

**People's Republic of China—Hong Kong Special Administrative Region: Selected
Issues**

This Selected Issues paper for **People's Republic of China—Hong Kong Special Administrative Region** was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on **April 25, 2002**. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of **People's Republic of China—Hong Kong Special Administrative Region** or the Executive Board of the IMF.

The policy of publication of staff reports and other documents by the IMF allows for the deletion of market-sensitive information.

To assist the IMF in evaluating the publication policy, reader comments are invited and may be sent by e-mail to Publicationpolicy@imf.org.

Copies of this report are available to the public from
International Monetary Fund • Publication Services
700 19th Street, N.W. • Washington, D.C. 20431
Telephone: (202) 623 7430 • Telefax: (202) 623 7201
E-mail: publications@imf.org • Internet: <http://www.imf.org>

Price: \$15.00 a copy

**International Monetary Fund
Washington, D.C.**

INTERNATIONAL MONETARY FUND

PEOPLE'S REPUBLIC OF CHINA—
HONG KONG SPECIAL ADMINISTRATIVE REGION

Selected Issues

Prepared by Tao Wang, Dora Iakova, Philip Schellekens,
and Chandima Mendis (all APD)

Approved by the Asia and Pacific Department

April 25, 2002

	Page
I. Economic Integration Between Hong Kong SAR and the Mainland of China	3
A. How Far has Integration Gone	3
B. Outlook for Further Integration with the Mainland	8
C. The Challenge of Integration	13
D. Conclusions	15
References	17
 Boxes	
I.1. Ports and Economic Hinterland of Hong Kong SAR and Shanghai	10
I.2. "Moving up the Value Chain"—An Example	13
II. Trends in Wage Inequality in Hong Kong SAR, 1981-2001	18
A. Introduction	18
B. Wage Inequality, Employment, and Education	19
C. Accounting for the Evolution of Wage Inequality	23
D. Policy Implications	26
Data Appendix	29
References	30
 Charts	
II.1. Gini Coefficients for Selected Countries	31
II.2. Hong Kong SAR: Percentile Differentials for Log Wages, 1981-2001	32
II.3. Hong Kong SAR: Real Log Wage Growth by Percentile, 1981-2001	33
II.4. 90/10 Percentile Differential by Educational Attainment: 1981-2001	34
II.5. 90/10 Percentile Differential by Industry	35
II.6. Kernel Density Estimates of Log Earnings, 1981-2001	36

Content	Page
Tables	
II.1. Summary Wage Statistics for Employed Men and Women, 1981–2001	37
II.2. Employment and Earnings by Industry (Male and Female)	38
II.3. Employment and Earnings by Education (Male and Female)	39
II.4. Education Attainment and Education Wage Premium by Industry	40
II.5. Measures of Inequality, Percentile Differentials (All Employed)	41
II.6. Effects of Sectoral Shifts on Changes in Wage Inequality	41
II.7. Human Capital Equations, Employed Men	42
III. Deflation in Hong Kong SAR	43
A. Introduction	43
B. Price Developments	44
C. Cyclical or Structural?	45
D. Persistence of Deflation	49
E. Summary and Policy Implications	52
Annex	54
References	63
Charts	
III.1. Comparison of CPI of Hong Kong SAR and Shenzhen by Components	58
III.2. Standardized Price Level Gaps	59
Tables	
III.1. Price Equalization Pressure between Hong Kong SAR and Shenzhen	60
III.2. Determinants of Deflation in Hong Kong SAR	61
III.3. Determinants of Deflation in Hong Kong SAR	62
IV. The Structure and Financing Patterns of the Hong Kong SAR Capital Market	65
A. Introduction	65
B. Overview of the Capital Market	65
C. Developing the Bond Market	75
D. Conclusions	78
Annex	79
References	84

I. ECONOMIC INTEGRATION BETWEEN HONG KONG SAR AND THE MAINLAND OF CHINA¹

1. **Hong Kong SAR's economic ties with the Mainland, revived in the late 1970s, have strengthened further since its return to China's sovereignty in 1997.** After moving most of its manufacturing to the Mainland in the 1980s and early 1990s, the Hong Kong SAR economy is going through another structural transformation as its integration with the Mainland economy deepens. This paper reviews the process of economic integration between Hong Kong SAR and the Mainland, and the policy implications for Hong Kong SAR. The paper is organized as follows: Section I looks at how close economic and financial ties have already developed between Hong Kong SAR and the Mainland; Section II presents the outlook for further integration; and Section III discusses policy implications.

A. How Far has Integration Gone?

2. **Hong Kong SAR's economic links with the Mainland expanded rapidly in the 1980s and the first part of the 90s, with Hong Kong SAR becoming the most important trade and international fund raising center for the Mainland.** Since Hong Kong SAR's return to China's sovereignty, integration between the two economies has deepened, notwithstanding the Asian crisis: Mainland-related entrepôt trade has continued to increase; a large share of China's foreign currency financing is raised in the Hong Kong SAR financial market; a growing range of economic activities are integrating across the border; and Hong Kong SAR business has become increasingly centered around China-related activities.

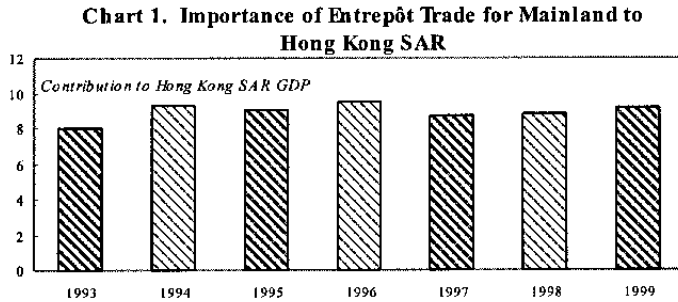
Trade

3. **Hong Kong SAR currently intermediates about 40 percent of China's external trade.** When China opened up beginning in the late 1970s, Hong Kong SAR's role as an entrepôt was quickly revived, and it became the main intermediary of China's external trade. Even after some decline in recent years, the share of China's trade intermediated via Hong Kong SAR is still around 40 percent.

4. **As manufacturing moved across the border, Hong Kong SAR gravitated toward intermediation, and its re-exports trade, almost all related to the Mainland of China, is now larger than its GDP.** After the Mainland opened up, Hong Kong SAR businesses quickly moved their manufacturing base to southern China, while expanding their entrepôt activities. As a result, the share of manufacturing in Hong Kong SAR's GDP dropped sharply (from 24 percent in 1984 to 6.5 percent by 1997), while that of re-exports in total exports more than doubled (to 88.5 percent in 2000). Almost all of Hong Kong SAR's re-exports either originate from or are destined for the Mainland of China. As a share of GDP, re-exports more than tripled since 1984, to 110 percent in 2000.

¹ Prepared by Tao Wang.

5. **Entrepôt trade with the Mainland and related services are thus critically important to the Hong Kong SAR economy.** Total trade - excluding offshore trade - is equivalent to over 250 percent of GDP, and its contribution to GDP is close to 10 percent



Sources: Data provided by the Hong Kong authorities and staff estimates.

(Chart 1). In addition, Hong Kong SAR is handling an increasing amount of offshore trade.² A 2001 survey estimated that the size of offshore trade is about the same as Hong Kong SAR's re-exports, having doubled over the past decade. More than one in six people employed in

Hong Kong SAR are engaged in import and export trading, contributing some 19 percent to GDP. This figure does not include trade-related services such as insurance and financing, sea and air transport, freight forwarding, and advertising and marketing, which together would increase the contribution significantly.

Finance

6. **Hong Kong SAR has been the most important source of international capital for the Mainland.** The financing has come in the form of foreign direct investment, equity financing, bond, and bank lending.

- Cumulative FDI from Hong Kong SAR was estimated at about \$171 billion as of 2000, or about half of China's total FDI³. Although the share of FDI flows from Hong Kong SAR has decreased recently, it still accounted for more than one-third of total FDI flows to the Mainland in 2000;
- All but one of the 58 Chinese SOEs listed abroad at end-2001 were listed in Hong Kong SAR⁴, having raised a cumulative of US\$16.6 billion. In 2000, China-related companies

² Defined as merchandise trade handled by Hong Kong companies or their subsidiaries, but not going through import-export declaration in Hong Kong SAR. It thus includes both "trans-shipment" and "offshore trade" as classified in the 5th BOP manual.

³ Some of the FDI may be "round tripping" from the Mainland to take advantage of the preferential treatment of foreign investors in China.

⁴ A number of them are dual listings (in New York).

(both so called “red-chip” and “H-shares”)⁵ raised a record US\$44 billion in the Hong Kong SAR market (Jiang 2000);

- China has raised more than US\$23 billion in the Hong Kong SAR bond market (out of \$28 billion placed outside the Mainland) in the last 10 years. Seven Mainland sovereign bonds were issued in Hong Kong SAR, and 18 Mainland issues of non-government bonds were listed on the Hong Kong SAR exchange at end-2000;
- The stock of Hong Kong SAR banks’ direct lending to Mainland entities totaled some US\$37 billion in 1999, or about 70 percent of total foreign bank lending to the Mainland⁶. Lending to the Mainland by Hong Kong SAR banks has since declined, in part due to the financial problems of some debtors;⁷
- Hong Kong SAR banks have also been active in arranging syndicated loans and floating rate notes for use in the Mainland. At the peak in 1998, syndicated loans to the Mainland of China arranged by Hong Kong SAR banks totaled \$5.6 billion.

7. **The growing presence of Mainland firms and capital raising activities has contributed to the development of Hong Kong SAR’s financial markets.** For instance, the growing number of Mainland firms in the equity market has attracted an increasing amount of international funds to Hong Kong SAR, with good returns: during the period 1996-2000, the “red chip” index was up 36 percent, compared to a return of 15 percent of the rest of the market⁸.

⁵ “H-shares” are shares of Mainland-incorporated companies listed in Hong Kong, while the red-chips are shares of Hong Kong SAR-incorporated companies with a controlling stake held by state-owned organizations of provincial/municipal authorities in the Mainland.

⁶ Hong Kong banks’ direct exposure to the Mainland is relatively small, amounting to less than 3 percent of total assets of the banking sector, although indirect exposure is likely to be higher, as a portion of loans booked for use in Hong Kong SAR is used by the borrowers for their Mainland operations.

⁷ In particular, the problems of International Trust and Investment Corporations (ITICs). The net liabilities of Hong Kong banks to Mainland clients have increased sharply recently, largely reflecting the ample liquidity conditions in the Mainland and the shrinking exposure of Hong Kong banks to the Mainland. Although from a very small base, there has also been increased lending by Mainland banks to Hong Kong SAR companies, in part to finance the latter’s Mainland operations.

⁸ Excluding HSBC (a large participant in the market that has seen its share price rise by more than 40 percent during this period).

Other Business Activities

8. **After near full integration in the traded goods sector, low-end services have started to relocate across the border as well.** Hong Kong SAR-funded firms now employ an estimated 5 million people in China, mostly in manufacturing. Some services, such as retail trade, recreation and leisure, accounting and back office operations of banks, and some trade-related services, have also started relocate across the border. As a result, the share of factor income from the Mainland has doubled from 7 percent in 1995 to 14 percent in 2000.

9. **An increasing number of Hong Kong SAR residents visit Shenzhen and other nearby cities for shopping, entertainment and leisure, and the number of people who live and work on different sides of the border has also increased.** Between 1990 and 2000, the number of Hong Kong SAR residents' visiting the Mainland more than tripled, to 50 million departures (implying that each Hong Kong SAR resident made on average seven visits in 2000). It is estimated that Hong Kong SAR consumers spent HK\$20 billion in connection with personal travel in Guangdong in 2000, equivalent to 11 percent of Hong Kong SAR retail sales. Moreover, an estimated 191,000 Hong Kong SAR residents worked in the Mainland in 2001 up from 52,000 in 1988.

The Mainland's Presence in Hong Kong SAR

10. **The Mainland of China has become a major source of FDI in Hong Kong SAR.** By end-1999, the Mainland of China had invested over \$100 billion in Hong Kong SAR (about one fourth of total inward FDI). Many firms and government entities have set up offices in Hong Kong SAR to gain international exposure and market opportunities. An estimated 2000 mainland-related companies are currently operating in Hong Kong SAR, with important presence in trading, real estate, insurance, transport, finance and construction. At end-2000, 24 Mainland bank branches accounted for 16 percent of total assets and 21 percent of deposits in Hong Kong SAR.

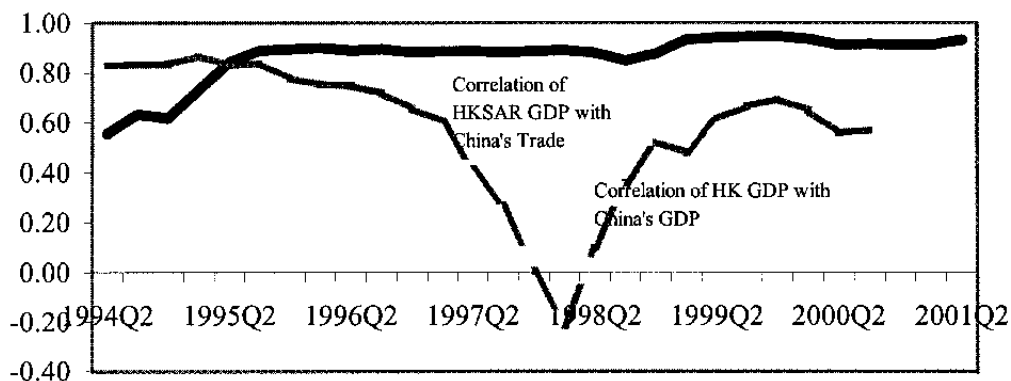
11. **A rising number of visitors from the Mainland has helped sustain the Hong Kong SAR tourist industry.** In 2000, mainland visitors contributed about one-third of Hong Kong SAR's tourist receipts, with the number of visitors up by another 18 percent in 2001.

Correlations of Economic and Financial Developments

12. **Hong Kong SAR's economy is increasingly correlated with Mainland's external sector, though not its overall economy.** The correlation between Hong Kong SAR's GDP and China's external trade⁹ has been strong, and tended to increase in recent years (Chart 2). On the other hand, as integration of other sectors is still in an early stage, the correlation with the GDP of the Mainland has been much weaker.

⁹ Measured by the correlation of estimated deviations from trends over moving sub-periods.

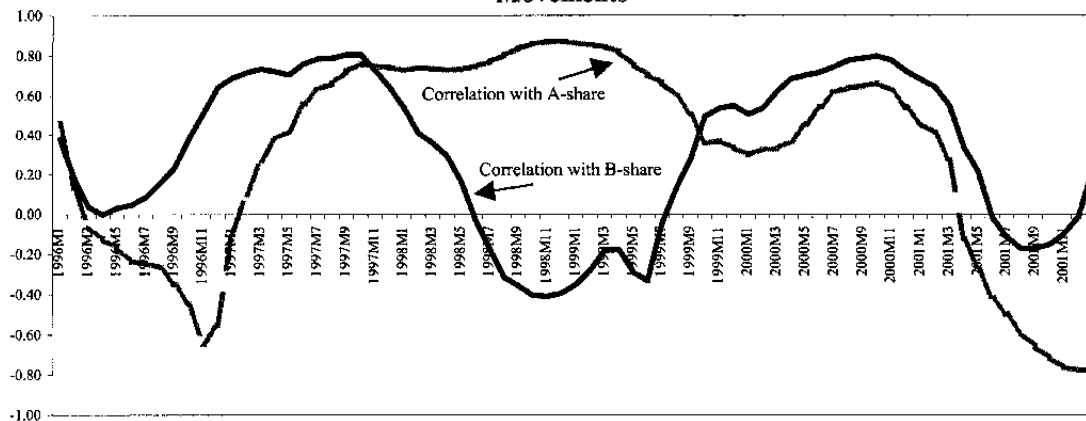
Chart 2. Correlation of Hong Kong SAR GDP and China's Trade Growth



Sources: Staff estimate

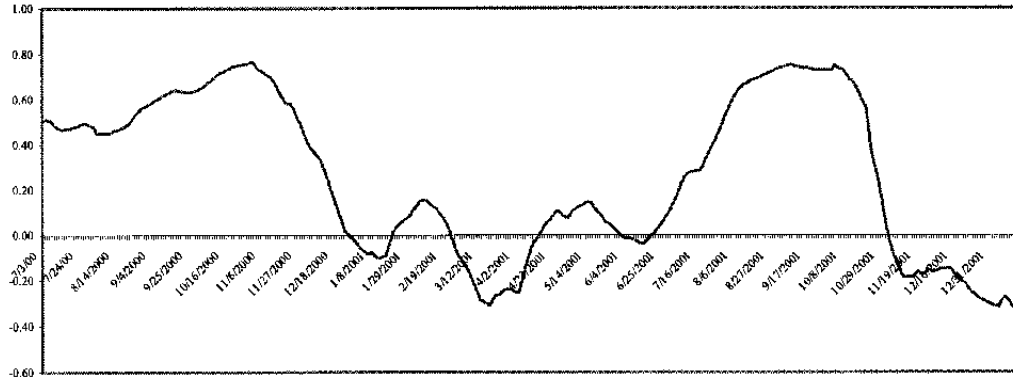
13. **Despite growing links, the financial markets of Hong Kong SAR and the Mainland remain largely independent from each other.** Capital controls, though not watertight, still serve to insulate China's domestic financial market from external developments. In contrast, the linked exchange rate system and absence of any capital controls in Hong Kong SAR have resulted in a high degree of global integration of its financial markets. As a result, correlations between the Hong Kong SAR and Mainland financial markets are weak (Chart 3 and 4).

Chart 3. Correlation of Hong Kong SAR and China's Stock Market Movements



Source: Data from CEIC database, Bloomberg, and staff calculations.

Chart 4. Correlations of Hong Kong dollar and RMB Forward Premium, 2000-2001



Source: Data from CEIC database, Bloomberg, and staff calculations.

B. Outlook for Further Integration with the Mainland

14. **Hong Kong SAR’s integration with the Mainland of China will deepen in the coming years, with the Mainland economy opening up further following WTO accession.** This process is expected to spur additional re-alignment of output, trade and investment patterns, and financial flows in the region. In the near term, Hong Kong SAR will likely benefit from increased trade and investment activities between the Mainland of China and the rest of the world, given the excellent “starting position” that Hong Kong SAR companies already have in intermediating those activities. In the longer run, however, Hong Kong SAR’s role as a traditional “middleman” will likely diminish, with sources of growth shifting increasingly to higher value-added service sectors. These structural changes could pose challenges, in particular, for labor market, education, and fiscal policies.

Trade

15. **In the next few years, Hong Kong SAR will benefit from increased trade between the Mainland of China and the rest of the world.** Even after two decades of rapid growth, China’s exports still account for a relatively small share of world trade (Table 2). Given China’s large labor supply and cost competitiveness, significant scope remains for growth of labor-intensive industries. Staff estimates suggest that, spurred by WTO

Table 2. Selected Global Export Shares, 2000

China	4.0
Japan	7.7
Asia NIEs *	7.7
France	5.2
Germany	8.8
United Kingdom	4.5
United States	12.4

Source: IMF, Direction of Trade Statistics.

(*): Korea, Singapore, Taiwan province of China, Hong Kong SAR. Re-exports of Hong Kong SAR are excluded.

accession, China's external trade will increase by about 80 percent in the next five years.

16. **Hong Kong SAR's efficient port facilities, trading experience, global network, and agglomeration of trading activities are hard to rival in the near future.** Hong Kong SAR is endowed with a natural deep-water, silt free harbor, strategically located on major sea routes and with China's export growth engine, the Pearl River Delta, as its hinterland. Nearby ports of the Mainland do not yet pose a serious challenge; rather, the about 20 small-to medium-sized ports in the region could complement the Hong Kong SAR port services, helping to lower their overall cost. Hong Kong SAR also has the advantage of major port agglomerations with extensive port and freight management experience, being able to provide complete services including insurance and financial services. A new terminal (to be phased in from 2003) will add significant capacity, providing a solid basis for handling additional China cargo.

17. **Nonetheless, Mainland port facilities are improving, and the economy of the Yangtze River Basin is gaining importance.** Ports in southern China have expanded rapidly, and Mainland exports handled by Hong Kong SAR companies are increasingly shipped directly from the Mainland rather than through Hong Kong SAR¹⁰. Growing competition will come especially from Shanghai and its surrounding ports, situated in the middle of China's coast line, with easy access to the large economic zone along the Yangtze River. Given its location and large industrial base, the Yangtze River region will likely gain further importance as a major engine of growth and exports (Box 1).

18. **As China continues to liberalize trade and investment, direct access between the Mainland and rest of the world will increase, potentially bypassing Hong Kong SAR.** Under China's WTO commitments, more Chinese firms will be allowed to engage in direct external trade, distribution, and transportation services. At the same time, restrictions on foreign companies are being reduced or abolished. While Hong Kong SAR companies are also expected to benefit from such liberalization, they will face intensified competition from Mainland as well as foreign firms.

¹⁰ A recent survey by the TDC shows that such direct shipment doubled between 1994-2000.

19. Therefore, Hong Kong SAR's role as a traditional "middleman" for Mainland trade will likely diminish over time.

Increasingly, re-exports will shift to off-shore trade (Table 3), or bypass the Hong Kong SAR connection altogether. While the initial increase in the Mainland of China's overall trade will likely dominate the trade

diversion effects, it will unlikely do so in the long run, and Hong Kong SAR will have to reduce its reliance on entrepôt trade for the Mainland.

Table 3. Survey of Traders on Prospects of Different Shipping Arrangements

(Views expressed, in percent of total)

	Growth	No change	Decline
Re-exports	18.5	32.5	49.1
Transshipments via Hong Kong SAR	37.2	36.8	26
Direct shipment	76.7	17.9	5.4

Source: Hong Kong SAR Trade Development Council

Box I.1. Ports and Economic Hinterland of Hong Kong SAR and Shanghai

Ports (2000):

	Cargo volume in (million ton)	Container traffic (million TEU)	New construction	Hinterland
Hong Kong	175, of which 69 percent containerized.	18.1, busiest in the world.	Terminal 9 will add 2.6 million TEU capacity	Pearl River Delta
Shanghai	204, largest port in China. 25 percent growth per annum in past 10 years.	5.6	Deep sea port being built on outskirts island	Yangtze River Delta

Source: Ministry of Communication of China, and staff estimates.

Hinterland:

Narrowly defined, Hong Kong's hinterland is the Pearl River Delta; more broadly, it could be viewed to include the whole of Guangdong province. Shanghai's hinterland is the Yangtze River Delta, or more broadly, including Jiangsu and Zhejiang provinces. Guangdong province has been the main export engine of China, but Jiangsu and Zhejiang provinces have a large potential to catch up given their large population and industrial base, and a vibrant non-state sector. Moreover, goods from other provinces along the Yangtze river area could easily reach Shanghai via the Yangtze river and its extensive branch network. This area would include much of Anhui, Hubei, and Hunan provinces, with a total population of 285 million people.

Comparison of Guangdong and Jiangsu plus Zhejiang, 1999

(In percent of Mainland total, unless noted)

	Guangdong	Jiangsu + Zhejiang
GDP	10.3	15.9
Export	40.4	16.5
Population	5.8	9.3
People with college or higher education (million)	2.4	3.8
Industrial production	16.0	21.0
Share of non-SOEs in total number of industrial enterprises of the region	77.0	83.9

Source: China statistical yearbook 2000.

Financial Services

20. **With the Mainland opening up its financial sector, some foreign financial institutions will likely relocate their China-related activities from Hong Kong SAR to the Mainland, especially Shanghai.** Lower business costs and proximity to business and clients would be the main attractions of moving to the Mainland. Shanghai is an industrial and commercial center where many foreign production facilities are located, and it has ample supply of relatively well-educated labor. In addition, the government has continued to invest heavily in Shanghai's infrastructure, and the city is gaining expertise as a financial center.

21. **Nonetheless, Hong Kong SAR has advantages that will likely preserve its role as a center for China's international capital raising for the foreseeable future:**

- sound legal framework, and independent and efficient judiciary – while the Mainland's legal system remains in need of development;
- free flow of capital and information – while the Mainland will maintain capital controls for the foreseeable future;
- a mature financial market and sound banking system – while China's financial market is at a much earlier stage of development, with a financially weak banking system.

These factors will make it difficult for Shanghai or other cities in the Mainland to rival Hong Kong SAR's position as a major international financial center in the near future.

