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economics department

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Overview

The Singapore economy deteriorated more sharply than expected in the first half of 2001. Since our last report published at the beginning of the year, GDP growth is estimated to have contracted for two consecutive quarters on a seasonally-adjusted quarter-on-quarter annualised basis. This follows from the strong growth of 10% recorded in 2000.

While a slowdown had been anticipated since the last quarter of 2000, economic conditions in Singapore's main trading partner countries have weakened much more drastically than expected at the time. In particular, the US economy has weakened sharply led by the correction in the high tech sector, while domestic demand in Japan and the Euro zone has worsened. As such, the regional countries are unlikely to find much support for growth through demand for their exports. The outlook for most of these economies have been downgraded following the release of weaker than expected Q1 2001 GDP numbers.

Given its openness and dependence on external demand, the Singapore economy was hit hard, especially the manufacturing, commerce and transport sectors, which are the sectors most vulnerable to the global economic downturn. The impact on the trade-related service industries was exacerbated by the moderation in regional trade flows.

Singapore's GDP growth projection for 2001 as a whole has been downgraded to 0.5-1.5%. Continued weakness is expected in the electronics industry in the quarters ahead, as price adjustments and clearing of inventory have not abated. We do not expect a sustained recovery in production until worldwide IT demand enters into a new expansion phase next year.

The weakening of the manufacturing sector in the next few quarters is also likely to dampen growth in the services sector, with the commerce and transport sectors bearing the brunt of the impact given their relatively strong linkages with the manufacturing sector.

Although the outlook for the financial sector is also dependent on the recovery of the US economy, some support for growth is likely to be seen from the insurance industry, which has been a significant beneficiary of the CPF investment liberalisation. Commercial banking activity also remains steady. In the construction sector, the surge in contracts for civil engineering works awarded last year could translate strongly into certified payment in the second half of 2001, although the private residential segment is expected to remain weak.

Price pressures, which have already come down, are likely to recede further. In the labour market, nominal earnings growth has responded fairly quickly to the weakening economy. Nonetheless, unit labour costs are expected to see some increase, due to the cyclical decline in productivity. On the consumer front, benign foreign inflation and weaker sentiments dampened by the economic downturn will help bring CPI inflation lower in the second half of the year. Some price increases will be sustained however, in those areas where costs have continued to rise, such as health and "other miscellaneous" items. Taking all factors into consideration, we have forecast inflation in 2001 to come in within the 1-1.5% range.

Included in this issue of the Quarterly Bulletin are box items which examine in greater depth recent developments in the tourism sector, as well as trends in the MAS underlying inflation measure. In Chapter 4, we also discuss the diminishing role of Japan in East Asia, which has emerged as a result of the persistent weakness in the Japanese economy. Finally, the special feature chapter introduces a measure to track changes in liquidity conditions in the Singapore economy.

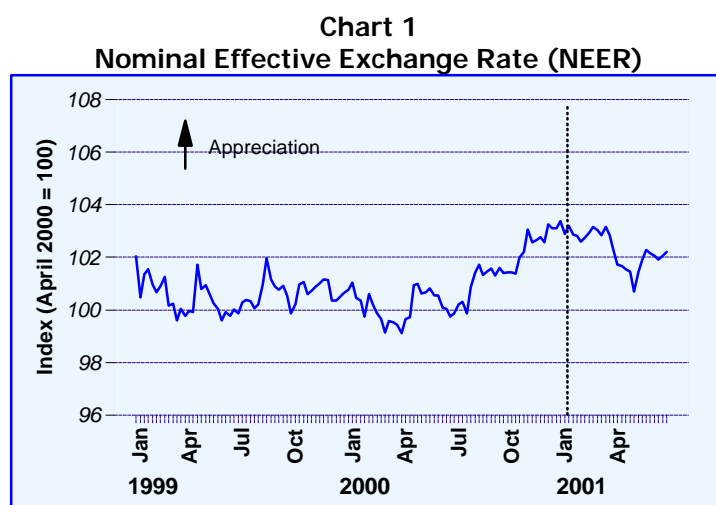
The MAS Monetary Policy Statement was released on 12 July 2001 and appears in pages ii-v.

Monetary Policy Statement

July 2001

Introduction

1 In early 2000, against the backdrop of a favourable external environment and a strong rebound in the Singapore economy, MAS adopted an exchange rate policy that allowed for a gradual, modest appreciation of the Singapore dollar on a trade-weighted basis. In the event, the Singapore economy expanded strongly in 2000, particularly in the second half of the year, accompanied by a significant tightening of the labour market and a rise in domestic inflationary pressures. The Singapore dollar trade-weighted exchange rate (S\$NEER) trended upwards for most of 2000, reaching the upper bound of the policy band by the end of the year. (Chart 1)

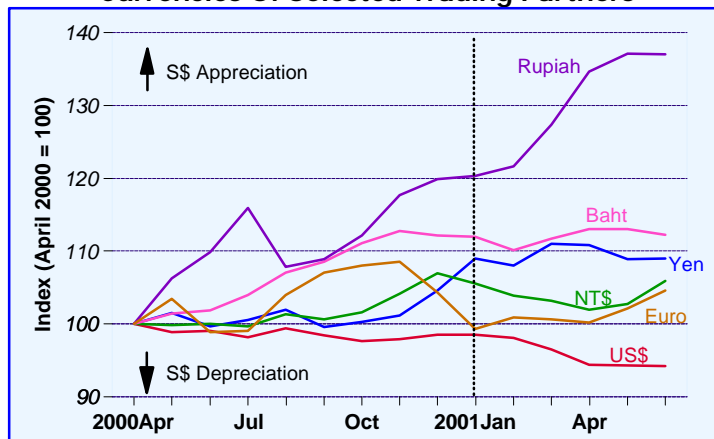


2 In January 2001, MAS decided to maintain this stance of a modest appreciation of the trade-weighted Singapore dollar within an unchanged policy band. It aimed to cap medium-term inflationary pressures, while continuing to be supportive of economic activity as growth came off its cyclical high and moderated to a slower pace.

3 Economic activity slowed much more in the first half of 2001 than was expected. This caused market sentiment to shift against the Singapore dollar. Strong demand for US dollars to fund merger and acquisition activities by domestic corporates, and a strengthening of the US dollar against the major currencies, exerted further downward pressure on the Singapore dollar. MAS intervened in early May, to prevent this exceptional demand for US dollars from pushing the exchange rate beyond the policy band.

