiated back in 1978 with the introduction of the SBS Share Scheme. SBS was the national public transport company created from the merger of several private and public bus services. The firm was listed on the Stock Exchange of Singapore (SES) in 1978.

The SBS Share Scheme allowed the use of CPF savings to buy SBS shares. This marked the first time CPF tender was allowed for securities invest-

ments. A total of 31,500 CPF members (2.35 percent) withdrew S\$18.8 million (0.3 percent) of the funds to subscribe to the initial public offering. Almost 90 percent of the subscriptions were for a single lot of 500 shares. The stock was listed on 26 June 1978. By 31 December of that year, only 26,000 CPF members were still holding the shares.

The government actually encourages greater public participation in the securities markets, as part of the move to give citizens a direct share in the country's assets ("Singapore Inc."). The rather lukewarm response to the SBS Share Scheme, however, reflected the average individual's unwillingness to risk his pension even for potentially higher returns. The next sections will expand on this brief account of the government's approach to liberalizing the use of CPF savings for risky investments.

Government Philosophy on Risky Investments with Central Provident Fund Savings

To understand the development of the various CPF investment schemes, one must have a better appreciation of the government's philosophy on the use of CPF savings for risky investments. Aside from foreign reserves, CPF savings form the largest single pool of investable funds in Singapore. If the American model of pension fund management were to be applied, it could be assumed, as it often has been, that the CPF Board would manage the funds to obtain maximum returns for future retirees, but this is not the case. This misperception has surfaced in some formal articles and studies such as Pacific Economic Cooperation Council (PECC) working papers.

The government has a paternalistic view of its role in ensuring the welfare of the people. It has, however, consistently repudiated social welfarism and stressed self-reliance, letting the individual assume responsibility for his own retirement. Hence, it has adopted the funded pension scheme instead of the pay-as-you-go system used in most Western countries. The government, through the CPF Board, acts as custodian of the retirement savings. Self-sufficiency during retirement requires a substantial level of compulsory savings. This accounted for the rapid rise in the CPF contribution rate, especially in the early years of the country's independence.

On the other hand, the government knows that an accumulating national pension fund that is not actively deployed becomes an economic dead weight. It is therefore not averse to the judicious use of such savings before the individual's retirement. In this regard, the government holds fast to two principles in the use of CPF savings. One is that it must be a form of investment and not outright consumption. Premature consumption of one's own pension is not allowed. The other principle is that investment decisions are made only by the individual. This is consistent with the philosophy of individual responsi-

bility for retirement. If the savings are to be invested, the individual should make the decision and bear the risk. Only recently (in February 1998), the government rejected a recommendation of a special committee¹⁰ to allow the individual to choose a private pension fund other than CPF. In the words of the deputy prime minister and chairman of MAS: "We have CPF and that's a major feature of the landscape. It will be adjusted, modified, trimmed at the edges but it will not go and we work our system around it."¹¹

In principle, the government is not against the individual risking some of his pension money for a possibly higher return. In fact, it strongly encourages securities investment, both to broaden participation in "Singapore Inc." and to develop greater depth in the financial markets. Annual investment seminars have been organized to give free advice on the basics of stock trading. Commercial banks have been allowed to provide facilities for individual buying and selling of shares. When shares in Singapore Telecommunications were floated, every Singaporean CPF member was given group A shares at a discounted price. Such shares could not be purchased with cash, which made them exclusive to Singaporean CPF members. CPF savings can also be invested in approved unit trusts. But despite all these, the government makes a clear distinction between letting the individual take risks and letting a pension fund take the risks on his behalf. Should the individual lose all that has been risked, there is no one else to blame. The government is not obliged to bail out the individual, who alone must pay the price for risk taking.¹²

However, if retirement funds are lost by a private pension management firm, the consequences are very different. In the first place, such a loss is likely to affect many. The effect is widespread and the amount involved, probably large. A political problem can quickly be created if the government ignores the plight of those affected. Besides, the government would have to bear moral responsibility for

having allowed the event to occur. The collapse of a pension firm could be regarded as supervisory negligence and would be quite a disaster. The government has built its reputation on trust. It has prided itself on its strong regulation and supervision to safeguard the individual's interest. This is a major reason why Singaporeans, in general, have tolerated a high degree of intrusion into their personal lives.

The disapproval of nationwide private pension management schemes does not, however, mean that the government is against the principle of having pension schemes apart from CPF.¹³ In fact, there are about 100 corporate pension schemes in Singapore, most of them set up by multinational corporations based in the country. In December 1993, tax laws were even amended to make the employer's contribution to such pension funds tax-deductible and to exempt from taxation any gains invested by the funds. Contributions to corporate pension schemes must, however, be over and above CPF contributions by both employer and employee. Besides, contributions to corporate pension schemes must come only from the employer. Such schemes are largely not portable unlike CPF. The Schroder group, for instance, contributes 2 percent of an employee's salary to its corporate pension fund. The employee must serve at least five years to be eligible for any distribution. Withdrawals can be made only after 14 years of service. The government does not regulate the operations of such funds.

The government has given the CPF scheme a clear purpose. It is a mistake to view CPF as a conventional pension management institution. It is no more than a passive depository and, as such, the fund does not compile detailed statistics on the investment activities of its members.

Central Provident Fund–Approved Investment Schemes

The CPF Approved Investment Scheme (CPFAIS) was first introduced on 1 May 1986 under the concept of asset enhancement. By then, the Approved Residential Properties Scheme, where the individual could use his CPF savings to purchase private property for residence or investment, had been in place for five years. Over the past 11 years, CPFAIS has undergone much fine-tuning. The most significant modification was the introduction of the Basic Investment Scheme (BIS) and the Enhanced Investment Scheme (EIS) on 1 October 1993. Table 5 shows the types of instruments permitted under each of these schemes. The essential difference between the two schemes lies in the scope of investment, which is wider for EIS but at the expense of a higher cash reserve in the CPF account.

If the investment schemes were meant to unlock CPF savings into the securities markets, the measures can be regarded as minimally successful at best. At the end of 1996, 373,895 CPF members, or 13.6 percent of the outstanding membership, had made

Table 5: Scope of Investment under the Basic and Enhanced Investment Schemes

Basic Investment Scheme (BIS)

- Fully paid ordinary shares of Singapore-incorporated companies listed on the main board of Stock Exchange of Singapore (SES) only
- Loan stocks of trustee companies approved under the BIS
- Approved unit trusts
- Gold and fully paid ordinary nontrustee shares or loan stocks of Singapore-incorporated companies listed on the main board of the SES (limited to 10%)

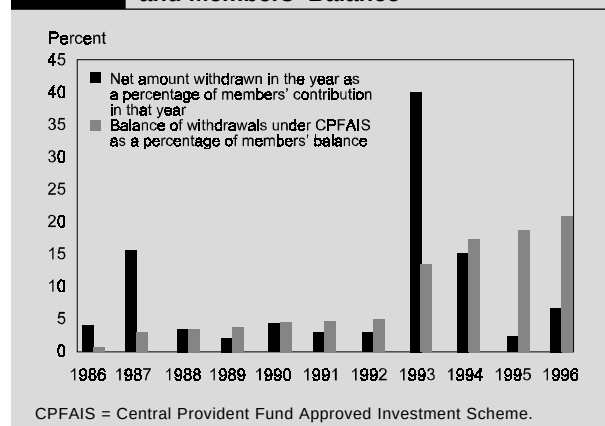
Enhanced Investment Scheme (EIS)

- Fully paid ordinary shares of Singapore-incorporated companies on both the main board of SES and Stock Exchange of Singapore Dealing and Automated Quotation (SESDAQ)
- Loan stocks of Singapore-incorporated companies approved under the EIS
- Approved unit trusts
- Gold (limited to 10%)
- Government bonds
- Fund management accounts
- Bank fixed deposits (minimum of one year)
- Endowment insurance policies

cumulative net investments of S\$15 billion. This was 20.7 percent of the members' balance in CPF, excluding the money previously withdrawn for investments in properties or securities. Including the S\$15 billion and ignoring the cash reserve required for each account, the securities investment amounted to 17.1 percent of the investable funds in CPF. Viewed from another angle, more than 80 percent of the compulsory savings remain as passive deposits. It is no surprise then that the CPF Board continues to demand increasing amounts of SGS to absorb the funds.

But if the proportion of the CPF balance invested in securities is low, the percentage of contributions drawn under CPFAIS in recent years has been even lower. In 1996, S\$1.0 billion was withdrawn under CPFAIS. This was 6.8 percent of the S\$14.6 billion in CPF contributions made that year. Figure 4 shows the net withdrawals under CPFAIS as a proportion of the annual contribution and of the CPF members' balance.

Figure 4: Withdrawals under CPFAIS as a Percentage of Annual Contribution and Members' Balance

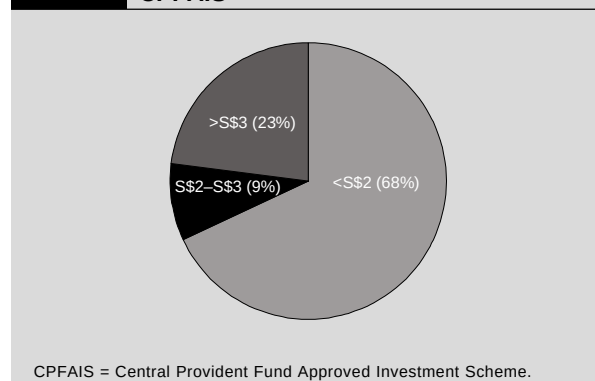


The spike in 1993 was due to the subscription for Singapore Telecommunications, which remains the largest public listing on SES. The percentage of net withdrawals each year provides a more accurate picture of the use of CPFAIS. After the initial euphoria in 1987, net withdrawals have remained low except in 1993. In 1995, net withdrawal as a percentage of

contributions was among the lowest since the introduction of the CPFAIS.

In a keynote address on 3 September 1996, the SES president mentioned the types of investments made under CPFAIS.¹⁴ Most of them are on penny stocks. Figure 5 shows the price range of stocks bought under the investment schemes. In terms of market value, investments made in equities with CPF savings accounted for 3.4 percent of SES market capitalization and for 5.8 percent of the total number of shares issued. The SES president cited these figures to highlight the highly risk-averse nature of investments made with CPF savings.

Figure 5: Price Range of Stocks Bought Under CPFAIS



Besides risk aversion and, generally, unfamiliarity with securities investment, there is another reason for the lack of enthusiasm for CPFAIS. The procedure for withdrawing CPF savings for securities investments is especially cumbersome and complicated. Over and above the basic requirement to have a brokerage account, there is the need to open an account with an approved local bank. Each time the individual makes a purchase with his CPF savings, that bank has to apply to the CPF Board for a release of funds from his account. Besides keeping a record of the flow of funds from and to CPF for the individual, the bank also acts as the nominee for all acquired securities. In other words, the CPF member does not get to register in his own name the securities he paid for. Since the registered shareholder is the bank (which acts for numerous CPF

members), the stock-issuing firm is not obliged to make annual financial statements available to the individual investor. The CPF member has to ask for a copy of the annual report if he wishes to have one.

But the securities ownership issue, while unpalatable, is not what deters many from investing their CPF savings. Rather, it is the determination of how much of a CPF account balance can be used for CPFAIS that totally deceives most people.

Investments in securities cannot take up the entire balance in an individual's CPF account. Besides a cash reserve, a minimum sum, which can be partly made up of the amount used for property acquisitions, must be kept in the account. These reserve amounts are different for the Basic Investment Scheme and the Enhanced Investment Scheme. If all these required reserves are taken into account, only 80 percent of the balance can be used.

If an individual places a buy order and is later told by his CPFAIS bank that there are not enough funds in his CPF balance to complete the order,¹⁵ there are two solutions to the problem. One is for the broker to execute a sell in the cash market at an unfavorable price to offset the buy. The other is for the individual to top up the shortfall with a cash deposit into his CPFAIS account.¹⁶ The individual may withdraw this cash later by making another application, on the condition that sufficient cash has been generated by another sale of securities.

The CPF Board tries to keep the public updated on CPFAIS guidelines, but the scheme is already so complicated and is changed so often that most CPF members have given up on it.

Impact of Central Provident Fund–Approved Investments on Trading Volume and Prices

Given its low level of use, CPFAIS has little impact on the primary and secondary equity markets. Since decisions associated with CPFAIS are made individually, the CPF Board has no obligation to keep track of and provide aggregate information on mat-

ters like trading activity. One can, nevertheless, infer from some events how much, or how little, CPFAIS affects the market.

As briefly described above, the government distributed Singapore Telecommunications group A shares to all Singaporean CPF members except those who opted not to participate in the scheme. Although more than one million individuals accepted the offer, the price of the share did not find much support. After a short rise, the price went on a sustained slide.¹⁷ This episode suggests that widespread subscription or ownership through CPFAIS does not translate into support for a share's price.

The preference for penny stocks also means that investments with CPF savings make very little impact, if any, on the stock market.

Macroeconomic Policy Implications of the Central Provident Fund's Role

The impact of the CPF scheme in the early years of Singapore's development is unequivocal. Without it, capital mobilization for the massive public housing project would not have been possible. When the economy went into a recession in 1985 because of structural inflexibility, a reduction in the employer's contribution to CPF helped in the quick turnaround.

The large pool of CPF savings has certainly helped Singapore build up its foreign reserves. As there is no separate accounting for the CPF savings tapped through the issue of government bonds, there is no way of determining how much of these savings is channeled into infrastructure development and how much is invested overseas. But it is believed that the government began investing CPF savings overseas in the early years of the scheme.¹⁸ What is more widely known, though, is that the government rarely directs funds managed by MAS, and later by the Government of Singapore Investment Corporation, into the domestic financial markets.

Conclusion

The economic success of Singapore has attracted much attention to its CPF pension scheme. Not only has the scheme come to symbolize the “Asian value” of a high savings rate, it has also been regarded as a strategic tool for the government to manage competitiveness and develop markets. Given the other major success of Singapore as a financial center, it has often been assumed that directing CPF savings into the financial market has been a critical factor. This seems to be an incorrect impression. In spite of its very significant role in social development, particularly in housing and healthcare, the CPF system, in fact, had a negative impact on securities market development in Singapore.

The CPF system is definitely a critical element in the government’s success in providing housing to the masses in the early years. Through a carefully controlled circular flow of funds, CPF savings have been used to enable individuals to fund the construction and ownership of government flats. Today, about 80 percent of Singapore citizens reside in such housing.

The contribution of the system to financial market development is quite different. In the government bond markets, the CPF is the biggest participant but a serious dead weight. More than 70 percent of government bonds are held by the fund. As the government runs a nearly perpetual fiscal surplus, there is no need for public debt. Government bonds are issued purely to meet the demand of commercial banks for their statutory reserves. MAS annual reports, almost without fail, mention this fact. With CPF soaking up increasingly large amounts of government bonds, the government has little room to increase the size of public debt for private investments. As a passive national custodian of pension funds, CPF is under no pressure to produce competitive returns for its members. This means that it does not need to actively trade to maximize the yield on its funds.

With CPF literally sitting on 70 percent of the government bonds issued and the government not wanting to issue more bonds than are needed, secondary market activity has been limited. In dollar terms, the average daily volume has only begun to recover to its levels in the late 1980s when SGSM was revamped. As a percentage of the amount outstanding, trading volume in 1996 has actually declined to half the level of 1988. Furthermore, half of the trades are repurchase agreements. Even for outright trades, almost all are between commercial banks trying to manage their reserve ratios.

One may actually see a more robust government bond market if there were no CPF scheme. Even if the amount of bonds issued were halved, there would still be a surplus for investors other than the commercial banks. Wider participation could produce a spillover effect on the anemic corporate bond market.

The CPF scheme makes almost as little contribution to the development of the equity market. Although the use of CPF savings for securities investment has increasingly been liberalized, the response to the investment schemes continues to be low. In 1996, only 6.8 percent of the CPF contributions were redirected to the stock market. In the same year, the value of securities held through CPFAIS amounted to 3.4 percent of the total market capitalization. This was 10 years after the introduction of CPFAIS. Since the CPF Board does not actively manage its funds, this means that CPF sits passively on a huge pool of savings. In 1996, the balance due to CPF members amounted to 55 percent of the gross domestic product. This amount does not include funds that were already withdrawn for housing, property, and securities investments. Although CPF funds are placed with the government through the purchase of SGS, it is unlikely that much of these funds are channeled into the Singapore securities markets. As a general policy, the government invests its surpluses and other public funds overseas.

The complicated procedure for keeping the required minimum reserves in cash or other forms and the burdensome task of having to instruct an approved commercial bank to transfer funds from and to CPF certainly did not help popularize CPFAIS. To make matters worse, the schemes are modified every year, leaving many CPF members totally confused about the latest guidelines. Not a few individuals who actively invest their CPF savings have been caught with insufficient funds in their CPF accounts to fulfill buy orders even when the account statements showed a healthy balance.

The well-documented unequivocal success of the CPF system on the social development front has probably led to a misperception of its large positive contribution to financial markets in Singapore. If anything, the current CPF system has been a drag and not a boost to the development of securitized debt and equity markets in Singapore.

A natural question then is if CPF can be reformed to make a positive contribution to capital market development in Singapore and, if so, what are the specific changes that would have to be made. The answer in short is no, but changes can surely be made to alleviate some of the drawbacks.

The recommendation to move all or part of CPF toward the Chilean system where the individual chooses one of several authorized investment funds to save with was soundly rejected. The pension aspect of the CPF remains the paramount consideration and as far as the government is concerned, savings for retirement cannot be exposed to risk. In fact, the most recent debate on CPF is whether the Special Account is really large enough to see one through retirement. Calls have been made even by Members of Parliament to raise the minimum sum in this account.

Unlike some more recently designed pension schemes (the Chilean system being one of the most well-known), CPF was not conceived with capital market development in mind. Until today, boosting market development is not a major objective. The

calibrated steps to relax constraints on securities and other forms of “risky” investments (real estate is generally not regarded as such) may be considered as concessions to the populace who felt deprived of the opportunity to benefit from the booming stock market in the latter half of the 1980s. Caution on the risk of such investments was repeatedly raised, and the printed press is generously supplied with data on how worse off those who invested were compared with those who simply left their savings in CPF. When the stock market performs badly, there is almost no shortage of voices advocating the abolition of the use of CPF savings for securities investments.

If the individual could withdraw part of his CPF savings to be placed in unit trusts, would this not have the same impact on the capital markets just like the Chilean model, in function, if not in form? The answer would be yes, if the necessary ingredients were in place. Of these, the most critical is the individual’s propensity for risk taking.

In the Chilean model, risk taking is institutionalized. The funds compete for accounts with their performance on risk and return. The individual can only choose the level of risk rather than avoid it altogether. Besides, there are not many funds to choose from.