22. **Growing financing needs in the Mainland will likely benefit Hong Kong SAR as an international financial center.** Given China's high saving rate, much of the financing will be domestically raised. Nonetheless, a significant part will be raised abroad, and Hong Kong SAR – with its well-developed market infrastructure and experience, could benefit in the following areas:

- Increasing placements by large Chinese SOEs and private firms in the *Hong Kong SAR stock market*.
- Restructuring and infrastructure projects in the Mainland should help boost Hong Kong SAR's *debt market* (a 1997 World Bank report estimated that China's infrastructure-related spending could exceed \$700 billion over ten years, and preparation for the 2008 Olympics may require additional infrastructure spending);
- Growing *corporate debt financing* by Mainland firms (if China's corporate debt to GDP ratio were to reach 4 percent – the level in Thailand before the crisis – by 2010, corporate bonds outstanding could total over \$120 billion (from the current \$10 billion);

- *FDI* to China will likely increase with WTO-related liberalization of services sectors and the elimination of textile export quotas in 2005. Some of the FDI should continue to be channeled through Hong Kong SAR.

23. **Hong Kong SAR firms could benefit from the opening up of China's financial sector, although they will face entrance barriers and competition from international firms.** Under China's WTO commitments, banking, insurance, and asset management industries will gradually open up to foreign firms. Hong Kong SAR firms could potentially benefit from this liberalization, given their extensive experience in these areas. However, many Hong Kong SAR firms face high entrance barriers in the Mainland's market (such as capital requirements for banks). Even in industries where such barriers are lower (such as asset management), Hong Kong SAR firms will compete with much larger and well-established international firms.

Business Services

24. **Migration of certain trade-related services to the Mainland will likely continue.** More than three-fourths of Hong Kong SAR-handled Chinese exports (of those surveyed by the TDC) now have freight forwarding and consolidation arranged in the Mainland, and over half of the testing and certification are also conducted there. As China opens up the services sector further, this trend is likely to continue.

25. **Nevertheless, while some foreign companies may relocate to the Mainland, Hong Kong SAR is still very attractive as a business center.** As foreign business expands in the Mainland of China, cheaper labor and office space may attract regional offices and China-related operations to move from Hong Kong SAR across the border. Hong Kong SAR could gradually lose its predominance as a center for China-related foreign businesses. However, currently Hong Kong SAR still has many advantages (described in the section that follows) that seem to justify a significant cost premium. The number of regional headquarters and offices in Hong Kong SAR increased by 20 percent in 2000, to over 3,000 (Table 3), and the presence of Chinese firms, falling in 1998-1999, has started to grow again.

Table 3. Hong Kong SAR as a Regional Headquarter for Multinational Companies

	1997	1998	1999	2000	2001
Number of regional headquarters and offices in Hong Kong SAR	2,514	2,449	2,490	3,001	3,237
o/w with Mainland incorporated parent companies	243	205	205	229	242
Number of persons engaged (in thousand, excl. those not responded)	N/A	136	114	133	173
o/w with Mainland incorporated parent companies		7.6	7.3	9.2	7.2

Source: Hong Kong SAR: Census and Statistics Department .

26. **The Hong Kong SAR tourism industry, although still relatively small, could be an important source of growth in the future.** Tourist receipts were equivalent to 4.7 percent of Hong Kong SAR's GDP in 2000, of which close to one-third came from Mainland Chinese visitors. Further relaxation of restrictions on visas/quotas for Mainland visitors to Hong Kong SAR could boost tourism significantly in the coming years.

C. The Challenge of Integration

27. **To meet the challenge of integration, Hong Kong SAR must continue to enhance its competitive advantage and attract higher value-added business activities.** As an advanced economy, Hong Kong SAR cannot compete with the Mainland in activities such as labor-intensive manufacturing and low-end services. It will have to "move up the value chain", following the examples of some companies that have successfully adjusted their business structure (Box 2). As noted, China's growth, rising financing needs, and further

Box II.2. "Moving up the Value Chain" – An Example

The evolution of Li&Fung Limited, one of the world's leading trading companies of consumer products, provides an example of adjusting to the changing environment of Hong Kong SAR.

When manufacturing moved from Hong Kong to the Mainland in the 1980s, the company shifted its sourcing from local manufacturers to the Mainland of China while focusing its Hong Kong business on supply-chain management. Today, the company uses its experience and global network to provide a complete services package including product development, raw material sourcing, production planning and management, quality assurance and shipping. For example, when a client orders a line of leather jackets, the company can arrange to have the leather from India, tanning in South Korea, plated metal buckles from Japan, cutting and sawing in China, and export from China. Interactive services ensure that the client can change the order in terms of quantity, color, and cut as long as those steps are not completed.

Taking advantage of Hong Kong SAR's location, openness, complete range of supporting services (financial, legal, transport), simple tax system, and human capital, the company manages its sales and marketing, contract negotiation, control, and information flow from its Hong Kong headquarter. At the same time, activities closer to manufacturing, such as molding and engineering, testing and quality control, and storage and shipment of cargo, have been moved closer to the factory floor in the Mainland of China and elsewhere.

The company has expanded its operations to some 40 countries, diversifying its supply sources and markets. This has allowed it to serve clients at the lowest cost and in the fastest time, and to reduce reliance on any one country. Modern telecommunications have enabled the company to manage its global business from Hong Kong SAR. For example, instead of in-kind inspection of design and production, it now mostly relies on digital camera and internet transmission. Thus, the company's operation in Hong Kong SAR has continued to grow, even if virtually nothing is sourced from there any longer.

With the further opening of the Mainland, the company is likely to increase its sourcing from there, and views Hong Kong SAR as an ideal location for managing this expansion.

liberalization offer great opportunities for Hong Kong SAR – with such a vast and vibrant hinterland, Hong Kong SAR can further develop what it does best and consolidate its role as a major international financial, trade, and business center.

28. A recent survey on trade and trade-related services shows that many Hong Kong SAR companies are planning to change their business operations along those lines.

Table 4 shows that companies plan to move lower value-added trade-related services to the Mainland while focusing Hong Kong SAR operations on the higher end.

Table 4. Location of Major Operations of Hong Kong SAR Companies in the Next Five Years
(Business location, in percent of total respondents)

	Hong Kong SAR	Mainland China	Other
Trade financing/documentation	90.1	16.1	4.4
Regional headquarters/offices	85.4	18.8	5.0
Insurance	84.9	19.5	6.9
Business negotiation	72.4	39.7	18.5
Arbitration	71.5	35.0	9.6
Marketing	58.1	37.6	30.5
Freight forwarding & consolidation	55.3	58.5	9.0
Production development/design	53.4	46.6	16.2
Testing/certification	46.2	59.1	12.0
Material sourcing	38.3	71.9	20.2
Warehousing/inventory control	30.6	77.8	5.9
Sample-making/prototyping	27.2	73.4	11.0
Quality control	25.9	78.0	10.5
Manufacturing/packaging	14.4	86.3	10.8

Source: Trade Development Council.

29. To take full advantage of this structural shift, Hong Kong SAR will need to further enhance its comparative advantage. A survey of foreign companies with regional representation in Hong Kong SAR identified the following major advantages (in order of importance):

- (1) Low and simple tax system;
- (2) Free flow of information;
- (3) Political stability and security;
- (4) Corruption-free government;
- (5) Communication, transport and other infrastructure;
- (6) Rule of law and independent judiciary;
- (7) Business-friendly government economic policy;
- (8) Absence of exchange controls;
- (9) Free port status;
- (10) Level playing field

30. **The structural changes resulting from integration lead to higher structural unemployment and shortage of skilled workers.** A recent study by the HKMA finds that the natural rate of unemployment has risen modestly in recent years, and there is evidence of increased skill mismatch in the services sector. The government's 2000 manpower projection report estimates that by 2005, Hong Kong SAR will have a shortage of some 120,000 people with higher education, and a surplus of 160,000 with only secondary school education or less (Table 5).

Table 5. Projected Manpower Resources Balance in 2005

<u>Educational attainment</u>	Projected manpower resource balance (person)	As a % of supply
Lower secondary and below	136,700	11.4
Upper secondary	15,200	1.4
Craft	7,400	22.8
Post-secondary	-85,500	-16.0
First degree and above	-31,400	-6.5

Source: HKSAR, Report on Manpower Projection to 2005.

31. **These labor market pressures will continue to challenge education and other social policies.** As discussed in Chapter 2, structural change is the main factor behind the rise in income inequality in the last two decades. To meet the growing demand for high-skilled workers, Hong Kong SAR will have to further strengthen its education and training programs, and may also consider revising its immigration policies.

32. **Meeting these challenges has fiscal implications.** Upgrading the education system, infrastructure development, and higher unemployment could create pressures for higher public expenditures, calling for measures to contain costs and/or offsetting savings elsewhere. At the same time, relocation of more economic activities from Hong Kong SAR to the Mainland could result in lower revenues given the territorial-source principle of income taxation¹¹ – pointing to the need for measures to strengthen the revenue base.

D. Conclusions

33. **Structural adjustment to Hong Kong SAR's further integration with the Mainland has important macro economic and structural policy implications.**

- Substantial restructuring is required to preserve and upgrade Hong Kong SAR's competitiveness as an intermediating economy:

¹¹ Report by The Task Force on Review of Public Finance, March 2002.

- Training and education systems need to be upgraded and expanded to meet the demand for higher-skilled workers resulting from the shift to high-end services;
 - Immigration policy may need to be modified to allow highly-qualified mainland personnel to work in Hong Kong SAR;
 - Transport, telecommunication and other infrastructure needs to be further upgraded;
 - To ensure stability and further development of Hong Kong SAR's financial markets, market infrastructure and the regulatory framework need to be continuously upgraded.
- Fiscal pressures will need to be met through a combination of private sector participation and offsetting savings as well as efforts to broaden the revenue base;

34. **As integration progresses, policy makers and regulatory authorities will have to increasingly look beyond developments in Hong Kong SAR to ensure effective surveillance.** Hong Kong SAR authorities will need to monitor closely economic developments in the Mainland of China, and as Hong Kong SAR financial institutions become ever more involved in the Mainland economy, supervision will need to pay further increasing attention to cross-country risk.

35. **Current indicators of economic developments may become increasingly inadequate:**

- Hong Kong SAR will depend increasingly on repatriated income flows from operations in the Mainland, as economic activities relocate across the border. As a result, Gross National Product (GNP) will become an important indicator of activity, in addition to GDP;
- Traditional measures of external competitiveness are becoming less relevant. The real effective exchange rate is currently based on relative consumer prices or unit labor cost in manufacturing, weighted by the direction of trade in goods. However, Hong Kong SAR's main production and trade has shifted to services. Thus, alternative measures of Hong Kong SAR's competitiveness would include estimates of relative prices of services, weighted by the direction of service trade (or compared with services prices competitor countries or localities offering similar services).

References

- Breuer, Peter, "A Note on the Impact of The Mainland's Accession to the WTO on Hong Kong SAR", in Hong Kong SAR, Selected Issues and Statistical Appendix, February, 2000.
- China Statistical Yearbook 2000.
- China Foreign Trade Statistical Yearbook 1999.
- Cheng, Yuk-Shing, Weiguo Lu and Christopher Findlay, "Hong Kong's Economic Relationship with China", *Journal of the Asia Pacific Economy*, 3 (1), 1998.
- CLSA Emerging Markets, "Hong Kong Market Strategy – Hong Kong's Future, tough choice to stay afloat", November, 2001.
- Deutsche Bank, "Emerging Markets Monthly", Hong Kong report, March 2002.
- Goldman Sachs, "Greater China Analyst", January, 2002.
- Hong Kong SAR Census and Statistics Department, "Survey of Regional Representation by Overseas Companies", 1997-2001.
- HKMA unpublished research papers, 1999 and 2000.
- Hong Kong General Chamber of Commerce, "China's Entry into the WTO and the Impact on Hong Kong Business", June 2000.
- Hong Kong Trade Development Council,
--"China's WTO Accession and Implications for Hong Kong", November 2001.
--"Profiles of Hong Kong Major service Industries", 2001.
--"Hong Kong as a Sourcing Center for China-made Products", February, 2000.
--"Hong Kong's Trade and Trade Supporting Services: New Developments and Prospects", -
January, 2002.
- Jiang, Guorong, Nancy Tang and Eve Law, "Cost-Benefit Analysis of Developing Debt Markets", *HKMA Quarterly Bulletin*, 11/2001.
- IMF staff, 2000 and 2001 Hong Kong SAR Staff Report and Selected Issues Paper.
- Ministry of Communication: 1999 China Water Transportation Development Report.
- Peng, Wensheng, Lilian Cheung, and Kevin Fan, "Sources of Unemployment: Recent Developments and Prospects", *HKMA Quarterly Bulletin*, November 2001.
- Yam, Joseph, "Building Stability in Unstable Times". October 24, 2001.

II. TRENDS IN WAGE INEQUALITY IN HONG KONG SAR, 1981-2001¹

A. Introduction

1. **Income inequality in Hong Kong SAR has increased rapidly over the last twenty years** (Chart 1). Today Hong Kong SAR ranks among the economies with the most uneven distribution of income in the world, even though income disparity has also widened sharply in many other high-income economies over the last thirty years.² The rise in income inequality has increasingly become a focus of attention for the public, academics, and policy makers in Hong Kong SAR.
2. **Rising income disparity may be a byproduct of increased economic efficiency.** Structural shifts and rapid technological change, which have been engines of growth in many advanced economies, have often been associated with rising income inequality. There is evidence that pervasive skill-biased technological change has led to increase in the relative demand for skilled labor³. Demand for skilled labor would also increase if there is an outsourcing of the less-skill-intensive stages of production to low-wage economies. As a result, the relative price of skilled labor increases which, in turn, creates incentives for more people to acquire better skills, contributing to further economic growth. In contrast, in the presence of labor market rigidities (such as minimum wages, strong unions, constraining labor laws, or heavy taxation of income), returns to skills may not rise as rapidly in response to higher demand, which can be detrimental to growth. In addition, if institutional constraints prevent relative wage changes, adjustment to structural shifts may take the form of high unemployment and/or discouragement from the labor force. In economies with flexible wages, like Hong Kong SAR or the United States, adjustments are likely to take place mostly through changes in relative wages.
3. **However, high income disparity may be undesirable from a social and economic perspective, and could signal weaknesses in the education system.** Although Hong Kong SAR does not publish official poverty statistics, there are indications that poverty may have increased. In the last three years, real income of households in the bottom quartile of the income distribution has fallen, and the number of low-earned-income recipients of social benefits has more than doubled. Some political economists argue that high inequality may be

¹ Prepared by Dora Iakova. I wish to thank the Hong Kong Census and Statistics Department for providing the data.

² The Gini coefficient, a commonly used summary measure of household income inequality, has risen from 0.451 in 1981 to 0.525 in 2001. The World Development Report 1995, World Bank, ranks Hong Kong SAR as having the highest rate of income inequality among high-income economies.

³ See Berman, Bound, and Machin (1998).

detrimental to growth since there could be a greater tendency to vote for politicians who support increased redistribution and other policies that distort the labor market.⁴ It may also make it more difficult to reach a broad consensus for certain economic reforms. Political economy considerations apart, increasing income polarization and rising poverty could affect long-run fiscal sustainability, as the share of social spending in public expenditure increases. High income inequality may also signal lack of equal opportunities or deficiencies in the education system, restraining the supply of skilled labor.

4. This paper reviews the evolution of wage inequality in Hong Kong SAR; discusses possible explanations of the rise in inequality; and evaluates policy options. The next section describes the evolution of cross-sectional wage inequality in Hong Kong SAR during the period 1981-2001. Section III examines the impact of structural shifts on wage inequality, and in particular the effect of structural change on the relative demand for skilled labor. Section IV summarizes current policies in Hong Kong SAR to support the socially vulnerable. Policy options based on the analysis in the paper are also discussed.

The main findings of the paper are as follows:

- Real wages have increased substantially at all points of the income distribution between 1981 and 2001, while at the same time wage disparity has also risen.
- Wage inequality within industry groups has increased as the economy has shifted towards higher value-added services, which resulted in high demand for skilled workers and a rise in the return to skills.
- The wage premia for higher education are large and have generally increased over the period.
- Earnings inequality is greater within more educated groups, suggesting that returns to unobserved skills also increase with education.
- The most effective policy in addressing growing income inequality is to increase the skills of the labor force.

B. Wage Inequality, Employment, and Education

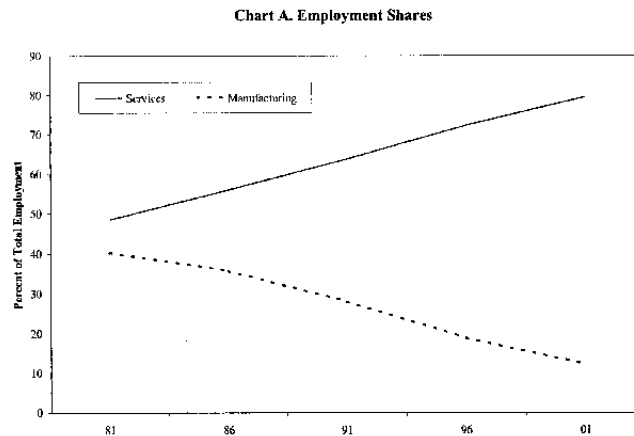
5. This section reviews trends in industry employment, education attainment, and wage inequality over the past two decades.⁵ Data sources are described in the Appendix 1 and summary statistics are presented in Table 1.

⁴ See, for example, Alesina, A. and D. Rodrik (1994).

⁵ The wage variable examined is real monthly wages from main employment.

Employment and Wages by Sector

6. **There has been a significant shift of employment toward the service industries as manufacturing production was gradually outsourced to the Mainland.** The last two decades witnessed rapid structural change in Hong Kong SAR. As the Mainland of China opened to foreign investment from the late 1970s, manufacturing production was gradually outsourced from Hong Kong SAR to the Mainland. As a result, the share of manufacturing employment declined from 40 percent to 12 percent, while the that of services increased from 48 percent to 72 percent (Chart A and Table 2). While an increasing employment share of services has been observed in most advanced countries in recent years, the shift is typically of much smaller magnitude. The share of manufacturing in Hong Kong SAR's total output has also declined sharply, from 23 percent to 5 percent.



7. **Average real wages have increased in all industry sectors, although at different rates, possibly reflecting the extent of skill-upgrading within sectors.** Wage increases in manufacturing have been larger than in any other sector, implying that the downsizing of labor in that sector was mostly among the low-skilled (Table 2). This is consistent with anecdotal evidence suggesting that the stages of manufacturing remaining in Hong Kong SAR are increasingly concentrated in sophisticated, high-value added managerial and administrative functions. Wage gains are the lowest in construction, wholesale and retail trade, transport, storage and communication sectors. The relative share of low-skilled occupations in these sectors is high, implying that wage rises have been more moderate among low-skilled workers. Wage differentials based on observable skills are analyzed in more detail in Section III.

Education

8. **The average educational level has risen rapidly, accompanied by rising wage premia for the higher skilled.** The share of workers with primary education or less declined from 47 to 16 percent of all employees, while the share of people with university education quadrupled (Table 3). The average educational level for employed women has risen faster than that for men. Average wage increases have been highest for people with upper secondary and post-secondary education. Finance, insurance, real estate, and business services is the most skill-intensive sector, and the share of skilled workers in that sector has

remained broadly constant over time (Table 4). Among the major sectors, skill-upgrading has been most significant in manufacturing, also supporting the hypothesis that predominantly high-value added, human capital intensive stages of manufacturing have remained in Hong Kong SAR. The wage premium for skilled workers has increased the fastest in the tradable goods sectors – finance and insurance, transportation and storage, and manufacturing, suggesting that international trade specialization has benefited the those with higher skills in Hong Kong SAR.

Evolution of Wage Inequality

9. **Wage inequality has risen substantially over the period, largely due to rapid increases at the highest deciles of the income distribution.** All measures of wage dispersion show a steady increase in every sub-period (Table 1 and Chart 2).⁶ However, relative wages below the median (50/10 percentile) have remained unchanged for men, and have risen for women only in the second half of the sample period. The increase in the 75/25 percentile is also very modest for men. These data suggest that the increase in overall wage inequality has come from rising wages at the top of the distribution, while relative wages in the lower half of the distribution have remained largely unchanged. By these measures, wage inequality in Hong Kong SAR has grown much faster than, for example, in the United Kingdom.⁷

Table A: Change in Log Wages by Percentile

All Workers	Hong Kong SAR	United Kingdom 1/
	1981-2001	1980-1998
90-10	0.45	0.25
90-50	0.35	0.16
50-10	0.1	0.09
75-25	0.24	0.17

Source for UK data: Prasad (2002)

1/ Log hourly wages

10. **The widening of income disparity in Hong Kong SAR has been accompanied by rising real wages at all deciles of the distribution (Chart 3).** Although wage growth has been higher at the top percentiles, cumulative real wage growth has been quite substantial even at the bottom half of the distribution (an exception is the real wage growth for women at the bottom 25 percent in the low-growth period 1996-2001). This is in contrast to the U.S., where male real wage growth in the lower deciles has been negative in the 1980s and early 1990s.⁸

⁶ The measures of wage inequality that show increased disparity are the standard deviation, the coefficient of variation, Gini coefficient, and different percentile ratios.

⁷ As well documented in the literature, 1980-1998 was a period of rapid increase in wage inequality in the U.K.

⁸ See Freeman and Katz (1994).

Within and Between-Group Changes in Inequality

11. **The increase in inequality in Hong Kong SAR reflects mostly growing wage dispersion within education and industry groups.** The rise in the overall wage inequality may reflect change in the average wages received by different groups in society (between-group), or increase in the dispersion of wages within those groups (within-group). Inequality within industry and education groups has risen (Charts 4 and 5). The fact that inequality within the more educated groups is larger suggests that returns to unobserved skills rise with education. To examine changes in within-group inequality, while controlling for between-group variation in observable skills, the residuals of wage regressions are examined (Table 5).⁹ This analysis indicates that within-group inequality accounts for more than three-quarters of total inequality. The change in residual (within-group) inequality also accounts for close to three-quarters of the change in overall inequality.¹⁰ One interpretation of the large increase in inequality, after accounting for the effect of formal education, is that the transformation of the economy from manufacturing to a trade intermediary and financial center created an environment of change and uncertainty that rewarded those with entrepreneurial ability. The rise in inequality within education groups is also consistent with rising returns to ability.

12. **The increase in within-industry inequality is likely caused by increased outsourcing and skill-biased technological change.** In the U.S. and U.K., increase in within-industry inequality has also accounted for most of the increase in the overall inequality. The typical interpretation is that this is an evidence of skill-biased technological change.¹¹ A complementary explanation is that within-industry skill upgrading is due to the ongoing process of outsourcing. If the less skill-intensive stages of the production process are outsourced, there will be rapid skill upgrading within industries. For the U.S., the magnitude of measurable outsourcing appears to be too small to account for a significant portion of the within-industry skill upgrading. For Hong Kong SAR, however, outsourcing has been very significant, and has likely played an important role in the rapid increase in inequality.

⁹ Log wages are regressed on years of experience, and dummies for education, experience, gender, and marital status.

¹⁰ We also run separate regressions of wages on a group of education dummies; industry dummies; and gender dummies. The regression on education dummies reduced the residual inequality the most, indicating that inequality between education categories is the largest contributor to between-group inequality.

¹¹ The argument is that according to the Stolper-Samuelson theorem, import competition reduces the relative wage of the unskilled and the result should be a substitution towards unskilled workers. Therefore, the observed increase in both the relative wage and relative employment of skilled workers within industries can not be due to import competition.

Gender Effects on the Wage Distribution

13. **The male and part of the female wage distributions have converged significantly over time.** The share of women in total employment has increased and the gender gap has narrowed (the median wage differential between men and women has declined from 35 percent in 1981 to 29 percent in 2001, Table 1). The increase in wage inequality among women is somewhat greater than among men. This is partially due to the fact that the distribution for women has become bi-modal in 2001 (Chart 5).¹² Women in the lower part of the distribution are mostly employed in elementary occupations (about 80 percent are domestic helpers and saleswomen).¹³ In contrast, the upper part of the female wage distribution has converged markedly with the male distribution since 1981.

C. Accounting for the Evolution of Wage Inequality

Effects of sectoral shifts

14. **Shifts in employment between groups can affect inequality even if there is no change in the underlying wage distribution within groups.** Relocation of workers from one sector to another could change inequality through two channels – a between-group composition effect (if average wages in the two sectors are different), and a within-group composition effect (if within-group inequality is different in the two sectors). In addition, the variance of the wage distribution may change within industry groups, and/or the mean wage may diverge between industries even in the absence of labor shifts.