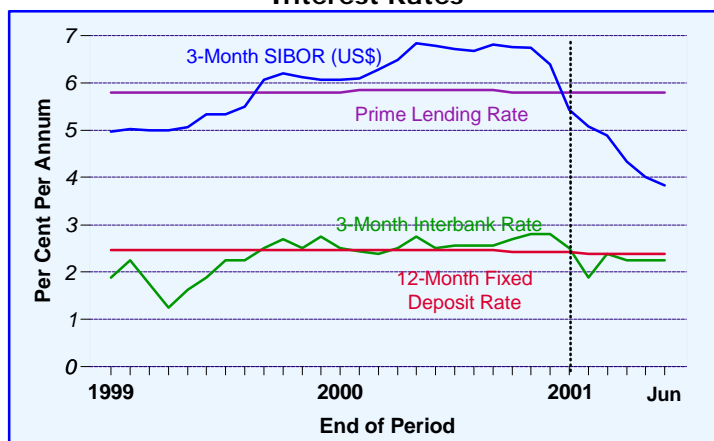
4 The S\$NEER has therefore weakened over the period, from the top of the policy band at the start of the year to the lower half of the band at end June. This trend was consistent with the change in underlying economic and market conditions. On a bilateral basis, the Singapore dollar depreciated against the US dollar but strengthened against the Yen and Euro and most regional currencies. (Chart 2)

Chart 2
Singapore Dollar Exchange Rate Against
Currencies Of Selected Trading Partners



5 Overall monetary conditions have eased since the beginning of this year, reflecting both the easing of the S\$NEER as well as lower interest rates, influenced by interest rate cuts by the US Federal Reserve. The domestic 3-month interbank rate eased from 2.81% in December 2000 to 2.25% in June 2001. Interest rates in the retail market have also stayed low. (Chart 3)

Chart 3
Interest Rates



Growth Prospects To Weaken Further This Year

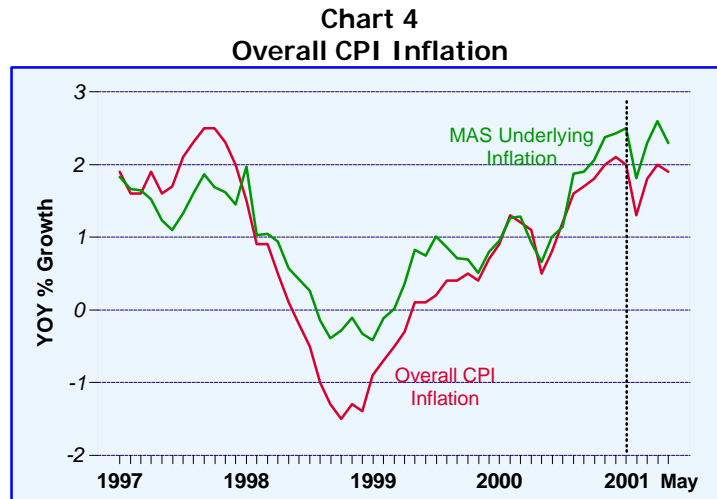
6 The global economic environment has deteriorated sharply. The extent of the slowdown has exceeded what was expected at the beginning of the year, and so has the risk of a more protracted downturn. The US economy slowed markedly, while Japan recorded negative growth in the first quarter. In Europe too growth has weakened more than expected. The forecasts for many regional economies have also been revised downwards following weak first quarter exports and GDP growth rates. The aggregate GDP growth for Singapore’s major trading partners is expected to moderate sharply to 2.5% this year, down from the 5.5% recorded last year.

7 Given the openness of the Singapore economy and its dependence on external demand, it is not surprising that we have been hit hard by the external downturn. GDP growth is estimated to have fallen to 1.8% (year-on-year) in H1 2001, from 10.7% in H2 2000, led by a sharp slowdown in manufacturing and weakening domestic demand. Measured in terms of a seasonally-adjusted quarter-on-quarter annualised rate (SAAR), growth has been negative for two consecutive quarters and the economy is technically in recession.

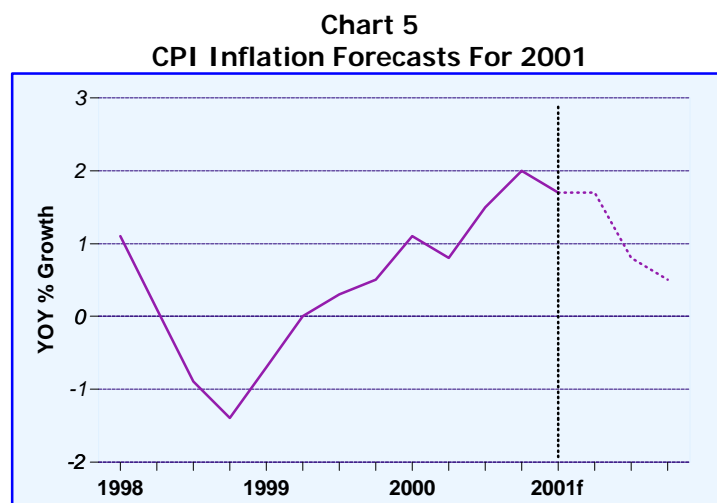
Inflationary Pressures Are Subsiding

8 The labour market remained tight in the first quarter of the year, with the seasonally-adjusted unemployment rate declining from 2.9% in December 2000 to 2.4% in March 2001. However, the labour market is now showing clear signs of easing.

9 CPI inflation averaged 1.8% in Jan-May 2001, down from a peak of 2.0% in Q4 2000, although the MAS measure of underlying inflation was still relatively high at 2.3% in Jan-May 2001. (Chart 4)



10 CPI inflation is expected to trend down for the rest of the year, coming in within the 1-1.5% range for 2001 as a whole. (Chart 5) Foreign inflationary pressures are expected to be benign this year, especially with the softening in oil prices. Domestic sources of inflation will also be more muted with a softer labour market going forward, significantly slower growth in nominal earnings, and more cautious consumer sentiments.



Monetary Policy

11 Against the backdrop of a weaker external economic environment and a more protracted global electronics downturn, near term growth prospects for the Singapore economy have turned significantly weaker. Real GDP growth is expected to slow sharply to 0.5-1.5% this year. Recovery in 2002 will depend on an upturn in external demand, particularly of the global electronics industry. At the same time inflationary pressures are subsiding. However, the slowdown reflects a decline in demand, not an erosion of competitiveness. There is no reason for any persistent weakening of the Singapore dollar.

12 MAS has therefore shifted to a neutral exchange rate policy stance, with a policy band centred on a zero percent appreciation of the S\$NEER. MAS will continue to guide the S\$NEER within this exchange rate band, and stands ready to intervene to dampen excessive volatility should this become necessary.