While the CPF account holder could have done nearly the same, there are several important differences here. First, the individual in the CPF scheme is made to save in risk-free deposits by default. Moving out of this position requires not only a conscious effort; it involves breaking a psychological barrier toward risk taking for those who have never invested in securities before. As in many other cultures, the Asian mindset associates risk taking with gambling, a vice that becomes more deplorable if one were to gamble with his “nest egg.” Even for those who overcome this barrier, the degree of risk-aversion remains high. It is not surprising then that the bulk of investments made with CPF savings are in penny stocks where the downside is much more limited. By contrast, exhausting available CPF savings for property,

whether for residence or for investment, is perceived favorably even if financial economics show that real estate investment need not be less risky than stocks and shares.

Aside from the attitude toward risk taking, information cost is another barrier to the CPF's having a positive effect on capital market development. The problem here is the range of choices available to the individual. These include fixed deposits in a bank, bonds, unit trusts, and even gold. The number of approved unit trusts alone continues to increase almost yearly. In essence, the individual has to determine his own portfolio against his utility function. When it comes to financial investment, both the cost of information and information overload would easily overwhelm the layman. Couple this with inertia, many individuals simply leave their CPF savings alone.

CPF can make a big impact on the capital markets provided investment options allowed under CPFAIS are fully exploited. In turn, this requires all CPF members to be knowledgeable about financial investment and the accompanying risk and return. That might have been the government's intention all along. That is, risky investments should be engaged in only when the individual is ready; they should not be delegated to a professional by default, as in the Chilean system. This is the reason why the CPF Board can act only as a custodian and not manager of CPF savings. The government is prepared to educate the populace on these matters through free seminars and other events but will not permit abdication of personal responsibility, a central pillar of social welfare management. Given such realities, it will be a long while before CPF

has any noticeable effect on capital market development.

If there were any way to improve the CPF's contribution to capital markets in the short term, it would have to be the simplification of transactions made under CPFAIS. Some steps in this direction have been made since CPFAIS was first implemented. More, however, could be done. For instance, since the amount of CPF savings does not remain static for a working individual, it might be easier to put a percentage limit on the monthly contribution that can be placed under CPFAIS rather than requiring the maintenance of various minimum sums in the CPF account. All the improvements would, nevertheless, not make CPF a boost to the capital market.

In conclusion, CPF was never conceived with capital market development in mind. Even today, how CPF can be reformed to improve the capital market is not a priority. It is unequivocally clear that CPF is meant to be a social fund first and foremost, and any liberalization to accommodate desires for higher return through higher risk are largely concessions rather than part of an active agenda. The most recent preoccupation with CPF savings is not whether they have been too much but rather whether the contribution rate is high enough to provide an adequate pension. As a social fund, CPF has made valuable contributions to the country's development. Changing its purpose to make it resemble the Chilean model has been officially proposed and rejected. The unfortunate side effect is that it has also become a drag to capital market development. But it is highly unlikely that the government would consider this drawback significant enough to redefine CPF.

Appendix 1

A Chronology of Measures to Liberalize the Use of Central Provident Fund Savings

1968. The Public Housing Scheme (PHS) is implemented. This low-cost housing scheme enables members to withdraw their Central Provident Fund (CPF) savings to buy low-cost flats from the Housing and Development Board (HDB) and Jurong Town Corporation (JTC).

1 Dec 1975. The CPF (Approved Housing Scheme) Regulations, 1968, are amended to allow a member who has applied to purchase a flat from HDB or JTC, to pay a deposit for the flat with all or part of his balance in the fund. Members can withdraw the deposit payment of 20 percent of the purchase price from their accounts in the fund right after registering for a flat.

1975. The Approved Middle-Income Housing Scheme is introduced to allow the purchase of residential properties from the Housing and Urban Development Co. (Pte) Ltd (HUDC) by middle-income members who would otherwise not be able to acquire their own homes.¹

11 Feb 1977. The Housing Scheme is extended in 1977 to enable officers of the Singapore Armed Forces to use their CPF balances and monthly contributions to buy flats built by the Ministry of Defense.

9 Sept 1977. An amendment to the CPF (Approved Middle-Income Housing Scheme) Regulations, 1975, is made. This amendment provides that the first withdrawal by a member of the fund to be used as a deposit for the purchase should not exceed 5 percent of the price of the property.

April 1978. The Singapore Bus Services (1978) Ltd. Shares Stock Scheme is introduced to enable members to withdraw their CPF savings for the purchase of shares of Singapore Bus Services (1978) Limited.

It allows members to have a stake in the republic's major public transport company and to enjoy concessionary rates for travel to and from their place of work.

1980. The CPF Act is amended to mitigate the hardship of bankrupts. Under the amendments, bankrupts can withdraw their CPF savings for the purchase of HDB/JTC flats. They can also withdraw from their CPF savings a monthly sum, to be determined by the CPF Board for their maintenance if they have reached the age of 55, or are physically or mentally incapacitated or of unsound mind. In addition, the Minister of Finance may also approve the total withdrawal of CPF savings of an undischarged bankrupt if he qualifies on the same grounds.

1 Jun 1981. The Approved Residential Properties Scheme (ARPS), a new housing scheme for private housing, is introduced. ARPS allows members to use their CPF savings to buy private residential properties for their own use or for rental. Its objective is not just home ownership, as in the case of other housing schemes, but also to give members a hedge against inflation.²

1 Nov 1981. The Home Protection Insurance Scheme (HPIS), a mortgage-reducing insurance scheme, is introduced. HPIS protects members and their dependents against the loss of their homes by paying the outstanding loans on their HDB, JTC, HUDC, or Ministry of Defense (MINDEF) flats, should the members become permanently disabled or die.

Nov 1983. The CPF Board eases its rulings on the use of CPF savings to purchase HDB resale flats. Previously, the amount of savings that a member

¹On 1 May 1982, HDB also became responsible for providing middle-income housing as a result of the merger of the Housing and Urban Development Co. (Pte) Ltd. with HDB.

²ARPS was implemented in two phases. The first phase, implemented from 1 June 1981, allowed a member to use his CPF savings to redeem all or part of his outstanding housing loan on one private residential property. The second phase, from 1 Jan 1982, enabled a member to use his CPF savings to make direct payment to the vendor or developers for the purchase of a residential property. In both phases, the member's accumulated savings and monthly contributions could also be used to meet installment payments on his housing loan.

could withdraw for their purpose could not exceed HDB's posted price for a resale flat. Now, he can withdraw up to 140 percent of the "posted price," which is nearer the market price of such property. This has certainly made it easier for members to buy HDB resale flats.

Mar 1984. To enable members to upgrade their homes or buy additional properties for investment, the three-year time bar on the reuse of CPF savings under the board's ARPS is relaxed. A member can immediately reuse his CPF savings to buy a second property if he has already owned for five years his first property bought under ARPS and has refunded to CPF, with interest, savings he withdrew for that purpose.

1 Apr 1984. The Medisave Scheme takes effect. A third account, called the Medisave Account, is created for each CPF member in addition to his Ordinary and Special Accounts. This scheme forms part of the National Health Plan. It provides for a small but regular sum of CPF savings to be set aside each month to help members meet their hospitalization expenses in government hospitals.

The balance in each member's Special Account is transferred to his Medisave Account. Henceforth, the 6 percent CPF contribution previously credited to the Special Account will now go to the Medisave Account.

1 Apr 1985. The Medisave limit for those above 55 years of age is raised from S\$5,000 to S\$5,500.

Jun 1985. The Medisave Scheme is extended to include the National University Hospital.

20 Jul 1985. Members are permitted to use the entire amount in their Ordinary Account to buy private property and to redeem outstanding housing loans. Prior to this, they were able to use only up to 90 percent of the funds in their Ordinary Account. In addition, members are allowed to buy more than one residential property with their savings.

1 Jan 1986. The Medisave Scheme is further extended to include seven private hospitals and also to cover the hospitalization expenses of

grandparents who are Singapore citizens or permanent citizens.

1 Apr 1986. A ceiling of S\$5,000 is set for the Medisave Account. For those above age 55, the ceiling is raised to S\$6,000.

1 May 1986. The Approved Investments Scheme is introduced to give CPF members the flexibility to invest their CPF savings in trustee and approved stocks, unit trusts, convertible loan stocks, and gold. The objective is to enable members to earn higher returns if they can, so as to enhance their savings for old age.

The Approved Nonresidential Properties Scheme (ANRPS) is introduced. Under this scheme, members are allowed to use funds to purchase commercial and industrial properties.

Jun 1986. The Government Bridging Loan Scheme, administered by the CPF Board on behalf of the government, is introduced to assist private homeowners who might be adversely affected by the reduction in CPF contributions. The scheme provides low-cost bridging finance to make up for the reduced contributions of such members for a period of two years.

1 Nov 1986. The Approved Investments Scheme is liberalized to let members use up to 40 percent of their investable savings for approved investments.

1 Jan 1987. The Minimum Sum Scheme (MSS) enables members to withdraw all their savings in their Ordinary and Special Accounts at age 55 after setting aside a minimum sum in the Retirement Account, which acts as a safety net for members to fall back on in case they have no other means of support. The maximum amount to be set aside in the Retirement Account is S\$30,000 for an individual and S\$45,000 for a married couple. The savings in this account can be used to buy an approved annuity, which is deposited with an approved bank or retained with CPF. From age 60, a member receives a monthly payment of at least S\$230 until the minimum sum plus interest is exhausted. Members can also pledge their properties in place of the minimum sum.

1 Apr 1987. MSS is extended to enable individuals (CPF and non-CPF members) to provide for their parents' or their own old-age needs. They can tap their Retirement Accounts through transfers of CPF savings or with cash. Siblings can also combine their CPF savings to tap their parents' Retirement Accounts. If a member is permanently disabled, he is not required to set aside a minimum sum.

For those above age 55, a ceiling of S\$6,500 is set for the Medisave account.

Aug 1987. Four approved unit trusts, namely, the Shenton Thrift Fund, the Savers Capital Fund, the Union Singapore Fund, and Unifund, are included under the Approved Investments Scheme.

1 Jan 1988. The limit on the use of CPF savings under ARPS is raised from 80 to 100 percent of the valuation price. Members can thus use more of their CPF savings to buy properties or service their housing loans.

The use of Medisave for hepatitis-B vaccinations is extended to private clinics.

Mar 1988. The Home Protection Insurance Scheme (HPIS) is further refined. A health declaration to determine the insurability of individuals before joining the scheme is introduced.

1 Apr 1988. For those above age 55, a ceiling of S\$7,000 is set for the Medisave Account.

1 Jun 1988. The use of Medisave for hepatitis-B vaccinations is extended to polyclinics.

1 Nov 1988. Childless couples can use up to S\$2,000 of their Medisave savings to pay for assisted conception procedures.

April 1989. The minimum sum to be set aside under MSS is S\$30,900 for an individual, and S\$46,400 for a married couple. The upper limit is also revised upward. Members or their parents can now enjoy a higher limit. By paying a lower annual premium with his CPF savings, a member is insured for a sum of S\$30,000. He or his dependents will receive the money should he become permanently disabled or die.

14 May 1989. The Dependents' Protection Insurance Scheme is introduced. It is an optional life insurance scheme that gives financial protection to CPF members below 55 years of age. It covers members against permanent disablement or death.

1 Jun 1989. The Approved Education Scheme (AES) is introduced. It enables members to borrow part of their CPF savings to pay for their own or their children's tertiary education, subject to the 40 percent investable savings limit.

Jun 1989. Medisave is extended to include the use of renal dialysis and radiotherapy at the Mount Elizabeth Hospital.

Sep 1989. Medisave is extended to include the use of renal dialysis and radiotherapy at the Singapore General Hospital.

1 Apr 1990. The minimum sum to be set aside under MSS is S\$31,600 for an individual, and S\$47,400 for a married couple. The upper limit is also revised upward.

1 Jul 1990. MediShield, a catastrophic illness insurance scheme, is introduced. It helps participants pay for their hospitalization expenses when they are struck with prolonged or serious illnesses.

1990. The use of Medisave savings is extended to include psychiatric treatment at private hospitals and eye surgery at the Singapore National Eye Center.

1 Apr 1991. The minimum sum to be set aside under MSS is S\$32,700 for an individual, and S\$49,100 for a married couple. The ceiling is also revised upward.

1991. Repayment of education loans begins.

Medisave is extended to cover outpatient chemotherapy treatment for cancer at approved hospitals and centers, and for treatment at the Balestier Medical Center. Members have to set aside S\$9,000 in their Medisave Account when they withdraw their CPF at age 55.

MediShield is extended to cover cyclosporin prescriptions for patients who have undergone organ transplants.

1 Apr 1992. The minimum sum to be set aside under MSS is S\$33,800 for an individual, and S\$50,700 for a married couple. The limit is also revised upward.

Members have to set aside S\$10,000 in their Medisave account when they withdraw their CPF savings at age 55.

1 July 1992. MediShield is extended to cover members up to 70 years of age. The claim limit is also revised upward to give better benefits to CPF members for their hospitalization and medical expenses.

Medisave is extended to all self-employed persons. By contributing to Medisave, the self-employed are also covered by MediShield.

1 Dec 1992. Non-Residential Properties Scheme (NRPS) members can use their CPF savings to invest in commercial properties with a remaining lease of 60 years, instead of the previous 75 years.

Residential Properties Scheme (RPS) rules are relaxed to allow members to use their CPF savings to buy private properties with a remaining lease of 60 years, instead of 75 years.

1992. Medisave is extended to cover treatment at the St. Andrew's Community Hospital and outpatient azidothymidine (AZT) treatment for AIDS patients at approved hospitals.

Fourteen trustee stocks, one loan stock, and one primary share issue are added to the list of approved investments. Another two trustee stocks that do not meet the requirements set out in the Trustees Act are removed.

1 Jan 1993. Medisave is extended to cover outpatient chemotherapy treatment at approved private clinics.

1 Apr 1993. The minimum sum for an individual is revised from S\$33,800 to S\$34,600. For a married couple, the new minimum sum is S\$51,900. The limit is revised upward.

Members below age 55 are required to set aside up to S\$16,000 in their Medisave Account, while those who withdraw their savings at age 55 have to

set aside S\$11,000 for their health-care needs during retirement.

1 Jun 1993. Medisave is extended to cover treatment at the Ang Mo Kio Community Hospital.

1 Oct 1993. Under the Public Housing Scheme, members can withdraw up to 100 percent of the purchase price of the flat or its market value at the time it was bought, whichever is lower. When this limit is reached, members can further withdraw up to 80 percent of their gross CPF savings in excess of the minimum sum to repay their outstanding housing loan.

Under RPS, before 1 October 1993, members could withdraw from their Ordinary Account only up to 100 percent of the purchase price of the property or its value at the time it was bought, whichever is lower. From 1 October 1993, they can withdraw further to repay their outstanding loan. The additional amount members can use is up to 80 percent of their gross CPF savings in excess of the minimum sum of S\$34,600. In addition, members can use their CPF savings to buy land and build their own houses. They are allowed to withdraw their CPF savings only after the construction of the building has been completed and the temporary occupation permit issued. CPF members who have properties under RPS and now wish to totally demolish the houses to build new ones can also use the CPF savings to repay the loan taken out for the construction.

The Basic and Enhanced Investment Schemes are introduced. Under the Basic Investment Scheme (BIS), a member may use up to 80 percent of his savings, after setting aside a minimum reserve of S\$34,600, to invest in trustee shares, loan stocks, and unit trusts. Ten percent of his investable savings may also be invested in gold and nontrustee shares. Under the Enhanced Investment Scheme (EIS), a member may use up to 80 percent of the CPF savings in excess of the S\$50,000 cash balance in his Ordinary and Special Accounts for investments approved under BIS. In addition, he may also invest in shares and loan stocks listed on Stock Exchange

of Singapore Dealing and Automated Quotation (SESDAQ), government bonds, bank deposits, fund management accounts, and endowment insurance policies. A CPF member can only have either a BIS or an EIS account at a time.

Oct 1993. Under the government's asset enlargement program, Singaporeans who are CPF members are able to buy Singapore Telecommunications Ltd. group A shares, which are special discounted shares. The aim is to make Singapore a share-owning as well as home-owning society, thereby giving Singaporeans a greater stake in the country.

1993. The CPF Share Ownership Top-Up Scheme (SOTUS) is introduced to help Singaporeans own shares. It gives a S\$200 cash grant to Singaporeans aged 21 years and above who contributed and retained S\$500 in their CPF accounts during the qualifying period between 1 Mar 1993 and 31 Aug 1993. Members who put in less than S\$500 receive a prorated amount.

1 Apr 1994. The minimum sum for an individual is increased to S\$35,400. For a married couple, the new minimum sum is S\$53,100. The limit is revised upward.

Members below age 55 are required to set aside up to S\$17,000 in their Medisave Account. Those who withdraw their savings at age 55 have to set aside S\$12,000 for their health-care needs during retirement.

1 Jul 1994. MediShield Plus is introduced for those who want a higher coverage than that offered under the regular MediShield. It works the same way as MediShield and has two plans, Plan A and Plan B.

Medisave is extended to cover day treatment at the Alexandra Day Hospital.

1 Sep 1994. Medisave is extended to cover treatment at the Ren Ci Hospital.

1 Nov 1994. Medisave is extended to cover treatment at the Assisi Home and Hospice.

1994. All self-employed license holders will have to be up-to-date in their Medisave payments before they can apply or renew their licenses.

The Singapore government introduces the second Share Ownership Top-Up Scheme to help Singaporeans own shares. A cash grant of S\$300 will be given to Singaporeans who contributed at least S\$750 in their CPF accounts during the qualifying period between 1 Mar 1994 and 31 Aug 1995. Members who put in less than S\$750 will receive a prorated grant from the government. The S\$300 cash grant and the voluntary CPF contributions can be used to buy shares when major government-owned corporations go public.

1 Jan 1995. EIS members can invest in foreign stocks through the EIS Unit Trusts and Fund Management Accounts.

1 Mar 1995. The government announces the CPF Top-up Scheme to reward all Singaporeans who have helped contribute to the economy of Singapore. Under the scheme, all adult Singaporeans are given an additional S\$200 in their CPF Ordinary Accounts in mid-October.

The age limit for the Home Protection Insurance Scheme is raised from 55 to 60 years old.

1 Apr 1995. Members are required to set aside up to S\$18,000 in their Medisave Account, while those who withdraw their savings at age 55 have to set aside S\$13,000 in their Medisave Accounts to meet health-care needs during retirement. These Medisave limits will be raised by S\$1,000 every April until they reach S\$20,000 and S\$15,000, respectively.