15. **To examine the effect of sectoral shifts on the wage structure, a variance decomposition framework is used.** The total variance of wages in year t can be decomposed into within- and between-industry components as follows:

$$\sigma_t^2 = \sum_j s_{jt} \sigma_{jt}^2 + \sum_j s_{jt} (\omega_{jt} - \bar{\omega}_t)^2$$

where σ_t^2 is the cross-sectional variance of log hourly wages, s_{jt} is the employment share of sector j , σ_{jt}^2 is the within-industry variance of wages, ω_{jt} is the mean wage in sector j , and $\bar{\omega}_t$ is the mean wage in the sample size. With this formula, the change in variance over time

¹² Epanechnikov kernel with a bandwidth of 0.1 was used to approximate the distributions.

¹³ If people in elementary services occupations (which are affected by a rising share of imported labor) are dropped from the sample, the change in wage inequality for women does not differ significantly from that of men.

can be decomposed into changes in within- and between-industry variance and composition changes within and between industries.¹⁴

16. **The increase in the variance of wages is attributable mainly to the change in within-industry variance** (Table 6, bottom panel). The rise in the variance of wages within industry groups and the increase in the employment share of industries with high earnings inequality account for most of the change in the total variance. The variance of wages has increased the most within the export-related sectors (manufacturing, transport, storage, communication, financing, insurance, and business services). This further supports the hypothesis that the increase in inequality is related to the process of cross-border vertical integration in the tradable goods production. More generally, structural shifts of economies towards service industries could lead to greater inequality since there is a greater heterogeneity of skills and productivity within the service sectors.¹⁵

17. **The wage decomposition based on education groups reveal that about two-thirds of the total change in variance in the period 1981-1996 is accounted for by an increase in the share of people with higher education** (Table 6, top panel). As the share of people in the higher education categories increases, ceteris paribus, wage disparity increases because wage variance is higher within the more educated groups (within-group composition effect). Between 1996 and 2001, there has been a large increase in the variance within groups, possibly related to the cyclical downturn.

Changes in Returns to Skills

18. **The joint evolution of skill prices and relative supply of skilled labor is an important indicator of changes in the labor market.** A human capital regression framework is employed to study the evolution of skill prices for employed men, controlling for other personal characteristics.

19. **Higher education is rewarded with increasingly higher relative returns over time, despite the rising relative supply of more educated workers.** Table B summarizes the results of the analysis, with more detailed results reported in Table 7. The wage premium for upper secondary education relative to lower secondary has risen from 17 percent in 1981 to 36 percent in 2001. For post-secondary and tertiary education, the premia were

¹⁴ Holding the employment shares constant, one can calculate: (1) the change in within-industry wage variance; and (2) the change in between-group variance, attributable to change in the industry average wage relative to the average wage in the economy. The composition effects give the change in variance due to changes in industry employment shares.

¹⁵ In Korea and Taiwan POC, which specialize in manufacturing, wage inequality is very low and has declined over the last twenty years (Fields and Yoo, 2000). The reverse is true for advanced countries which have increasingly specialized in services.

significantly higher and have increased faster over the period. The levels of the premia are at the upper range of those typically found in other advanced economies, although differences in the definition of education variables make cross-country comparisons difficult. The increase in the premia has also been very rapid. This happened despite the significant increase in the average education level of workers noted above, which implies that the increase in demand for skilled labor outpaced the increase in supply.

Table B. Education Premium Based on Human Capital Regressions, Men 1/

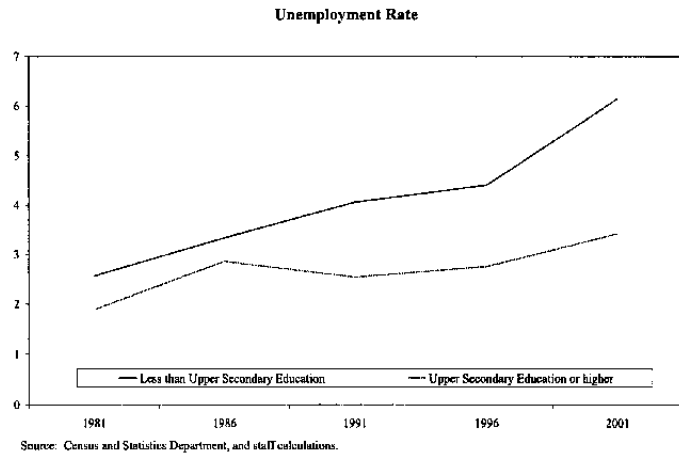
	1981	1986	1991	1996	2001
Education Level:					
Upper Secondary/Crafts	1.17	1.26	1.28	1.31	1.36
Post-Secondary/Technical Institutes	1.67	1.90	1.94	1.97	2.15
Tertiary	2.16	2.58	2.87	2.84	3.02

1/ The premia are relative to lower secondary education (exponent of the OLS coefficients, Table 7).

Change in relative wages versus change in unemployment

20. The low level of unemployment, sustained despite significant demand shifts favoring skilled labor, is evidence of the flexibility of Hong Kong SAR's labor market.

Until the 1998 recession, unemployment was very low for both skilled and unskilled workers.¹⁶ It is often argued that labor market rigidities in Europe have constrained relative wage changes, and adjustment to structural shifts has taken place through higher unemployment for the unskilled¹⁷. In the U.S. and U.K., which have relatively flexible labor markets, the adjustment has been accomplished mostly through a change in relative wages and less so through



differential unemployment rates. Hong Kong SAR's labor market is considered highly flexible - there are no minimum wages, no unemployment insurance, less than two percent of the labor force is unionized, income taxes are low, and labor legislation is very limited.

¹⁶ Peng, Wensheng, Cheung, Lillian, and Kelvin Fan, 2001, "Sources of Unemployment: Recent Developments and Prospects," Quarterly Bulletin 11/2001 (Hong Kong SAR: Hong Kong Monetary Authority), pp. 33-48.

¹⁷ See Prasad (2000) for a review of the literature and a case-study of the German labor market.

Therefore, one would expect adjustments to structural changes to take place mostly through changes in relative wages. This seems to have been largely the case prior to the Asian crisis.¹⁸

D. Policy Implications

21. **The rise in income inequality has attracted increased attention from the public and policymakers in Hong Kong SAR.** The above analysis has highlighted the role of structural changes in raising income inequality. To a large extent, the increase in inequality over the 1981-2001 period has been a byproduct of an efficient and dynamic economy. Fast growth has led to better standards of living for all income groups, even though relative wages have changed. Nonetheless, rising income disparity and especially the possibility of rising poverty are undesirable from a social perspective. More worrisome, the continuous rise in the price of skilled labor may signal deficiencies in the education system which prevent the supply of skilled labor from catching up with the rise in demand.¹⁹ This not only has negative distributional consequences, but may also reduce economic growth.

Current Policies

22. **Traditionally, the Hong Kong SAR authorities have emphasized policies that support economic efficiency and long-term growth, taking into account the structure of the economy.** Hong Kong SAR has a very open economy, highly dependent on international trade in goods and services. It maintains a rules-based economic policy framework, including a currency board, which has served it well in its role as an intermediating economy and a financial center. In this framework, flexible prices and a well-functioning labor market are crucial to facilitate adjustment to shocks and ensure sustained economic growth. The authorities have also made efforts to avoid excessive growth of public expenditure to avoid introducing distortions in the economy and maintain macroeconomic balance. They have refrained from regulatory and redistributive policies that distort the labor market, such as minimum wages, that could reduce the flexibility of the economy and its long-run growth potential.

23. **Policies to improve economic efficiency have been supplemented by measures to support the most needy.** Targeted support to the poor is channeled through the social security system. Lower income groups also benefit from public housing, subsidized health

¹⁸ In the recent protracted downturn, which was accompanied by significant deflation, unemployment seems to have increased disproportionately among the low-skilled. This could either be due to short term frictions in the labor market, or signal partial downward rigidity in nominal wages which delays adjustment through the price of labor.

¹⁹ Baraka (1999) attributes the fall in relative skill prices in Taiwan over the last two decades to a rapid increase in the proportion of workers with higher education.

care, and free education. The rise in unemployment in recent years also prompted increases in the budget for training and job matching programs.

24. **The social security system in Hong Kong SAR is strictly means-tested.** Social spending as a share of government expenditure is smaller than in most other advanced economies, although the number of cases and amount of spending have been rising rapidly in recent years. The Comprehensive Social Security Assistance (CSSA) Scheme is a means-tested, non-contributory system which provides assistance for the elderly, disabled, unemployed, and the very poor. About three quarters of CSSA expenditures went to elderly people in 2000. Low-earned-income recipients accounted for only 3.7 percent of all cases in 2001, although their share has been increasing. Only 14 percent of all unemployed received

Table C. Comprehensive Social Security Assistance Recipients by Category

	Unemployed		Low Earned Income		Single Parents		Total	
	(thousand)	Percent of All Unemployed	Percent of All CSSA cases	(thousand)	Percent of All CSSA cases	(thousand)	Percent of Total CSSA cases	
1997	16.3	23.4	9.0	3.9	2.1	15.3	8.4	19.5
1998	26.2	14.9	12.0	6.4	2.9	20.9	9.6	24.5
1999	30.2	14.1	12.9	7.8	3.4	26.1	11.2	27.5
2000	23.4	14.0	10.4	8.5	3.7	25.4	11.3	25.4
2001	25.7	13.9	10.9	8.7	3.7	27.5	11.7	26.3

Source: CSSA, Hong Kong SAR. The numbers are as of September of each year.

support from the CSSA, since the system is strictly means-tested and does not provide unemployment insurance. Limited social benefits are generally viewed as a part of an implicit social contract, according to which the government provides a low-tax environment to limit distortions in the labor market and increase incentives to work. Tax exemptions are very generous, and only about 40 percent of all employees are subject to income tax.

25. **Assistance to the lower-income groups is also provided through subsidized public housing, education, and health care.** Although very few people meet the stringent means-tested criteria for direct welfare payments, a large share of the population effectively receives transfers from the government. The first nine years of education are free and compulsory, and higher education is also subsidized in the form of loans and grants. About 50 percent of all households live in government-provided or subsidized housing at costs much below market. Health care is heavily subsidized by the government and available at nominal cost. If these implicit transfers are taken into account, income distribution could be more even.

Looking Forward

26. **The analysis in this chapter suggests that the most effective policy for addressing growing income inequality in Hong Kong SAR is to increase the skill levels of the labor force.** Structural changes in the last twenty years have led to growing demand for skilled labor and faster obsolescence of skills. The empirical analysis shows that people with higher education enjoy large and rising earnings premia over those with primary and lower secondary education. Higher education also enhances the returns to other individual skills. An increase in the education level of the labor force, by itself, may not make the distribution of income more equal, but it will increase the equality of opportunity and contribute to

sustainable economic growth, which historically has led to improvement of the living standards even for the poorest.

27. **Continuing economic integration with the Mainland will likely result in a further increase in skill premia as Hong Kong SAR undergoes further structural shift into higher-end services.** According to government projections (see Table 5 in Chapter I), job growth in the next decade will be fastest in financing, insurance, and business services, which have the highest concentration of high-skilled employment. The Hong Kong SAR manpower survey predicts that a shortage of people with higher education will emerge, while unemployment among those with secondary education or less may increase further.

28. **Therefore, the emphasis of policies should continue to be on upgrading the quality of education.** Education spending as a share of GDP has been low in Hong Kong SAR relative to most OECD countries, although it has increased in recent years.²⁰ The government has intensified efforts to increase enrollment in post-secondary education, as well as to improve the quality of the education. Adapting immigration policy to allow the entry of more high-skilled workers could also be used to help alleviate their shortage.²¹ As the supply of skilled labor increases relative to demand, its relative price could decline, thus bringing greater social equality.

Table D. Distribution of the labor force by level of educational attainment (1996)

	Below Upper Secondary	Upper Secondary	Non-university Tertiary	University Tertiary
Hong Kong SAR 1/	46	34	6	14
Canada	18	29	33	20
Korea	38	41	0	21
United Kingdom	19	57	10	15
United States	11	52	9	28

1/ Data for Hong Kong SAR are for employed men

Source: OECD Education Database, Hong Kong Census

29. **Retraining programs could be introduced to help those already in the labor force acquire new skills.** The Hong Kong SAR government is already experimenting with such programs for the unemployed. The programs could be expanded, for example, by giving employers incentives to provide continuing education for their workers. To have long-term success, retraining programs should be geared more towards the needs of the expanding sectors (e.g. provision of basic computer skills). The experience of other advanced economies suggest that such programs are more efficient if run by the private sector (OECD, Employment Outlook, June 1998).

²⁰ See Lui, H.K. (1997).

²¹ Lam, K. and Liu, P. (1998) discuss the effect of immigrants on income distribution.

Data Appendix

30. The data set used in this paper is constructed from a one percent sample of individuals and households from the Hong Kong SAR Population and by-Population Censuses conducted in 1981, 1986, 1991, 1996, and 2001. The data includes monthly earnings, industry sector of employment, occupation, and educational, demographic, and household characteristics for every individual.

31. The wage variable examined is real monthly earnings from main employment (the composite consumer price index, 1996=100, is used as the price deflator). The analysis is restricted to employed people, between 18 and 65 years of age. Hours worked are not reported and part-time workers are included in the sample. In addition, the data is top-coded at different real incomes for the different years. To adjust partially for these problems and to exclude outliers, individuals in the lowest 1.5 percent and the top 0.5 percent of the wage distribution have been dropped from the sample for the purpose of the analysis. An approximation of the upper tail of the distribution by fitting Pareto distribution was also attempted – it only makes a difference for the size of the aggregate inequality indexes, and not for the rest of the analysis.

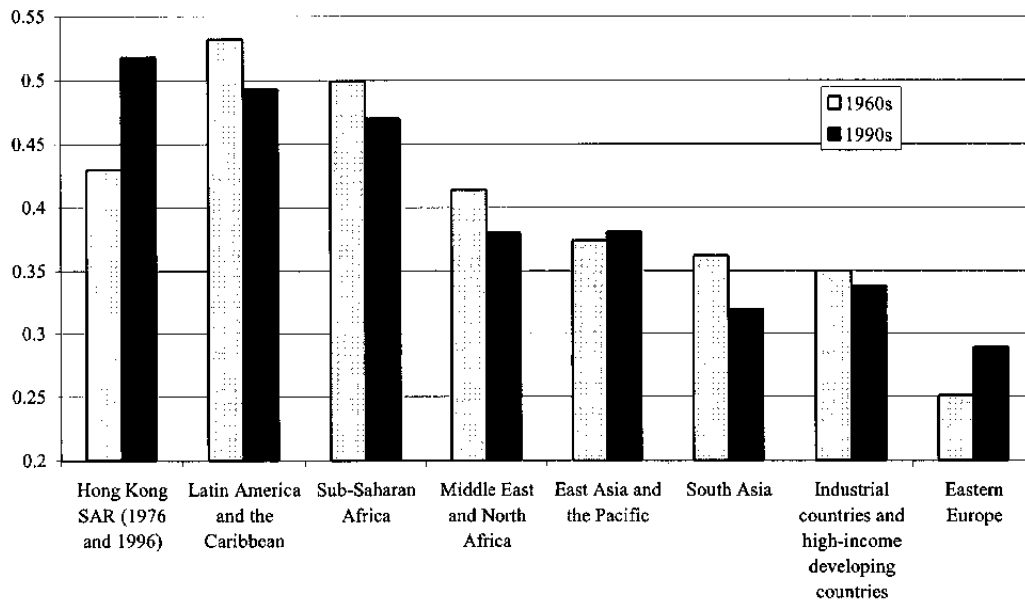
32. The Census reports level of education attained. Five education groups were constructed based on this variable, and the approximate years of education corresponding to each level were computed. Approximate years of potential experience is also estimated based on age and years of education.

References

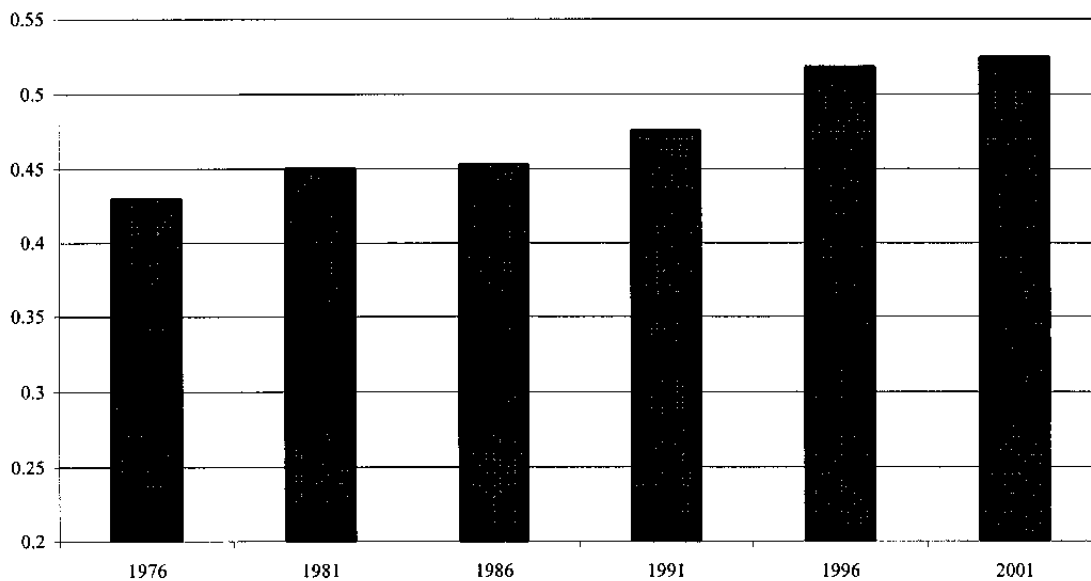
- Alesina, A. and D. Rodrik, 1994, "Distributive Politics and Economic Growth", *Quarterly Journal of Economics*, v109: 465-489.
- Acemoglu, D. (2001), "Patterns of Skill Premia", MIT mimeo.
- Baraka, J. (1999), "Returns to Education in Taiwan: A Cross-Sectional and Cohort Analysis", Princeton University mimeo.
- Berman, E., Bound, J. and Machin, S. (1998), "Implications of Skill-Biased Technological Change: International Evidence", *Quarterly Journal of Economics*, v113, no. 4
- Fields, G. and Yoo, G. (2000), "Falling Labor Income Inequality in Korea", *Review of Income and Wealth*, v. 46, n2.
- Freeman, R. and Katz, L. (1994), "Rising Wage Inequality: The United States versus Other Advanced Countries", in R. Freeman (ed.), *Working Under Different Rules*, New York, Russell Sage Foundation.
- Peng, Wensheng, Cheung, Lillian, and Kelvin Fan, 2001, "Sources of Unemployment: Recent Developments and Prospects," *Quarterly Bulletin* 11/2001 (Hong Kong SAR: Hong Kong Monetary Authority), pp. 33-48.
- Lam, K and Liu, P. (2001), "Immigration and the Economy of Hong Kong", Hong Kong: City University of Hong Kong Press.
- Liu, H.K. (1997), "Income Inequality and Economic Development", Hong Kong: City University of Hong Kong Press.
- Prasad, E. (2000), "The Unbearable Stability of the German Wage Structure: Evidence and Interpretation", IMF WP/00/22.
- Prasad, E. (2002), "Wage Inequality in the United Kingdom, 1975-99", IMF WP/02/42.
- Wolff, E. (2000), "Trade and Inequality: A Review of the Literature", NYU mimeo.

Chart II.1. Gini Coefficients for Household Income

Average Gini Coefficients for Selected Regions in the World

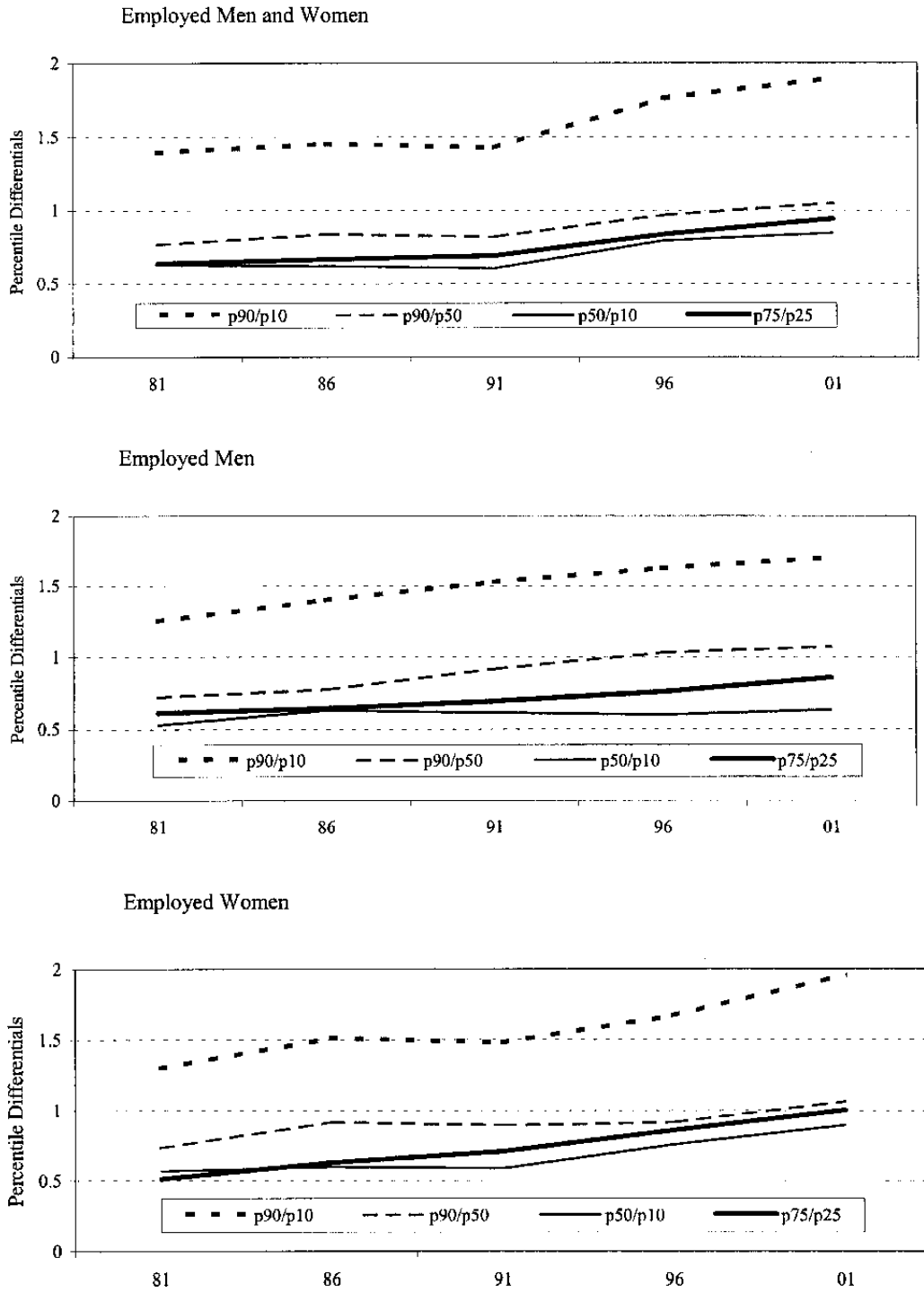


Hong Kong SAR's Gini Coefficients: 1971-2001



Sources: Deininger, K. and L. Squire (1996), "A New Data Set Measuring Income Inequality", The World Bank Economic Review 10: pp. 565-591; Census and Statistics Department, Hong Kong SAR. The Gini coefficient for Hong Kong SAR is estimated for unadjusted household income.