1 Macroeconomic Developments

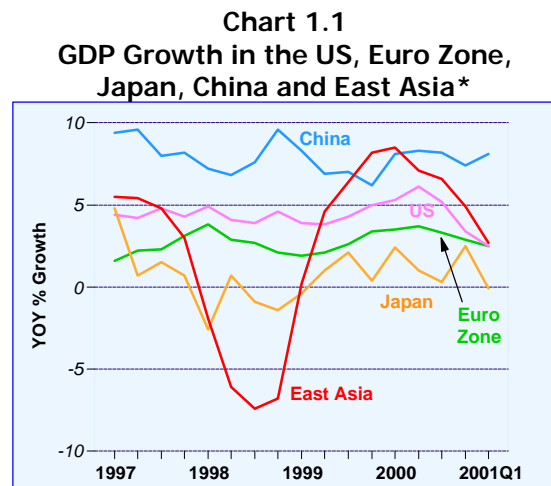
1.1 External Developments

The world economy continued to decelerate in Q1 2001...

The global economy, which started to show signs of slowing in the latter part of 2000, continued to decelerate in Q1 2001. This was evident in the industrialised economies as well as the developing economies of East Asia, with the exception of China. (Chart 1.1)

In the US, real GDP growth decelerated to 2.5% in the first quarter of this year, from 3.4% in Q4 2000, as firms cut back on excess inventories and reduced new spending on equipment and software. In Q1 2001, US firms recorded their first quarterly reduction in inventories in ten years while growth in business equipment and software investment slowed to around one-third the pace recorded in H2 2000. US consumers also turned more cautious in Q1 2001 amid the weak equity market, which was weighed down by worries about corporate profitability, as well as softening conditions in the labour market. However, declining mortgage rates boosted disposable incomes and lent some support to private consumption growth.

The Japanese economy weakened more sharply than expected. Real GDP contracted 0.2% on a quarter-on-quarter (QOQ) basis in Q1 2001, placing the economy on the brink of a technical recession barely one year after it emerged from the last one in Q1 2000. On a year-on-year basis, the economy stagnated. Weak external demand and private capital investments were the main drags on growth. Consumer spending was also sluggish, despite the surge in durable goods consumption ahead of the introduction of the new recycling law that requires consumers to shoulder the cost of disposing old appliances from 1 April 2001. Private consumption, which accounts for more than half of GDP, was flat in Q1 2001 compared to the previous quarter.



* Includes Indonesia, Malaysia, Philippines, Thailand, Hong Kong, South Korea and Taiwan

In the Euro zone, the anticipated economic slowdown started to materialise. Real GDP growth moderated to 2.5% in Q1 2001, as a result of slower investment and export growth. Private consumption growth, on the other hand, continued to contribute to economic activity.

In the two largest economies, Germany and France, real GDP growth slowed to 2.1% and 2.7% respectively in Q1 2001, as real export growth in both countries moderated sharply. Amid the weak external demand outlook, private investment spending also recorded a significant slowdown.

...and the weakening external environment dragged down East Asian growth

As a result of the worsening external environment driven by the sharp slowdown in the US, Japan and world electronics demand, average East Asian¹ economic growth weakened to 3.4% in Q1 2001 from 5.2% in Q4 2000.

The impact of the export slowdown on economic growth in these regional economies varied with their exposure to the US, Japan and the electronics sector (Chart 1.2a & 1.2b), as well as currency fluctuations. For countries with flexible exchange rates, currency depreciation mitigated to some extent the impact of the external demand slowdown on the volume of exports and real GDP growth. (Table 1.1)

Chart 1.2a
% Share of Electronics Exports to Total Exports, 2000

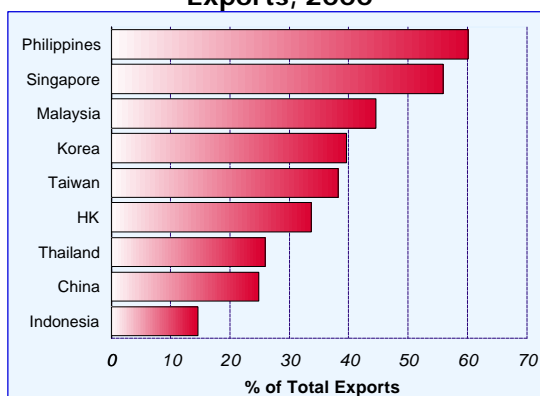


Chart 1.2b
% Share of Exports to US and Japan, 2000

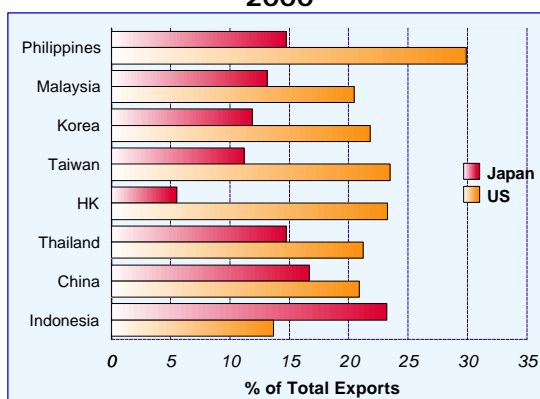


Table 1.1
East Asian Export Growth

	YOY% change					
	in Nominal US\$ *			in Real Local Currency **		
	2000 Q1-Q3	2000 Q4	2001 Q1	2000 Q1-Q3	2000 Q4	2001 Q1
Indonesia	31.4	18.0	4.7	16.7	14.2	11.7
Malaysia	20.4	5.8	2.0	19.0	8.1	6.6
Philippines	9.0	7.8	-0.5	15.2	25.2	19.0
Thailand	21.4	14.4	-0.8	18.9	7.1	-2.0
Hong Kong	17.7	11.9	2.0	18.2	12.8	4.5
South Korea	25.7	6.1	2.4	23.5	16.4	8.4
Taiwan	25.5	13.0	-3.6	18.6	14.0	1.9
China	33.1	15.5	14.6	na	na	na

* Customs trade data for exports of goods only.

** National accounts data for exports of goods and services.

¹ Includes Indonesia, Malaysia, Philippines, Thailand, Hong Kong, South Korea, Taiwan and China in East Asia.

Reflecting the openness of the regional economies, domestic demand slowed sharply in tandem with the deteriorating external environment. With the exception of Hong Kong, investment spending decelerated across the region. South Korea, Taiwan and the Philippines saw real gross fixed capital formation contracting in Q1 2001, while investment spending in Thailand had already begun to decline a quarter earlier. (Chart 1.3)

With the exception of Indonesia, consumer spending in East Asia slowed, undermined by uncertainties over labour market conditions and to some extent by stock market volatility.² (Chart 1.4)

China was the only bright spot in East Asia

China was the bright spot in East Asia, recording a stellar 8.1% growth in Q1 2001, compared to an average growth rate of 2.7% for the rest of East Asia. The Chinese economy received support from domestic demand, boosted by government spending. China's export growth also outperformed the region's, as demand for lower-end consumer products was not as significantly affected by the electronics downturn.