14 May 1995. The age limit for the Dependents' Protection Insurance Scheme is raised from 55 to 60 years to be in line with the current retirement age. At the same time, the insured amount is increased from S\$30,000 to S\$36,000 to take into account wage increases over the years.

Jun 1995. The CPF Board implements the automatic refund of cash balances in excess of S\$1,000 in members' CPF Investment Accounts to their CPF Ordinary Accounts at the end of every quarter.

During the year, the board includes six unit trusts and two fixed-deposit banks under BIS and EIS.

1 Jul 1995. MSS is enhanced to help members set aside sufficient savings to support a modest standard of living during retirement. This scheme was previously pegged at subsistence level. Members who turn 55 from 1 Jul 1995 are required to set aside a minimum sum of S\$40,000, of which at least S\$4,000 must be in cash and the remaining S\$36,000 can be pledged with a property. The minimum sum will be raised gradually by S\$5,000 a year until it reaches S\$80,000 in the year 2003, with S\$40,000 required to be in cash. The limit is adjusted upward.

Jul 1995. In recognition of older Singaporeans' contribution to the economy and the need to help them build up their Medisave Accounts, the government announces the Pre-Medisave Top-Up Scheme. Under this scheme, Singaporeans aged 61 and above as of 1 Apr 1995, who contributed S\$50 into their Medisave Accounts during the qualifying period between 1 Jul and 31 Dec 1995 will receive additional money ranging from S\$100 to S\$350 (depending on their age) into their Medisave Accounts.

1995. MediShield is enhanced with increases in claimable limits for daily room and board, intensive care unit treatments, surgical treatments, outpatient treatments, and the overall claimable limit.

Mar 1996. The government announces that from 1 Jan 1997, BIS and EIS will be merged to form the CPF Investment Scheme (CPFIS).

The government taps Singaporeans' CPF accounts under the third SOTUS. Adult Singaporeans who contributed at least S\$500 between 1 Mar 1996 and 28 Feb 1997 will receive an additional sum of money between S\$300 and S\$500 depending on their National Service status. Members who contributed less than S\$500 will receive a prorated amount from the government.

Under the CPF Medisave Top-Up Scheme, all adult Singaporeans are given an additional S\$200 into their CPF Medisave Accounts on 26 Oct 1996.

1 Apr 1996. Members are required to set aside up to S\$19,000 in their Medisave Account, while those who withdraw their savings at age 55 have to set aside S\$14,000 in their Medisave Accounts to meet health-care needs during retirement. These Medisave limits will be raised by S\$1,000 annually until they reach S\$20,000 and S\$15,000, respectively.

1 Jul 1996. Members who turn 55 from 1 July 1996 are required to set aside a minimum sum of S\$45,000, of which at least S\$8,000 must be in cash and the remaining S\$37,000 can be pledged with a property. The limit is revised upward.

In recognition of older Singaporean's contribution to the economy and the need to help them build up their Medisave Accounts, the government reannounces the Pre-Medisave Top-Up Scheme. Under this scheme, Singaporeans aged 62 and above as of 1 Apr 1996 who contributed S\$50 into their Medisave Accounts during the qualifying period between 1 Jul and 31 Dec 1996 will receive an additional sum ranging from S\$100 to S\$350 (depending on their age) into their Medisave Accounts.

The age ceiling for MediShield and MediShield Plus is extended from 70 to 75 years old.

Aug 1996. The government makes a second offer of discounted Singapore Telecommunications (ST) shares.

1996. RPS is extended to executive condominiums, which the government introduces to replace Housing Board executive flats.

Appendix 2

Major Developments in the Singapore Government Securities Market

May 1987. The new Singapore government securities market is launched. A regular schedule of issues is introduced. A market committee is selected from among the financial institutions to provide the Monetary Authority of Singapore (MAS) with feedback on demand conditions. This group, comprising five primary and three registered dealers, also forms the core of the distribution network for government securities. The new government stocks issued would be scripless, with transactions in these securities being recorded through book entries in the main computerized register maintained by MAS.

Two-year and five-year notes are issued quarterly, while Treasury bills are issued more frequently. Three-month Treasury bills are issued weekly, while six-month and one-year Treasury bills are issued bi-monthly. In light of feedback from the market committee, the schedule of each of these issues is revised to once every four months at the start of 1988, except for three-month Treasury bills, which remain as weekly issues.

Primary and registered dealers are committed to quote two-way quotes under all market conditions.

1988. Except for the 91-day Treasury bill which continues to be auctioned weekly, issues for scripless government securities are made less frequent so that each can be larger and remain the current issue traded for a longer period. With several issues of each maturity already in the market, the issuance of the 182-day, 364-day, two-year, and 5-year notes is reduced to three times.

1989. While 91-day Treasury bills continue to be auctioned weekly, the frequency of the other Treasury bills and government notes issues is moderated to twice a year.

1990. The number of primary dealers decreases from eight to seven toward the end of the year.

Jan 1991. To further enhance liquidity in government securities trading, MAS initiates an interdealer broking system, ensuring that two-way prices are readily available to both dealers and their customers.

One of the seven primary dealers, a joint venture between two banks, goes into voluntary liquidation in the first quarter of 1991. Its primary dealership is taken over by its majority shareholder.

1997. Primary dealers increase from seven to eight.

Appendix 3

Efforts Made by the Central Provident Fund Board to Find Other Investment Avenues

1977. The board decides to trade Singapore government securities in the secondary market. Hitherto, all Singapore government stocks in the board's possession were held to maturity for redemption. However, with the board holding more than 70 percent of all Singapore government stocks issued, it was felt that the board should participate in the secondary market for these stocks and help to activate and develop the market. The board places its funds as advance deposits with the Monetary Authority of Singapore (MAS). During the year, the board invests in two issues of 6.25 percent tax-free registered stocks.

18 Jan 1978. The board begins trading Singapore government-registered stocks in the secondary market to increase its investment returns. Market activity in these stocks was limited, as financial institutions generally held stock investments to meet statutory requirements.

1979–1980. The board invests in Singapore government stocks and places funds as advance deposits with MAS. During the year, the board is allotted three issues of 6.25 percent tax-free registered stocks.

1981–1983. The board invests in Singapore government stocks and places funds as advance deposits with MAS pending the issue of such stocks. Only a small float is set aside to meet operational requirements.

1984. Almost all of the board's funds are invested in Singapore government bonds ranging from one

to 18 years and placed as advance deposits with MAS pending the issue of such bonds. Only a small float is set aside to meet operational requirements.

1985. Almost all of the board's funds are invested in Singapore government bonds ranging from three to 18 years and placed as advance deposits with MAS pending the issue of such bonds. Only a small float is set aside to meet operational requirements.

1986. Besides a small float set aside to meet operational requirements, all of the board's funds are invested in Singapore government bonds with maturity periods ranging from two to 17 years and placed as advance deposits with MAS pending the issue of such bonds.

1987. Central Provident Fund (CPF) members' funds are invested in Singapore government bonds and placed as advance deposits with MAS pending the issue of such bonds. CPF's holdings of fixed-rate bonds are replaced by floating-rate bonds on 1 September 1987. The replacement removes possible financial risk to the fund by matching earnings with interest payments to members. The interest rate on the new bonds is pegged to the CPF interest rate, which is adjusted every six months according to market rates.

Insurance funds are managed by institutional fund managers. These funds are invested primarily in fixed deposits, negotiable certificates of deposit, equities, and government bonds.

1988–1996. CPF members' funds are invested in Singapore government bonds and placed as advance deposits with MAS pending the issue of such bonds.

Home insurance funds are managed by institutional fund managers. These funds are invested primarily in fixed deposits, negotiable certificates of deposit, equities, and government bonds.

Notes

¹An older pension fund called the Academic Staff Provident Fund still exists today. This fund was set up for the teaching staff of the then University of Singapore. The civil service had its own pay-as-you-go pension system.

²Ministry of Finance, (1964), p. 6.

³Whether CPF savings are enough for retirement has been of lingering concern and occasionally emerges as a topic of debate in Parliament. An increasing lifespan and rising healthcare cost are two major factors behind the concern.

⁴A foreigner may withdraw all his CPF savings when he leaves the country but in that case he cannot be employed again in Singapore. This policy of disallowing re-employment in Singapore is clearly stated as a warning in the CPF withdrawal form. It is largely aimed at West Malaysians who, given their proximity to Singapore, would enjoy an undue advantage over the locals should there be no such policy.

⁵MAS Annual Report 1986/87, p. 2.

⁶The eight primary dealers comprise the six local commercial banks, Citibank, and Hongkong and Shanghai Bank.

⁷POSBank, formerly the Post Office Savings Bank, is a statutory board rather than a commercial bank.

⁸A bank officer, asked about the possibility of investments in SGS with CPF savings, expressed surprise. He did not see why anyone would consider investing in SGS given their low yields. He explained that the SGS market is illiquid and specific issues may have to be specially sourced. In his own words, "we get an enquiry from an individual about investing in SGS only once in a blue moon."

⁹Estimated average daily turnover for 1997 on the Stock Exchange of Singapore Dealers Automated Quotation (SESDAQ), the second-tier securities market on the Stock Exchange of Singapore.

¹⁰This was one of 55 recommendations of the finance and banking subcommittee of a national panel formed to look into Singapore's competitiveness. Most of the other recommendations were accepted by the government.

¹¹Reported in the *Business Times*, 19 February 1998.

¹²In Singapore, obtaining social welfare aid is a tortuous process and even then, the amount of the allowance is not meant to be sufficient for one to rely solely on the state.

¹³There is one exception to the disapproval of private pension management firms. The Academic Staff Provi-

dent Board retains its autonomy in actively managing contributions from the university teaching staff who have the option of not contributing to CPF.

¹⁴The figures were compiled by the Central Depository (CDP), the electronic share registry. It is a subsidiary of SES. The information is not available to the public.

¹⁵The bank learns about the prospective purchase only a few days after the order is placed, when CPF applies for a release of funds.

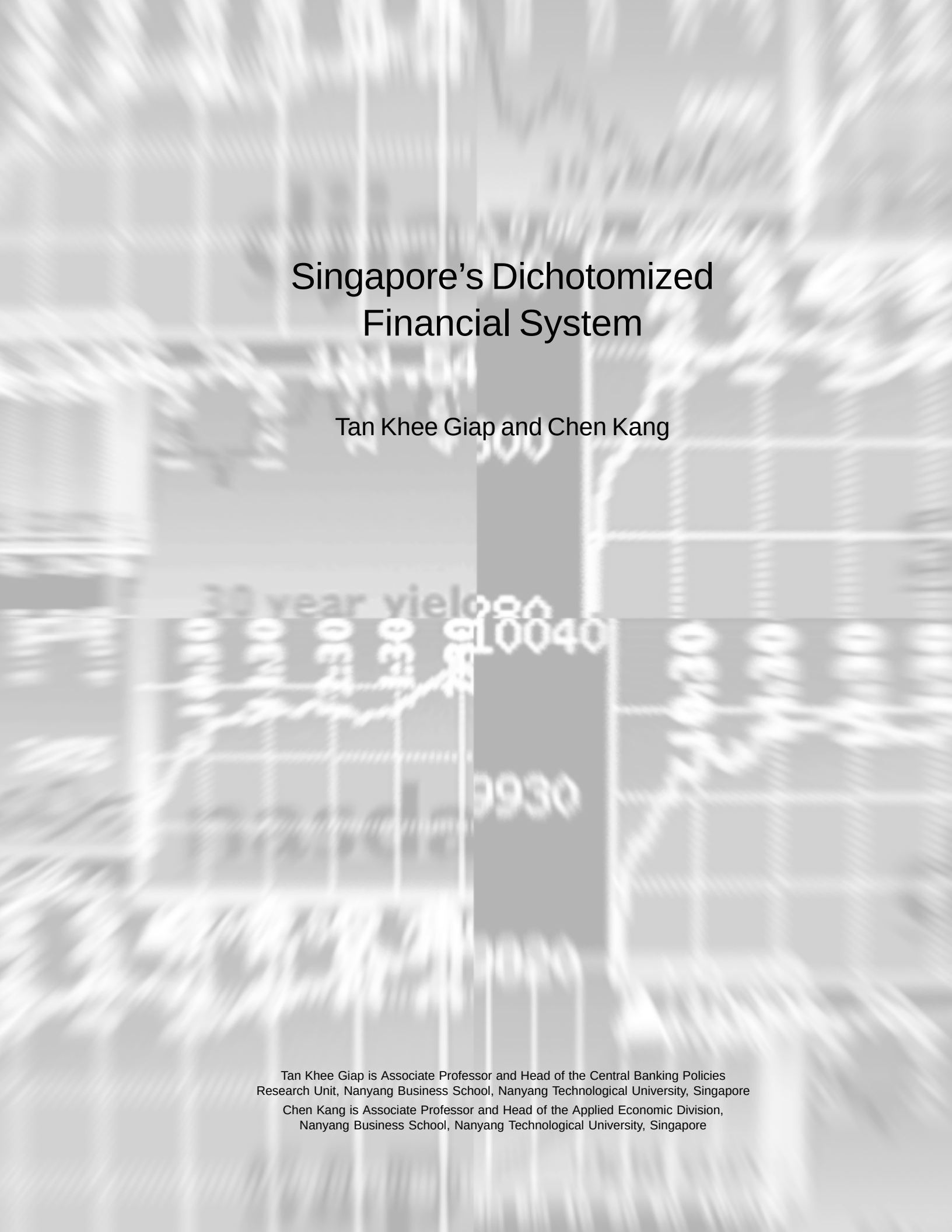
¹⁶Many individuals, including the author, have been caught by a cash shortfall even after determining that there are sufficient funds available for securities investment. One reason for this is the seven-day lag between order and settlement, which means that the account balance on the day of the order may not be the same as the balance on the day of settlement because of outstanding transactions. Even bank officers responsible for CPFAIS accounts have given up trying to explain how the shortfall could have occurred and simply ask their clients to make cash top-ups.

¹⁷This actually led to murmurs about the share being overpriced in the first place.

¹⁸Based on a report of the Central Provident Fund Study Group in April 1986. Funds raised through the issuance of government bonds are joined with government reserves and the funds entrusted by other government bodies to MAS, and later the Government of Singapore Investment Corporation, for management.

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Singapore's Dichotomized Financial System

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Summary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The Macroeconomic Context and Its Effect on Financial Sector Policies

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

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

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

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

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

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

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

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

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

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

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

The Dichotomized Financial System and Its Evolution Since the 1960s

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

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

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

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

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

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

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

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

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

Contribution of Financial and Business Services to Economic Growth

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

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

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

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

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

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

() = negative values are enclosed in parentheses.

^a Includes insurance and real estate services.

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

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

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

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

() = negative values are enclosed in parentheses.

^a Includes insurance and real estate services.

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

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

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

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

^a Includes insurance and real estate services.

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

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

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

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

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

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

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

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

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

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

The Dichotomized Financial Structure: Conceptual Framework and Rationale

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

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

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

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

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

() = negative values are enclosed in parentheses.

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

^b Includes insurance and real estate services.

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

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

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

() = negative values are enclosed in parentheses.

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

^b Includes insurance and real estate services.

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

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

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

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

On liberalizing offshore banking activities, Hu reiterated that:

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

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

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

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

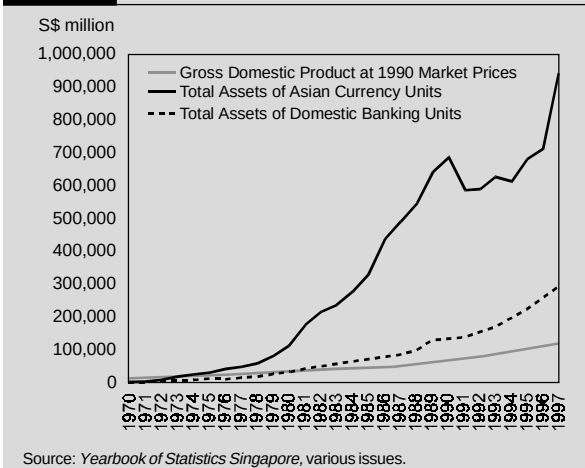
The operation of restricted banks, offshore banks, and merchant banks in Singapore is subject to rigid guidelines. Restricted banks are not allowed to operate savings accounts or to accept fixed deposits of less than S\$250,000 each, and can operate only in one location, with no subbranching. Such restrictions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

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

The Dichotomized Financial Sector: A Performance Review

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

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



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

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

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

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

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

^b All local banks are full banks.

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

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

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

^f SIMEX began operations in December 1983.