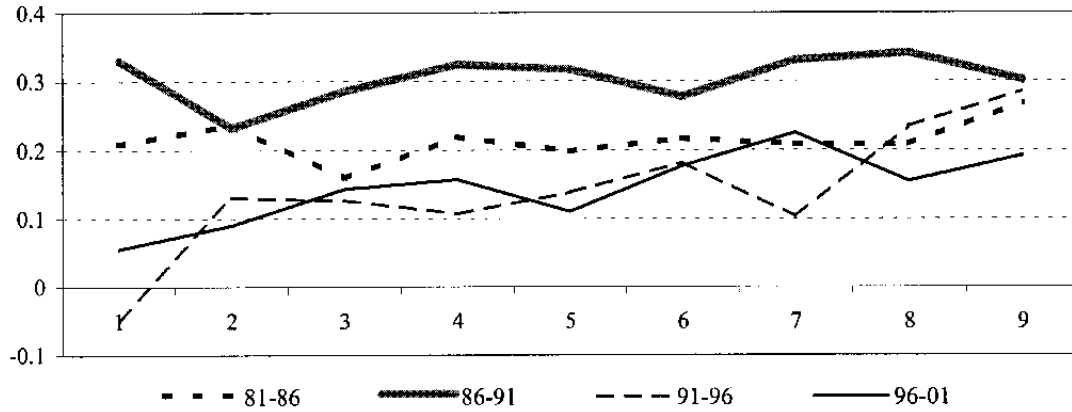
Chart II.2. Hong Kong SAR: Percentile Differentials for Log Wages, 1981-2001



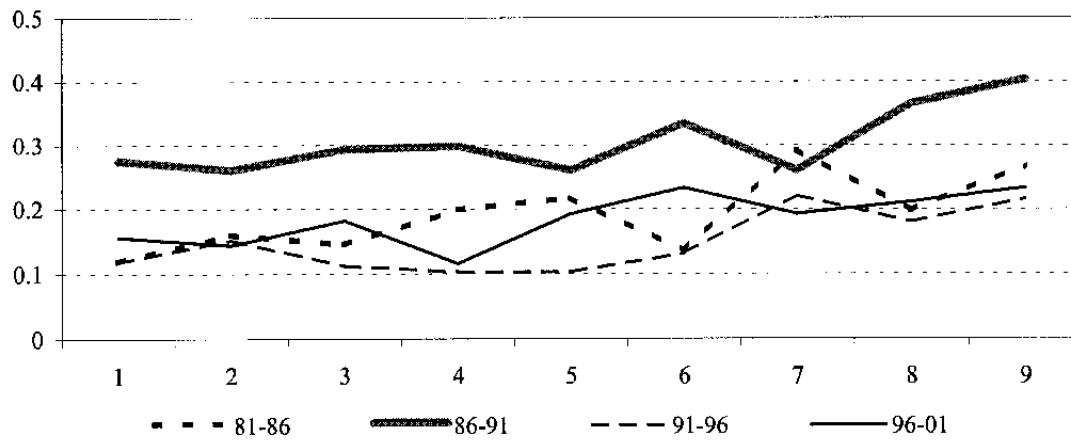
Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Chart II.3. Hong Hong SAR: Real Log Wage Growth by Percentile, 1981-2001

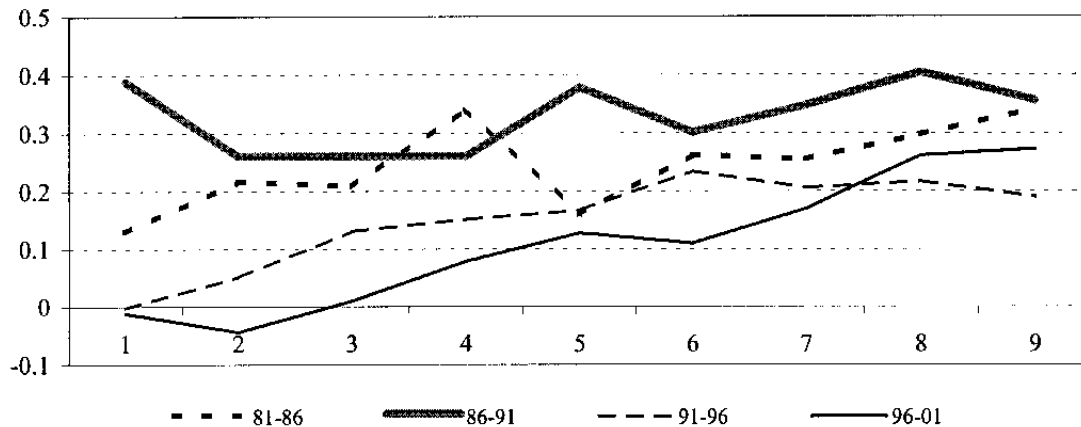
Real Wage Growth by Percentile, Men and Women



Real Wage Growth by Percentile, Employed Men

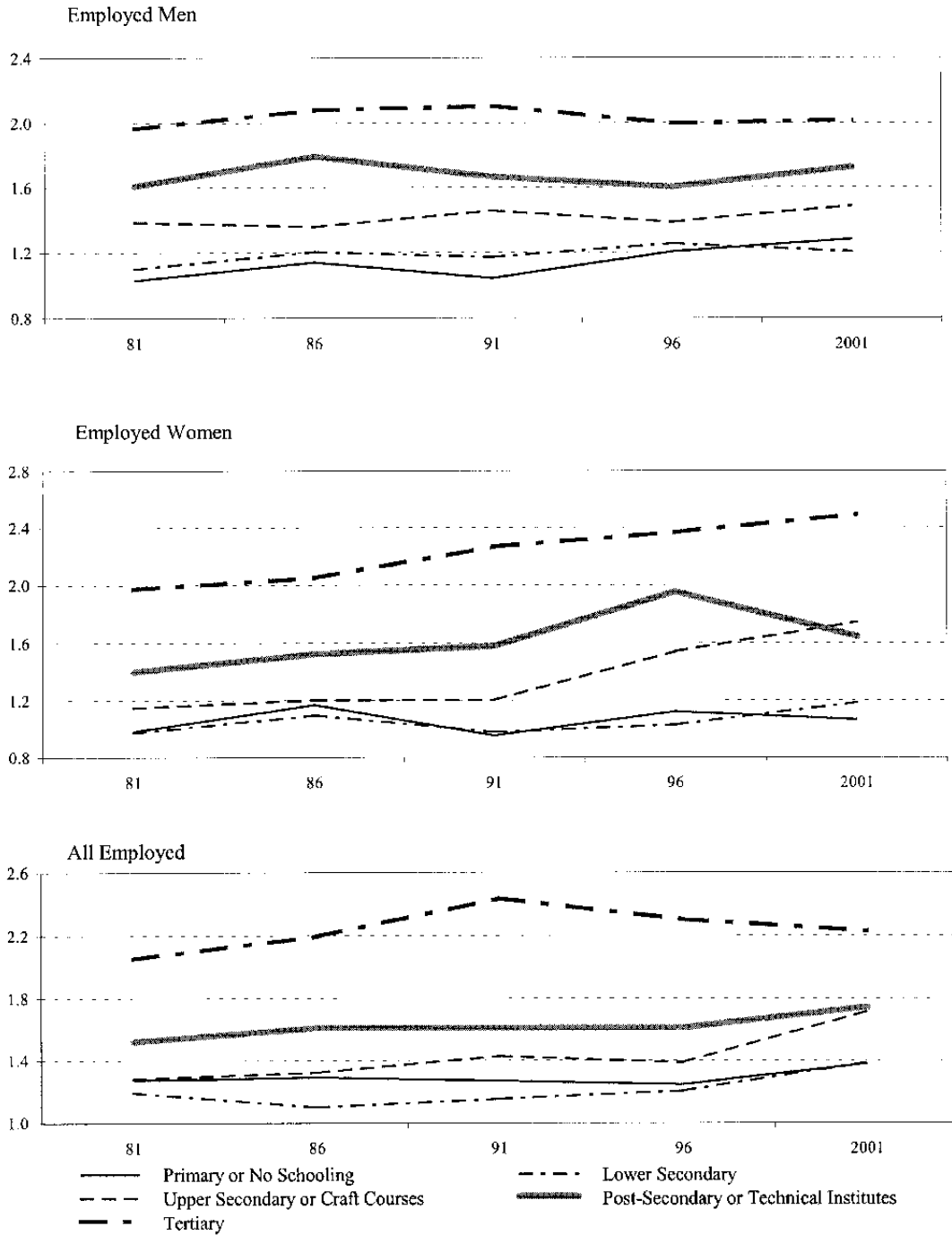


Real Wage Growth by Percentile, Employed Women



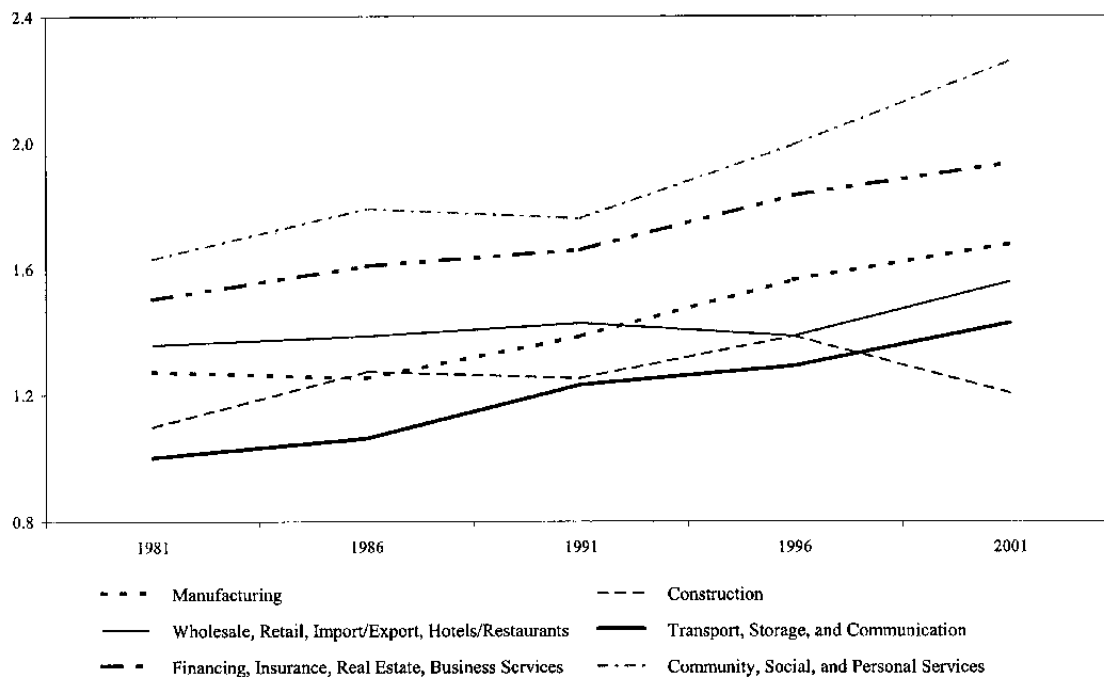
Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Chart II.4. 90/10 Percentile Differential by Educational Attainment: 1981-2001



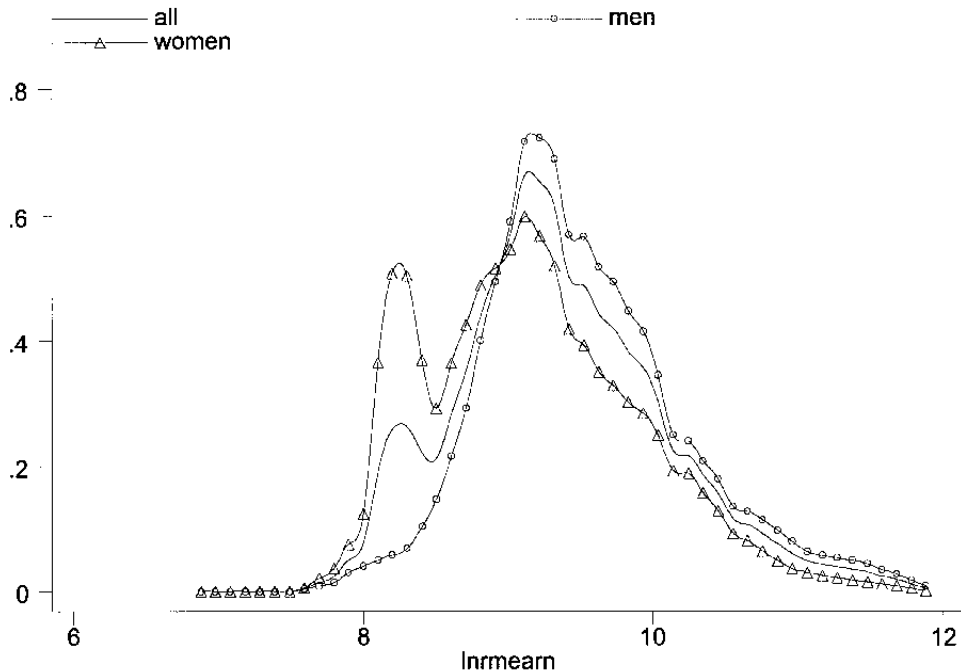
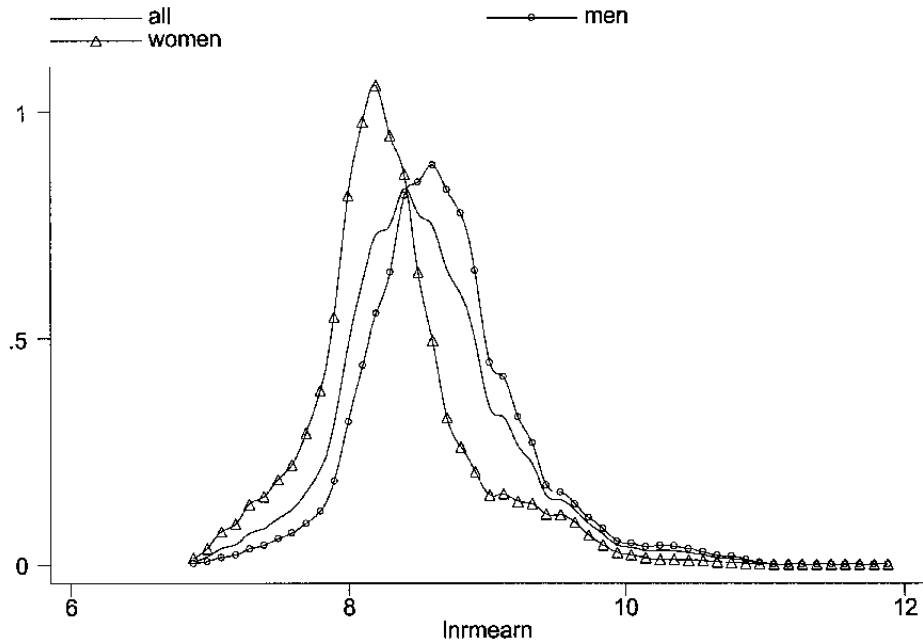
Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Chart II.5. 90/10 Percentile Differential by Industry



Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Chart II.6. Kernel Density Estimates of Log Wages, 1981 and 2001



Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Note: An Epanechnikov kernel with a bandwidth of 0.1 was used for the estimation.

Table II.1. Summary Wage Statistics for Employed Men and Women, 1981-2001

	1981	1986	1991	1996	2001	Change, 1981-2001
Number of observations	19860	23115	23417	28646	30712	
Share of Men	0.66	0.63	0.63	0.60	0.55	
Share of Women	0.34	0.37	0.37	0.40	0.45	
Log Real Wage Statistics:						
Median	8.50	8.70	9.02	9.16	9.27	0.76
<i>Men</i>	8.63	8.85	9.11	9.21	9.40	0.77
<i>Women</i>	8.28	8.44	8.82	8.99	9.11	0.83
Gender Gap	0.35	0.41	0.29	0.22	0.29	
Mean	8.56	8.77	9.08	9.23	9.36	0.81
<i>Men</i>	8.69	8.88	9.19	9.35	9.52	0.84
<i>Women</i>	8.31	8.56	8.89	9.05	9.16	0.86
Standard Deviation	0.58	0.62	0.64	0.68	0.73	0.15
<i>Men</i>	0.55	0.60	0.64	0.67	0.69	0.14
<i>Women</i>	0.55	0.60	0.59	0.66	0.73	0.19
Coefficient of Variation*10	0.677	0.707	0.702	0.735	0.782	0.10
<i>Men</i>	0.636	0.676	0.693	0.713	0.724	0.09
<i>Women</i>	0.657	0.701	0.667	0.725	0.801	0.14
Gini Coefficient for Real Wages	0.34	0.36	0.38	0.41	0.43	
<i>Men</i>	0.33	0.36	0.38	0.4	0.41	
<i>Women</i>	0.32	0.35	0.36	0.39	0.43	

Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Table II. 2. Employment and Earnings by Industry (Male and Female)

Year	81	86	91	96	01	Change, 81-01
	<u>Share in Total Employment</u>					
Utilities, Agriculture	2.2	1.9	1.4	1.0	0.8	-1.4
Manufacturing	40.3	35.8	28.0	18.8	12.2	-28.1
Construction	8.9	6.3	6.9	7.9	7.5	-1.5
Wholesale, Retail, Hotels/Restaurants	15.6	18.3	17.2	18.7	18.4	2.8
Import/Export	3.3	4.1	4.4	6.2	7.5	4.3
Transport, Storage, and Communication	8.4	8.0	10.2	10.9	11.5	3.0
Financing, Insurance, Real Estate, Business Services	5.4	6.5	11.3	13.7	16.4	11.0
Public Admin., Education, Health, Social Services	11.5	14.5	14.4	15.1	16.8	5.4
Personal Services	4.3	4.5	6.2	7.5	8.8	4.5
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	
	<u>Median Log Wage</u>					
Utilities, Agriculture	8.50	8.85	9.11	9.32	9.48	0.98
Manufacturing	8.28	8.54	8.93	9.10	9.32	1.03
Construction	8.71	8.78	9.11	9.16	9.22	0.51
Wholesale, Retail, Hotels/Restaurants	8.50	8.70	8.93	8.99	9.11	0.61
Import/Export	8.66	8.85	9.19	9.35	9.44	0.78
Transport, Storage, and Communication	8.79	8.85	9.11	9.21	9.27	0.48
Financing, Insurance, Real Estate, Business Services	8.63	8.91	9.26	9.39	9.56	0.93
Public Admin., Education, Health, Social Services	8.79	9.03	9.30	9.44	9.65	0.86
Personal Services	8.28	8.39	8.49	8.23	8.25	-0.03
	<u>Mean Log Wage</u>					
Utilities, Agriculture	8.59	8.73	9.16	9.38	9.54	0.95
Manufacturing	8.36	8.56	8.92	9.16	9.41	1.05
Construction	8.70	8.76	9.08	9.17	9.32	0.61
Wholesale, Retail, Hotels/Restaurants	8.57	8.75	9.01	9.07	9.16	0.59
Import/Export	8.80	9.03	9.30	9.44	9.52	0.72
Transport, Storage, and Communication	8.75	8.90	9.12	9.23	9.38	0.63
Financing, Insurance, Real Estate, Business Services	8.76	9.04	9.38	9.50	9.64	0.88
Public Admin., Education, Health, Social Services	8.89	9.13	9.33	9.53	9.67	0.79
Personal Services	8.31	8.44	8.64	8.54	8.51	0.19
	<u>Standard Deviation of Log Wages (multiplied by 100)</u>					
Utilities, Agriculture	69.7	74.8	68.9	71.1	77.3	7.6
Manufacturing	51.0	55.3	58.4	63.3	65.4	14.4
Construction	52.0	58.8	57.8	58.1	55.1	3.1
Wholesale, Retail, Hotels/Restaurants	55.3	53.7	55.8	56.8	58.7	3.3
Import/Export	65.7	63.8	61.9	64.3	65.1	-0.6
Transport, Storage, and Communication	45.9	48.2	50.6	55.6	59.3	13.4
Financing, Insurance, Real Estate, Business Services	59.8	63.0	69.4	73.2	74.3	14.5
Public Admin., Education, Health, Social Services	64.9	68.5	72.2	69.3	78.4	13.5
Personal Services	45.3	49.6	48.8	49.4	50.7	5.3

Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Table II.3. Employment and Log Wages by Education (Employed Men and Women)

Year	81	86	91	96	01	Change 81-01
Average Years of Education						
All Employed	7.5	8.5	9.3	10.1	10.8	3.2
Men	7.7	8.5	9.1	9.9	10.6	2.9
Women	7.3	8.5	9.5	10.5	11.0	3.7
Share in Total Employment						
Primary and No Formal	47	36	27	20	16	-30.2
Lower Secondary	19	19	20	20	20	0.9
Upper Secondary	27	33	38	40	42	14.9
Post-Secondary	4	6	7	6	5	1.5
Tertiary	4	6	7	13	17	13.0
Median Log Wage						
Primary and No Formal	8.4	8.5	8.8	8.9	9.0	0.60
Lower Secondary	8.5	8.7	8.9	9.0	9.1	0.61
Upper Secondary	8.6	8.8	9.1	9.2	9.3	0.70
Post-Secondary	9.1	9.2	9.5	9.5	9.8	0.67
Tertiary	9.4	9.6	9.8	9.9	10.0	0.54
Mean Log Wage						
Primary and No Formal	8.4	8.5	8.8	8.9	9.0	0.58
Lower Secondary	8.5	8.7	9.0	9.0	9.1	0.61
Upper Secondary	8.7	8.8	9.1	9.2	9.3	0.66
Post-Secondary	9.1	9.2	9.5	9.6	9.8	0.69
Tertiary	9.4	9.6	9.8	9.9	10.0	0.58
Standard Deviation of Log Wages (multiplied by 100)						
Primary and No Formal	50.3	52.1	49.7	52.2	54.8	4.5
Lower Secondary	49.2	48.7	49.7	50.9	53.7	4.5
Upper Secondary	55.3	55.9	56.5	58.6	64.5	9.2
Post-Secondary	62.3	66.6	64.8	66.6	71.0	8.7
Tertiary	73.9	80.1	85.2	84.5	85.0	11.0

Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Table II.4. Education Attainment and Education Wage Premium by Industry

	81	86	91	96	01	Change, 81-01
<u>Average Years of Education by Industry</u>						
Utilities, Agriculture	5.0	6.6	7.9	8.9	9.3	4.3
Manufacturing	7.0	7.7	8.4	9.5	10.4	3.4
Construction	6.6	7.6	7.9	8.4	8.6	1.9
Wholesale, Retail, Hotels/Restaurants	6.7	7.6	8.4	9.0	9.4	2.6
Import/Export	10.7	11.2	11.4	11.8	11.9	1.2
Transport, Storage, and Communication	7.8	8.3	8.9	9.5	10.1	2.3
Financing, Insurance, Real Estate, Business Services	11.1	11.3	11.5	11.9	12.7	1.6
Public Admin., Education, Health, Social Services	9.8	10.4	10.7	11.4	11.9	2.1
Personal Services	5.8	8.3	9.5	10.3	10.8	5.0
<u>Share of Worker with More than 9 Years Education by Industry</u>						
Utilities, Agriculture	18	32	38	45	52	33.1
Manufacturing	24	33	40	52	60	35.5
Construction	22	32	31	35	35	13.0
Wholesale, Retail, Hotels/Restaurants	27	36	41	45	49	21.6
Import/Export	78	84	85	86	81	3.8
Transport, Storage, and Communication	37	42	48	52	56	19.3
Financing, Insurance, Real Estate, Business Services	84	84	83	83	84	0.2
Public Admin., Education, Health, Social Services	62	67	72	74	73	11.2
Personal Services	21	45	55	63	67	46.5
<u>Skilled Wage Premium by Industry 1/</u>						
Utilities, Agriculture	3.6	7.2	8.9	8.1	11.8	8.2
Manufacturing	4.3	5.3	6.9	9.0	9.2	4.9
Construction	5.6	7.1	7.2	8.0	6.2	0.6
Wholesale, Retail, Hotels/Restaurants	4.7	5.0	6.0	6.8	7.2	2.5
Import/Export	8.9	7.8	9.2	9.2	9.9	0.9
Transport, Storage, and Communication	4.4	6.4	6.3	8.7	9.1	4.8
Financing, Insurance, Real Estate, Business Services	10.4	11.8	12.7	13.1	12.7	2.3
Public Admin., Education, Health, Social Services	9.0	10.8	12.2	11.6	12.8	3.8
Personal Services	2.5	1.6	1.9	0.7	-0.2	-2.7

Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

1/ The estimated skilled wage premium is the coefficient on years of education in a regression of log wages on years of education, gender, experience, experience squared, and recent immigrant status.

Table II.5. Measures of Inequality, Percentile Differentials: All Employed

	1981	1986	1991	1996	2001	Change, 81-01
Wage Inequality						
90/10	1.40	1.46	1.43	1.76	1.90	0.50
90/50	0.77	0.84	0.82	0.97	1.05	0.28
50/10	0.63	0.62	0.61	0.79	0.85	0.22
Residual Wage Inequality 1/						
90/10	1.13	1.21	1.24	1.35	1.43	0.31
90/50	0.56	0.58	0.61	0.67	0.68	0.13
50/10	0.57	0.63	0.63	0.69	0.75	0.18

Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

1/ Wage residuals are from regressions of log wages on dummies for education, experience, experience squared, marital status, and gender.