1.2 Domestic Output

In the previous issue of the quarterly bulletin, we noted that there were mounting signs of weakness in the global electronics industry. As it turned out, the magnitude and speed of the fall-off in tech demand has been particularly sharp, with global chip sales -- which is commonly used as a proxy for global electronics demand -- contracting by 20% in Q1 2001, the steepest quarter-on-quarter contraction for the past two decades. (Chart 1.5)

Other indicators also pointed to a more severe correction compared to previous downturns in 1996 and 1998. For instance, US new orders for electronics fell by a hefty 9.8% in Q1 2001, which was the sharpest year-on-year contraction in the past decade. The weakness was particularly acute in the communication segment, which

² While the East Asian households' exposure to the stock markets were relatively low compared to that in the US, stock market movements did affect domestic consumer sentiments. Except in China, stock prices in the region were weaker in Q1 2001, weighed down by the contagion effects from the downturn in the US equity markets.

Chart 1.3
Real Investment Growth

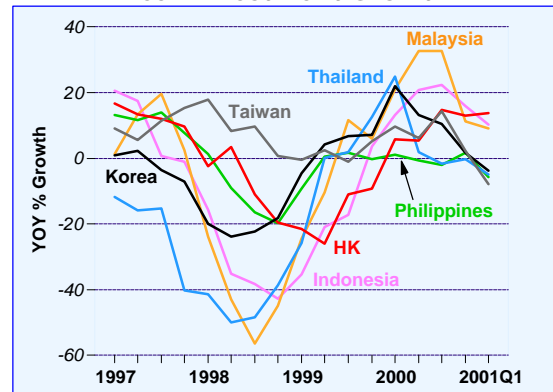


Chart 1.4
Real Private Consumption Growth

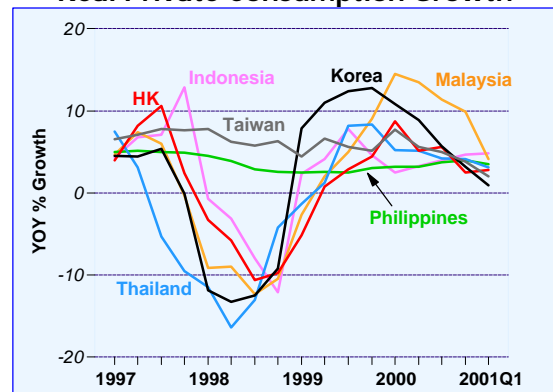
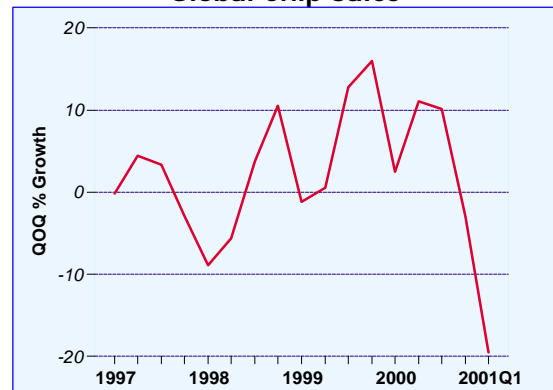


Chart 1.5
Global Chip Sales



saw new orders shrinking by 19% in Q1 2001 and a further 38% in April 2001. The North America book-to-bill ratio of semiconductor equipment also dipped to a record low of 0.44 in April 2001, reflecting a sharp cutback in capital spending given the weak demand and uncertain outlook for the industry. (Chart 1.6)

Singapore's manufacturing sector bore the brunt of the downturn

The slowdown in global electronics demand filtered quickly to the Singapore economy. Its effects first showed up in export numbers before manifesting in manufacturing output with a lag. Growth of electronics exports started declining in December 2000, while output only started falling in March, as local manufacturers cut back on production in response to declining semiconductor prices. Electronics output grew by just 1.1% in Q1 2001 and subsequently contracted 15% in Apr-May 2001, with production of disk drives, telecommunications equipment and consumer electronics experiencing the steepest declines. (Chart 1.7)

Non-electronics output also started to show signs of weakening in Q1 2001. This reflected the spillover effects of the slowdown in the electronics segment to the non-electronics industries, as well as the volatility of pharmaceuticals output. Supporting industries such as fabricated metals and machinery and equipment started to contract in March 2001. (Chart 1.8)

Pharmaceuticals output was volatile, mainly due to a switch in product mix by a key manufacturer in the industry³. In comparison, a steady performer in the non-electronics sector has been the transport equipment industry. In particular, the marine transport segment continued with its robust expansion, reflecting the improved competitiveness of the industry following the consolidation among local shipyards, and increased contracts for oil-rig production and repairs. The aviation transport segment also turned in stellar growth, supported by overseas contracts for repair of commercial planes. Overall, the manufacturing sector grew by 2.4% in Q1 2001 and contracted by 6.1% in Apr-May 2001, down sharply from the double-digit growth recorded in the preceding quarters.

Chart 1.6
New Orders of Electronics & Book-to-Bill Ratio of Semiconductor Equipment