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

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

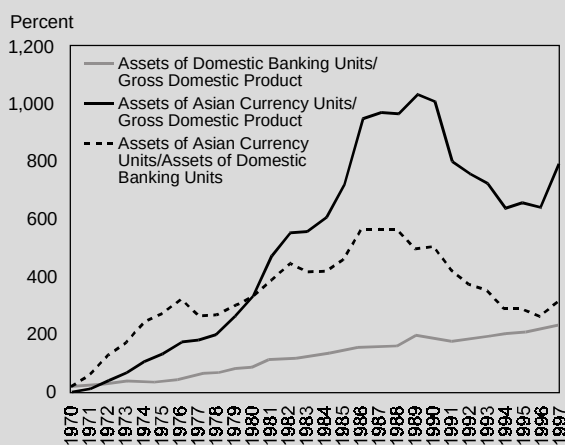
A Two-Tier Financial Entity: The Domestic Banking Unit vs. the Asian Currency Unit

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

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

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

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

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

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

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

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

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

Item	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Assets													
Cash in hand	50.0	46.0	63.0	70.0	97.0	107.0	105.3	115.1	154.6	161.1	272.4	222.4	247.9
Balances with MAS	116.8	147.0	233.0	594.0	445.0	454.1	511.7	546.3	633.1	733.7	923.1	1,195.1	1,417.5
S\$NCDs held						381.2	380.1	292.6	198.4	166.2	127.8	89.0	76.8
Amount due from banks ^b	800.7							3,712.5	4,331.5	5,646.6	6,880.1	11,824.3	9,823.6
In Singapore								1,263.6	1,616.2	1,986.6	2,756.7	4,196.0	3,727.9
ACUs								1,068.4	853.1	1,265.9	1,655.0	3,094.2	3,074.1
Outside Singapore								1,380.5	1,862.1	2,394.1	2,468.4	4,534.1	3,021.6
Money Market Investments	604.7	843.0	989.0	695.0	712.0	780.4	819.9	832.4	947.7	1,065.6	1,573.0	2,262.0	2,486.3
Treasury bills ^c	604.7	843.0	895.0	340.0	319.0	364.5	328.5	306.7	324.4	369.9	688.9	784.0	568.4
Deposits with discount houses			94.0	355.0	393.0	415.9	491.4	525.7	623.3	695.7	884.1	1,478.0	1,917.9
Other Investments	221.3	434.0	544.0	817.0	922.0	1,073.2	1,446.8	1,604.7	1,685.7	1,690.6	1,914.9	1,955.6	3,118.0
In Singapore		334.0	430.0	727.0	831.0	995.4	1,365.7	1,540.6	1,620.4	1,639.6	1,845.7	1,882.6	2,994.4
Government securities ^d	90.0	129.0	196.0	333.0	381.0	473.4	762.0	897.5	955.2	908.9	861.1	689.0	1,016.2
Other securities ^e	131.3	205.0	234.0	394.0	450.0	522.0	603.7	643.1	665.2	730.7	984.6	1,193.9	1,978.2
Outside Singapore		100.0	114.0	90.0	91.0	77.8	81.1	64.1	65.3	51.0	69.2	72.7	123.6
Loans and advances to nonbank customers of which bill financing	2,367.2	2,615.0	3,565.0	5,146.0	5,697.0	7,678.7	8,894.2	10,183.0	12,226.4	16,007.0	20,206.9	25,229.1	29,442.9
Commercial bills		555.0	719.0	1,054.0	1,111.0	1,326.2	1,622.5	2,352.2	2,827.5	3,948.3	44,049.3	3,979.4	4,107.3
Fixed and other assets	138.7	231.0	278.0	526.0	633.0	738.7	840.1	951.4	1,040.9	1,277.0	1,417.9	1,853.0	1,924.2
Total Assets	4,299.4	4,871.0	6,391.0	8,902.0	9,617.0	11,213.3	12,998.1	18,238.0	21,218.3	26,747.8	33,316.1	44,630.8	48,537.2
Liabilities													
Paidup capital and reserves	262.5	350.0	417.0	788.0	921.0	1,088.7	1,270.9	1,353.9	1,498.1	1,861.2	2,665.4	3,799.5	4,301.3
Deposits of nonbank customers ^f	2,896.8	3,746.0	4,737.0	5,800.0	6,586.0	7,606.0	8,488.5	8,969.5	10,045.7	12,178.4	16,035.0	20,007.9	23,408.7
S\$NCDs issued						527.6	617.8	513.4	455.3	515.0	331.9	404.5	428.0
Amount due to banks ^b	830.8	296.0	702.0	1,316.0	811.0	642.9	903.3	5,044.2	6,624.1	8,615.9	9,942.5	15,366.0	14,426.4
In Singapore		12.0	12.0	91.0	26.0	28.9	1.7	1,271.7	1,718.7	2,415.4	2,888.4	4,241.3	3,941.6
ACUs		57.0	148.0	350.0	94.0	33.2	53.8	1,355.1	1,944.3	2,399.8	2,267.1	3,035.2	3,683.4
Outside Singapore		227.0	542.0	875.0	691.0	580.8	847.8	2,417.4	2,961.1	3,800.7	4,787.0	8,089.5	6,801.4
Amount borrowed from other creditors		135.0	192.0	401.0	655.0	658.0	774.6	792.9	843.9	1,053.4	1,549.2	2,115.4	2,623.8
Bills payable		75.0	95.0	126.0	107.0	266.7	298.1	738.9	864.0	1,410.2	1,261.1	989.5	1,291.0
Other liabilities	309.3	219.0	248.0	417.0	538.0	574.0	644.9	825.2	886.6	1,113.7	1,531.0	1,948.0	2,058.1
Total Liabilities	4,299.4	4,871.0	6,391.0	8,902.0	9,617.0	11,213.3	12,998.1	18,238.0	21,218.3	26,747.8	33,316.1	44,630.8	48,537.2

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

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

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

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

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

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

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

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

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

Regulatory Rules

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Prudential Safeguards

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

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

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

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

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

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

The MAS Guidelines provide further that a bank must:

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

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

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

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

Table 9: Singapore Dollar Resident Loan Limit on Offshore Banks

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

Source: Monetary Authority of Singapore.

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

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

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

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

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

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

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

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

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

Thus, EC can be expressed as follows:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

FISCAL INCENTIVES

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

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

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

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

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

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

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

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

The Dichotomized Financial System: Issues and Policy Implications

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

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

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

Management and Transmission Mechanism of the Singapore Dollar

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

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

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

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

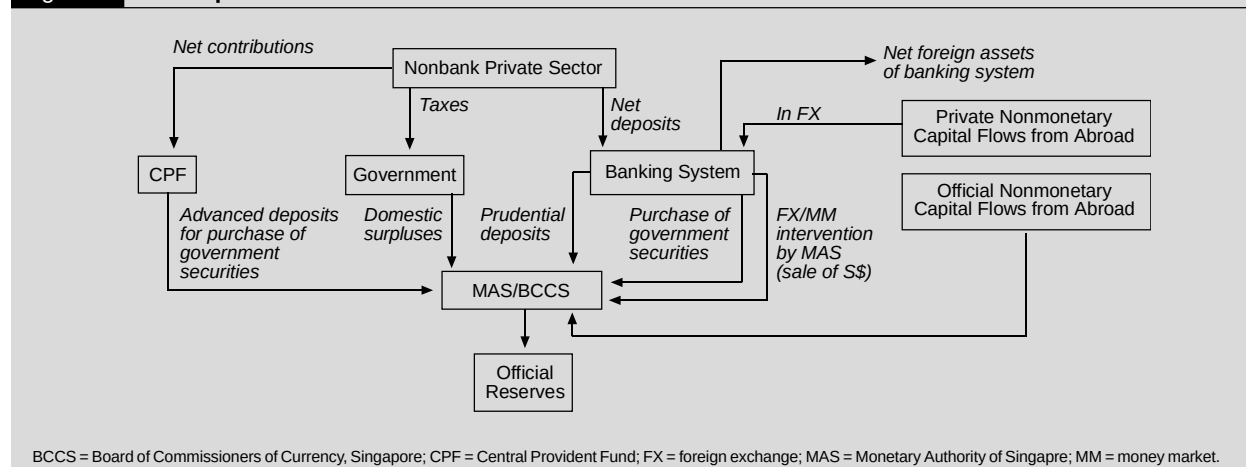
The more important, if not the most frequent, means of regulating liquidity in the banking system appears to be intervention by MAS through the foreign-exchange market, currency swaps, and direct deposit injections or withdrawals in the money market. Compulsory CPF contributions and domestic surpluses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

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

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

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

Figure 3: MAS Operations and Flow of Funds



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

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

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

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

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

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

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

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

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

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

Trade Competitiveness and Current- and Capital-Account Liberalization

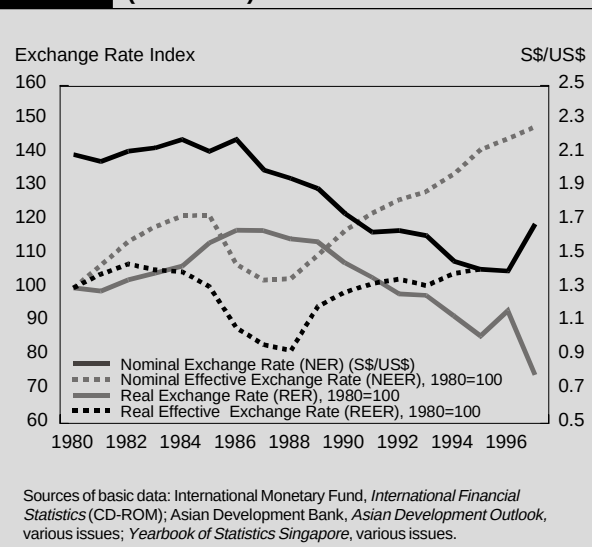
Managing a trade-weighted Singapore dollar floating within a band would still involve market judgment, and may not be an easy task for MAS. The

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

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

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

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



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

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

Table 12: Exchange Rate Movements, 1980–1997

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

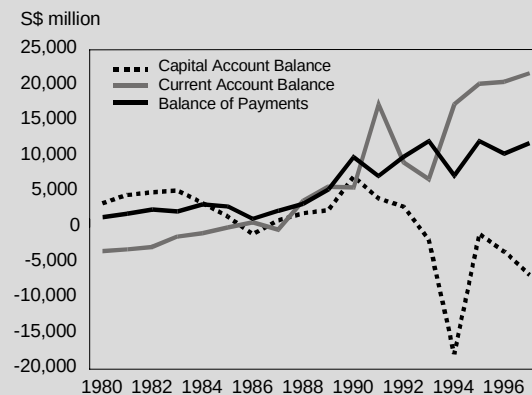
Sources of basic data: International Monetary Fund, *International Financial Statistics* (CD-ROM); Asian Development Bank, *Asian Development Outlook*, various issues; *Yearbook of Statistics Singapore*, various issues.

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

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

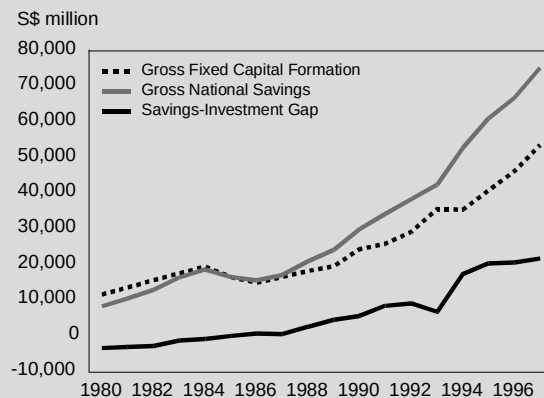
Singapore's balance-of-payments position has improved significantly especially since the mid-1980s. Surpluses have reached a ceiling of around S\$12 billion because of tremendous improvement in the current account, which hit a record high of S\$22 billion in 1997. The capital account began to deteriorate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

Figure 5: Balance of Payments, 1980–1996



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

Figure 6: Savings-Investment Gap, 1980–1996



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

Trade balances were negative throughout the 1980s and early 1990s. Thereafter, they hovered at close to zero, as shown in Figure 7. The maturing economy has reduced the need for imports of goods. There

has also been a corresponding surge in exports of goods as well as of services. In the 1990s, Singapore has begun to reap the fruits of being an international service hub, including the earnings of its financial,

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

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

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

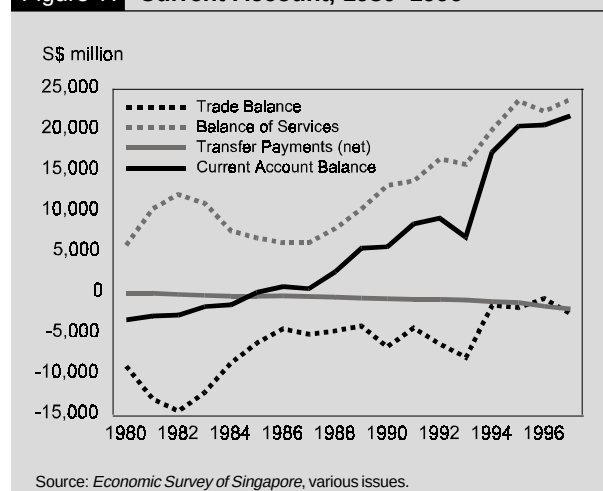
Table 14: Savings-Investment Gap, 1980–1997

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

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

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

Figure 7: Current Account, 1980–1996



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

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

Figure 8: Capital Account, 1980–1996

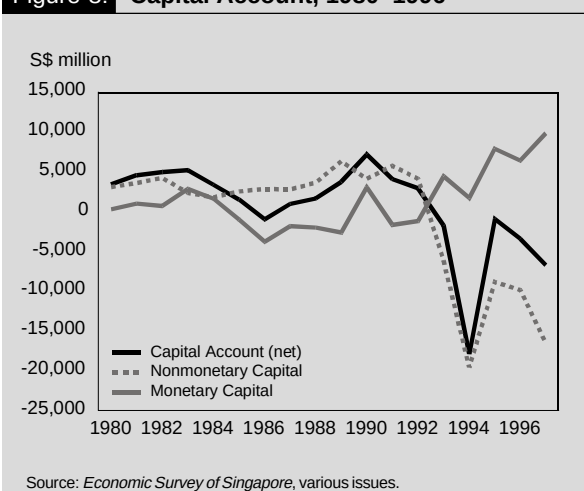


Table 15: Current Account, 1980–1997 (S\$ million)

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

() = negative values are enclosed in parentheses.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

() = negative values are enclosed in parentheses.

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

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

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

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

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

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

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

() negative values are enclosed in parentheses.

na = not available.

ACU = Asian currency unit.

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

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

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

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

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

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

() = negative values are enclosed in parentheses.

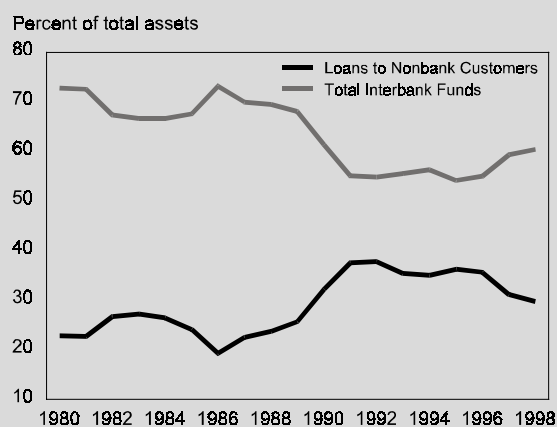
ACU = Asian currency unit.

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

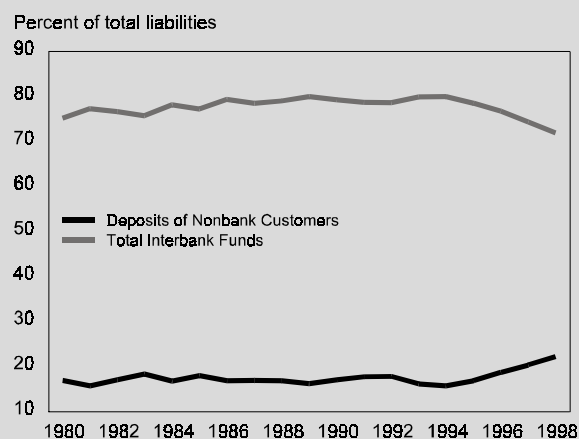
^b Percentages for 1971–1977 include Inter-ACU transactions.

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

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

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

Source: Monetary Authority of Singapore.

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

Source: Monetary Authority of Singapore.

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

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

() = negative values are enclosed in parentheses.

ACU = Asian currency unit.

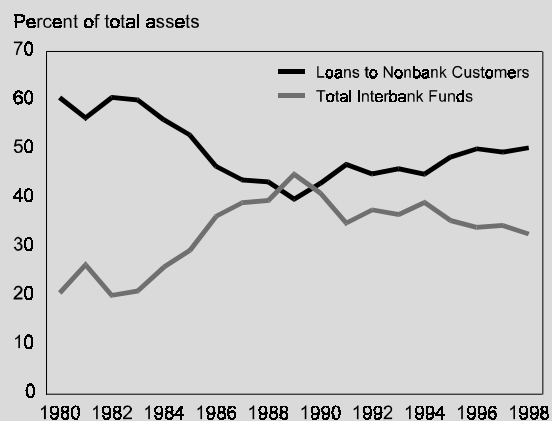
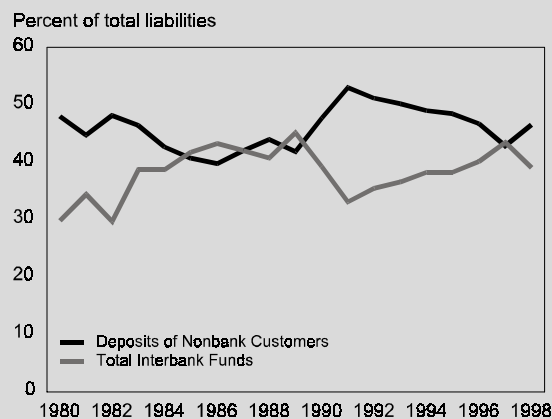
^a End-December except for 1998 whose reported figures are for end-March.^b Percentages for 1971–1977 include Inter-ACU transactions.^c "Other liabilities" include "S\$NCDs issued" and "Other liabilities."Source: Monetary Authority of Singapore, *Annual Report*, various issues.**Figure 11: Composition of the Assets of Domestic Banking Units: Nonbank Customers and Total Interbank Funds, 1980–1998**Source: Monetary Authority of Singapore, *Annual Report*, various issues.**Figure 12: Composition of the Liabilities of Domestic Banking Units: Nonbank Customers and Total Interbank Funds, 1980–1998**Source: Monetary Authority of Singapore, *Annual Report*, various issues.

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

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

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

^b Figures for 1970 and 1975 are classified as "Over 7 days to 3 months."

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

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

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

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

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

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

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

() = negative values are enclosed in parentheses.

ACU = Asian currency unit.

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

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

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

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

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

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

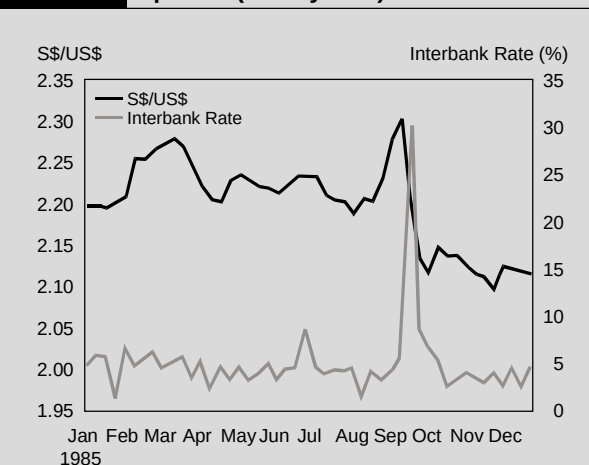
Source: International Monetary Fund, *International Financial Statistics*, various issues.

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

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

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

ACU = Asian currency unit.

^a End-December except for 1998 whose reported figures are for end-March.^b Percentages for 1970–1977 include Inter-ACU transactions.^c "Other liabilities" include "S\$NCDs issued" and other liabilities.Source: Monetary Authority of Singapore, *Annual Report*, various issues.**Figure 14: The September 1985 Exchange-Rate Episode (weekly data)**

Source: Monetary Authority of Singapore.

Noninternationalization of the Singapore Dollar and Its Implications

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

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

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

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

na = not available.

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

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

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

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

ACU = Asian currency unit.

^a End-December except for 1970 and 1998 whose reported figures are for end-March.^b Figures for 1971–1976 are reported as “Net Balances due to banks.”^c “Other liabilities” include “\$SNCs issued,” “Bills payable,” and other liabilities.Source: Monetary Authority of Singapore, *Annual Report*, various issues.