Table II.6. Effects of Sectoral Shifts on Changes in Wage Inequality
(Variance Decomposition) 1/

		Total Change in Variance	Within Group		Between Group	
			Change in Variance	Composition Effect	Change in Variance	Composition Effect
Education	1981-1986	4.90	1.50	1.30	0.90	1.10
	1986-1991	2.30	-0.10	1.40	0.50	0.50
	1991-1996	5.30	1.90	2.60	-0.60	1.40
	1996-2001	7.60	4.50	1.50	1.00	0.50
Industry	1981-1986	4.90	3.40	0.50	0.50	0.50
	1986-1991	2.30	2.90	0.50	-1.70	0.50
	1991-1996	5.30	2.80	-0.20	1.60	1.10
	1996-2001	7.60	2.70	0.30	3.10	1.50

Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

1/ The change in variance is multiplied by 100.

Table II. 7. Human Capital Equations, Employed Men

<i>Independent Variable:</i> <i>Log of Monthly Wages</i>	81	86	91	96	2001
Education Level: 1/					
Primary	-0.116 (-11.13)	-0.130 (-12.19)	-0.144 (-12.61)	-0.122 (-10.46)	-0.108 (-8.53)
Upper Secondary/Crafts	0.158 (12.99)	0.233 (21.70)	0.248 (22.33)	0.271 (26.11)	0.306 (28.84)
Post-Secondary/Technical Institutions	0.516 (18.50)	0.640 (28.21)	0.664 (32.49)	0.677 (34.49)	0.765 (32.54)
Tertiary	0.771 (24.01)	0.948 (35.32)	1.053 (44.05)	1.044 (60.82)	1.107 (67.52)
Years of Potential Experience	0.03 (22.12)	0.05 (28.74)	0.05 (29.22)	0.05 (34.92)	0.06 (40.25)
Years Experience ² /100	-0.07 (-24.11)	-0.09 (-29.85)	-0.10 (-32.21)	-0.10 (-35.55)	-0.12 (-38.61)
Married	0.25 (23.30)	0.21 (19.50)	0.22 (20.14)	0.15 (13.85)	0.19 (16.69)
Recent Immigrant	-0.14 (-8.37)	0.08 (2.86)	0.20 (5.96)	0.01 (0.31)	0.09 (2.57)
Constant	8.24 (567.41)	8.16 (268.13)	8.27 (225.21)	8.50 (277.66)	8.39 (233.02)
Sample Size	13049	14663	14707	17237	17033
R-sqr	0.26	0.31	0.35	0.35	0.37

Source: Data provided by Hong Kong SAR Census; and IMF staff estimates.

Note: t-statistics are in parenthesis (based on robust standard errors).

1/ The omitted variable is lower secondary education

Summary: Returns to Education and Experience for Men

	1981	1986	1991	1996	2001
	Education Premia 1/				
Education Level:					
Upper Secondary/Crafts	1.17	1.26	1.28	1.31	1.36
Post-Secondary/Technical Institutes	1.67	1.90	1.94	1.97	2.15
Tertiary	2.16	2.58	2.87	2.84	3.02
	Returns to Experience 2/				
Experience Level:					
5 years	2.7	3.7	3.7	4.2	4.9
15 years	1.2	1.8	1.8	2.1	2.6
25 years	-0.3	0.0	-0.1	0.1	0.2

1/ Note: The premia are relative to lower secondary education (exponent of the OLS coefficients).

2/ Returns to experience are evaluated at particular experience levels.

III. DEFLATION IN HONG KONG SAR¹

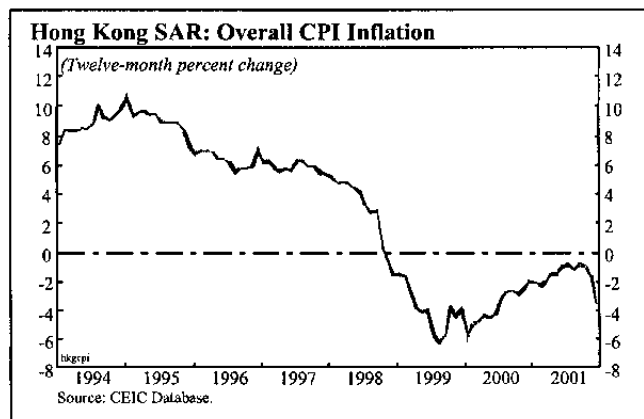
A. Introduction

1. **Protracted deflation in Hong Kong SAR has raised several questions.** In particular, what have been the causes of deflation, and why has it been so persistent?
2. **Both cyclical and structural factors have been cited as possible causes of deflation.** According to the cyclical view, prices have had to decline in response to shocks, to restore competitiveness under the linked exchange rate system. The structural view sees deflation mainly as a process of narrowing price differentials between Hong Kong SAR and the Mainland of China, due to growing economic integration. Persistence of inflation could be due to its structural nature, or reflect a drawn-out cyclical adjustment process.
3. **This chapter examines whether deflation has been caused mainly by cyclical or structural factors, and why it has persisted for so long.** The main findings are:
 - **Although structural factors have played a role, deflation has been mainly the result of a process of cyclical adjustment to shocks.** The analysis attributes most of the inflationary/deflationary process in Hong Kong SAR to cyclical factors, and only a small part to price equalization as a result of growing economic integration with the Mainland of China.
 - **The persistence of deflation reflects the way deflation has propagated itself into the real economy, and the fact that the economy has been hit by successive shocks.** Price adjustment has been amplified and protracted by the importance of balance-sheet and wealth effects and the fact that the Hong Kong economy has suffered two subsequent cyclical downturns.
4. **The plan of this chapter is as follows.** Section B reviews recent price developments. Section C examines whether the cause of deflation is primarily cyclical or structural. Section D addresses the question of why deflation has persisted for so long. Section E summarizes and discusses any policy implications. Econometric evidence and technical details are presented in an Annex.

¹ Prepared by Philip Schellekens (ext. 39071).

B. Price Developments

5. **Deflation in Hong Kong SAR has lasted for more than three years.** Between September 1998 and January 2002, the Hong Kong price level has fallen by a cumulative 12 percent, bringing consumer prices back to their level of late 1995.



6. **Deflation has mainly reflected a sharp fall in housing costs after the property price bubble of the mid-1990s collapsed (Table 1 and Chart 1).**

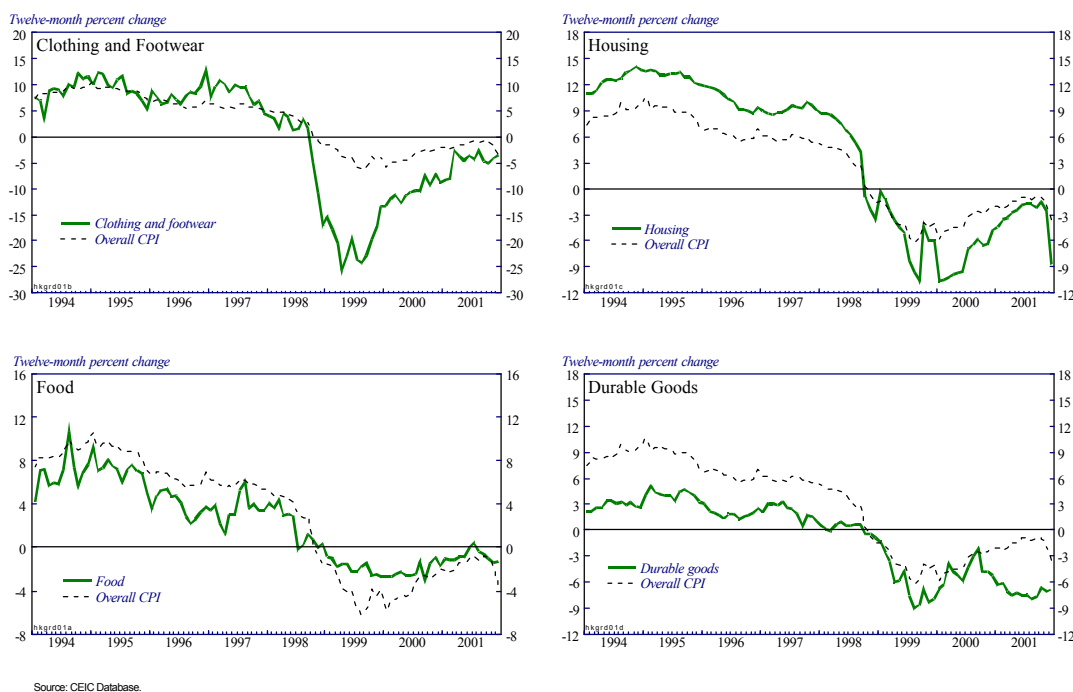
The bubble had been driven by rapid productivity and wage growth in the tradable sector that spilled over into the non-tradable sector, a process that was exacerbated by speculative motives (Kalra and others, 2000). After a sharp initial correction, property prices have continued to fall, albeit on a slowing pace, resulting in a cumulative decline of about 55 percent since the peak in late 1997. The consequent decline in rentals – about 20 percent since the mid-1998 peak – has been responsible for half of the deflation in the overall CPI. Other components of the CPI that have declined were food, clothing and footwear, and durable goods, together accounting for about one-third of deflation.

Table 1. Major Contributors to Deflation

	Cumulative change Sep 1998-Jan 2002 (percent)	Weight in overall CPI (percent)	Contribution to overall deflation (percentage pts)	Contribution to overall deflation (share)
<i>Five most important contributors:</i>				
Housing	-20.3	29.9	-6.1	50.5
Food	-6.1	26.7	-1.6	13.7
Clothing and Footwear	-32.9	4.1	-1.4	11.3
Durable Goods	-20.1	6.2	-1.3	10.5
Miscellaneous Services	-3.6	14.4	-0.5	4.3
<i>Memorandum Item:</i>				
All Items	-12.0	100.0	-12.0	100.0

Source: Composite CPI data from CEIC

Chart 1. Components of CPI Inflation



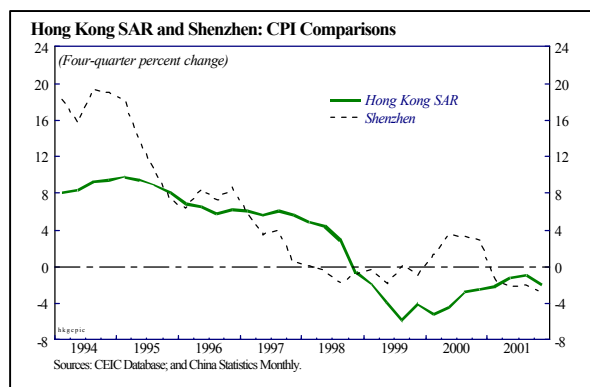
Source: CEIC Database.

C. Cyclical or Structural?

7. **This section examines the relative importance of cyclical and structural factors.** It first summarizes econometric evidence on the determinants of deflation in Hong Kong SAR, followed by a (qualitative) review of the potential channels of price equalization.

Econometric Evidence²

8. **Price data for Hong Kong SAR and neighboring Shenzhen are examined for evidence of price equalization pressures and their impact on deflation in Hong Kong SAR.**³ The main findings are as follows:



² A detailed description of the methodology and regression results is presented in the Annex.

³ In measuring the effect of price equalization pressure on the Hong Kong SAR price level, Shenzhen is chosen because of its close proximity.

- **There has been some degree of price equalization pressure.** To measure price equalization pressure, an equation is estimated that relates the gap between Hong Kong and Shenzhen prices to the gap of the previous period. Price equalization pressure is indicated by the extent to which the size of the gap is associated with a future narrowing of the gap. The estimation results suggest that:
 - *The price levels of Hong Kong SAR and Shenzhen have been converging as a result of price equalization pressure.*
 - *The major part of such pressure appears to have occurred before the collapse of the property price bubble.*

- **However, price equalization pressures explain only a minor part of deflation in Hong Kong SAR, with the major part attributable to cyclical and other factors.** An equation is estimated that relates CPI inflation in Hong Kong SAR to unemployment, the nominal effective exchange rate, credit growth (controlling for the business cycle, imported inflation, and property market developments) as well as the gap between Hong Kong and Shenzhen prices (the structural variable). The same equations are estimated for various subcomponents of the CPI. The results are as follows:
 - *Cyclical and other factors explain the major part of deflation, while the structural element appears to play only a minor role.* Variations in unemployment, credit growth, and the nominal effective exchange rate contribute 36 percent, 14 percent, and 5 percent, respectively, to the explanatory power of the equation. In contrast, the price level gap contributes only 2 percent. Similar patterns hold for the determinants of deflation in the CPI subcomponents.
 - *Structural forces do not seem to have become more prevalent in recent years.*

Channels of Price Equalization

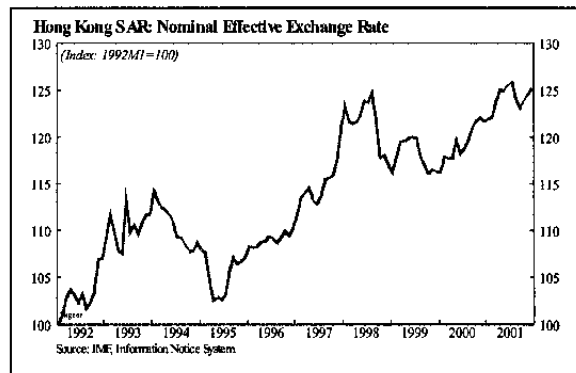
9. **To shed further light on the relative importance of structural and cyclical factors, the potential channels of price equalization are examined.** Specifically, price determination in the product, labor, and property markets are analyzed to gauge the potential role of price equalization pressures.

Product Market

10. **While growing integration with the Mainland of China facilitates price equalization in the product market, deflation in product prices could also be the result**

of strong pro-cyclicality of certain products. Cheaper food imports from the Mainland of China and the increased practice of cross-border shopping among Hong Kong residents (see Chapter 1) may have led to some downward pressure on product prices. However, it should also be noted that:

- **The demand for certain products, such as clothing and durable goods, is highly sensitive to the business cycle.** Other economies suffering a cyclical downturn but not sharing Hong Kong SAR's integration challenges (such as Singapore) have experienced a similar pattern of deflation in the prices of clothing and durable goods.
- **The current prevalence of price cuts and discounts can be explained by the strong pro-cyclicality of mark-up margins.** Competition among retailers typically intensifies during a cyclical downturn. Since mark-up margins tend to be strongly pro-cyclical, a large cyclical price response is to be expected.
- **Weak price developments in major trading partners together with the nominal effective appreciation of the Hong Kong dollar have also contributed to the weakness in product prices.** Deflation in Japan as well as the weakness of the Yen have likely had a particularly dampening effect.



Labor Market

11. **Deflation has also been attributed to price equalization pressure in the labor market.** With the demand for non-skilled labor falling as low-skilled activities migrate across the border, rising unemployment among low-skilled workers may create deflationary pressure. However:

- **While mismatch in labor skills is an important problem that needs to be addressed, it is not a convincing explanation for persistent deflation.** Downward pressure on the wages of low-skilled labor is to be expected as businesses in Hong Kong SAR continue to upgrade along the value-added chain. However, given the shortage of skilled labor, the impact on average wage costs of falling low-skilled wages may be more than offset by upward pressure on wages of high-skilled labor.
- **A similar fallacy would attribute deflation to a structural displacement of services jobs to the Mainland.** A large part of the Hong Kong services sector supports the export-oriented manufacturing base located in Guangdong, controlled by businesses registered in the Hong Kong SAR. With manufacturing in Guangdong hit

hard by the global cyclical downturn, it is not surprising that the services industries in Hong Kong SAR were affected too.

Property Market

12. **While the “structural view” attributes the retrenchment of property prices to the availability of cheaper real estate across the border, this factor is likely to have played only a limited role.** The sharp decline of property prices after 1997 reflects the puncturing of the real estate bubble, prolonged by a renewed economic downturn last year. In contrast, price equalization forces appear to have played only a minor role so far:

- **Various factors seem to limit price equalization in the residential property market.** These include, among others, commuting costs⁴ and differences in terms of legal systems, and the quality and cost of education and medical services. Survey evidence suggests that cost considerations have played only a minor role for Hong Kong residents who have decided to relocate.⁵ To the extent that there has been increased demand from Hong Kong residents for property in the Mainland, it is mostly for second homes (demand creation) rather than relocation (demand displacement). A significant gap between residential property prices in Hong Kong SAR and the neighboring area is therefore likely to remain.⁶
- **The decline of rentals in the commercial property market is unlikely to have resulted from price equalization pressure.** Although Hong Kong SAR has repeatedly listed among the most expensive cities in the world, the Hong Kong location commands a premium related to its function as an international hub. Furthermore, commercial rental costs are reportedly only a minor factor in the location decision of firms.

⁴ Travelling costs (nearly \$30 per round-trip from Futian in Shenzhen to the center of Hong Kong SAR) and time (about 95 minutes) make commuting to Hong Kong SAR relatively unattractive (CLSA Emerging Markets, 2001).

⁵ A 2001 Census and Statistics Department survey indicated that, among over 41,000 persons who had taken up residence in the Mainland, only some 700 had done so because of “lower cost of living in the Mainland”.

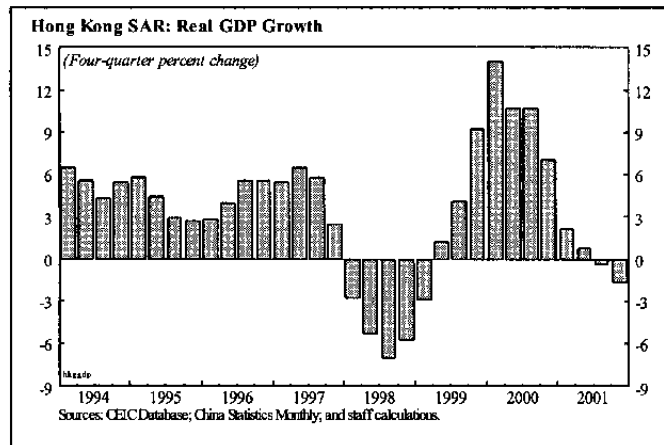
⁶ UBS Warburg (2001) report that the price differential between comparable real estate in Hong Kong SAR and Shenzhen is about 30 percent, and likely to remain as long as the differences noted above remain.

D. Persistence of Deflation

13. **Even if deflation is largely cyclical, its persistence for over three years raises the question of why adjustment has taken so long.** The persistence of deflation may be explained by the fact that Hong Kong SAR suffered two successive shocks, and by the way deflation has propagated and amplified itself into the real economy.

Successive Shocks

14. **Deflation has spanned a period during which the Hong Kong economy was hit by two external shocks, causing large swings in output.** As a result of the Asian crisis, Hong Kong SAR suffered a sharp decline in output in 1998. This was followed by a strong – but brief – recovery in 1999-00, during which deflation also started to decelerate. The renewed external downturn reduced growth to almost zero in 2001, with deflation re-accelerating as well.



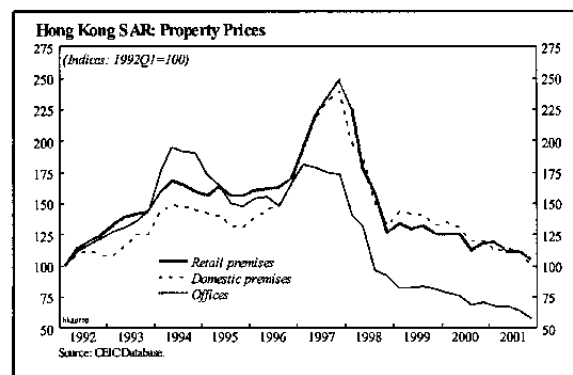
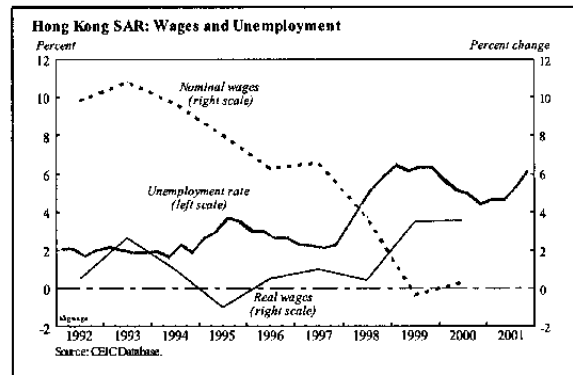
Propagation and Amplification

15. **The two external demand shocks of recent years have propagated themselves into the real economy through a drawn-out adjustment process in product and factor markets.** Given the linked exchange rate system, the shocks had to be absorbed through price adjustment in product and factor markets.

- **In product markets, price adjustment has been relatively fast.** As noted earlier, various components of the CPI underwent large and rapid adjustment (see Table 1).⁷

⁷ Zitzewitz (2000) shows that, compared to OECD economies, price adjustment has historically been much faster in Hong Kong SAR. Mark-up margins are significantly more pro-cyclical in services, while only slightly more counter-cyclical in manufacturing. The shift to a service-based economy has therefore made economy-wide margins more pro-cyclical, contributing to a rate of price adjustment that is faster than in the OECD.

- **In labor markets, nominal wages have adjusted more slowly than prices.** Despite increased unemployment and drops in productivity, real wages have continued to grow.⁸
- **In asset markets, the shocks entailed large movements in property and stock prices.** The property market saw a large correction, with residential property prices falling by 45 percent between October 1997 and October 1998. Property prices continued to fall subsequently, albeit at a lower pace, with rentals lagging behind. The stock market suffered a correction of about 43 percent between July 1997 and January 1998, with continued volatility thereafter.



16. **Deflation in Hong Kong SAR appears to have been amplified through large balance-sheet and wealth effects of falling property and stock prices.** Balance-sheet and wealth effects are particularly relevant in Hong Kong SAR because a large amount of wealth is held in property and stocks, and bank lending is mostly secured against real estate.

- **Private consumption expenditure has slowed as a result of asset price deflation.** Peng, Cheung and Leung (2001) report that more than half of the decline in private consumption expenditure in 1998 can be explained by balance-sheet effects. Between 1997 and 2000, net housing equity in the private residential sector has dropped by more than 50 percent.

⁸ The incomplete adjustment of real wages, which has been associated with greater unemployment, is not necessarily the result of inefficiency. For example, lack of adjustment in nominal wages may be explained by the reluctance of employers to lower nominal wages because of efficiency wage arguments: as wage declines may lead to productivity declines, employers may rationally prefer to lay off employees rather than to lower wages. Also, sole consideration of wage data distorts the degree of labor market flexibility since non-wage compensation items, such as bonuses, have reportedly also declined significantly.

- **With deteriorating balance sheets limiting the capacity and willingness of firms to take on additional debt, private investment has also declined.** As banks became increasingly reluctant to provide credit under falling asset values, small- and medium-sized enterprises (SMEs), which play an important role in the Hong Kong economy, have particularly suffered (HKMA, 2000).⁹ This may reflect the fact that SMEs typically depend on collateral in securing credit. Although subdued demand became the main factor restraining loan growth in recent years (Chiu and Lai, 2001), banks have continued to remain cautious in lending to SMEs.

Other amplifiers have contributed too.

- **Precautionary savings effects have dampened consumption and investment.** Due to increased unemployment risk and the uncertain business outlook, precautionary savings effects have amplified the slowdown in consumer durable goods purchases and fixed investment. By increasing the rate of unemployment, downward nominal wage rigidity may have exacerbated this effect.
- **High real interest rates have likely delayed spending plans.** With deflationary expectations settling in, high ex-ante real interest rates have likely been a factor in the decision of households and firms to postpone consumption and investment outlays.

17. **The slowdown in spending generated through these amplifiers is likely to have made deflation more persistent.** Kiyotaki and Moore (1997) show that a one-off shock may cause a persistent decline in credit through the interaction with an amplified asset price response. Along these lines, asset price deflation (which implies overall deflation in Hong Kong SAR, given the importance of rentals in the CPI) may well last for a protracted period of time even if there is no persistence in the shock.

⁹ Survey data indicate that SMEs (defined as having less than 100 employees) contribute 43 percent of value-added in the manufacturing sector, 59 percent in the construction sector, 78 percent in the distributive and catering trades, 32 percent in the transport, storage, and communication sector, and 66 percent in the financing, insurance, real estate, and business services sector.