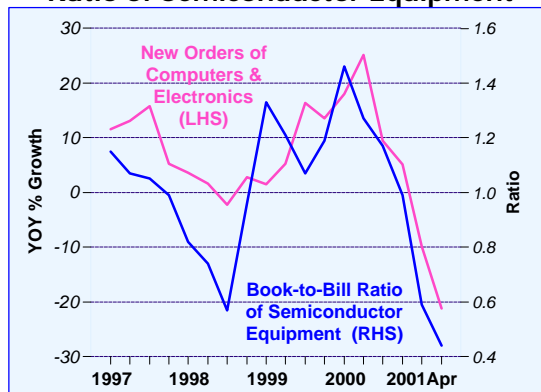


Chart 1.7
Manufacturing Sector Performance

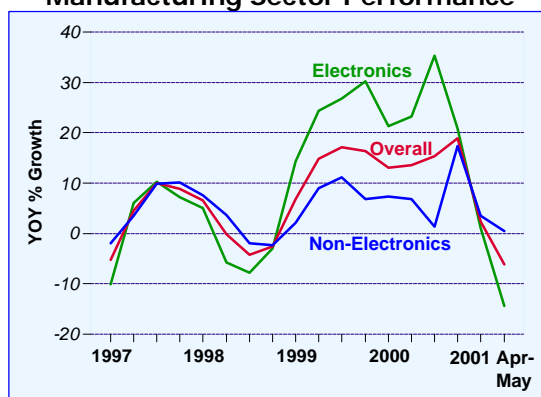
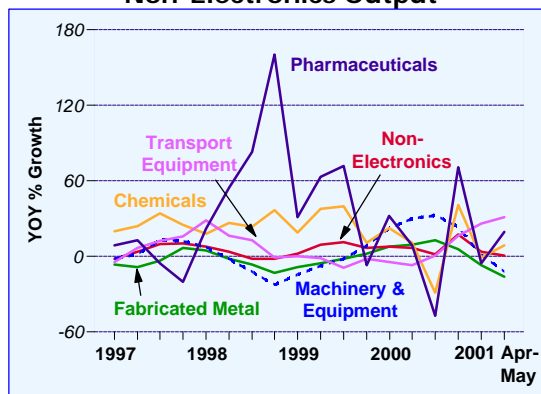


Chart 1.8
Non-Electronics Output



³ Pharmaceuticals output expanded by a hefty 71% in Q4 2000, before contracting by 5.8% in Q1 2001 and subsequently increased by 19% in Apr-May 2001. Excluding pharmaceuticals, output of non-electronics increased by 5.4% in Q1 2001 and contracted by 2.3% in Apr-May 2001.

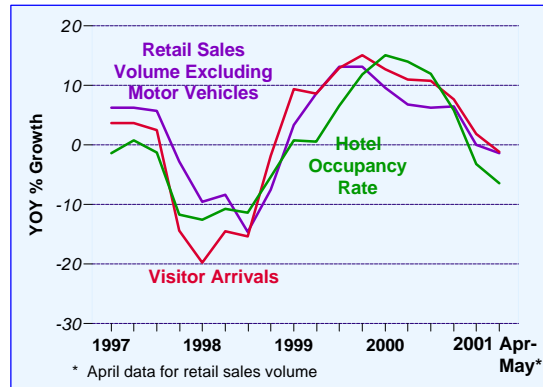
The slowdown has begun to permeate the services sectors...

The slowdown in the manufacturing sector, coupled with the weaker regional demand, has in turn dragged down the growth of the trade-related services sectors. The spillover effects of manufacturing sector activity on the performance of services sectors reflect the strength of the underlying inter-linkages between the various sectors in the economy.⁴

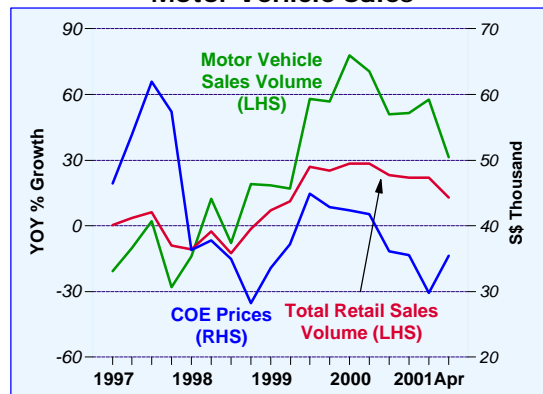
...with the commerce sector hit by slower regional and domestic trade, as well as declining visitor arrivals

The commerce sector saw the sharpest moderation among the services sector in Q1 2001, as growth more than halved from the previous quarter. (Chart 1.9) The slowdown was broad-based across the segments. Reflecting the weakness of domestic and regional manufacturing activity, re-export growth also moderated sharply. Although retail sales continued to turn in double-digit growth in Q1 2001 and April, this was due largely to a surge in motor vehicle sales. (Chart 1.10) Nevertheless, the easing of Jun-Jul COE premiums could indicate slower motor vehicle sales going forward. Excluding motor vehicle sales, retail sales was flat in Q1 2001 before falling by 1.4% in April, reflecting more cautious spending by domestic consumers amidst the uncertain economic environment. Spending on computers and telecomm equipment, the two main supporting pillars of retail sales last year (other than motor vehicles) also registered a 3.0% contraction in April following slower growth in Q1 2001.

**Chart 1.9
Commerce Sector Performance**



**Chart 1.10
Motor Vehicle Sales**



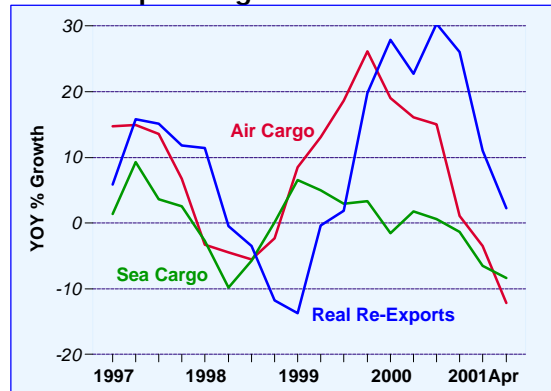
⁴ To estimate the dynamic effects of a manufacturing downturn on the services sector, simulations were performed using the MAS' Monetary Model of Singapore (MMS). The results from the model incorporated the direct inter-linkages as captured by the Input-Output tables, as well as other dynamic and macro linkages through the economy. The results show that a 1% drop in manufacturing output would shave off 0.11% point from growth of the services sector. The spillover from the manufacturing downturn would be felt almost immediately, with the impact lasting for around four quarters.

Visitor arrivals moderated sharply in Q1 2001 and subsequently contracted in April 2001. In May, visitor growth rose by 1.6%, similar to that in Q1 this year.⁵ The slower growth led to poorer business at hotels as their average occupancy rates fell by 3.2% in Q1 this year and a further 6.5% in Apr-May. It was estimated that the retail, hotel, and restaurant industries would be most affected in the event of a slowdown in tourist arrivals. A more detailed write-up of some recent trends in the tourism industry appears in Box Item 1.1.