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

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

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

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

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

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

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

Some Popular or Persuasive Arguments for Internationalization

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

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

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

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

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

BROADER AND DEEPER FINANCIAL MARKETS FOR SINGAPORE

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

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

INTRA-ASEAN TRADE INVOICED IN SINGAPORE DOLLARS

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

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

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

SINGAPORE AS AN INTERNATIONAL FINANCIAL CENTER

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

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

REGIONALIZATION DRIVE AND THE EXTERNAL ECONOMY

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

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

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

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

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

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

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

Rules of the Game and the Role of Financial Institutions

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

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

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

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

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

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

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

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

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

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

Concluding Remarks: Some Observations and Lessons

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix 1

Chronology of Financial Market-Related Measures and Events

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

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

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

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

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

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

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

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

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

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

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

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

June 1978. Exchange controls are completely abolished

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix 2

Guidelines for Operation of Banks and Merchant Banks

ASIAN CURRENCY UNIT TERMS AND CONDITIONS OF OPERATION

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

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

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

GUIDELINES FOR OPERATION OF "RESTRICTED" BANKS

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

GUIDELINES FOR OPERATION OF "OFFSHORE" BANKS

1. Transactions with nonresidents of Singapore

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

2. Transactions with nonbank customers who are residents of Singapore

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

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

3. Transactions with banks and other financial institutions in Singapore

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

4. Asian Currency Unit

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

Residents of Singapore are defined as:

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

Nonresidents or residents outside Singapore are defined as:

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

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

GUIDELINES FOR OPERATION OF "MERCHANT" BANKS

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

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

Source: Monetary Authority of Singapore.

Appendix 3

Notice to Banks

INTERNATIONALISATION OF THE SINGAPORE DOLLAR (S\$)

MAS 757, 26 Nov 1999

Issued by Monetary Management Division

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

Overview

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

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

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

are described in detail below and summarized in Schedule 1.

Extension of S\$ Credit Facilities

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

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

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

Listing of S\$ Equities

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

Issue of S\$ Bonds

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

Transactions in S\$ Financial Derivatives

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

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

Reporting

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

Consultation Procedure

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

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

Source: Monetary Authority of Singapore.

Schedule 1: Summary Table of Provisions Under MAS Notice 757

S\$ Credit Facilities to Non-residents ^a			Arranging Issuance for Nonresidents ^b		
	For Use in Singapore	For Overseas Projects	S\$ Bonds	S\$ Shares	Financial Derivatives
Allowed freely	<i>Any amount for:</i> • Trade financing, performance bonds, performance/payment guarantee. • Working capital, purchase of office, factory and fixed assets for own development. • Purchase of land for construction. All of the above S\$ loans and their hedging will be allowed without the need to consult. • Repos of SGS and/or SES-listed S\$ denominated bonds which are cleared and settled through CDP, where there is full delivery of collateral. <i>≤ S\$5 million for:</i> • Shares, bonds, deposits, commercial properties. Large amounts (>\$5 million) must not be split to circumvent.	<i>≤ S\$5 million</i> Large amounts (>\$5 million) must not be split to circumvent.	<i>If S\$ proceeds are used for:</i> • Trade financing, performance bonds, performance payment guarantee. • Working capital, purchase of office, factory and fixed assets for own development. • Purchase of land for construction. All of the above and their hedging will be allowed without prior consultation. Banks must notify the Authority prior to the launch of any proposed S\$ bond issues or commercial papers.	S\$ proceeds must be converted into foreign currency for utilization outside Singapore	• S\$ currency swaps for hedging FX exposures arising from economic activities in Singapore. • S\$ currency and interest rate swaps with Singapore-incorporated SPVs for securitizing S\$ assets. • Singapore equity market- or bond-linked S\$ bank deposits. • S\$ or foreign currency denominated yield enhancement deposits. • S\$ interest rate swaps, interest rate options and swaptions, interest rate futures, forward rate agreements, caps, floors, and other S\$ interest rate derivative products.^c • S\$ currency options for hedging FX exposures arising from trade with or economic activities in Singapore subject to the conditions in Para 5.1 (transactions in S\$ financial derivatives).^d
Consult MAS	<i>> S\$5 million for:</i> • Other activities not specified above.	<i>> S\$5 million for:</i> • Overseas projects with Singaporean management control or MTI/EDB sponsorship, and (a) Singaporean shareholding of 21% to 49% = S\$ financing up to 100% of project cost. (b) Singaporean shareholding up to 20% = S\$ financing up to 50% of project cost. • Without management control or MTI/EDB sponsorship = S\$ financing up to the proportion of Singaporean shareholding. S\$ proceeds above the freely approved \$5 million must be converted/swapped into foreign currency for utilization outside Singapore.	If proceeds are to be used outside Singapore or for purposes not specified above. S\$ proceeds must be converted/swapped into foreign currency for utilization outside Singapore.		• S\$ currency options with non-bank financial institutions. • All other S\$ financial derivatives not specified above.
Not allowed					• S\$ currency options with other banks.

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

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

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

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

^d Immediate reporting upon each successful transaction.

Schedule 2:

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

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

Schedule 3:

Monthly Report for _____

Name of Bank _____

Bank Code _____

Officer-in-charge _____

Tel _____

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

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

FI = financial institution.

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

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

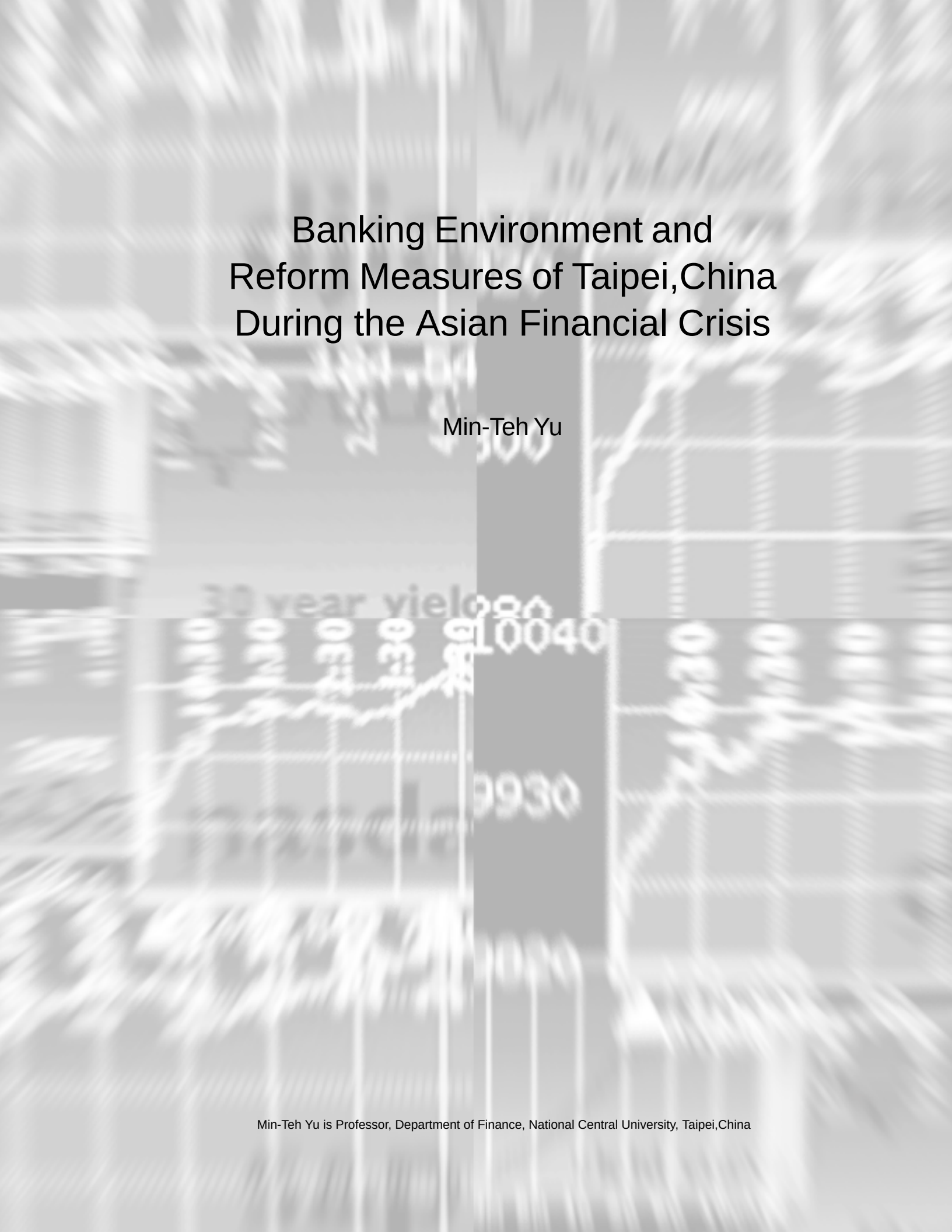
C. S\$ Currency Options (to be reported immediately after the conclusion of each deal)

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

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Banking Environment and Reform Measures of Taipei, China During the Asian Financial Crisis

Min-Teh Yu

Introduction

The recent crisis in East Asia arose from the large-scale shift of funds out of domestic financial markets, beginning in Thailand. The Thai crisis soon had spillover effects on emerging market economies with vulnerable external positions in eastern Europe and in Southeast Asia. As the Southeast Asian crisis deepened, the pressure began to spread to other economies in Asia, including Taipei, China.

To cushion the impact of the crisis, the central bank of Taipei, China, from early June until 17 October 1997, had used about US\$ 10.5 billion to support the exchange rate. Then the central bank stopped its intervention and allowed the New Taiwan (NT) dollar to depreciate. The NT dollar dropped by roughly 18 percent, from NT\$27.5 to NT\$32.5 to the US dollar, over the same period.

Though all sectors in Taipei, China have been affected by the crisis to varying degrees, the economy performed well in 1997. The gross domestic product (GDP) grew by 6.7 percent, the highest annual growth rate in the last five years, while the inflation rate was only 0.9 percent, the lowest recorded in the last 10 years (Table 1). Equity prices suffered moderately from September to November 1997 as interest rates were raised to counter exchange-rate pressures. Since then, equity prices have been stable, and have registered some steady growth.

It is far from clear that the crisis has ended. Its causes are complex and will need to be thoroughly analyzed. While many have attributed the crisis to macroeconomic variables such as foreign debt, budget deficit, and foreign-exchange reserves, some academic experts believe that the weakness of the financial market played a major role. Krugman (1998), for instance, brought out the fact that the currency crisis in Asia was only part of a broader financial crisis that had very little to do with currencies or even monetary issues themselves. Nor did the crisis have much to do with traditional fiscal issues. McKinnon (1998) also believed that mismanaged

Table 1: Key Macroeconomic and Financial Indicators, 1988–1997

Year	GDP Growth Rate (%)	General Consumer Price Index	M2 Growth Rate (%)	Interbank Money Market Rate (%)	Stock Price Index (1966=100)	NT\$/US\$ (end of period)	Foreign Exchange Reserves (US\$ million)	Savings Rate (%)	Foreign Debt (US\$ million)	Unemployment Rate (%)	Current Account Balance (US\$ million)
1988	7.84	1.28	21.16	4.88	5,202	28.17	73,897	na	na	na	10,195
1989	8.23	4.42	20.42	7.34	8,616	26.26	73,224	31.00	na	1.6	11,416
1990	5.39	4.12	12.85	10.49	6,775	27.11	72,441	29.33	na	1.7	10,925
1991	7.55	3.63	16.33	6.01	4,929	25.75	82,405	29.40	2,632	1.5	12,458
1992	6.76	4.47	19.94	6.88	4,272	25.40	82,306	28.29	(3,326)	1.5	8,547
1993	6.32	2.94	16.43	6.41	7,215	26.63	83,573	27.79	(265)	1.5	7,042
1994	6.54	4.09	16.29	6.13	6,253	26.24	92,454	26.11	2,633	1.6	6,498
1995	6.03	3.68	11.59	6.19	5,544	27.27	90,310	25.34	152	1.8	5,474
1996	5.67	3.07	9.23	5.44	6,001	27.49	88,038	24.86	3,311	2.6	11,027
1997	6.71	0.91	8.28	6.86	8,385	32.64	83,502	24.57	89 ^a	2.7	7,051

na = not available, () = negative values are enclosed in parentheses, GDP = gross domestic product.

^a As of June.

Source: Central Bank of China (1998a).

banks were the fundamental cause of the crisis. Kane (1998) used a framework of regulatory competition to explain how longstanding financial weaknesses evolved into a countrywide economic crisis.

This study summarizes the structure of the banking system and financial markets in Taipei, China, and some recent issues in these sectors. From a detailed description of banking and nonbanking financial institutions in Taipei, China, in the next major section, the study goes on to report the developments in and current status of the foreign-exchange market and the currency risk relevant to banks; the most recent plan for bank supervision and examination; and the current banking practices and business environment in Taipei, China. The study ends with some suggested measures for overcoming fundamental weakness in the banking system.

Financial Institutions

Besides the Central Bank of China (CBC), the banking system consists of five major subgroups: (i) domestic commercial banks, (ii) local branches of for-

eign banks, (iii) medium- and-small-scale business banks, (iv) credit cooperatives, and (v) credit departments of farmers' and fishermen's associations (Table 2). A flexible definition of banking businesses is contained in the recently revised Banking Law of 17 July 1989. At the discretion of the Ministry of Finance (MOF), commercial banks can now accept savings deposits, and savings banks can offer checking accounts. Both of these activities were limited previously. However, another provision strictly prohibits unlicensed organizations from taking deposits.

New privately owned banks opened in 1990, paving the way for banking liberalization. Bank regulators have become better able to deal with unlicensed or underground financial institutions and insolvencies, and MOF has been authorized to allow banks to expand their business activities. While MOF determines the extent and timing of bank expansion, CBC approves the establishment of businesses concerned with foreign-exchange transactions and overseas branches by domestic banks. The Banking Law has set criteria for setting up banks and

Table 2: Structure of Financial Institutions, 1998

Financial Institutions	Monetary Institutions	Central Bank (1)	
		Depository Banks	Domestic Banks (39 [1,685]) Local Branches of Foreign Banks (45 [69]) Medium- and Small-Business Banks (8 [491]) Credit Cooperative Associations (60 [478]) Credit Departments of Farmers' Assns (287 [946]) Credit Departments of Fishermen's Assns (27 [48])
	Other Financial Institutions		Central Deposit Insurance Corporation (1) Postal Savings Offices (1,279 [251]) Investment and Trust Companies (5 [61]) Life Insurance Companies (30 [103]) Property and Casualty Insurance Companies (25 [130]) Bills Finance Companies (14 [35]) Securities Finance Companies (4 [2]) Offshore Banking Units (72)

Figures in parentheses represent the number of institutions. Figures in brackets within the parentheses represent the number of domestic offices.
Source: Central Bank of China (1998b).

qualifications for bankers-in-charge. A minimum initial capitalization of NT\$10 billion is required. No single individual stockholder may hold more than 5 percent of the total issued stocks of any registered bank; a corporate stockholder is limited to a maximum of 15 percent. The law requires each bank to maintain a ratio of core and supplementary capital to weighted risk assets of at least 8 percent, similar to the risk-based capital standards set by the Bank for International Settlements (BIS). It also enforces strict supervision over banks, with heavy penalties against offenders.

MOF formulates financial regulatory policies and licenses financial institutions while CBC implements monetary and financial regulatory policies such as reserve requirements or banking supervision. To protect the interests of depositors and to help promote sound banking business, the Central Deposit Insurance Corporation (CDIC), a specialized agency established in 1985, examines and monitors all deposit-taking institutions.

MOF and the central bank have introduced an early-warning financial monitoring system to strengthen banking supervision. Moreover, CDIC is empowered to take over the management of any bank that has violated regulations and to order the bank to stop operating. Taipei, China has been moving toward private bank ownership and greater foreign banking participation to increase competition in and to modernize an industry long dominated by government-owned banks. Banking supervision is also being reinforced to ensure financial soundness and an orderly banking system.

Interest rates and foreign-exchange rates are administered by CBC, and this has led to difficulties in controlling the money supply. Open-market operations have mopped up some of the excess liquidity, but the answer may lie in financial reforms to attract capital resources away from speculative investment. Interest rates on loans and deposits are now set by the banks themselves, on a customer-by-customer basis.

Banking Institutions

THE CENTRAL BANK

Founded in Canton in 1924, CBC relocated to Taipei in 1949. Most central banking functions were delegated to the Bank of Taiwan from 1949 until 1 July 1961, when CBC took back these responsibilities. Under the Central Bank Act, CBC issues currency, regulates interest rates, determines reserve ratios against deposits, provides facilities to banking institutions as lender of last resort, supervises financial institutions and their operations, acts as fiscal agent of the central government, manages official foreign-exchange reserves, collects financial data, and conducts economic research.

Since 1961, CBC's three basic objectives have been to stabilize the internal and external value of the currency, to promote financial stability, and to provide sound guidance to banking institutions. All three objectives are aimed at fostering economic growth.

CBC uses various tools, namely, the rediscount rate, reserve ratio requirements, the exchange rate, open-market operations, and selective credit controls to regulate domestic credit, sterilize foreign-exchange transactions, and, even more importantly, direct controls on the inflow or outflow of foreign exchange. It has stressed the control of monetary aggregates since 1979, and has gradually freed interest rates to market determination. A floating exchange-rate regime has replaced fixed exchange rates in the meantime, in order to enhance CBC's ability to control the money supply.

By requiring banks to keep reserves against their deposits, CBC can influence credit creation by the banking system. However, the reserve requirement is a powerful policy instrument that has been used only occasionally. Since 1985, Treasury bills, negotiable certificates of deposit (NCDs), and savings bonds have become the most important policy instruments of CBC to absorb the surplus liquidity of banks. In addition, CBC has been acquiring more bills with varied maturities under repurchase agree-

ments. This move has made the open-market operations of CBC more active and flexible. Finally, its selective credit controls allow CBC to impose maximum loan ratios on collateral for secured loans, prescribe the down payment and period of banking credit for the investment of productive assets and the consumption of durable goods, and regulate banks' dealings in securities.

DOMESTIC COMMERCIAL BANKS

Six years before the deregulation of bank charters, Taipei, China had only 20 domestic commercial banks (DCBs). As of 1998, there were 36 DCBs, with well-distributed networks throughout the island. These form the backbone of Taipei, China's financial sector. In December 1997, DCBs held 47.4 percent of the total financial assets in the sector, 53.8 percent of deposits, and 69.7 percent of loans. These shares have been increasing over the past 10 years. On the other hand, the postal savings system (PSS), whose assets were more than 10 percent of the total in the 1980s, held only 8.9 percent as of end-1997 (Table 3).

Banks in Taipei, China operate under a branch banking system. Aside from commercial banking,

most domestic banks operate an additional savings department or trust department with separate capital as required by law.