E. Summary and Policy Implications

18. **The long duration of deflation in Hong Kong SAR raises the question whether it reflects a prolonged process of cyclical adjustment or whether more longer-term structural forces are at work.**
19. **The staff's analysis suggests that, although structural factors have played a role, deflation has been mainly the result of a process of adjustment to cyclical shocks.** A price equation for Hong Kong SAR finds unemployment, nominal credit, and the nominal effective exchange rate as powerful determinants of deflation, while the gap between prices in Hong Kong SAR and neighboring Shenzhen has only small explanatory power. To the extent that there has been price equalization, most of it seems to have come through greater inflation in the neighboring region rather than through deflation in Hong Kong SAR.
20. **The persistence of deflation can be explained by the fact that the economy was hit by two subsequent shocks, and by the role of balance-sheet and wealth effects in amplifying these shocks.** Large balance-sheet and wealth effects from the fall of property and equity prices fed back into demand, and thus amplified and prolonged the deflationary shock. Persistence was compounded by the fact that the economy was hit by a second shock before the adjustment to the first one had been completed.
21. **What can be done to reduce the length and amplitude of future price adjustment cycles?** Given the openness of Hong Kong SAR's economy and its rules-based approach to economic policy, the scope for counter-cyclical demand management is limited. However, certain structural features can be improved upon to facilitate adjustment:
- **Given the importance of the property sector, land and housing policies play an important role in the adjustment process.** Much of the feedback into the real economy through balance-sheet and wealth effects arises from volatility in the property market. Reducing such volatility is thus important, and although monetary policy is constrained by the linked exchange rate, other available policy options (including prudential safeguards) should be used to avoid speculative bubbles. Recent changes in land policy that enhance the elasticity of land supply should also help de-amplify price volatility in the property market. Finally, the policy of providing public housing at a fixed discount (which is currently under review) may also amplify downward price pressures.
 - **Asset price cycles may be moderated by a more balanced reliance on collateral-based lending.** In a purely collateral-based system, with the value of collateral highly susceptible to cyclical swings, credit is also bound to be highly volatile. On the other hand, in a pure risk assessment-based system, banks, if faced with an economic downturn, may also become overcautious in providing credit. The point is therefore to find the right balance between strong risk assessment methods and reasonable

collateral requirements.¹⁰ Such a regime will provide room for banks to supply credit to SMEs during a downturn, which may help de-amplify the cycle.¹¹ To strengthen risk assessment capabilities, the establishment of a credit reference agency for SMEs may be useful.

- **Safeguarding and, where possible, promoting nominal wage flexibility may help dampen the feedback through unemployment and consumer demand.** Faster adjustment in prices than in nominal wages has been associated with rising unemployment, which in turn has contributed to uncertainty, precautionary savings, and further deflationary pressure. Since there is no government interference in private sector wage formation, the policy implication here is mainly to refrain from measures that would introduce rigidities.

¹⁰ Manove, Padilla, and Pagano (2001) show that over-reliance on collateral may lead to market equilibria in which the provision of cheap credit is inappropriately emphasized over project screening.

¹¹ Schellekens (2000) shows that, while collateralization alleviates informational asymmetries, over-reliance on collateral may inefficiently restrict the provision of credit to SMEs because of aggregate asset price volatility and costly collateral liquidation.

Annex

22. **This Annex presents econometric evidence on the relative role of cyclical and structural factors in causing deflation in Hong Kong SAR.** First, price equalization pressures between Hong Kong SAR and the neighboring city of Shenzhen are examined. Second, the determinants of deflation in Hong Kong SAR are studied. Third, the question is asked whether the importance of price equalization pressure in causing deflation has increased recently.

23. **The structural factor is proxied by the price level gap between Hong Kong SAR and Shenzhen.** The price level gap is constructed by taking log differences between the seasonally adjusted consumer price indices of Hong Kong SAR and Shenzhen, respectively.¹² The resulting percentage gap is then mean-standardized. Since the gap is based on two indices, the analysis focuses on the evolution of the gap.¹³

Price Equalization Pressure

24. **Annex Table 1 examines whether the price level gap between Hong Kong SAR and Shenzhen has narrowed as a result of price equalization pressure.** The sample consists of monthly data covering the period of January 1993 to December 2001. The dependent variable is the change in the price level gap between Hong Kong SAR and Shenzhen (that is, the difference between the respective inflation rates). Price equalization pressure would manifest itself if a large gap were responsible for narrowing the gap in the next period (through higher inflation in Shenzhen than in Hong Kong SAR). The independent variables included in the regressions are the lagged level of the mean-standardized gap (to measure the speed of price equalization pressure) and two interaction terms (to measure whether such pressure has intensified in recent years).¹⁴ The first interaction term includes a

¹² All price level and inflation rate variables in this chapter have been seasonally adjusted with the U.S. Bureau of Census X11.2 procedure. The price level gap is defined as $\log(P_t^{HKG}) - \log(P_t^{SHE})$, where P_t^{HKG} and P_t^{SHE} are the seasonally-adjusted composite CPI price levels of Hong Kong SAR and Shenzhen at date t . The year-on-year change in the price level gap equals $\log(P_t^{HKG}) - \log(P_t^{SHE}) - (\log(P_{t-12}^{HKG}) - \log(P_{t-12}^{SHE}))$. This is equivalent to $(\log(P_t^{HKG}) - \log(P_{t-12}^{HKG})) - (\log(P_t^{SHE}) - \log(P_{t-12}^{SHE}))$, which is the difference between the year-on-year inflation rates of Hong Kong SAR and Shenzhen. Therefore, in order to have price level equalization (leading to a narrowing of the gap), Shenzhen inflation needs to exceed that of Hong Kong SAR.

¹³ CLSA (2001) suggest that the percentage gap is quite large in absolute terms. A basket of nondurable consumer goods is about 40 percent cheaper in Shenzhen.

¹⁴ All lags in this paper refer to twelve-month lags.

dummy variable which equals one after November 1997 (when the property market started its collapse); the second interaction term includes a dummy which is set to one after October 1998 (when deflation was first recorded in Hong Kong SAR).

The results are as follows:

- **The data indicate the presence of some degree of price equalization pressure during the period under review.** This is reflected by the significantly negative coefficients on the lagged levels of the gap. Large price differentials have generally caused the gap to close by more than small ones.¹⁵
- **Most of such pressure occurred prior to the collapse of the property market and the onset of deflation (1997/1998).** This is reflected by the two interaction terms which offset the negativity of the convergence parameter—the exception being regression (5).

Determinants of Deflation

25. **Annex Table 2 presents evidence on whether the price level gap has led to deflationary pressure in Hong Kong SAR.** Price equalization may be consistent with (i) an unchanged price in Hong Kong SAR in combination with higher inflation in Shenzhen, or (ii) an unchanged price path in Shenzhen in combination with deflation in Hong Kong SAR. Therefore, the finding of some price equalization pressure is not sufficient to conclude that this has caused deflation in Hong Kong SAR. Also, deflation may be due to other factors that need to be controlled for. The regressions presented in Annex Table 2 analyze the link between deflation in Hong Kong SAR and price equalization pressure, while controlling for other factors.

¹⁵ The speed of convergence is meant to capture the extent of integration between markets or the efficiency with which price differentials between spatially separate locations are arbitrated away. See Obstfeld and Taylor (1997), and Ejmaes and Persson (2000) for extensions.

26. **The methodology adopted is as follows.** The rate of overall CPI inflation in Hong Kong SAR is taken as the independent variable. In addition to overall CPI inflation, a number of components of the CPI index are also examined, including clothing, food, health, durables, housing, services, and transportation.¹⁶ The sample consists of quarterly data from the first quarter of 1995 until the last quarter of 2001.¹⁷ Independent variables include the rate of unemployment (controlling for the business cycle), the nominal effective exchange rate (controlling for imported inflation), lagged credit growth (controlling for the dynamics of the asset price bubble and its lagged effect on rentals),¹⁸ and the structural variable (proxied by the percentage gap between the Hong Kong and Shenzhen price levels). Again, the price level gap has been mean-standardized and lagged by four quarters.¹⁹ The data on the relative inflation rates and the price level gaps is presented in Annex Charts 1 and 2.

¹⁶ Due to differences in CPI aggregation between Shenzhen and Hong Kong SAR, inevitable problems arise when constructing comparable subcomponent CPI indices. For this reason, the Shenzhen subcomponent of “recreational, educational, and cultural articles” has been left out. As to the remaining components, a sufficiently close match has been achieved, although some differences remain: (1) the Shenzhen food index includes alcoholic drinks and tobacco; (2) the Shenzhen durable goods index excludes durable goods for recreational use; (3) the Shenzhen transportation index includes communication (4) the Shenzhen housing index includes gas, water, and electric; and (5) the services index has been left out for 2001 as the Shenzhen definition was changed that year.

¹⁷ The sample period is smaller than for the previous regressions due to limited data availability. The choice of quarterly frequency is motivated by the need to control for the cyclical component.

¹⁸ In line with Peng, Cheung and Fan (2001), who find that most of the variation in unemployment in Hong Kong SAR has reflected cyclical conditions, unemployment has been selected as a proxy for the business cycle. Lagged nominal credit growth has been included to capture the build-up and subsequent collapse of the asset price, and its lagged effect on the housing component of the CPI. See Samiei and Schinasi (1994), and Collins and Senhadji (2002) on the relevance of credit growth for asset price bubbles.

¹⁹ To check for robustness, alternative specifications were examined. These featured a lagged dependent variable, various lags for the independent variables, and alternative proxies for the asset price bubble. Several specifications were examined with alternative proxies for the business cycle, including measures of the output gap. See Ha and Leung (2001), and Gerlach and Yiu (2002) for measures of the Hong Kong output gap using, respectively, unobservable-component estimation and the production function approach.

The results can be summarized as follows:

- **The rate of change in Hong Kong SAR's price level is explained well by the regressions.** The overall explanatory power is relatively high; most coefficients are significant at the one-percent level; and almost all coefficients have the predicted sign.
- **Cyclical and other factors explain most of the deflation, whereas structural factors play only a marginal role.** Variations in unemployment, credit growth, and the nominal effective exchange rate contribute 36 percent, 14 percent, and 5 percent, respectively, to the explanatory power of the deflation equation. In contrast, the price level gap contributes only 2 percent.²⁰
- **The same pattern holds for the determinants of deflation in the CPI subcomponents.** Except for clothing and transportation, the price level gap does not add much to overall explanatory power. Variations in unemployment, credit growth and nominal effective exchange rate explain most of the deflation.

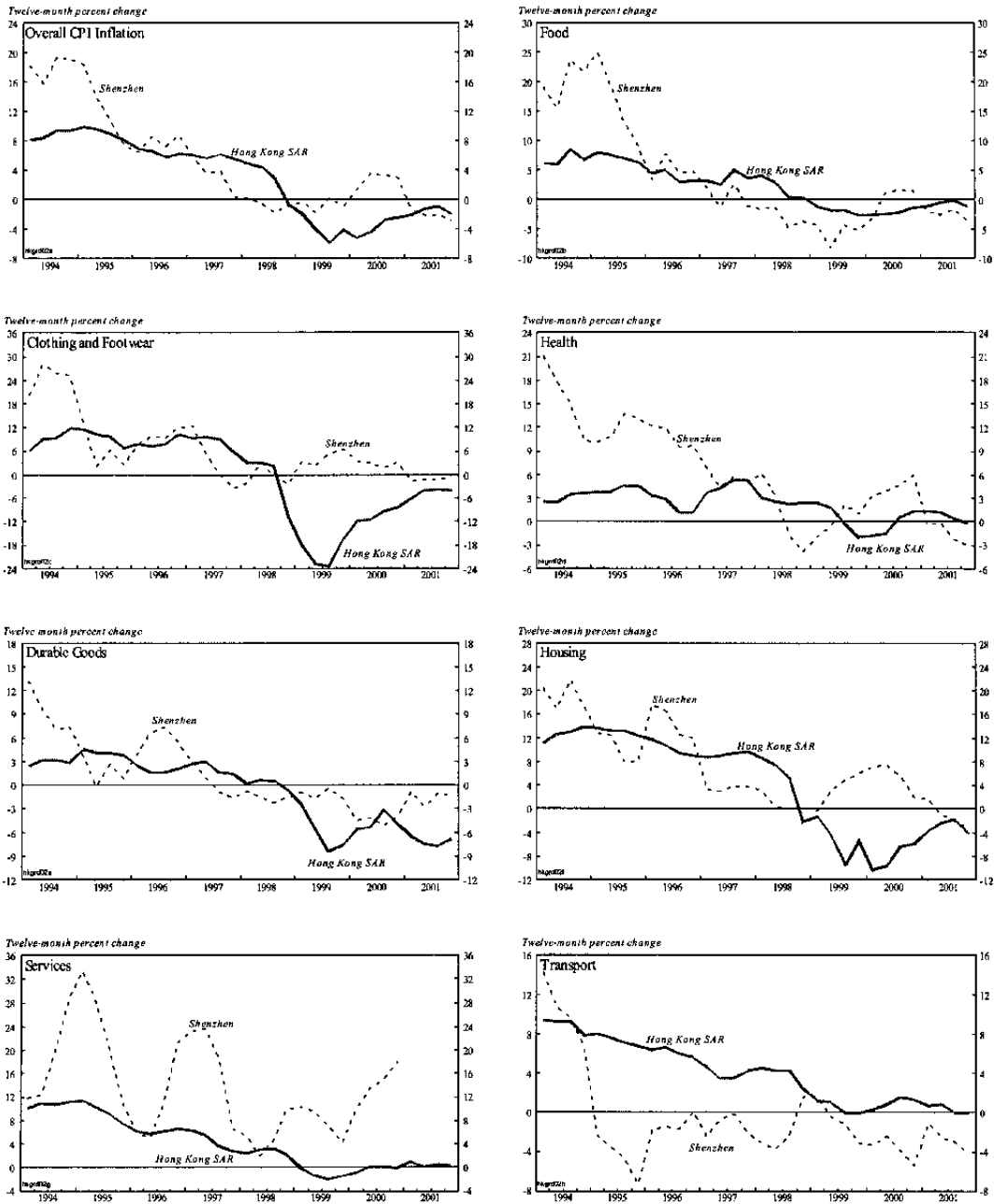
Intensification of Price Equalization Pressure

27. **Annex Table 3 shows that the relative importance of structural forces has not increased in recent years.** Two periods are examined: the period right after the collapse of the property market in 1997, and the period commencing with the start of deflation in 1998. The data set consists of the same quarterly data used in the previous regressions. Focusing on overall CPI inflation, two interaction terms are included to allow for a differential impact of the price level gap after the two events in 1997 and 1998.

28. **Deflationary pressures arising from price convergence forces have not increased significantly after the collapse of the property market in 1997, nor after the onset of deflation in 1998.** As the regression results indicate, the dummy interaction terms are not significant at the 10-percent level.

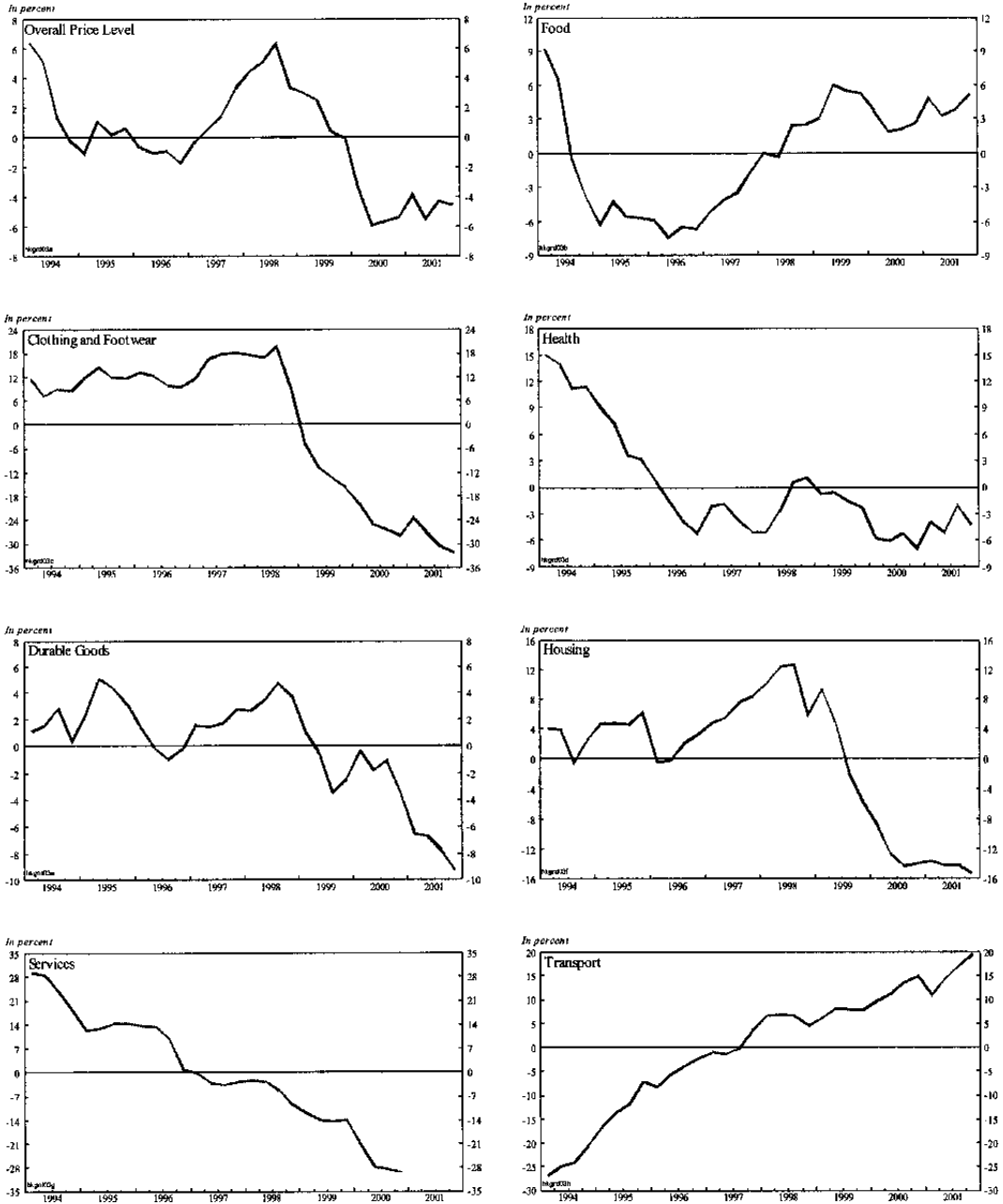
²⁰ The formula for calculating the contributions is $(1 - \tilde{R}^2)\hat{f}^2$, where \tilde{R}^2 is the multiple coefficient of determination of the restricted regression that excludes the independent variable in question, and \hat{f}^2 is the partial coefficient of determination between the dependent variable and the considered independent variable in the unrestricted regression.

Annex Chart 1. Comparison of CPI of Hong Kong SAR and Shenzhen by Components



Sources: CEIC Database; and China Statistics Monthly.

Annex Chart 2. Standardized Price Level Gaps



Sources: CEIC Database; China Statistics Monthly; and staff calculations.

Annex Table 1. Price Equalization Pressure between Hong Kong SAR and Shenzhen

Independent variables	Dependent variable: change in the price level gap					
	without constant			with constant		
	(1)	(2)	(3)	(4)	(5)	(6)
constant	..	..	..	-0.02	-0.02	-0.02
	..	..	..	(-8.15)*	(-6.56)*	(-6.42)*
price level gap (lagged)	-0.52	-0.61	-0.62	-0.48	-0.50	-0.54
	(-10.55)*	(-12.01)*	(-12.81)*	(-12.39)*	(-11.01)*	(-12.49)*
price level gap (lagged)	..	0.50	..	..	0.09	..
* dummy_property	..	(4.12)*	..	..	(0.78)	..
price level gap (lagged)	..	..	0.62	..	..	0.30
* dummy_deflation	..	..	(5.12)*	..	..	(2.66)*
Adjusted R ²	0.33	0.42	0.46	0.58	0.58	0.61
N	108	108	108	108	108	108

Note to table: Monthly data from 1993:01 to 2001:12; t-statistics are between parentheses; *, **, and *** indicate statistical significance at the 1, 5, and 10 percent levels; the change in price level gap is defined as the year-on-year difference in the gap.

Annex Table 2. Determinants of Deflation in Hong Kong SAR

where i =	Dependent variable: inflation in component i							
	(1) all items	(2) clothing	(3) food	(4) health	(5) durables	(6) housing	(7) services	(8) transport
Independent variables								
constant	0.11 (11.65)*	0.21 (8.61)*	0.07 (9.07)*	0.05 (4.92)*	0.05 (4.65)*	0.15 (8.18)*	0.06 (2.94)*	0.03 (4.09)*
unemployment rate	-2.49 (-12.79)*	-6.22 (-12.42)*	-1.73 (-9.66)*	-1.00 (-4.35)*	-1.92 (-8.61)*	-3.71 (-9.70)*	-0.95 (-1.95)***	-0.10 (-0.66)
neer appreciation	-0.42 (-4.71)*	-0.24 (-1.34)	-0.24 (-3.55)*	-0.17 (-1.89)***	-0.32 (-4.10)*	-0.41 (-3.00)*	-0.16 (-1.02)	0.11 (2.37)**
credit growth (lagged)	0.21 (7.92)*	0.39 (4.54)*	0.13 (5.44)*	0.09 (4.30)*	0.19 (6.42)*	0.37 (6.98)*	0.05 (1.30)	0.03 (2.18)**
price level gap in i (lagged)	-0.24 (-2.28)**	-0.22 (-3.66)*	0.08 (1.17)	-0.09 (-1.55)	0.00 (-0.03)	-0.10 (-1.26)	0.15 (2.39)**	-0.20 (-8.94)*
R ²	0.94	0.90	0.88	0.74	0.90	0.91	0.91	0.95
N	28	28	28	28	28	28	24	28

Note to table: Quarterly data from 1995:01 to 2001:4 (for services to 2000:4); t-statistics are between parentheses; *, **, and *** indicate statistical significance at the 1, 5, and 10 percent levels.

Annex Table 3. Determinants of Deflation in Hong Kong SAR

Independent variables	Dependent variable: inflation		
	(1)	(2)	(3)
constant	0.11 (11.65)*	0.10 (10.23)*	0.10 (10.69)*
unemployment rate	-2.49 (-12.79)*	-2.40 (-11.48)*	-2.39 (-11.99)*
neer appreciation	-0.42 (-4.71)*	-0.37 (3.73)*	-0.35 (-3.58)*
credit growth (lagged)	0.21 (7.92)*	0.20 (7.79)*	0.20 (7.86)*
price level gap (lagged)	-0.24 (-2.28)**	-0.03 (-0.14)	0.02 (0.10)
price level gap (lagged) * dummy_property	.. ..	-0.23 (-1.16)	.. ..
price level gap (lagged) * dummy_deflation	.. ..	.. ..	-0.28 (-1.52)
Adjusted R ²	0.94	0.94	0.95
N	28	28	28

Note to table: Quarterly data from 1995:01 to 2001:4; t-statistics are between parentheses; *, **, and *** denote statistical significance at 1, 5, and 10 percent;

References

Census and Statistics Department, 2001, "Aspiration and Experience of Taking Up Residence in the Mainland of China," Thematic Household Survey No. 7 (Hong Kong SAR).

Chiu, Priscilla, and Kitty Lai, 2001, "Domestic Lending," Research Memorandum (Hong Kong SAR: Hong Kong Monetary Authority), January.

Collins, Charles, and Abdelhak Senhadji, 2002, "Lending Booms, Real Estate Bubbles and The Asian Crisis," IMF Working Paper 02/20 (Washington: International Monetary Fund).

CLSA Emerging Markets, 2001, "Hong Kong's future. Tough choices to stay afloat," Hong Kong Market Strategy Report (Hong Kong SAR), November.

Erjnaes, Mette, and Karl Gunnar Persson, 2000, "Market Integration and Transport Costs in France 1825-1903: A Threshold Error Correction Approach to the Law of One Price," *Explorations in Economic History*, Vol. 37, No. 2, April, pp. 149-73.

Fan, Kelvin, 2001, "Measures of Core Inflation in Hong Kong," Research Memorandum (Hong Kong SAR: Hong Kong Monetary Authority), October.

Gerlach, Stefan, and Matthew Yiu, 2002, "Unobservable-Component Estimates of Output Gaps in Five Asian Economies," HKIMR Working Paper 5 (Hong Kong SAR: Hong Kong Institute for Monetary Research).

Ha, Jiming, and Cynthia Leung, 2001, "Estimating Hong Kong's Output Gap and Its Impact on Inflation," Research Memorandum (Hong Kong SAR: Hong Kong Monetary Authority), November.

HKMA, 2000, "Survey of the Financing Situation of Small- and Medium-Sized Enterprises," Quarterly Bulletin 8/2000 (Hong Kong SAR: Hong Kong Monetary Authority), pp. 33-38.

Kiyotaki, Nobuhiro, and John Moore, 1997, "Credit Cycles," *Journal of Political Economy*, Vol. 105, No. 2, April, pp. 211-48.