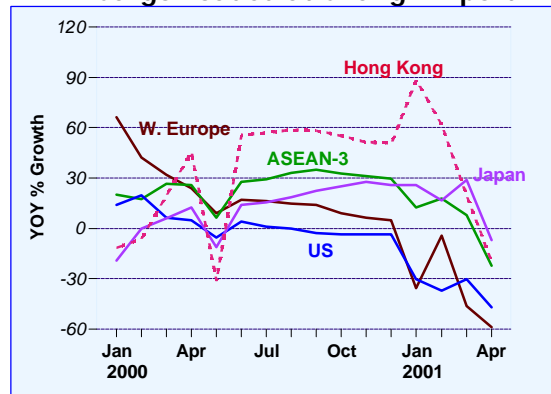
The transport sector was also adversely affected , although communications continued to hold up well under the impetus of liberalisation measures

The transport & communications sector slowed in tandem with the weaker export performance. (Chart 1.11) Air cargo traffic contracted by 3.5% in Q1 and by a further 12% in April 2001, as exports of electronics contracted. In particular, machinery & transport equipment cargo - the bulk of which are electronics products – loaded at the Changi Airport for shipments to major export markets has been weakening since Oct-Nov last year. (Chart 1.12) In addition, overall transshipment air cargo and passengers carried showed signs of weakening in April 2001. Sea cargo volume shrunk further in Q1 and April 2001, mainly due to the slowdown in regional trade and the shift by Maersk Sealand to Tanjung Pelepas. The communications industry remained the only bright spot within the transport & communications sector, with mobile phone subscriptions and telephone call minutes surging further on the back of competitive packages offered by mobile subscribers and other service providers.

**Chart 1.11
Transport Segment Performance**



**Chart 1.12
Machinery & Transport Equipment
Air Cargo Loaded at Changi Airport**



⁵ Visitor growth rebounded in May from the 3.8% fall in April, largely propped up by improved arrivals from Australia (18%), ASEAN (8.3%) and Europe (2.8%). Together these countries account for 54% of total arrivals into Singapore.

The financial sector was dragged down by the weak stock market

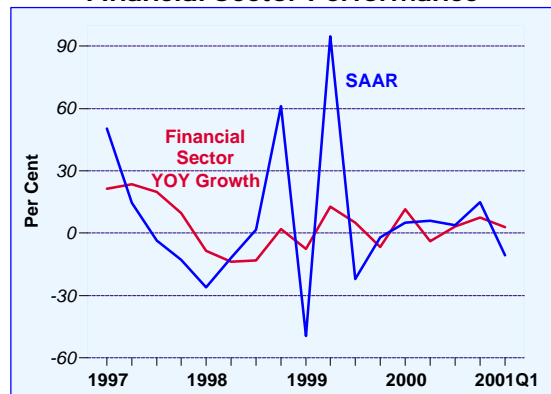
The financial services sector was not spared from the general slowdown. Growth of the sector moderated to 3.0% in Q1 2001 from 7.5% in the previous quarter. (Chart 1.13) Stock market activity contracted sharply, taking its cue from the correction in the global equity markets. The weakening US economy and sharp corrections in Wall Street equity prices, particularly technology stocks, dampened sentiments in the local stock market, with the Straits Times Index (STI) shedding an average of 14% since the beginning of this year. As a result, volume and value of shares transacted in the local market plunged some 19% and 32% respectively in Jan-May 2001, as investors stayed away. (Chart 1.14) At the same time, stockbroking activity was further dragged down by the liberalisation of brokerage fees since October last year.

Activities in the other segments such as foreign exchange, the Asian Dollar Market (ADM) and the investment advisory business were also weaker. In the ADM, weak growth prospects in the regional economies continued to act as a drag on non-bank loans⁶. The investment advisory segment also fell sharply in Q1 2001, reflecting in part the lower commissions earned by fund managers as a result of the decline in the value of managed assets on the back of the fall-off in global equity prices. The poorer performance in the investment advisory business was also due to lower income from unit trusts' net subscription and custodian fees of new institutional fund mandates, as investors were more cautious in allocating funds for investment. Although foreign exchange activity picked up from Q4 2000 as a result of greater volatility in Yen-US dollar movements, it remained lower than in the first quarter of last year. (Chart 1.15)

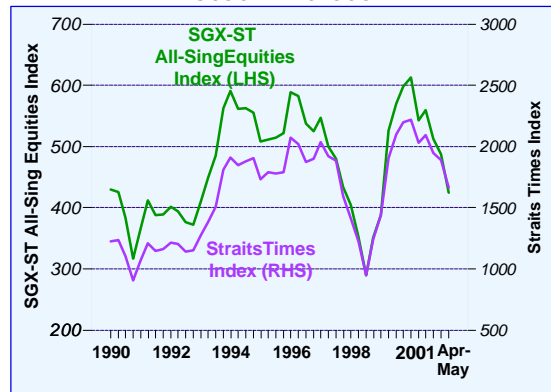
In contrast, the insurance segment continued to expand strongly in Q1 2001, benefiting from the further liberalisation of the CPF Investment Scheme in January this year. Over 90% or \$1.5 billion of savings withdrawn from CPF Special Accounts went into insurance-related products, together with a further \$1.44 billion from CPF Ordinary Accounts as Singaporeans adjusted their portfolio allocations. The \$2.95 billion channelled to insurance-related products in Q1 alone

⁶ As at end-April 2001, non-bank Asian Dollar Market lending to East Asia fell by US\$10.9 billion compared to April 2000, while lending to the other regions saw a net increase of US\$1.3 billion.

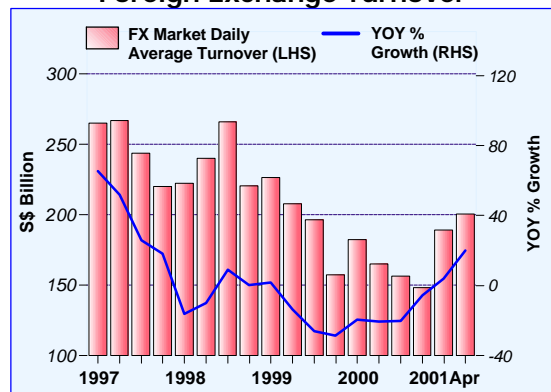
**Chart 1.13
Financial Sector Performance**



**Chart 1.14
Stock Indices**



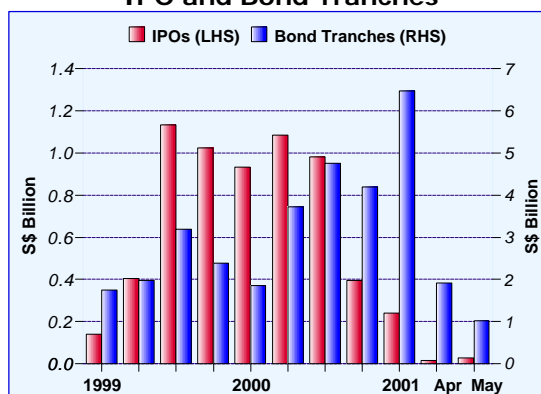
**Chart 1.15
Foreign Exchange Turnover**



amounted to 75% of the total life insurance sales for the whole of last year.