Of the 20 "old" domestic banks (those established before 1991), 12 are owned by the government. This was designed to reinforce the public's confidence in the banking system and facilitate the implementation of monetary policy and the government's strategic policy. Other banks, such as the Bank of Taiwan, act as fiscal agents of provincial governments. Likewise, the city banks of Taipei and Kaohsiung act as the fiscal agents of their local governments, and handle bond flotation. Shares of three major commercial banks—First, Chang Hwa, and Hua-Nan—are listed in the stock markets and, before 1998, were mainly held by the provincial governments. These banks provide extensive commercial banking facilities throughout the island. After banking was deregulated, the government authorized these three commercial banks to go public, paving the way for their privatization. The four privately owned commercial banks, except the International Commercial Bank of China (ICBC), are relatively small in scale compared with the state banks. ICBC, a stock market-listed

Table 3: Market Share of Financial Institutions, 1997

Item	No. of Units (branches)	% of Total Branches	Assets (NT\$ million)	Share of Total Assets (%)	Asset Growth Rate (%) 1987–1997	Share of Deposits Market (%)	Share of Loans Market (%)
Central Bank of China	1	0.02	3,360,411	11.6	21.37	^a	^a
Domestic commercial banks	36 (1685)	31.32	13,682,807	47.4	274.24	53.8	69.7
Local branches of foreign banks	45 (69)	1.28	975,327	3.4	214.85	2.4	3.1
Medium business banks	8 (491)	9.13	1,843,509	6.4	402.58	9.0	9.5
Credit cooperative associations	64 (505)	9.39	1,334,437	4.6	175.43	8.1	5.5
Farmers' and fishermen's associations' credit department	314 (991)	18.42	1,529,439	5.3	259.94	8.3	6.3
Investment and trust companies	5 (61)	1.13	488,637	1.7	139.8	0.2	1.8
Postal savings system	1 (1276)	23.72	2,558,903	8.9	174.49	15.1	
Life insurance companies	30 (103)	1.91	1,749,378	6.1	822.5	2.9	4.1
Property and casualty insurance companies	26 (127)	2.36	113,143	0.4	1,127.01	.03	
Offshore banks	71	1.32	1,252,019	4.2	0.14	^a	^a
Total	5,380	100.00	28,888,010	100.0	298.34	100.0	100.0

^a Data omitted because the CBC is not permitted to function as a commercial bank and offshore banking units serve both residents and nonresidents. Offshore banking began in July 1984.

Source: Central Bank of China (1998a).

bank, has operated since 1971 as a specialized foreign-exchange bank with authority from CBC. As of end-1997, about 79 percent of the assets of domestic banks were in the form of loans and advances, of which about 68 percent were made to private enterprises (Table 4). Of the total loans, less than 1 percent are in the form of discounts or advances to importers, 36 percent in short-term loans and over-

drafts, and the remaining 63 percent in medium- and long-term loans. A salient feature of domestic banking credits is that 63 percent of the banks' advances are officially secured loans, while much of the unsecured, particularly short-term, loans use postdated checks as credit collateral to obtain overdrafts. In terms of funding, passbook and time deposits compose 68 percent of the banks' assets and liabilities.

Table 4: Consolidated Assets and Liabilities of Depository Banks, 1997

Item	Amount (NT\$ million)	%
Assets		
Foreign assets	550	3.46
Loans and discounts	12,541	78.95
Government agencies	1,373	8.64
Government enterprises	391	2.46
Private enterprises and others	10,778	67.85
Portfolio investment	1,554	9.78
Government securities	349	2.20
Securities		
Government enterprises	46	0.29
Private enterprises	1,042	6.56
Financial institutions	118	0.74
Claims on financial institutions	1,031	6.44
Central Bank of China	1,004	6.32
Other financial institutions	27	0.17
Real estate	46	0.29
Cash in vault	162	1.02
Total assets (net)	15,885	100.00
Liabilities and net worth		
Foreign liabilities	489	3.08
Deposits held by firms and individuals	12,089	76.10
Checking accounts	308	1.94
Passbook deposits	892	5.62
Passbook savings deposits	2,004	12.62
Time deposits	2,737	17.23
Certificates of deposit	439	2.76
Time savings deposits	5,139	32.35
Foreign currency deposits	570	3.59
Government deposits	697	4.39
Due to other financial institutions	2,736	17.22
Central Bank of China	320	2.01
Other financial institutions	1,363	8.58
Postal savings system	1,053	6.63
Bank debentures issued	69	0.43
Net worth	228	1.44
Other items	(423)	(2.66)
Total liabilities and net worth (net)	15,885	100.00

() = negative values are enclosed in parentheses.
Source: Central Bank of China (1998a).

Banking entry was not deregulated until 1991. Before that time, state-owned banks were not profit-maximizing firms. They were conservative, and had been doing business only with well-known or established enterprises with sufficient collateral. Small and medium businesses and households were not competitive in obtaining financing through chartered banks, and relied on “underground” financing from informal and illegal financial associations. Deregulation of banking entry and related laws has brought most financing from the underground back to normal channels, and underground financing is now of negligible amount (Hsu 1993; Lee and Chen 1994).

FOREIGN BANK BRANCHES

Foreign banks, inconsequential in the 1960s, became a significant force in the domestic financial system in the 1980s. A foreign bank that intends to set up a branch or representative office in Taipei, China must be a reputable international bank with total assets ranking among the world's top 500 in the year prior to application. As of December 1997, 45 foreign banks had established branch operations and together had 69 domestic offices. At the start, these banks were authorized only to handle foreign-exchange transactions and lend to customers. The newly revised Banking Law, however, authorizes foreign banks to operate in exactly the same way as DCBs. Taipei, China's banking industry has been steadily opening up to greater participation by foreign banks, to increase competition in and modernize an industry long dominated by domestic banks.

SPECIALIZED COMMERCIAL BANKS

The government, starting in the early 1920s, established specialized banks and special funds to subsidize or promote strategic industries or favored groups. There are three types of specialized banks: specialized commercial banks, medium- and small-business banks, and community financial institutions.

Specialized commercial banks are designed to help specific industries. The Chao Tong Bank, one

of the largest banks in Taipei, China, is chartered as a development bank to upgrade domestic industries and foster the development of strategic industries. The Farmers Bank of China finances agricultural development and promotes rural construction. The Land Bank of Taiwan extends loans to assist the government in carrying out its land and agricultural policies. The Export-Import Bank of China, founded in January 1979, is engaged in risk financing of export-import activities, including guarantees related to plant, equipment, and overseas construction projects; export insurance; country-risk surveys; and credit investigations. These banks mainly extend medium-term (up to seven years) and long-term loans (more than seven years). The other specialized commercial bank, the Central Trust Bank of China, is in the trust and insurance business, serving as agent for government procurements, and also performs regular trading business for both public and private enterprises.

MEDIUM- AND SMALL-BUSINESS BANKS

Medium and small enterprises largely constitute the general business structure in Taipei, China. Thus, they are considered the major driving force of economic growth. The industrial organization of the economy is unique in that few enterprises can be considered “large” even by international standards. While specialized commercial banks cater to large enterprises, medium- and small-business banks serve medium and small enterprises.

There are now eight medium- and small-business banks (commonly known as business banks) with 491 offices in the island. Though they are designed and required by law to provide loans to medium and small enterprises, their businesses have become similar to those of commercial banks. Currently, their assets compose 6.4 percent of the market. These banks grew out of the country's longstanding mutual loans and savings companies, which themselves originated from the old private mutual credit unions. The Medium and Small Business Bank of Taiwan is owned

by the provincial government, while the rest are private banks listed on the Taiwan Stock Exchange. Traditionally, medium- and small-business banks have played an important role in financing local small businesses by extending medium- and long-term credit to improve machinery and equipment, financial structure, and management and business operations. Legally, they are not allowed to conduct banking business outside the geographic area where they are based.

COMMUNITY FINANCIAL INSTITUTIONS

Community financial institutions are credit groups that serve specific development sectors. There are two types of credit groups: credit cooperatives and credit departments of farmers' and fishermen's associations. Credit cooperatives were established under the Cooperatives Law; farmers' associations, under the Farmers' Association Law; and fishermen's associations, under the Fishery Association Law. As of December 1997, there were 64 credit cooperatives with 505 branches, mainly in the urban areas, and 314 credit departments of farmers' and fishermen's associations with 991 branches in the townships. These institutions are limited to accepting deposits from and granting loans to their members. Medium- and small-business banks, credit cooperative associations, and credit departments of farmers' and fishermen's associations together make up the local deposit-taking institutions, with a service network that spans the island, especially its small towns, suburbs, and rural areas.

The Cooperative Bank of Taiwan was established in 1946. Sixty percent of its capital is owned by the provincial government, and the remainder, by various cooperatives. Besides its commercial banking activities, it acts as a central bank for cooperatives. It takes deposits from and offers credit to both credit cooperatives and the credit departments of farmers' and fishermen's associations, and directs the operations of these institutions. However, the authority to examine and monitor the institutions was shifted in

1997 to CDIC. The Cooperative Bank of Taiwan is also a specialized bank for the real estate, farming, and fishing industries, and it executes strategic loans funded by related government agencies. The general business practices of the Cooperative Bank of Taiwan, like those of other banks, are regulated by the Banking Law. The law allows the individual customer to borrow up to 3 percent of the bank's net worth, and the institutional customer, up to 15 percent.

As shown in Table 3, credit cooperatives accounted for 4.6 percent of the total assets of all financial institutions, 8.1 percent of deposits, and 5.5 percent of loans at the end of 1997. The credit departments of farmers' and fishermen's associations accounted for 5.3 percent of total assets, 8.3 percent of deposits, and 6.3 percent of loans during the same year.

The community financial institution sector, presents major issues for the banking industry. These institutions are protected by regulations and subsidized by law, and their profits are not taxed. Most importantly, they are often run by elected members rather than professional managers. These community financial institutions are deep-rooted in local politics and unions (farmers' and fishermen's associations) and play a critical role in elections. Regulators, constrained by local politics, have long been unable to resolve the problem of widespread insolvencies in the sector. Insolvent community financial institutions continued to operate as usual because of their strong links to local politics. In 1995 and 1996, however, there were 20 bank runs, 18 of them against the credit departments of farmers' and fishermen's associations (the other two were against credit cooperatives). Even now, regulators admit that more than 50 cases of insolvency involving community financial institutions are still unresolved. Fortunately, community financial institutions occupy only about 5 percent of the banking market in Taipei, China, and have never affected the backbone of the banking system.

SPECIAL FUNDS

In addition to specialized banks, special funds have been set up to assist specific lines of business. Currently, these special funds comprise three major government-assisted funds. The first is the Small and Medium Business Credit Guarantee Fund (SMBCGF), which was formally inaugurated on 9 July 1974. SMBCGF plays a pivotal role in providing small- and medium-size businesses with credit guarantees to help them gain access to financing. The Farmers Credit Guarantee Fund (FCGF), an independent nonprofit financial institution supervised by MOF, provides the same service to farmers and fishermen. In general, fund guarantees are limited to debts not protected by collateral. The FCGF is financed mainly by the government and banking institutions and to a lesser extent from retained surplus of the previous year. The third government-assisted fund, the Overseas Economic Cooperation and Development Fund (OECDF), was introduced on 19 June 1989. This fund, with a total capitalization of NT\$30 billion, provides loan guarantees, investments, and various forms of technical assistance to developing countries over a five-year period. The fund is being used to finance exports of technology and capital goods to selected countries through the Export-Import Bank of China.

Nonbanking Financial Institutions

The nonbanking financial institutions (NBFIs) consist of the postal savings system, investment and trust companies, and insurance companies. These NBFIs were established through specific regulations or laws but are all subject to the Banking Law.

THE POSTAL SAVINGS SYSTEM

The postal savings system (PSS) began operating in Taipei, China in June 1962. The system accepts savings deposits and handles local and foreign remittances, but does not provide loans. Its savings deposits are redeposited with the CBC and four banks, namely, Chao Tong Bank, Land Bank of Taiwan,

Farmers Bank of Taiwan, and Medium Business Bank of Taiwan. These funds are used for medium- and long-term loans to specific investment projects at a preferential interest rate.

With 1,276 post offices and 251 postal agencies throughout the island, PSS has been effective in mobilizing savings from the rural and newly developed areas. The growth in its assets has been very steady, perhaps because of the convenience of its service network for most residents (see Tables 5 and 6 for a breakdown of PSS assets and liabilities). In 1997, PSS had some NT\$17 billion in deposits, including simple life insurance reserves, for a market share of 15.1 percent, second in importance to the domestic banks.

INVESTMENT AND TRUST COMPANIES

Investment and trust companies were established in 1971 in Taipei, China to encourage long-term savings and investment. They are chartered under the provisions of the Banking Law, although some of them are also governed by special statutes. These companies are not allowed to accept deposits from the public. Their main source of funds is the discretionary trust, which offer slightly higher guaranteed rates of return than commercial bank savings deposits.

Five investment and trust companies operate in Taipei, China. In 1998, these companies had assets of NT\$488 billion—51 percent in loans to private enterprises, 27.7 percent in securities investments, and 5.1 percent in real estate. The China Development Corporation (CDC), which began operating as early as May 1959 and is partly government-owned, is also considered a trust company. Unlike the other trust companies, CDC accepts neither deposits nor trust funds. In addition to its own capital base, the corporation obtains funds from the government and international financial institutions. It renders assistance to private industries in the form of medium- and long-term loans, equity investment, guarantees, and trust and agency services.

Table 5: Postal Savings System Assets, 1987–1997 (NT\$ million)

Assets										
Year	Loan	Portfolio Investments				Claims on Financial Institutions				
		Government Securities	Securities			CBC	Other Monetary Institutions	Cash in Vaults	Other Assets	Total Assets
			Government Enterprises	Private Enterprises	Financial Institution					
1987	5,095	3,468	5,780			518,116	351,258	5,086	43,439	932,242
1988	6,103	5,463	5,448			598,443	322,845	5,292	57,841	1,001,435
1989	7,103	5,702	4,284			737,052	212,894	5,831	65,765	1,038,631
1990	4,161	3,617	2,524			851,078	223,978	6,250	74,259	1,165,867
1991	1,576	23,432	1,296			1,045,495	244,923	6,878	86,250	1,409,850
1992	2,865	52,769	801	5,085	70,157	1,139,353	347,578	8,631	109,406	1,736,645
1993	5,108	99,594	398	22,219	27,766	1,139,571	467,285	9,250	132,203	1,903,394
1994	2,457	41,336			2,085	1,183,735	575,932	9,242	165,424	1,980,211
1995	2,754	58,728		41,224	34,473	1,116,728	762,097	10,205	158,942	2,185,151
1996	3,474	128,816	7,960	145,270	63,380	1,055,047	884,871	10,230	163,736	2,462,784
1997	4,909	155,866	6,985	75,976	44,753	1,028,254	1,054,157 ^a	12,617	175,386	2,558,903

CBC = Central Bank of China.

^a Includes claims on other financial institutions amounting to NT\$4,264 million.

Source: Central Bank of China (1998a).

Table 6: Postal Savings System Liabilities, 1987–1997 (NT\$ million)

Year	Savings Deposits			Due to Financial Institutions				Total Liabilities + Net Worth
	Giro Accounts	Passbook Savings Deposits	Time Savings Deposits	CBC	Other Monetary Institutions	Other Liabilities	Net Worth	
1987	7,473	498,927	285,190			128,978	11,674	932,242
1988	9,237	545,278	284,468		5,000	144,459	12,993	1,001,435
1989	10,951	459,211	387,690		14,000	154,775	12,004	1,038,631
1990	11,236	465,050	525,707			140,326	23,548	1,165,867
1991	12,492	512,948	717,474			139,392	27,544	1,409,850
1992	15,560	581,804	916,979		2,500	189,390	30,412	1,736,645
1993	18,114	608,210	980,999			262,495	33,576	1,903,394
1994	1,264	659,708	1,076,458		7,679	181,183	33,919	1,960,211
1995	24,863	705,369	1,232,200		4,108	183,325	35,286	2,185,151
1996	25,744	756,194	1,445,920			199,725	35,201	2,462,784
1997	27,401	752,848	1,455,528	15,500		271,638	35,988	2,558,903

CBC = Central Bank of China.

Source: Central Bank of China (1998a).

INSURANCE COMPANIES

There are 30 life insurance companies, with 103 branches, and 26 property and casualty insurance companies, with 127 branches, in Taipei, China. Of these, 22 are foreign companies. All insurance companies are subject to government supervision, and their asset management is examined by the MOF. A minimum capitalization of NT\$2 billion is required to start up a new insurance company. To preserve policyholders' rights and benefits and to maintain financial stability, insurers are required to contribute to the establishment of separate stabilization funds, similar to the state insurance guarantee funds in the US. The stabilization funds charge up-front a flat rate of 0.2 percent of the total premiums for property/casualty insurers and 0.1 percent for life/health insurers.

Currency Risk of Banks

Very few banks in Taipei, China have substantial foreign-currency positions. There were restrictions on trading and dealing in foreign currency until the early 1990s. Although a floating exchange-rate system was adopted in 1978, the rate has been stable for a long time. Most banks, until the early 1990s, concentrated on the domestic market. Since then, some banks have developed businesses in the People's Republic of China (PRC) and Southeast Asia. International businesses involve many restrictions where domestic banks are concerned, and have therefore been largely reserved for branches of foreign banks. Currency transactions at the individual and corporate levels are almost unconstrained, but there are strict regulations on banks' foreign-exchange activities, foreign participation in the local stock market, and speculation in local currency.

The development of the foreign-exchange market and recent changes in the market are briefly described below. It may help to see how regulators reacted during the crisis and to understand the current foreign-exchange activities of banks in Taipei, China.

Foreign-Exchange Market Development and Recent Changes

The NT dollar has been quite stable in value in recent years compared with many other currencies. From 1990 to 1996, the exchange rate fluctuated between NT\$24.5 and NT\$27.98 to the US dollar. During the Asian currency turmoil, while the currencies of some Southeast Asian countries plummeted by 30 percent or more from July 1997, the NT dollar fell by only about 11 percent from April 1997 till mid-November 1997. During the first 10 months of 1997, the NT dollar depreciated in three stages, first in April 1997 after CBC relaxed its defense of the line at around NT\$27.5 to the US dollar, then in July 1997, and again in October 1997. The NT dollar hovered around NT\$28.5 to the US dollar in mid-October, and reached NT\$31.1 on 13 November of the same year, after the CBC's new hands-off policy allowed the NT dollar to be determined by market forces. However, CBC changed the nature of the market by suspending the trading of currency futures (referred to as nondelivery forwards in Taipei, China) and limiting speculators' participation from mid-1998.