Manove, Michael, Padilla, A. Jorge, and Marco Pagano, 2001, "Collateral versus Project Screening: A Model of Lazy Banks," *Rand Journal of Economics*, Vol. 32, No. 4, pp. 726-44.

Obstfeld, Maurice, and Alan M. Taylor, 1997, "Nonlinear Aspects of Goods-Market Arbitrage and Adjustment: Heckscher's Commodity Points Revisited," *Journal of the Japanese and International Economies*, Vol. 11, No. 4, December, pp. 441-79.

Peng, Wensheng, Cheung, Lillian, and Cynthia Leung, 2001, "The Property Market and the Macro-Economy," Quarterly Bulletin 5/2001 (Hong Kong SAR: Hong Kong Monetary Authority), pp. 40-49.

Peng, Wensheng, Cheung, Lillian, and Kelvin Fan, 2001, "Sources of Unemployment: Recent Developments and Prospects," Quarterly Bulletin 11/2001 (Hong Kong SAR: Hong Kong Monetary Authority), pp. 33-48.

Sanjay, Kalra, Mihaljek, Dubravko, and Christoph Duenwald, 2000, "Property Prices and Speculative Bubbles: Evidence from Hong Kong SAR," IMF Working Paper 00/2 (Washington: International Monetary Fund).

Samiei, Hossein, and Garry J. Schinasi, 1994, "Real Estate Price Inflation, Monetary Policy and Expectations in the United States and Japan," IMF Working Paper 94/12 (Washington: International Monetary Fund).

Schellekens, Philip, 2000, "Costly Collateral and The Public Supply of Liquidity," IMF Working Paper 00/125 (Washington: International Monetary Fund).

UBS Warburg, 2001, "Shenzhen-Hong Kong Arb," Global Equity Research (Hong Kong SAR), November.

Zitzewitz, Eric, 2000, "Domestic Competition, Cyclical Fluctuations, and Long-Run Growth in Hong Kong SAR," IMF Working Paper 00/142 (Washington: International Monetary Fund).

IV. THE STRUCTURE AND FINANCING PATTERNS OF THE HONG KONG SAR CAPITAL MARKET¹

A. Introduction

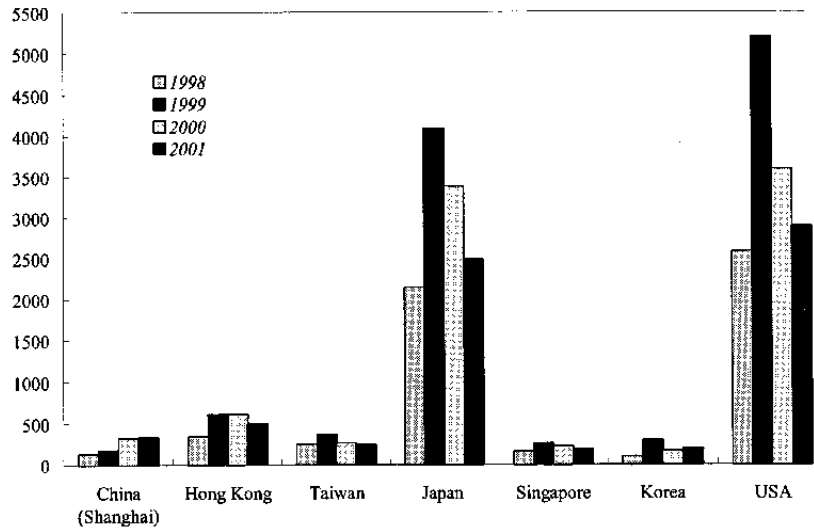
1. **Hong Kong SAR's capital market acts as a major funding center for the region.** Bank lending and equity issuance have been the dominant sources of financing for corporations, while debt issuance has played a relatively minor role. This chapter describes the structure of the Hong Kong markets in terms of financing mode, investor base and market regulation; the contribution of the different modes of financing; and assesses the potential benefits of developing the bond market.
2. **Although conceptual arguments generally favor further development of the debt market, there have also been concerns that this may have some costs.** A deep and mature capital market can increase financial intermediation and serve as an alternative funding source to equity and bank financing when those sources dry up. However, it has also been argued that bond markets may not fulfill such a role during a crisis, and may in fact amplify the transmission of external shocks.
3. **The empirical analysis in this chapter attempts to assess the Hong Kong bond market's capacity to serve as an alternative source of finance during a crisis.** The results are mixed, with no significant evidence for the bond market as an alternative to *bank lending* but some degree of substitutability for *equity financing*.

B. Overview of the Capital Market

4. **Hong Kong SAR's financial sector is dominated by the stock market and the banking sector, with the debt market playing a much smaller role.**
 - **The Hong Kong stock market (SEHK) is the 10th-largest in the world and the second-largest in Asia in terms of market capitalization.** Together with bank financing, it remains the prime source of raising capital in Hong Kong SAR.

¹ Prepared by Chandima Mendis.

Chart 1: Stock market capitalization, 1998-2001
(in US\$ billions)



- Hong Kong SAR's banking sector is the second largest in the Asia after Japan.** In terms of total bank assets to GDP, Hong Kong SAR is only matched by Singapore, and it has the highest ratio of foreign assets to GDP, reflecting its role as an international financial center.

Table 1: Banking System Assets
(End-2000)

	Total Assets		External Assets	
	(In US\$ billion.)	(In percent of GDP)	(In US\$ billion.)	(In percent of GDP)
Hong Kong SAR	734	451	451	277
Singapore	417	450	346	195
United States	8538	87	863	12
United Kingdom	3981	283	1803	127
Japan	6789	152	740	17
Germany	6031	153	542	16

Source: IFS, BIS and Fund Staff estimates

- In contrast, the bond market has lagged behind the equity and banking sectors.** At end-2001, the size of the bond market totaled about US\$63 billion, or about one-third of GDP, a much lower ratio than for other leading fixed-income markets (Table 2).

Table 2: Bond Market Size
(outstanding, end-2001)

	(In US\$ billion)	(In percent of GDP)
Hong Kong SAR	63	35
Singapore	22	25
United States 1/	14546	146
United Kingdom 1/	897	64
Japan 1/	6072	136

Source: HKMA
1/ Data for end-2000.

5. **Financial and business services have contributed a large and rising proportion of GDP.** The contribution of financial, insurance, and business services increased from 10.6 percent in 1990 to 16.7 percent in 2000 (Table 3).

Table 3: Contribution of Financial, Insurance and Business Services to GDP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000 *
	(in percent of GDP)										
Financial Services	6.2	8.6	9.5	10.0	9.3	9.3	9.9	10.1	9.4	10.7	11.3
Insurance	0.8	0.9	0.9	1.1	1.2	1.2	1.0	0.9	0.9	1.0	1.2
Business Services	3.6	3.7	3.7	3.7	3.8	4.1	4.0	4.3	4.2	4.1	4.2
Total	10.6	13.2	14.1	14.8	14.4	14.5	14.9	15.3	14.5	15.9	16.7

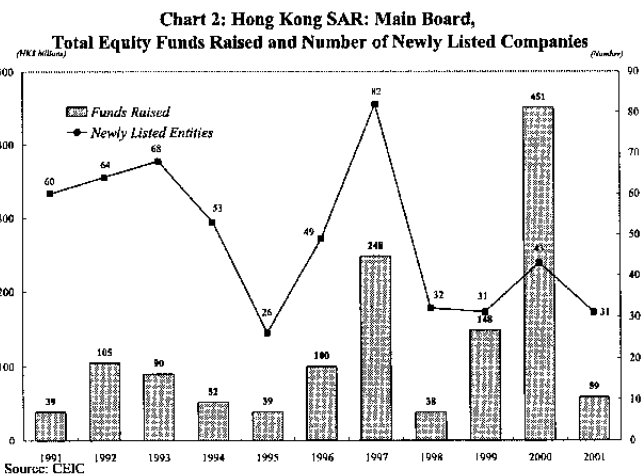
Source: Census and Statistics Department

*Figures are subject to revision

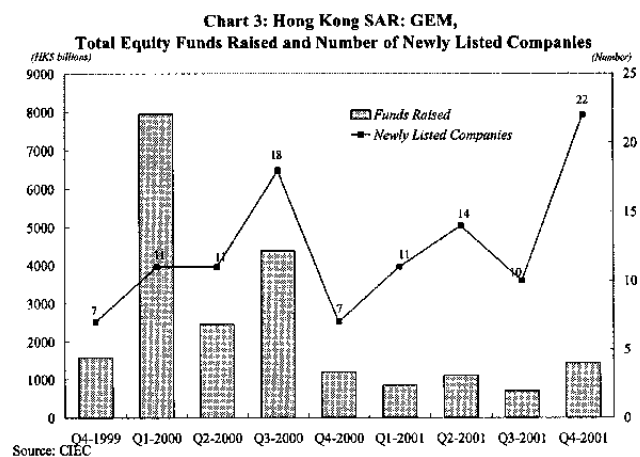
The Equity Market

6. **The equity market has been a major source of funding for companies in Hong Kong SAR.**

- Despite a drop in the wake of the Asian Crisis, funds raised during 1998-2001 on the **Main Board** were about 1½ times the amount raised in the preceding four-year period. Since 1998, an average HK\$ 170 billion per year (equivalent to 15 percent of GDP), has been raised by 140 companies. By end-2001, there were 756 companies listed on the Main Board, including 50 Chinese state-owned enterprises.

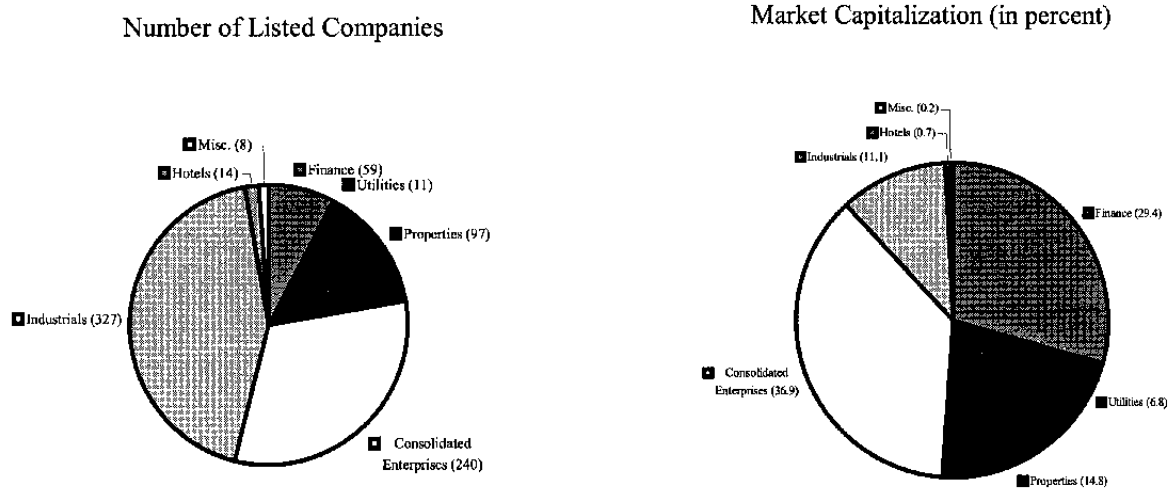


- **The Growth and Enterprise Market (GEM)** was established in November 1999 to provide an alternative fund-raising channel for emerging growth companies. As of end-2001, there were 111 GEM-listed companies with over HK\$ 6 billion in funds raised, providing an important source of financing for emerging companies.



7. **The Main Board is dominated by large enterprises operating in more than one sector of the economy.** Although “industrials” account for nearly half of the listed companies, they represent only 7 percent of market capitalization. “Consolidated enterprises” (engaged in more than one sector of economic activity) account for over 40 percent of market capitalization; “financials” represent about 30 percent; and the rest are mainly in the property sector and utilities. The stock market is thus dominated by “financials” and “consolidated enterprises”, i.e. firms operating in numerous spheres of the economy.

Chart 4: Composition of Main Board, 2001



Source: Hong Kong Stock Exchange

The Banking Sector

8. **Hong Kong SAR has a sophisticated banking system, with 263 authorized institutions at end-2001.** There were 154 licensed banks, 48 restricted licensed banks and 61 deposit-taking institutions from over 40 countries. Hong Kong SAR maintains a three-tier system of deposit-taking institutions, consisting of licensed banks, restricted-license banks and deposit-taking institutions - collectively known as Authorized Institutions (AIs), (see Section B, Paragraph 19). As noted, Hong Kong SAR has a higher ratio of bank assets to GDP than most international financial centers and over half of those assets are external, indicating a large amount of international intermediation.

9. **While bank lending was an important source of corporate financing through 1997, it has declined since then.** Bank loans for use in Hong Kong SAR has the been the

traditional mode of finance for corporate expansion. Such loans rose steadily in the 1990s before falling in 1998-99. The decline reflected the effects of the regional crisis and the subsequent collapse in property prices. Lending recovered slightly in 2000, but fell again with the renewed economic downturn last year. Lending to manufacturing, wholesale and retail trade and financial services has declined the most in recent years (Table 4).

Table 4: Net loans for use in Hong Kong SAR by economic sector

	1997	1998	1999	2000	2001
	(percent change)				
Manufacturing	2.9	-14.5	-15.3	-8.0	-2.6
Agriculture and fisheries	0.3	64.7	-18.9	28.6	-39.2
Transport and transport equipment	16.1	10.5	-2.8	1.8	-3.2
Electricity, gas and telephone	8.8	5.6	-10.0	193.4	-24.5
Construction & property development	32.2	-5.5	-7.7	3.7	-2.4
Wholesale and retail trade	16.5	-12.6	-19.8	-16.6	-15.7
Financial services	23.8	-13.2	-18.3	-8.2	-14.6
Miscellaneous	27.9	1.6	-1.0	2.4	1.1
Total loans and advances	24.4	-3.8	-7.2	2.3	-3.7
	(shares)				
Manufacturing	5.4	4.8	4.4	4.0	4.0
Agriculture and fisheries	0.0	0.1	0.1	0.1	0.1
Transport and transport equipment	4.7	5.4	5.7	5.6	5.7
Electricity, gas and telephone	1.3	1.5	1.4	4.1	3.2
Construction & property development	21.6	21.2	21.1	21.4	21.7
Wholesale and retail trade	10.1	9.2	7.9	6.5	5.7
Financial services	13.5	12.2	10.7	9.6	8.5
Miscellaneous	43.2	45.6	48.7	48.7	51.2
Total loans and advances	100	100	100	100	100

Source: HKMA

Debt Market

10. **The Hong Kong Debt market is dominated by issues from government and statutory bodies.** Other major issuers include authorized institutions, overseas corporations and multilateral development banks.

Table 5: New Hong Kong Dollar Debt Securities Issued
(HK\$ billions)

	1997	1998	1999	2000	2001
• Public Sector Bonds: This consists of Exchange Fund Bills and Notes as well as bonds issued by statutory bodies. Regular issuance under					
Exchange Fund	379.9	316.9	261.4	275.0	234.0
Statutory Bodies/Gov't Owned Corporations	0.0	9.2	10.4	8.3	24.3
Multilateral Development Banks (MDBs)	8.7	44.5	15.9	19.3	7.5
Non-MDB Overseas Borrowers	2.5	7.7	34.4	57.1	56.6
Authorized Institutions	76.9	33.3	70.3	79.8	57.8
Local Corporations	12.8	6.2	24.1	16.1	5.6
Total	480.8	417.7	416.6	455.7	385.8

Source: HKMA

the Exchange Fund Bills and Notes Program was curtailed in 1998, when measures were introduced to strengthen the currency board. Since then, new paper can only be issued if there is a corresponding inflow of foreign reserves.

- **Foreign bond issues are placed by multilateral development banks and foreign corporations.** Multilaterals consists of organizations such as the Asian Development Bank, which usually borrow in Hong Kong dollars, and then swap the proceeds into foreign currency. Foreign companies have issued an increasing amount of bonds on the Hong Kong SAR market in recent years. In 2001, over HK\$ 55 billion worth of foreign corporate bonds were issued, representing 15 percent of total new issues.
- **Local corporate bond issuance has been limited.** Local corporates accounted for only a small fraction of new issues in 2001. Although there were 240 corporate bonds listed on the SEHK, most of them were in foreign currency and privately traded. As a result, the pricing details were not publicly available and a well functioning secondary market remains to develop.

11. **Although the average maturity of bonds has increased in recent years, it still remains below pre-crisis levels.**

- **Since September 1998, existing Exchange Fund issues can only be rolled over upon maturity.** The maturity profile of Exchange Fund issues is heavily skewed toward the short-end. However, since November 2000, maturing short term paper can be replaced with longer-term paper.
- **After falling in 1997-98, the maturity profile of corporate bonds has partly recovered in recent years.** The maturity of new bond issues fell significantly in 1997-98, reflecting the turbulent financial market conditions during the Asian crisis. Since then, average maturity has recovered somewhat, but it is still below pre-crisis levels.

Table 6: Average Maturity of Fixed-Rate Debt
(in years)

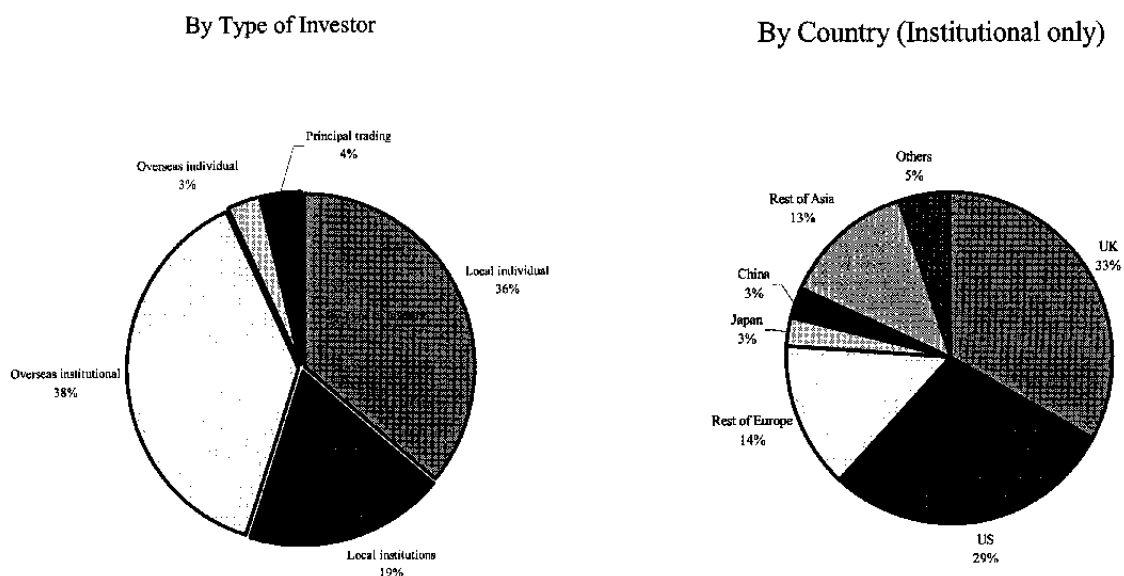
Issuers	1996	1997	1998	1999	2000	2001
<i>Outstanding Stock</i>						
Exchange Fund	...	...	1.4	1.2	1.2	1.2
Statutory Bodies/Gov't Owned Corporations	3.5	2.7	2.4	1.8	1.7	2.3
Multilateral Development Banks (MDBs)	3.5	3.2	1.8	1.8	2.3	2.2
Non-MDB Overseas Borrowers	2.9	3.0	1.7	1.4	1.6	2.1
Authorized Institutions	3.0	2.7	2.7	2.1	2.0	2.0
Local Corporations	3.9	2.8	1.9	2.4	2.7	2.2
<i>Average Maturity</i>	3.2	2.9	2.1	1.9	2.0	2.2
<i>New Issuance</i>						
Exchange Fund	...	...	...	...	0.4	0.5
Statutory Bodies/Gov't Owned Corporations	5.0	...	2.9	2.0	2.0	3.6
Multilateral Development Banks (MDBs)	4.4	5.2	2.0	4.0	4.7	4.8
Non-MDB Overseas Borrowers	2.5	4.3	1.5	2.3	3.8	3.0
Authorized Institutions	3.3	2.5	3.4	2.1	2.7	2.4
Local Corporations	5.0	0.1	0.2	3.3	3.0	2.6
<i>Average Maturity</i>	3.7	3.2	2.2	2.5	3.6	3.3

The Investor Base²

12. In terms of transactions, local investors comprised the largest group of investors in the stock market. In 2001, local investors contributed over half of all trades, with local individual investors and overseas institutional investors the largest groups. Investors from the United Kingdom were the largest foreign group, followed by the United States investors (Chart 5).

- Local investors have tended to trade more pro-cyclically than foreign investors. Local investor participation has tended to rise faster during bullish periods while it fell more rapidly in bear markets (Chart 6).³

Chart 5: Main Board Distribution of Trading (2001)

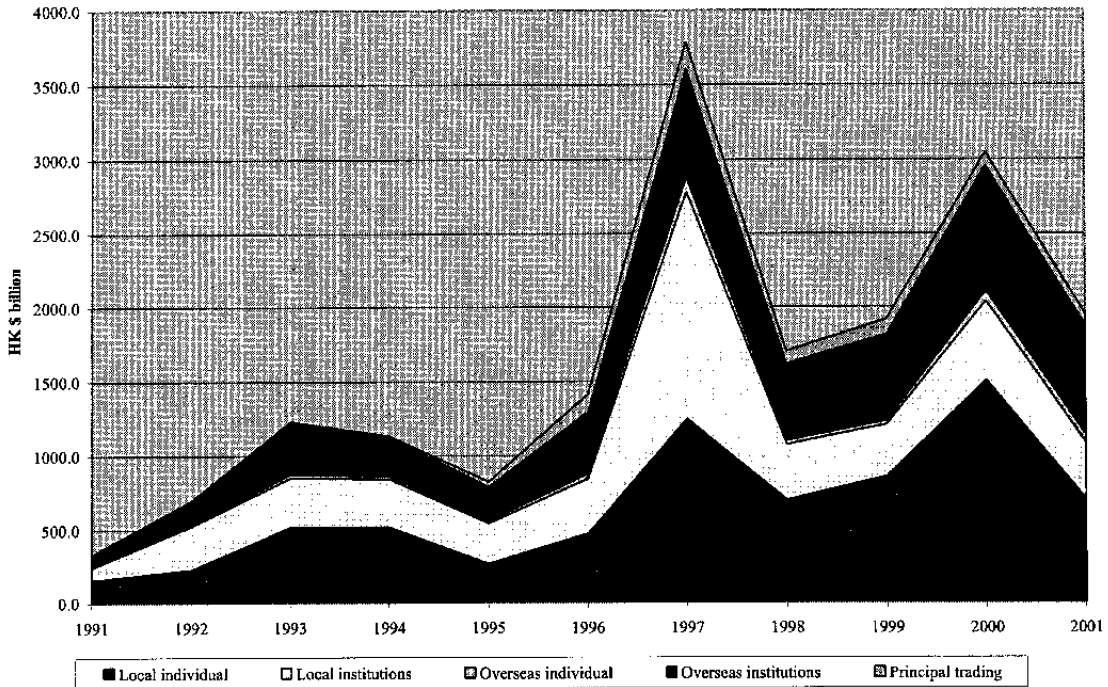


Sources: Hong Kong Exchanges and Clearing Ltd, and Securities and Futures Commission.

² Based on the Retail Investors Survey, Securities and Futures Commission, 2000, and Cash Transaction Survey, Hong Kong Exchanges and Clearing Ltd, 2001.

³ "Implied" value of trading for a particular group is determined by multiplying the percentage contribution to market turnover by that type of trade, as obtained from the Hong Kong Exchanges and Clearing Survey, by the total turnover during the period.

Chart 6: Hong Kong Stock Exchange: Implied value of trading by investor type

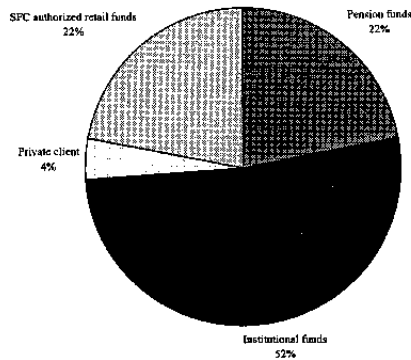


13. Hong Kong SAR has an active asset management and insurance industry.

The number of fund management companies rose to over 200 in 2001. Total Assets under management totaled HK\$ 1.5 trillion in 2000 (about 120 percent of GDP), down from about HK\$3.5 trillion in 1999. The drop reflected the restructuring of a large overseas fund, and the global downturn in equity prices.