In the commercial banking industry, loans to non-bank customers expanded by a steady 4.7%⁷ in Q1 2001, unchanged from the previous quarter. Credit to most major industries continued to increase, although loans to the commerce sector declined further. Fee-based income from investment banking activities also bolstered the banking segment with a record-level of corporate Singapore dollar bond issuance, although this was marred somewhat by a decline in the number of IPO launches in the first quarter. (Chart 1.16)

Chart 1.16
IPO and Bond Tranches



Business services sector weakened in line with the sluggish property market and the general slowdown in economic activities

Growth in the business services⁸ sector moderated to 5.4% in Q1 2001. Real estate services, which accounts for 46% of the sector, weakened in line with the sluggish property market. Prices of residential property slid 7.9% on a year-on-year basis, with the number of uncompleted units sold coming in 21% lower than the average in 1999-2000. Concomitantly, the secondary market also fell to its lowest since the Asian financial crisis, with prices of resale HDB flats contracting by 8.5%. Prices of office space registered the sharpest decline in growth in the non-residential segment, from more than 20% growth in Q4 2000 to just 9.4% in Q1 2001.

In line with the downturn in economic activity, other professional services also reported slower growth. According to the Department of Statistics' Quarterly Business Receipts Index, growth of earnings in both professional and business services moderated to 1.5% and 9.3% in Q1 2001 respectively, from double-digit expansions in the preceding quarter.

⁷ Adjusted growth rate takes into account the integration of DBS Finance with DBS Bank.

⁸ Business services include real estate services, IT activities, legal and accounting professions, architectural and engineering services and business representative offices.

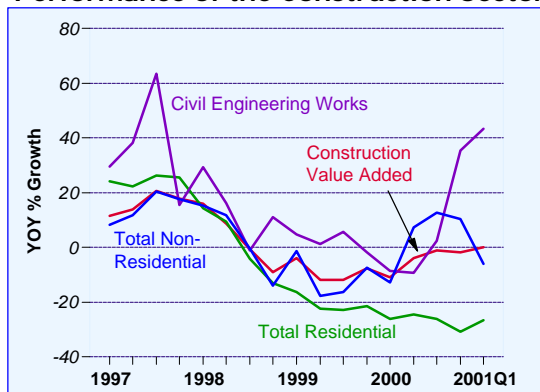
The construction sector showed some signs of recovery

While the performance of the services sectors was dampened by the slowdown in the manufacturing sector, the construction sector bottomed out to record flat growth in Q1 2001, after 10 consecutive quarters of contraction. The improvement was underpinned by strong growth in civil engineering works, as the four-fold increase in contracts awarded last year started to filter through⁹.

However, the building construction segments remained weak, as public and private residential construction activity continued to contract sharply on the back of the lacklustre property market. Prices declined in the private housing market, by 4% in Q1 2001, and are now 30% off the Q2 1996 peak. Sentiment in the public residential segment is similarly poor, as demonstrated by the shorter queues for new HDB units.

The construction of non-residential buildings also slowed in Q1 2001 after recording strong growth in H2 2000, as new projects were postponed in the wake of weakening economic conditions. (Chart 1.17) Contracts awarded in the non-residential segment also fell sharply, tumbling 27% in Q1 2001.

**Chart 1.17
Performance of the Construction Sector**



⁹ These were largely contracts for land reclamation projects, including the \$5.1 billion Jurong Island reclamation and Tuas View Extension in June and the \$1.8 billion reclamation project in Pulau Tekong and Pulau Ubin in October.

Box Item 1.1: Some Recent Trends in the Tourism Industry

Introduction

Singapore attracted a record 7.7 million visitors last year, an increase of 11% over 1999 and around 1.5 times the number of arrivals in 1990. This year, 3.1 million tourists have already visited Singapore in the first five months despite the weaker economic growth prognosis for many countries around the world. The Singapore Tourism Board (STB) is targeting arrivals of around 8.0 million in 2001. It is hoped that some of the major events planned for the year, including the Fashion Festival (held in March), the Caltex Singapore Masters golf tournament and the Manchester United exhibition soccer match, will provide a draw for visitors. In this box item, we examine some longer-term trends in the tourism industry in Singapore. We also report the results of the estimation of a simple econometric model to identify the underlying determinants of visitor arrivals into the country.

Trends in visitor arrivals

Visitor arrival growth rates trended down through most of the 1990s. (Chart A) Growth rates were volatile and relatively sluggish (averaging 6.1%) in the 1990-96 period, partially dragged down by the Gulf War. The onset of the Asian crisis in 1997 caused arrivals to fall further, by as much as 13% in 1998. However, the quick economic rebound in the region led to a surge in visitor arrivals in 1999-2000, bringing the growth over the decade to 4.6%. Nonetheless, the overall sluggish visitor growth during the 1990s led to a steady decline in Singapore's share of tourist arrivals to East Asia. (Table A)

Chart A
Total Visitor Arrivals

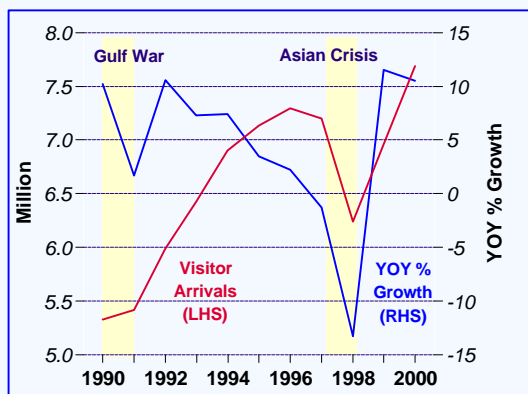


Table A
Singapore's Share of Tourist Arrivals to East Asia*

	Arrivals into S'pore as a share of East Asia* (%)	Year-on-Year growth for S'pore (%)	Year-on-Year growth for East Asia (%)
1988	9.0	13.8	18.3
1991 (Gulf War)	9.3	1.7	8.9
1993	8.8	7.3	8.0
1995	8.6	3.5	6.0
1998 (Asian Crisis)	5.7	-13.3	2.9
1999	5.5	11.5	14.1

* East Asia consists of the ASEAN-5, NIE-3, Japan and China
Source: CEIC

The country profiles of tourists to Singapore have remained largely unchanged over the past decade, although the share of visitors from Asia, particularly Indonesia, has increased somewhat. (Chart B) The increasing importance of short-haul markets (such as Indonesia and Malaysia) over long-haul markets (such as Europe) reflected, in part, the strengthening linkages between these countries and Singapore, as well as the increasing affluence of the middle-class within the region.