Several important factors have influenced the exchange rate of the NT dollar. These include the international value of the US dollar in relation to other currencies, interest-rate differentials between the domestic and foreign markets, speculation, inflows of foreign investments, travel expenditures, short-term capital movements, and the attitude and intervention policies of CBC. Each of the above factors has affected the value of the NT dollar and its market performance. Increased expectation of a depreciation in the NT dollar in mid-October 1997, for instance, led many importers to buy US dollars while exporters were reluctant to sell the same, further pushing down the value of the NT dollar. The increase in short-term foreign capital outflow also contributed to the downtrend. In addition, political concerns, such as changes in the nature of relations between Taipei, China and the PRC, should be taken into

account when considering the short-term fluctuations in the value of the NT dollar.

ROLE OF FINANCIAL AUTHORITIES

The government has intervened in the foreign-exchange market, in the light of its balance of payments, to maintain a sound foreign-exchange market. For example, CBC fought against panic buying of the US dollar in the first quarter of 1996 when Beijing was testing ballistic missiles near the island. At the time, the central bank used its foreign-exchange reserves to halt a plunge. It also adopted defensive measures to preserve the value of the NT dollar from April to October 1997, such that the currency depreciated much less than many other Asian currencies. However, although the authorities have intervened in many ways during the crisis, the general trend in the foreign-exchange market is still toward deregulation and internationalization.

MARKET CHARACTERISTICS

The foreign-exchange market in Taipei, China bears the following characteristics:

- Exchange rates reflect the workings of the market, and relatively large amounts of foreign exchange can be remitted inward or outward without restrictions.
- Market volume is still relatively small, so the government can intervene effectively when necessary.
- Compared with the capital account, the current account has had less influence on the value of the NT dollar in recent years. In particular, capital movements rule the value of the NT dollar.

EXCHANGE-RATE DEREGULATION

Taipei, China changed from a pegged to a floating exchange-rate system in 1978. The foreign-exchange market was established in February 1979 and the NT dollar was able to float freely within a narrow range (i.e., 2.25 percent) against a daily mid-rate. The mid-rate was set according to the weighted av-

erage of the interbank transactions of the previous business day. In April 1989, a new system of free price negotiation came into existence. At present, every bank is entirely free to set its own rates for foreign currencies.

In August 1993, the Regulation Governing Foreign Exchange Brokers was promulgated to influence prominent brokers to set up branches or participate in joint ventures, to make the foreign-exchange market more efficient, and to establish an international network. In addition, authorized foreign-exchange banks were allowed to trade in a third currency. Other new products, such as margin trading, swaps, and forward rate agreements, were also permitted. In November 1994, the first specialized foreign-exchange brokerage, Taipei Forex Inc., was established. The second foreign-exchange brokerage began operating in early 1998. The foreign-exchange market is expected to further broaden in scope and volume.

NEW TAIWAN DOLLAR FORWARD AND FUTURES TRADING

The local currency forward market was established in 1979 in accordance with the spot exchange market, but it was suspended from July 1987 to October 1991 to discourage speculation and cut off the influx of foreign hot money into Taipei, China. Originally, only trade-related transactions in currency forwards could be accepted to avoid speculation and arbitrage. This restriction was lifted in March 1994 to include several service items such as shipping, transportation, and marine insurance in the current account.

The central bank allowed the entry of more local and foreign currency traders in January 1995 and authorized for the first time forward currency dealing and trading by companies that were conducting only capital-account transactions. Starting 7 July 1995, banks could transact in currency nondeliverable forwards (NDFs). NDF transactions are, by nature, over-the-counter futures contracts. However, NDF trading was restricted to trade-related transactions

in mid-1998 to prevent speculation in the NT dollar during the Asian financial crisis.

CAPITAL FLOW DEREGULATION

In July 1987, the authorities lifted most of the restrictions on the NT dollar. This change has completely liberalized current-account transactions. With respect to capital-account transactions, each individual can now make outward and inward remittances of up to US\$5 million per year. On 1 June 1997, the amount was raised to US\$50 million per year for corporate entities, which did not have to obtain prior approval from CBC or state specific uses for the funds remitted. Such high ceilings on outward and inward remittances virtually did away with limitations on capital flow for local individuals.

Until January 1991, foreign institutional investors could not invest in the local stock market. By 20 December 1996, a foreign institutional investor could invest up to US\$600 million. Foreign individuals and corporate investors were permitted for the first time to invest directly in the local stock market in March 1996. Foreign individuals could invest up to US\$5 million, and foreign corporate investors, up to US\$20 million (US\$50 million since 2 June 1997). The aggregate holding of foreign investors was originally limited to 20 percent of the shares of any listed company, but this limit was increased to 25 percent on 21 November 1996. However, although more space is opening up for foreign investors, foreign participation in the stock market amounted to only 3 percent of the total market value as of early 1998.

Supervision and Examination

The major regulatory bodies for financial institutions are the central bank, the MOF, and CDIC. The Banking Law requires CDIC to coordinate with the other two agencies in examining the operations of insured institutions. However, recent developments in the coordination of banking supervision have caused CDIC to take the lead in supervision and examination. All examinations are initiated by CDIC.

While MOF and CBC send representatives to participate in the examinations, most of the examiners come from CDIC. CDIC now monitors and examines insured institutions only, but MOF has decided to make deposit insurance compulsory for all deposit-taking institutions. The bill is being reviewed by legislators.

Deposit Insurance System

CDIC began its operations in September 1985. Almost all of its capital was subscribed by MOF and CBC. CDIC exists to protect depositors and maintain a sound banking system by supervising and monitoring the operations of insured institutions, handling problem institutions, and resolving failed institutions. The deposit insurance system in Taipei, China is voluntary, unlike the systems in Canada and the US, where bank membership is compulsory. However, the system may eventually become compulsory, and all banking institutions will then have to be insured and examined by CDIC. In a compulsory system, all financial institutions will be insured by CDIC (government) and taxpayers will be forced to assume all the liabilities arising from bank failures. This is a move away from the market economy and from the use of depositors to regulate bank risk-taking behavior.

INSURANCE COVERAGE

The insurance covers only certain types of domestic deposits that are denominated in local currency. The maximum insurance coverage available to each individual depositor in any insured institution is NT\$1 million. The average ratio of insured deposits to total insurable deposits of all insured institutions is 42 percent (Table 7).

INSURANCE PREMIUM

The premium rate is set at 1.5 basis points of insured deposits. The total amount of insured deposits is computed every six months. Duan and Yu (1994) reported that CDIC undercharged the insured institutions and

Table 7: Deposits of Insured and Insurable Financial Institutions, as of 28 February 1998 (NT\$ million)

Item	Insured Institutions				Insurable		Insured/Insurable (%)		
	No.	Covered Deposits	Total Deposits	Covered/Total Deposits (%)	No.	Total Deposits	No.	Total Deposits	
Private financial institutions									
Domestic banks	34	1,592,419	4,141,036	38.5	38	6,611,381	89.5	62.6	
Investment and trust companies	4	67,556	267,765	25.2	4	267,765	100.0	100.0	
Credit cooperative associations	56	642,196	1,164,278	55.2	60	1,194,852	93.3	97.4	
Credit departments of farmer's associations	246	660,969	1,050,280	62.9	287	1,207,360	85.7	87.0	
Credit departments of shermen's associations	27	20,072	29,104	69	27	29,104	100.0	100.0	
Local branches of foreign banks	29	57,912	270,450	21.4	45	278,971	64.4	96.9	
Subtotal	396	3,041,124	6,922,913	43.9	461	9,589,433	85.9	72.2	
Government financial institutions									
Domestic banks	5	238,332	879,672	27.1	8	1,866,212	62.5	47.1	
Investment and trust companies	0	0	0	0	1	33,365	0	0	
Subtotal	5	238,332	879,672	27.1	9	1,899,577	55.6	46.3	
Total	401	3,279,276	7,802,585	42.0	470	11,489,010	85.3	67.9	

Source: Central Deposit Insurance Corporation (1998).

provided them with a huge subsidy over the last 10 years. Still, many small institutions choose not to join the deposit insurance system because the government and CDIC have been bailing out all defaulting institutions, no matter whether they were insured or not. Eight banks owned by provincial governments, which account for about 30 percent of total deposits, are not yet insured. The provincial governments do not consider another tier of protection provided by CDIC and the central government as necessary. Though several failed resolutions have occurred, CDIC has never made any cash payoff because all the resolutions use the purchase-and-assumption method, with no cash involved. The acquiring organizations are willing to pay for the losses because they can get compensation from the market shares and charter values of the failed banks. The deposit insurance reserves have therefore accumulated to NT\$452 million, which is equivalent to 4 basis points of CDIC's insured deposits.

ON-SITE EXAMINATION

CDIC's supervision program combines on-site examination and off-site monitoring. CDIC conducts regular on-site examination of all insured institutions. Head offices are examined every year. The frequency of examinations of the branches of insured institutions depends on the institution's credit rating. Institutions rated "A" or "B" are examined every three years; those rated "C" every two years; those rated "D" or "E", every year. The regular examinations are mainly concerned with the management of asset risk and quality as well as compliance with financial laws and regulations. CDIC also conducts unscheduled examinations of specific operational areas. Examiners focus on violations of laws and regulations, abnormal and excessive loan growth, or major operational deficiencies.

MONITORING SYSTEM

In order to fully understand the financial status and operations of insured financial institutions, and take

timely supervisory action, CDIC developed a monitoring program, the Insured Financial Institutions' Early Warning System (IFIEWS), in 1988. The system was designed to allocate examination resources more efficiently among problem and potential problem insured institutions, and to identify changes in the financial conditions of insured financial institutions and prevent their failure. This system can also help to identify specific problem areas, thus aiding off-site analysis and helping to focus examinations on major areas of concern.

The IFIEWS has two subsystems. The Examination Data Rating System (EDRS) is based on the CAMEL (capital adequacy, asset quality, management capacity, earnings, and liquidity) rating system used by the federal financial supervisory agencies in the US. Instead of relying solely on the examiner's judgment, the EDRS uses a statistical method to select financial evaluation ratios, and assigns weights to these ratios. On the basis of these assigned weights, the system can calculate individual scores on the five CAMEL criteria and a composite score. The composite score will indicate the financial condition of the insured institution. On the basis of the foregoing criteria, institutions are rated from "A" to "E," with "A" as the best rating. Institutions rated "D" or "E" are included in the exception list, which also consists of institutions that meet any of the following conditions:

- Adjusted net worth is smaller than two thirds of capital.
- Ratio of nonperforming loans to total loans is more than 10 percent (for banks) and more than 5 percent (for credit cooperative associations and credit departments of farmers' and fishermen's associations).
- Liquidity reserve ratio fails to meet the legal minimum of 7 percent for three consecutive months.
- Total affiliated loans are greater than 120 percent of preadjusted net worth.

Once institutions in the exception list are identified as problem banks, an analysis is performed to

determine the causes of the problems, and the necessary corrective actions are initiated.

The second IFIEWS subsystem is the Call Report Percentile Ranking System (CRPRS), which is based on the surveillance procedures of the US Federal Reserve System. The CRPRS is CDIC's principal off-site surveillance tool. It uses quarterly data from call reports of the individual insured institution to calculate the institution's percentile ranking on each of the evaluation criteria and its composite percentile ranking. The calculated scores are used to derive an enforcement follow-up list. Aside from determining the current status of the insured institution, this system can monitor their operational trends by looking at the quarterly changes in their respective percentile ranking. Institutions that meet any of the following conditions are included in the enforcement follow-up list:

- Percentile ranking of composite score:
 - Government-owned banks: above 90
 - Private banks: above 80
 - Trust and investment companies: above 50
 - Credit cooperative associations: above 80
 - Credit departments of farmers' and fishermen's associations: above 70
- Deterioration of more than 40 percent in the composite percentile ranking within 12 months.
- Percentile ranking of individual ratio above 90.

Institutions in the enforcement follow-up list are subjected to documentary analysis by senior examiners of CDIC to determine the causes of the problems. Once the nature of the problems is confirmed, CDIC adopts the necessary measures and enforces follow-up tasks. Specifically, CDIC takes the following enforcement steps:

- Confirm and analyze the problems.
- Enforce comprehensive annual examinations.
- Conduct on-site examination in advance of the routine schedule.
- Conduct specific examination, if necessary.
- Establish a file of follow-up tasks.

- If necessary, recommend the following rigid enforcement actions to MOF:
 - Request correction by a specified date.
 - Request regulatory agencies to conduct on-site examinations immediately.
 - Take preconservatorship steps to remedy the situation.
 - Assess a penalty (fines, demerits for manager-in-charge, removal of manager-in-charge).
 - Recommend conservatorship and receivership.

MANAGEMENT CONSIDERATIONS

The early-warning system is not a panacea but only a supervisory measure and could never replace on-site examination. This system can only detect general problems existing in insured institutions, and will still fail to detect problems unique to individual institutions. In 1992, MOF recognized the need for a national early-warning system for all financial institutions. Under its guidance, CDIC established the National Financial Institutions' Early Warning System (NFIEWS). The effectiveness of the NFIEWS has not yet been established, although the financial stability and soundness of the banking sector in general have not been affected during the Asian crisis. In fact, no financial institution has slid into financial distress since the crisis began.

HANDLING PROBLEMS OF INSURED INSTITUTIONS

In general, decisions regarding troubled institutions are arrived at by balancing several policy considerations. These considerations include preserving financial stability, protecting individual depositors, maintaining market discipline against risk taking, and minimizing costs to the deposit insurance fund. The authority and the insurer have at their disposal a variety of alternative solutions and financing options to achieve these various policy considerations. CDIC can, if authorized by MOF, dispatch personnel to assist the insured institution. It can also terminate the

insurance status of the institution if the latter fails to rectify regulatory transgressions within the time prescribed by CDIC.

HANDLING FAILED INSURED INSTITUTIONS

When an insured institution voluntarily closes or is ordered by MOF to close because it cannot make payments to its depositors, CDIC acts as the statutory receiver. CDIC must then fulfill its insurance obligation to protect the interests of depositors and enable them to quickly receive the principal and interest on their deposits within the maximum coverage limit. CDIC can do this in any of the following ways:

- Directly pay the insured deposits in cash.
- Arrange for the insured deposits to be transferred to other insured institutions in the same area.
- Temporarily operate the closed institution in CDIC's own name if no other insured institution in the same area can assume the transfer of deposits.
- With prior approval from MOF, extend loans to or purchase assets from the closed institution. Otherwise, the institution will be liquidated according to the law.

When CDIC liquidates the assets of the closed institution, it distributes the proceeds periodically to those having a claim on the receivership. As insurer, CDIC acquires a claim against the receivership equal to the amount of the payoff after it compensates depositors of the closed institution. That is, CDIC becomes the co-claimant on the closed institution's assets. No insured institution has been put under receivership since CDIC began its operations in 1985.

Banking Business Environment

Asset and Liability Management Standard for Most Banks

Asset-liability management (ALM) refers to the coordinated management of a bank's balance sheet

to allow for alternative interest-rate and liquidity scenarios. It is commonly believed that the asset-liability management committee (ALCO) is the single most important management group in a bank. In Taipei, China, most banks, except the community financial institutions, manage interest-rate risk through ALM, using the techniques of maturity gap management and duration gap management. The community financial institutions are usually managed not by professional managers but by their associated members (farmers, fishermen, etc.), and therefore have a much lower level of management skill.

However, the loan portfolios of Taipei, China banks have long been dominated by floating-rate loans, and fixed-rate loans are only a negligible portion. In contrast, traditional banks in the US have assets whose maturity is significantly longer than the maturity of their liabilities. Therefore, without a careful calculation of assets and liabilities, it is not clear whether Taipei, China banks have a positive or negative maturity or duration gap. According to a study by Yu, Shen, and Chen (1995), equity prices of Taipei, China banks were not sensitive to interest-rate movements from 1989 to 1994. This may imply that Taipei, China banks in general have a matched duration structure of assets and liabilities.

MERGERS TO RESOLVE WEAK INSTITUTIONS

Mergers and acquisitions (M&As) do not happen often in the Taipei, China financial markets. Though there have been over 100 M&As in the 1990s, very few of them involve large banks or nonbanks. Of these recent M&As, 90 percent were carried out through cash payments and 10 percent of them through stock swaps. However, during the second half of 1995 and into 1996, there were more than 21 instances of panic runs against community financial institutions. Most of these failing institutions were resolved through assisted mergers with commercial banks or other community financial institutions. The

government is aware of the financial weakness of community financial institutions and encourages them either to merge with other financial institutions or to convert themselves into commercial banks, which are subject to more restrictive regulations.

UNIVERSAL BANKING ENCOURAGED BY THE GOVERNMENT

Though the banking system in Taipei, China was originally designed to have specialized banks serving alternative functions, the government now encourages the move toward universal banking. Beyond the traditional deposit-loan business specified in Article 3 of the Banking Law, banks are encouraged to expand their services by offering investment banking, insurance and securities brokerage, and other services. Thus, banks and investment banking firms are expected to have considerable overlap in their activities, unlike their counterparts in the United States, which are limited by regulations from comingling banking and commercial activities. In fact, several banks now provide brokerage and investment banking services together with their traditional banking business.

OFF-BALANCE-SHEET ACTIVITIES

Although off-balance-sheet activities (OBSAs) are a modern banking development, banks in Taipei, China, have long been undertaking traditional OBSAs such as loan commitments, lines of credit, guarantees, and letters of credit. However, OBSA data are hard to collect because many items are either not recorded or are not required to be reported to government authorities (except for the major traditional OBSAs specified in Article 30 of the Banking Law, which must be reported monthly). Table 8 presents OBSA data, specifically guarantees and letters of credit, collected for 14 listed commercial banks. As can be gleaned from the table, the volume of guarantees and letters of credit generally increased from 1995 to 1997 and reached NT\$452 million by the third

quarter of 1997. However, this volume is only about 2 percent of the total assets. More sophisticated OBSAs such as swaps, derivative contracts, and asset securitization are permitted, but under strict rules specified by MOF in 1995. These activities are not very popular among domestic banks but are often offered by foreign banks.

Table 8: Off-Balance-Sheet Activities, June 1995 to September 1997^a (guarantees and letters of credit)

Month/Year	Amount (NT\$ million)
Jun 1995	265
Sep 1995	380
Dec 1995	359
Mar 1996	402
Jun 1996	421
Sep 1996	403
Dec 1996	420
Mar 1997	451
Jun 1997	457
Sep 1997	452

^a Sample of 14 listed commercial banks.
Source: *Taiwan Economics Journal Database*.