About one-third of those assets were attributable to Hong Kong investors, with close to 60 percent invested overseas. Hong Kong SAR also has a sizeable insurance industry, with over 200 insurers (about half of which were foreign).

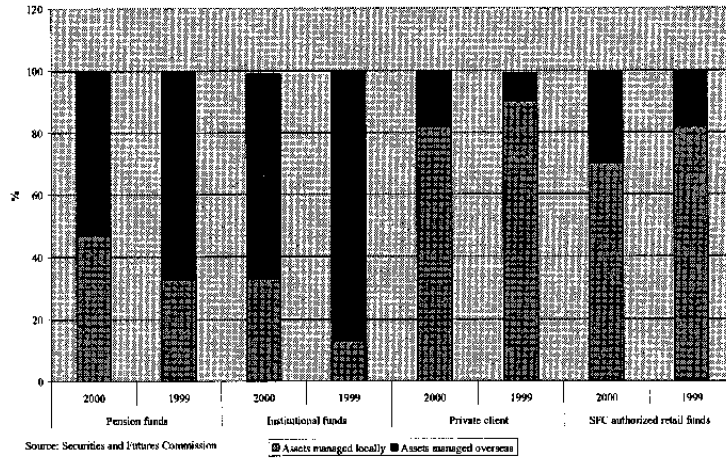
Chart 7: Mutual Funds - Total assets managed in Hong Kong SAR 2000



Source: Securities and Futures Commission.

14. While institutional funds⁴ and pension funds invested about three-quarters of their assets overseas, funds catering to individual investors⁵ held predominantly local assets. The introduction of the Mandatory Provident Fund (MPF) in 2000 should enhance institutional investor demand for local assets.

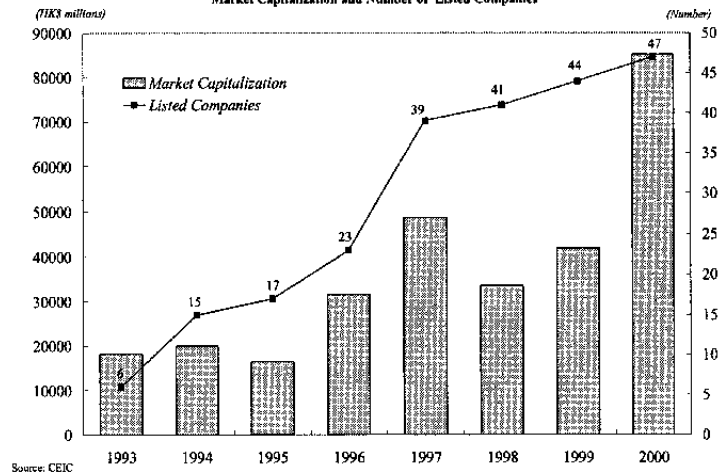
Chart 8: Destination of investment by type of Funds



15. Companies from the Mainland of China are increasingly using the Hong Kong market to raise funds. The majority of issues were used to raise capital for large state-owned enterprises. Initially such issues were mainly through individual company offerings, while conglomerate issues have become more prominent recently.

- The number of H share IPOs (China-registered companies) increased during the mid-1990s, with 16 new issues in 1997. With the onset of the Asian crisis, H Share IPOs declined sharply. In 2000, only 3 companies issued IPOs, albeit raising a record HK\$2 billion in funds, (including two large issues by Mainland companies in the petroleum sector).

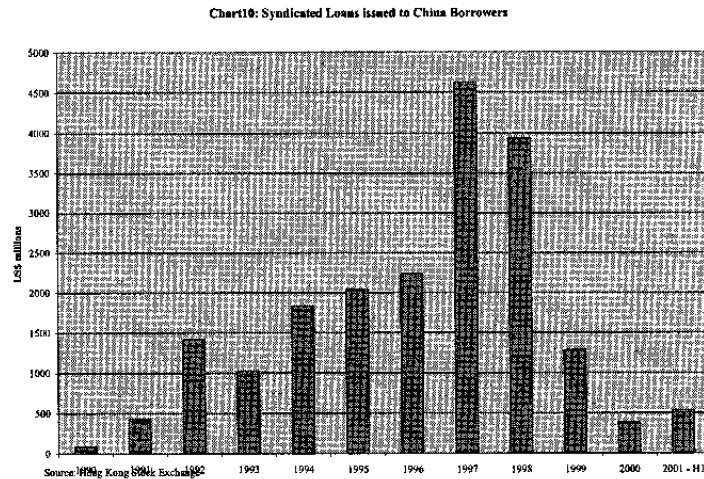
Chart 9: Hong Kong SAR: H-Shares
Market Capitalization and Number of Listed Companies



⁴ “Institutional” funds are non-pension, non-retail in nature, i.e. funds from associated companies, fund houses, insurance companies, large corporate clients, etc.

⁵ Including private client funds and Securities and Futures Commission-authorized retail funds, which cater for individual investors.

- Syndicated borrowing by Mainland corporations rose rapidly through 1997, but has declined since.** A large number of private and state-owned corporations from the Mainland have tapped this market. From negligible amounts in 1990, syndicated lending mainland firms increased to over US\$4.5 billion in 1997, before declining to below US\$1 billion in 2000.



16. **The number of private corporations from the Mainland tapping the Hong Kong market has increased.** The borrowers in the early 1990s were predominantly public enterprises. In recent years, more private corporations have started to access the Hong Kong market.

Table 7: Number of China borrowers

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001 H-1
Public												
State/Provincial						3		1		2		
Corporate	2	4	8	6	17	8	13	40	19	3	4	1
Financials	4	8	9	5	7	9	21	16	7			1
Utility		2	1	3	4	1			3			
Private												
Corporate		1				2	13	5	3	18		
Financials			1	2				1	6	2		1
Utility				1		1	3			2		
Total	6	15	19	17	28	24	50	63	38	27	4	3

Source: Bondware

Money Market and Derivatives

17. **The money market consists mainly of the interbank market.** It is mostly used by institutions at the wholesale level, where the supply and demand of funds determines the Hong Kong Interbank Offer Rate (HIBOR). The interbank market is an important source of funding for banks without extensive retail networks (mostly foreign incorporated institutions). For banks with a large customer base, the interbank market provides an outlet to invest in short-term loans.

18. **Hong Kong SAR also has a sophisticated derivatives market.** It is the fifth largest in the Asia-Pacific region (following Japan, Korea, Australia and Singapore), with notional value over US\$600 billion and turnover equal to 80 percent of stock market capitalization. There are about 14 futures and options products traded on the Hong Kong Futures Exchange (HKFE), mainly based on interest rate and stock indices. An active over-the-counter market is used to trade swaps, forwards and options in relation to equities, interest rates and currencies.

Market Regulation

19. **The HKMA, established in 1993, carries out the central banking functions and operates the currency board.** The supervisory regime differentiates between the three types of authorized institutions (AIs). Only *licensed banks* can operate current accounts; *restricted license banks* are principally engaged in merchant banking and capital market activities. *Deposit taking companies* are engaged in a range of activities, including consumer finance and securities business but are restricted to taking deposits of HK\$100, 000 or above with original maturity of 3 months. AIs have to comply with the provisions of the Banking Ordinance, which, inter alia, require them to maintain adequate liquidity and capital adequacy ratios, submit periodic statistics, and adhere to various other criteria in line with the Basel Core Principles.

20. **The Securities and Futures Commission (SFC) was established in 1989** as an autonomous statutory body responsible for the regulation of the securities, futures and financial investment industries. The Securities and Futures Ordinance (2002) consolidates and modernizes the number of relevant regulations into a composite piece of legislation in line with international standards, aiming to provide a more transparent regulatory regime, promote market development, and protect investors. New elements include a single license for market intermediaries to streamline regulatory arrangements and reduce compliance burden; new licensing requirements to better protect clients' assets; expanded procedures to combat market misconduct; and strengthened requirements for interest disclosures.

C. Developing the Bond Market

21. **As noted, bank and equity financing are the leading modes for raising capital in Hong Kong SAR, while the bond market has lagged behind.** Recent research by the HKMA ⁶ has identified several reasons why the bond market has lagged behind other modes of raising capital. These include unfavorable tax treatment of bonds, lack of adequate benchmark in the yield curve, deficiencies in debt issuance and listing procedures, restrictive

⁶ HKMA Quarterly Bulletin, February 2001, "Hong Kong Dollar Debt Market Developments in 2000".

credit rating requirements, low secondary market liquidity, and the small number of institutional investors with long-term investment horizon⁷.

22. There are several compelling economic reasons for the development of a bond market.

- A deep and mature bond market can improve economic efficiency by helping to channel resources between creditors and borrowers.
- It also helps development of a market-determined term-structure of interest rates that can serve as a benchmark for pricing credit risk.
- The shape of the yield curve can provide policy makers with useful information about market expectations.
- A well developed bond market can introduce competition to banks and lower the costs of raising capital.
- It has also been argued that bond markets can provide an alternative avenue for finance in the event of a significant market downturn (Greenspan, 2000). For example, the US bond market seemed to provide an alternative source of financing during the Latin American Debt Crisis and the Savings and Loans Crisis in the 1980s.
- Fixed-income instruments also enable banks to transfer risk through securitization. The bond market enables banks and other financial institutions to repackage loans and sell them as bonds, thereby reducing banks' exposure to maturity mismatch.

23. However, there may be potential costs of having a developed bond market during a crisis. HMKA (2001)⁸ argues that a financial crisis may be amplified as a result of contagion via the bond market, as investors engage in herding behavior due to asymmetric information and inability to differentiate between good and bad risks. It argues that in a number of countries that experienced financial crises (including Russia 1998, Brazil 1999 and Turkey 2000), the debt market did not serve as an alternative source of financing. To the contrary, debt markets were the first to collapse and thus seemed to act more as an agent of contagion than a cushion against it. The remainder of this section analyzes the potential for

⁷ For a detailed discussion of factors holding back the growth of debt markets and the policy options to support their development, see SM/01/23 (1/26/01).

⁸ HKMA Quarterly Bulletin, November 2001, "Cost-Benefit Analysis of Developing Debt Markets"

substitution between the major financing modes (equity, bonds, and bank lending) in Hong Kong SAR.

Methodology for analyzing alternative modes of financing

24. **Most of the empirical work on the development and efficiency of bond markets has focused on sovereign debt**⁹. Eichengreen and Mody (1998) examined the determinants of issue-spreads for sovereign bonds, and discussed the domestic macroeconomic and external factors which may influence the decision to issue a bond and the pricing of bonds. They find key macroeconomic variables, such as high foreign reserves and high real growth, conducive for issuing bonds. They also find that increases in industrial country interest rates and fiscal deficits tend to increase the cost of capital and discourage issuance.

25. **This paper employs a similar framework to analyze corporate bonds issues in Hong Kong SAR.** It assesses the macroeconomic and firm-specific factors that may affect the amount of bonds issued, and whether the bond market serves as an alternative mode of financing during a financial crisis. Specifically, it examines whether there are co-movements between corporate bond issuance and bank and equity finance, controlling for the macro variables and a firm-specific variable.

Econometric estimation

26. **An econometric financing model is estimated, linking bond issuance with firm-specific and macroeconomic variables.** The estimation is carried out in two steps: It first decomposes the firm-specific factors from the macroeconomic factors, and then estimates the financing model.¹⁰

- As the launch spread is a combination of firm-specific and macroeconomic factors, and since firm-specific data is not available, an “implicit” firm-specific credit rating variable is derived. The launch spread is first regressed on key macroeconomic variables, and the residuals from this equation are assumed to be the “implicit” firm-specific credit rating variable.
- In the financing models, the volumes of bond issuance are regressed on macroeconomic variables and the “implicit” firm-specific variable. To test for possible substitution effects during crisis periods, appropriate interactive dummy variables are used.

⁹ See for example, Eichengreen and Mody (1998), Kamin and van Kleist (1997) and HKMA (2001).

¹⁰ Details of the econometric analysis are presented in the Annex.

27. **The results are as follows:**

- Bond issuance is positively associated with real growth and the reserve position, while an increase in foreign interest rates raises the cost of borrowing and reduces bond issuance.
- The coefficient for the firm-specific variable is negative, which implies that a lower firm-specific risk premium is associated with a greater amount of bonds issued. However, this variable is not highly significant.
- There is no significant evidence of substitution between bond financing and bank borrowing, but some evidence of substitution of bonds for equity financing.
- Financial crises adversely affect equity issuance, and the bond market seems to be an alternative mode for raising capital during a crisis. This was particularly evident during the Mexican Crisis in 1994 .
- These results have to be treated with caution due to the paucity of data, particularly for firm-specific factors, and the small sample size.

D. Conclusions

- **Hong Kong SAR continues to be a leading international financial center.** Hong Kong SAR has traditionally been a prime center for raising and intermediating capital among foreign companies. Companies from the Mainland of China are increasingly using Hong Kong markets to raise funds.
- **Equity and bank lending have been the dominant forms of raising capital, while the bond market has lagged behind.** Several studies have identified the bond market as an area that can enhance Hong Kong SAR's position as a leading financing center.
- **A well developed bond market has several important economic benefits, but may also have some costs.** A deep and mature bond market can cushion the economy from credit disruptions when other forms of financing (equity and bank lending) dry up. Bond markets can also contribute to more efficient allocation of resources by providing competition to the banking system, lowering the cost of capital and encouraging greater financial intermediation and growth. However, it has also been argued that bond markets may act as channels of contagion during financial crises.
- **Empirical results are mixed regarding the bond market's role as an alternative source of financing in Hong Kong SAR.** The analysis found no significant statistical evidence for the bond market as an alternative to bank lending during crisis and non-crisis periods. However, there is some evidence of substitutability between the bond market and the equity market during crisis episodes.

Annex

28. **Econometric estimation proceeds in two steps.** Since the launch spread is a combination of firm-specific and macroeconomic factors, and since firm-specific data is not available, an “implicit” firm-specific credit rating variable is derived.

- First, the launch spread is regressed on key macroeconomic variables, and the residuals derived from this equation are assumed to be the “implicit” firm specific credit rating variable.
- Second, the financing model is estimated, using the “implicit” firm-specific variable and macroeconomic variables. The regression model estimates the volume of corporate bond issuance (local and foreign currency) as a function of foreign reserves, real GDP growth, the government budget balance, and foreign debt, and the firm-specific variable.

29. **Determining the macroeconomic and firm-specific effects at launch.** The following equation was estimated (in logs), using quarterly data, to obtain firm-specific residuals:

$$Spread_t = \alpha_0 + \alpha_1 resgr_{t-1} + \alpha_2 \frac{debt}{gdp}_{t-1} + \alpha_3 rgdgr_{t-1} + \alpha_4 \frac{fisbal}{gdp}_{t-1} + trend + \mu$$

where Spread	- launch spread over an appropriate benchmark, in bps
resgr	- foreign reserves growth,
debt/gdp	- gross external debt outstanding to all BIS reporting banks,
rgdgr	- real gdp growth
fisbal/gdp	- fiscal deficit to GDP
trend	- time trend

The following results were obtained (t-statistics in parenthesis):

$$Spread_t = 3.97 - 4.77resgr_{t-1} + 0.2 debt/gdp_{t-1} - 0.2 rgdgr_{t-1} - 0.01 fisbal/gdp_{t-1} + 0.02trend$$

(5.6) (1.9) (0.2) (1.6) (0.2) (5.8)

Adj. R² = 0.81; F(5,15) = 18.91; Obs. = 21; Period Q1-1984-Q2-2001.

- **The results suggest that the key macro determinants of corporate bond spreads are the foreign reserve position and real growth.** Foreign reserve growth significantly reduces corporate bond spreads. Real GDP growth is also correctly signed, though significant only at the 10 percent level; that is, real income growth reduces the launch spread and cost of issuing debt. Foreign debt to GDP is positive in sign but insignificant. A weak fiscal balance is negative in sign but also insignificant.
- **The residuals from this equation were then used in the second model as a “firm-specific credit rating” variable.** The model regresses the log of bond issues on

macroeconomic factors, the firm-specific variable, and alternative modes of financing. As a proxy for an appropriate risk-free rate benchmark, the yield on ten-year US treasury bonds at the time of issue was used. The explanatory variables in model (1) were a range of macro and external variables and the firm-specific variable. In model (2), sensitivity to a crisis variable¹¹ was tested; in model (3), syndicated bank lending is added to test whether the bond market serves as an alternative source of financing. Model (4) tests the substitution between the bond and equity markets.

30. **Results**

Table 8: Simple OLS Regression Results - Bond Issuance Model

Dependent var: Log of bond issues	Model 1	Model 2	Model 3	Model 4
Constant	7.26 [4.24]	7.6 [4.21]	7.5 [3.80]	11.8 [3.71]
Trend	0.01 [1.33]	0.01 [1.05]	-0.01 [0.32]	-0.01 [0.55]
Lagged real GDP growth	0.03 [2.02]	0.03 [2.00]	0.04 [2.06]	0.11 [2.80]
Lagged foreign reserve growth	2.91 [1.76]	2.59 [1.50]	2.08 [1.15]	1.87 [0.93]
Lagged US 10 yr rate	-0.52 [0.82]	-0.62 [0.95]	-0.69 [0.93]	-2.25 [1.68]
Firm specific residual	-0.5 [1.90]	-0.51 [1.83]	-0.74 [1.38]	-0.5 [0.68]
Crisis		0.17 [0.65]		
log of loan issues			0.2 [1.38]	
log of equity issues				-0.08 [1.00]
Adj. R Squared	0.54	0.55	0.58	66
Sample observations	44	44	40	23
Prob > F	0.0001	0.0001	0.0001	0.009
Sample Period: Q1-1984 to Q2-2001				

¹¹ This consists of a dummy variable, taking the value of one for the Latin American Crisis (1983), Mexican Crisis (1994), and Asian Crisis (1998).

- In model 1, which regresses bond issuance on the standard macro variables, bond issuance is positively associated with real growth and the strong reserve position. The coefficient on the US ten-year rate is negative and correctly signed, i.e., an increase in foreign interest rates increases the cost of borrowing and reduces bond issuance. However, this variable is not significant. The firm-specific variable is negative in sign and implies that the lower the risk premium associated with firm-specific factors, the greater the amount of bonds issued. A crisis dummy variable is introduced in model 2, to test the robustness of the results, and the coefficients were not altered significantly.
- Model 3 introduces the log of syndicated loan issues to test for co-movements between the two modes of raising capital. Although positive in sign, the coefficient on the loan variable is not significant. When equity issues were introduced in model 4, a negative and insignificant sign is obtained. The results seem to suggest that the bond market does not serve as an alternative source of raising capital to bank borrowing.
- The next step in the estimation procedure regresses the log of equity issues against the macro variables, the firm-specific variable and a crisis variable (Table 9). Results from model 5 show that the level of equity financing is determined significantly by real growth and firm-specific factors. Equity issuance is also conditioned significantly by the performance of the stock market (proxied by the lagged value of average Hang Seng dividend yield). The sign on the bond issuance variable is negative but insignificant – confirming the results obtained from model 4.
- When an interactive crisis and bonds variable is introduced in model 6, it is negative in sign and highly significant. This suggests that a financial crisis adversely impacts on equity issuance – and the bond market seems to be an alternative mode for raising capital during such periods. The coefficients on real growth and Hang Seng dividend yield variables decline while the firm-specific factors become insignificant. This implies that a crisis tends to dampen the appetite for equity placements, after controlling for other macroeconomic and firm-specific factors, but there is some evidence of firms raising funds through bond issues, supporting hypothesis of the bond market as an alternative mode of financing.
- The crisis variable is further disaggregated into the Mexican crisis of 1994 and the Asian Crisis of 1998. The coefficient on the interacted Mexican crisis variable is negative in sign but only significant at the 10 percent level. This implies that during the Mexican crisis, the corporate bond market served to finance the funding requirements of some firms which would have otherwise engaged in equity financing. For the interacted Asian crisis variable, the coefficient is positive and significant at the 10 percent level. This implies that during the Asian crisis, the bond market did not serve as a financing mechanism to firms.

Table 9: Simple OLS Regression Results - Financing model

Dependent var: Log of equity issues	Model 5	Model 6	Model 7	Model 8
Constant	-9.62 [1.14]	-2.18 [0.13]	2.89 [3.93]	37.9 [5.92]
Trend	0.14 [1.37]	0.04 [0.40]	-0.12 [2.21]	-0.16 [3.12]
Lagged equity issuance	0.23 [0.67]	0.02 [0.07]	0.5 [1.82]	0.9 [4.07]
Lagged foreign reserve growth	-0.81 [1.39]	0.85 [0.10]	-0.11 [2.56]	-2.34 [2.72]
Lagged real growth	0.56 [1.84]	0.38 [1.41]	-0.08 [0.51]	-0.29 [2.47]
Firm-specific residual	-0.06 [2.68]	-0.21 [0.10]	-0.65 [0.44]	-1.2 [0.81]
Log of bond issues	-0.4 [0.39]	-0.11 [0.13]	-1.18 [-2.23]	-1.61 [3.14]
Lagged log Hang Seng dividend yield	11.8 [1.65]	4.83 [0.62]	-11.18 [2.77]	-17.82 [5.56]
Crisis*bond issues		-0.63 [2.21]		
Mexican Crisis*bond issues			-0.46 [1.78]	
Asian Crisis*bond issues				0.71 [1.82]
Adj. R Squared	0.5	0.62	0.7	0.7
Sample observations	36	36	36	36
Prob > F	0.04	0.02	0.008	0.008
Sample Period: Q1-1984 to Q2-2001				

- Table 10 shows the results from a similar exercise with the syndicated loan market. The log of syndicated loans issues is regressed against its own lag, real growth, foreign reserve growth, bond issues and the best lending rate. The results are shown below.
- Syndicated loan issues seem to be highly autoregressive and statistically independent of foreign reserve growth and real income growth. The coefficient on the best lending rate is negative, i.e. a rise in the lending rate leads to a significant reduction in loan issues. The sign on the firm-specific residual is positive and significant, i.e. the higher the perceived credit rating, the higher the amount of loans that were issued. When the

interactive crisis variable is introduced, it is positive in sign though not significant, i.e. there is no significant evidence of the bond market substituting for the bank loan market.

Table 10: Simple OLS Regression Results - Financing model

Dependent var: Log of syndicated loan issues	Model 9	Model 10
Constant	3.58 [1.42]	3.75 [1.47]
Trend	0.04 [2.76]	0.34 [2.76]
Lagged loan issuance	0.62 [2.54]	0.59 [2.34]
Lagged foreign reserve growth	2.34 [0.90]	1.83 [0.67]
Lagged real growth	0.03 [0.95]	0.03 [0.95]
Firm specific residual	1.44 [1.96]	1.41 [1.65]
log of bond issues	-0.15 [0.71]	-0.16 [0.71]
Lagged log of best lending rate	-0.85 [2.11]	-0.84 [1.90]
Crisis*bond issues		0.05 [0.62]
Adj. R Squared	0.71	0.72
Sample observations	36	36
Prob > F	0.0001	0.0001

Sample Period: Q1-1984 to Q2-2001

Sources of Data		
Variable	Definition	Source
Spreads	Weighted spreads of corporate issues (local and foreign currency) over an appropriate benchmark	Bondware, Capital Data
Real GDP	Real GDP growth	CEIC Database
Bond issuance	Nominal amount of bonds issued	Bondware, Capital Data
Equity Issuance	New equity issues	Bondware, Capital Data
Loan Issuance	New syndicated loan issues	Bondware, Capital Data
Hang Seng Dividend Yield	Hang Seng Dividend Yield, Main Board	CEIC Database
US 10 year rate	Yield on 10 year US Treasury Bond, to Maturity	
Foreign Reserves	International foreign reserves	HKMA
Debt	Total external debt	HKMA
Fiscal deficit	General government fiscal deficit	Hong Kong SAR Government

References

Eichengreen, B., and Mody, A., (1998), "What Explains Changing Spreads on Emerging Market Debt: Fundamentals or Market Sentiment?", *NBER Working Paper*, No. 6408, Cambridge.

International Monetary Fund, (2001), *International Capital Markets: Developments, Prospects, and Policy Issues*, Washington . D.C.

Hong Kong Monetary Authority, (2001), "Cost-Benefit Analysis of Developing Debt Markets", *HKMA Quarterly Bulletin*, November 2001, Hong Kong.

Kamin, Steven and Karsten van Kleist, (1997), "The Evolution and Determinants of Emerging Market Credit Spreads in the 1990's", *Working Paper*, Bank for International Settlements, Basle.