OFFSHORE BANKING UNITS

The first offshore center began operating in Taipei, China in July 1984; by December 1997 the number of offshore banking units (OBUs) had increased to 71. After the initial spurt in 1984, there was a leveling off in 1987, attributed partly to the weakening position of the US dollar and the general decline in international loan syndicates. In recent years, OBUs have grown dramatically in number and size as the government has relaxed regulations on OBUs to promote Taipei, China as a regional financial center. The major change in the regulations is that OBUs may now accept deposits from and lend to residents and nonresidents. This business used to be limited to financial institutions. Table 9 provides the detailed assets and liabilities of OBUs in Taipei, China. As of December 1997, there were 38 OBUs owned by domestic banks and 33 OBUs owned by foreign banks, with total assets of over US\$39 billion.

CAPITAL ADEQUACY

The Banking Law requires banks to maintain a level of risk-based capital according to an adequacy test similar to that set by BIS. Banks that fail to meet the 8 percent criterion may not distribute dividends and will need new capital infusion. Otherwise, their banking licenses may be suspended. Starting January 1998, the Banking Law requires banks to measure their adequacy at VAR (value at risk) basis. Tables 10 and 11 report the ratio of net worth to assets as the capital adequacy ratio of banks chartered before 1991 and after 1991, respectively. In general, the ratio of net worth to assets is lower than the BIS capital ratio because risk weights adjust down the assets and raise the BIS ratio. According to a news release in March 1998, the only domestic bank that failed to pass the 8 percent BIS ratio was the Taiwan Cooperative Bank, whose BIS ratio was 6.71 percent. The bank of Overseas Chinese had its lowest BIS ratio of 6.75 percent in 1995. Table 10 shows that the Taiwan Cooperative Bank has a ratio of net worth to assets of 2.7 percent, the lowest among all domestic banks. Other "old" domestic banks, chartered before 1991, have a ratio of net worth to assets of 4.5 percent or better, higher than those commonly observed for US banks. Banks chartered after 1991, the "new" banks, generally have a higher ratio of net worth to assets, in the range of 8 to 13 percent (Table 11). This is not because of these banks' intent to keep a strong capital position but due to high paid-in capital of NT\$10 billion required by the authority. Higher asset growth is expected for these new banks to achieve operational efficiency and fully utilize their capital position.

At the end of 1997, credit cooperatives on the average had a deposits-to-assets ratio of 89.5 percent, and credit departments of farmers' and fishermen's associations, a ratio of 80.8 percent. No direct data on the net-worth-to-assets ratio of community financial institutions are available but this indicator can be derived from the ratio of net worth to deposits and the ratio of deposits to assets. Commu-

Table 9: Assets and Liabilities of Offshore Banking Units, 1996–1998 (US\$ million)

Item	1996	1997	1998
Assets			
Loans to nonfinancial institutions	8,543	11,736	14,550
Residents	1,403	1,847	2,678
Nonresidents	7,139	9,888	11,872
Portfolio investments	2,576	3,885	4,223
Claims on financial institutions	23,421	19,943	19,175
Authorized foreign exchange			
Banks	10,478	7,751	6,207
Inter-OBUs	2,798	3,228	2,770
Foreign financial institutions	10,145	8,964	10,197
Other assets	2,050	3,561	2,684
Total	36,590	39,126	40,632
Liabilities			
Deposits of nonfinancial institutions	2,617	4,551	6,241
Due to financial institutions			
Domestic	11,068	9,846	11,584
Inter-OBUs	2,706	3,030	2,504
Foreign	17,254	16,363	15,383
Securities issued	971	1,177	1,382
Other liabilities	1,973	4,159	3,539
Total	36,590	39,126	40,632

Source: Central Bank of China (1998a)

nity financial institutions on the average have weaker capital positions than commercial banks. The credit departments of fishermen's associations, with a ratio of net worth to assets of around 3.7 percent, are the weakest group among the community financial institutions. Recent government reports indicate that there are more than 50 insolvent community financial institutions left unresolved and still in operation. The unresolved insolvent financial institutions remain a critical problem of the current banking system. There is no immediate plan to resolve these insolvent institutions because of their close links to local politics. Democratic elections have caused government officials to delay the resolution of the problem in exchange for local political support.

PERFORMANCE EVALUATION

Profitability in banking is moderate. In terms of return on assets (ROA), new banks average 76 percent, better than the 65 percent for old banks. Even for an

equity multiplier of 20, which is found among a few old banks, the return on equity (ROE) would be 13 percent. The equity multiplier is roughly around 10 for the new banks, giving them an ROE of 7.65 percent, which is very close to the yield on government bonds. Of course, some of the old banks are profitable. Shanghai Commercial Bank, for instance, has an ROE of 21.12 percent, and United World Chinese Bank has an ROE of 17.14 percent. The ROA of community financial institutions is slightly lower than that of commercial banks. However, because they have weaker capital and a higher equity multiplier, their ROE may not be lower than that of banks.

NONPERFORMING LOAN RATIO

Loans with payments overdue by more than 90 days are considered nonperforming. Nonperforming loan (NPL) ratios went up over the five years between 1993 and 1997 and peaked at 4.07 percent at the end of March 1997. This was mainly due to the

Table 10: Selected Indicators on Domestic Commercial Banks Chartered Before 1991, as of 11 February 1998

Name of Bank	Credit Rating by TEJ ^a	Assets (NT\$ billion)	Loan (NT\$ billion)	No. of Branches	No. of Employees	CAR (%)	NPL (%)	Operating Revenue Per Capita (NT\$ million)	Operating Expenditures/ Assets (%)	ROA (%)	Operating Profit (%)	Liquid Reserve Ratio (%)
United World Chinese	1	468.7	292.7	57	2,444	7.0	1.93	11	4.6	1.2	20.2	14.7
Shanghai Commercial	1	205.1	131.3	36	1,500	11.8	2.45	12	6.1	2.5	27.1	11.8
Bank of Taiwan	1	1,742.7	1,183.5	96	na	9.2	1.8	na	na	na	na	15.1
Central Trust	1	474.5	302.4	34	3,374	7.0	1.84	10	6.1	0.9	13.1	11.5
Land Bank	1	1,130.6	812.6	83	na	5.3	3.52	na	6.6	0.8	9.8	11.6
Chiao Tung Bank	1	447.9	343.9	31	1,141	6.7	2.2	25	6.3	0.8	0.4	16.9
Taipei Bank	1	481.4	329.2	65	3,225	7.4	2.25	10	6.1	0.6	10.9	13.3
ICBC	1	594.7	342.7	56	3,191	5.9	1.75	9	4.3	0.7	10.8	27.6
First Commercial	2	949.7	645.9	138	6,582	4.8	4.27	10	6.1	0.6	11.5	17.5
Taichung Business	2	223.5	159.6	59	2,077	8.7	5.08	6	4.9	0.9	17.8	24.3
Hua Nan Commercial	2	910.9	596.3	127	6,199	5.0	4.59	10	6.2	0.7	11.8	16.4
Farmers' Bank	2	451.3	331.2	70	2,068	5.2	4.34	15	6.5	0.4	7.3	12.8
Taiwan Cooperative	2	1,541.1	1,021.7	132	na	2.7	4.04	na	na	na	na	27.7
Taipei Business	2	238.5	170.1	73	1,979	8.2	3.00	7	4.9	1.0	15.3	13.0
Chang Hwa Commercial	3	859.1	575.9	140	6,440	4.7	5.69	9	6.1	0.6	10.4	17.5
Kaohsiung Bank	3	121.5	88.9	29	1,027	4.5	3.10	8	6.6	0.5	6.7	20.9
Taiwan Business	3	754.7	543.3	114	5,455	4.6	4.15	10	6.3	0.6	9.1	11.9
Chinfon Commercial	4	147.4	96.4	20	931	9.1	8.90	6	0.0	0.3	8.7	8.6
Hsiuchu Bank	4	236.1	164.6	62	2,095	6.4	7.00	7	5.2	0.6	11.7	16.5
Kaohsiung Business	5	96.0	58.2	57	1,475	8.2	17.00	1	6.2	(0.3)	(6.8)	19.2
Taitung Business	5	48.3	27.3	25	577	19.6	15.00	5	5.6	0.0	(0.5)	18.9
Hualien Business	5	37.0	23.4	24	635	6.7	11.00	1	7.5	0.0	1.1	10.6
Overseas Chinese	5	176.8	133.0	43	1,926	6.4	11.30	3	3.3	0.3	9.1	11.2
Tainan Business	5	133.9	84.2	59	1,335	7.0	8.56	6	5.3	0.6	7.9	13.3

na = not available, () = negative values are enclosed in parentheses.

CAR = capital adequacy ratio, ICBC = International Commercial Bank of China, NPL = nonperforming loan, ROA = return on assets, TEJ = Taiwan Economic Journal.

^a 1 = highest (best) rating and 5 = lowest (worst) rating.

Source: *Taiwan Economic Journal* (1998).

Table 11: Selected Indicators on Domestic Commercial Banks Chartered After 1991, as of 11 February 1998

Name of Bank	Credit Rating by TEJ ^a	Assets (NT\$ billion)	Loan (NT\$ billion)	No. of Branches	No. of Employees	CAR (%)	NPL (%)	Operating Revenue Per Capita (NT\$ million)	Operating Expenditures/Assets (%)	ROA (%)	Operating Profit (%)	Liquid Reserve Ratio (%)
E. Sun Commercial	1	159.1	118.3	24	728	8.7	1.80	15	6.0	1.0	13.4	10.8
Fubon Commercial	1	159.7	113.4	34	947	10.9	1.77	9	4.4	1.0	16.5	9.7
Entie Commercial	1	110.6	89.3	20	725	11.5	1.81	8	4.7	0.8	15.2	10.3
Bank Sinopac	1	149.6	107.0	25	834	9.0	0.52	10	4.7	0.8	14.6	10.3
Grand Commercial	1	138.2	103.6	24	771	11.0	2.37	10	4.6	0.9	17.7	11.0
Far East. International	1	114.4	81.3	21	714	11.9	1.89	9	4.8	0.6	11.7	11.5
Dah An Commercial	1	129.2	101.6	23	802	9.9	1.84	9	4.5	0.8	15.5	10.3
Asia Pacific	1	109.3	78.9	25	696	11.2	2.43	9	4.7	0.7	13.6	11.4
Chung Shing	2	129.0	97.0	21	720	12.6	4.00	10	4.6	1.0	16.9	13.8
Chinese Bank	2	118.8	91.4	22	789	10.0	2.62	8	4.8	0.6	11.5	8.9
Union Bank	2	139.4	100.2	25	954	10.4	1.87	8	4.9	0.7	12.9	10.2
Taishin International	2	158.3	115.1	22	1165	8.0	1.88	8	5.2	0.8	12.2	10.4
Cosmos	2	133.1	92.6	20	902	10.7	3.60	9	5.3	0.8	13.0	10.0
Baodao Commercial	3	122.6	88.2	18	793	9.3	4.50	8	4.9	0.6	10.8	8.8
Ta Chong Commercial	3	135.3	96.7	24	992	9.1	5.80	8	5.0	0.5	10.5	9.8
Pan Asia	4	121.5	88.8	17	666	13.6	8.86	10	5.0	0.6	11.1	9.7

CAR = capital adequacy ratio, NPL = nonperforming loan, ROA = return on assets, TEJ = Taiwan Economic Journal.

^a 1 = highest (best) rating and 5 = lowest (worst) rating. Source: Taiwan Economic Journal (1998).

recession in the real estate sector and the many cases of default in construction loans. Recently, banks have been encouraged to write off their bad debts. As a result, the NPL ratio declined to 3.82 percent at the end of December 1997 (Table 12). The Banking Law has set a 4 percent NPL ratio as the ceiling ratio beyond which tougher regulations and monitoring will be imposed and new lines of business and branches will not be approved.

OLD BANKS AND NEW BANKS

Fourteen of the 24 banks chartered before 1991, the old banks, have NPL ratios exceeding 4 percent. Seven of the eight medium- and small-business banks are among the 14 banks. In addition to the seven business banks, there are five state-owned banks that are relatively large in the industry. They are First Commercial, Hua Nan Commercial, Chang Hwa Commercial, Farmer's Bank, and Taiwan Cooperative. The first three are owned by the provincial government, and provincial legislators can influence loan decisions. Farmer's Bank and Taiwan Cooperative carry out government strategic loans. These five state-owned banks are expected to have a high number of NPLs. The only bank left from the above two categories is the Bank of Overseas Chinese, which was previously owned by the government. Of the 16 newly chartered banks, only five have an NPL problem.

COMMUNITY FINANCIAL INSTITUTIONS

The high and increasing NPL ratios in all three sectors of community financial institutions highlight the weakness of the banking industry and the ineffectiveness of regulation. The average nonperforming ratios were above 4 percent for several years and cannot be controlled. Credit departments of farmers' associations had an average ratio of 10.2 percent at the end of the third quarter of 1997, while credit cooperatives had a ratio of 7.9 percent and fishermen's associations had a ratio of 6.2 percent. The problem of loan quality is obvious, but regulators have not been able to contain this problem

“effectively, even with the support of public opinion during the wave of roughly 20 bank runs against these weak institutions. The political link among government, local politicians, and community financial institutions has hindered regulators from effective supervision. The weakness of this banking sector remains a challenge for future banking reforms.

Table 12: Nonperforming Loan Ratios of All Depository Banks, December 1993 to December 1997

Month/Year	NPL Ratio (%)
Dec 1993	1.24
Mar 1994	1.63
Jun 1994	1.62
Sep 1994	1.67
Dec 1994	1.85
Mar 1995	2.54
Jun 1995	2.57
Sep 1995	2.75
Dec 1995	2.92
Mar 1996	3.36
Jun 1996	3.47
Sep 1996	3.89
Dec 1996	3.78
Mar 1997	4.07
Jun 1997	3.78
Sep 1997	3.95
Dec 1997	3.82

NPL = nonperforming loan.
Source: Central Bank of China.

LEVEL OF BANKING SKILLS

The level of skills in Taipei, China banks can be discussed with respect to consumer banking and corporate banking. At the consumer level, credit card and ATM transactions have grown at a double-digit rate in the 1990s, and are very popular among consumers. Telephone banking is available from many banks, providing consumers with information on lending rates, balance transfers, etc. The recent entry of new domestic banks and local branches of foreign banks has increased competition in the banking market and raised the level of banking skill significantly. However, state-owned banks still hold a substantial share of the deposits and loans markets. The slow pace of change in the skills level of these banks has continued to hold back the development of the banking sector.

At the corporate level, banking skills and services are at the highest level among the local branches of foreign banks. Among these, Standard Chartered and American Express provide full branch service through fully authorized computer access at the client's end. Corporate clients can have a full-service branch at their own office. For most other banks, online Internet banking for corporate clients, which provides information on such aspects as rates, account transfers, and foreign-exchange remittances, is popular. Most banks have set up or have been developing electronic data interchange (EDI) systems to provide online services in finance, tariffs, and trade for their corporate clients.

Another dimension of skill is ability to provide services in risk management or financial engineering. These high-skill services are mainly available at foreign banks. Some derivative products and services are also available at domestic banks, but at a very primitive stage. In terms of banking skill and service and product diversity, the participation of foreign banks has contributed substantially by increasing competition in the domestic banking industry.

Recommendations

Though the overall banking system appears to be sound, many areas still deserve attention, to improve the health and efficiency of the Taipei, China banking environment. The following are recommended measures to address the fundamental weaknesses of the banking system.

Close Insolvent Institutions Immediately

Many identified problems or insolvent financial institutions have been left unresolved in the industry. These insolvent institutions will hurt healthier banks in the industry by offering a higher deposit rate to attract funds for their risk-taking projects. Regulators are aware of the potential losses and the damage to the banking system that can result from not closing down the insolvent institutions. However, the

current administration has decided to delay resolving the problem in exchange for the political support of the related interest groups. The delayed resolution may undermine the overall health of the banking system and bring further losses to taxpayers.

Convert Community Financial Institutions Into Commercial Banks

Credit departments of farmers' and fishermen's associations and even credit cooperatives are outdated forms of financial intermediation. Tax preference and government subsidy should no longer be granted to these interest groups. Their system of allowing one vote for each member does not reflect the member's stake in the institution. Therefore, such financial institutions should not be managed by elected members. They should all be converted into commercial banks and be supervised and monitored like other banks in the system.

Institute a More Accountable Regulatory Framework and Transparency of Information

More than 20 bank runs have occurred over the last five years and yet no regulators have been held responsible for these long-delayed failures. Particularly in the case of community financial institutions, no regulatory body considers itself as having sole responsibility for monitoring and supervision. The MOF, the Ministry of Agriculture (for authorized farmers' and fishermen's associations), and the Ministry of Interior (for chartered credit cooperatives) debated long among themselves about their regulatory authority and responsibility over these community financial institutions. This regulatory structure needs to be redesigned so that each government agency would have clear responsibility and would be accountable for its policy decisions.

Though the transparency of financial information has improved over the years, regulators still tend to conceal information on financially distressed institutions on the grounds that releasing this infor-

mation may again trigger runs on these weak institutions. This practice, in fact, make information less transparent and hinder the determination of accountability.

Privatize Government-Owned Institutions

State-owned banks and banks with substantial government shares still have significant market share in terms of deposits and loans. These banks usually compete at a cost advantage and with guaranteed business, but are in fact less profitable and have a higher ratio of NPLs. Privatization of government ownership in banking is necessary. This will increase the overall efficiency of the banking system.

Deal with the Problem of Lack of Confidence

Taipei, China has a relatively sound economy and has good fundamentals at the micro and macro levels. But confidence is low and faces considerable threat. During the Asian financial crisis, the Taipei, China stock market plummeted, and panic selling of NT dollars occurred. In addition, the stock market and foreign-exchange market have been very sensitive to political tensions in the Taiwan Strait. Foreign-exchange reserves, despite being the second or third largest in the world, can never sustain a confidence run on the currency. Lack of confidence remains a threat to the stability of the financial markets.

Check Government Guarantees

In addition to the national health insurance plan and pension plan, the government has sponsored several major infrastructure projects with a total budget in the hundreds of billions of US dollars through build-operate-transfer (BOT) transactions. To assist the project operators in obtaining enough capital from banks to support these BOT projects, the MOF has recently exempted BOT loans from the standard regulations on loan diversification and risk-based capital requirements. In several cases, the

government even guaranteed BOT loans against defaults. In fact, most BOT projects are of poor quality. These undiversified BOT loans are risky and, without enough capital cushion, the failure of some BOT projects may bring the lending banks into financial distress. However, these financially distressed banks will not be closed in the current regulatory environment because they provided loans to government-sponsored projects and the government guaranteed these projects.

Develop Regional and International Economic Coordination

It is not clear where Taipei, China can go to for help if a more serious economic crisis occurs. Legitimately, it will not be able to get help from the International Monetary Fund (IMF) and the World Bank, since it is not a member of these two organizations. There is an apparent need for Taipei, China to develop regional economic cooperation or coordination relative to the globalization of its financial market.

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