Visitors on holiday, including those visiting friends & relatives, accounted for more than half the tourist population in the 1990s. (Chart C) This category of tourists tended to be particularly sensitive to income fluctuations, with arrivals falling during periods of economic downturn such as the Asian financial crisis. Visitor arrivals were also affected by other developments such as the Gulf War, foot and mouth disease outbreak and the haze. More significant has been the trend decline in holiday arrivals since 1994. Indeed, when tourists visiting their friends & relatives (which accounted for 7% to 13% of holiday arrivals) were excluded, the holiday segment's share of arrivals had started to fall as early as in 1991-92.

On the other hand, the business arrivals segment grew over the same period, boosted by Singapore's status as a vibrant business/convention hub. The business segment's share of tourists rose from 17% in 1990 to 19% in 1999, with more than half the arrivals originating from Indonesia, Malaysia, Japan, USA, Hong Kong and Australia in 1999. Business visitors are potentially important because they usually stay longer and spend more than holiday tourists (except those visiting friends & relatives). (Tourists visiting their friends & relatives stayed the longest, often for more than a week.)

A small but growing segment of business tourists are those who come to Singapore to attend conventions, exhibitions, company meetings and company paid holidays (commonly known as Meetings, Incentives, Conventions and Exhibitions, or MICE in short). These tourists often bring along their friends and family. MICE tourists accounted for 2.7% of total arrivals in 1999 compared to 1.0% in 1994, and originate largely from Asia. This segment is likely to expand further as on-going joint promotional efforts between hotels, STB, and convention centres attract more MICE tourists. Singapore was ranked as Asia's number one meeting place and the sixth in the world by the influential Belgium-based Union Des Association Internationales (UAI).

Chart B
Top Tourist Generating Markets in 2000

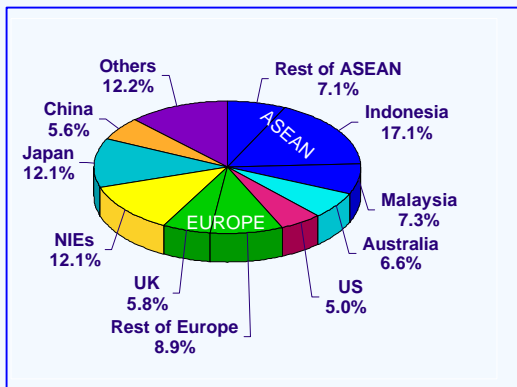
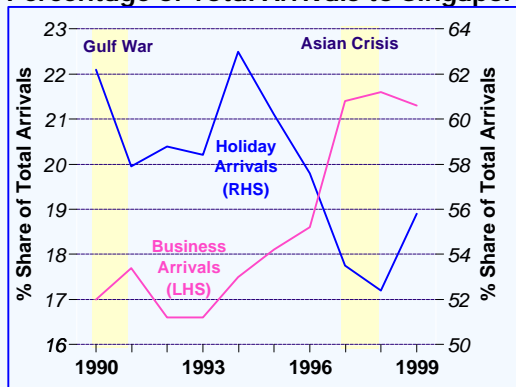


Chart C
Business & Holiday Arrivals as a Percentage of Total Arrivals to Singapore



Contributions from the tourism industry

Tourist receipts or the payment for goods and services bought by tourists during their stay in Singapore present a more accurate picture of the contributions of tourists to the domestic economy. Growth of tourist receipts averaged around 3.3% in the 1990-98 period - slightly higher than the average growth of arrivals for the same period - which was significantly lower than the late 1980s when receipts grew by 15% and arrivals by 12%. (Chart D) Promotional measures taken by the STB during the post-Asian Crisis period helped reverse this trend. As a result, receipts grew by 7.0% in 1999 and 13% in 2000, to yield \$8.8 billion and \$10 billion respectively - in line with the record tourist arrivals of 7.0 million and 7.7 million in those two years.

A study by DOS - using 1995 tourist expenditure and the 1990 Input Output Tables - found that tourism expenditure contributed \$4.7 million in value-added or 3.9% of GDP, based on the value created in industries that *directly* provide goods and services to tourists. Of these industries, the retail, hotel, restaurant and air transport industries benefited the most. Value-added generated by tourism expenditure amounted to 42% in the commerce sector and 19% in the transport & communications sectors. (Chart E)

Chart D
Tourist Receipts

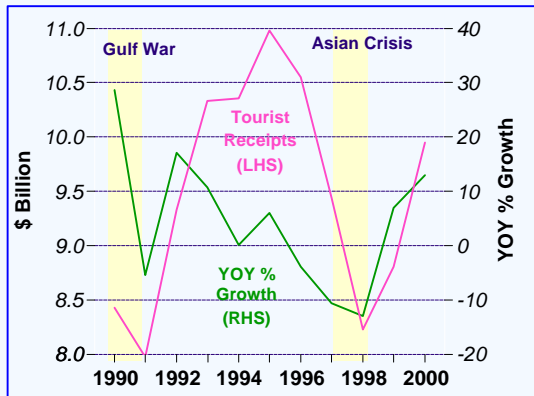
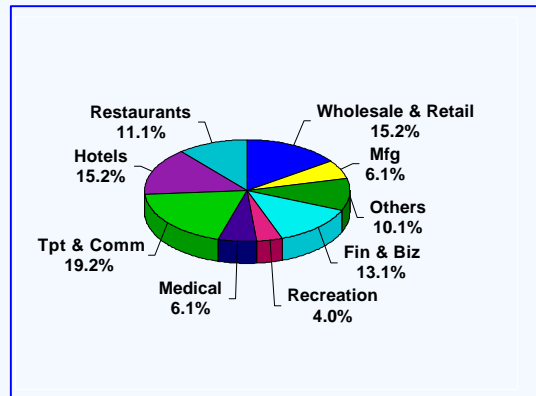


Chart E
Sectoral Distribution of Total Tourism Value-added Generated



Source: Singapore Input Output Tables 1990:
Concepts & Applications by DOS

Average expenditure per person was generally larger for the business tourists, who formed around a fifth of total arrivals during the 1990s. This was also generally true when average expenditure per person per day was considered. (Chart F) In particular, expenditure was the highest for those who travelled to Singapore specifically for shopping and business-related travel. These tourists provided support during the two crisis periods, and partially offset the decline in average expenditure per day by holiday tourists over the decade. Recently, there have been efforts to nurture this group of visitors to better meet their needs. For example, some hotels have started to offer wireless internet connections and attractive health-and-spa packages to cater to the busy (and weary) business traveller. Tourists intending to visit Singapore can now also select hotels according to their preference for price, location and facilities, and subsequently make real-time hotel reservations online.

Among the various tourist expenditures, shopping has consistently represented the main expenditure item, accounting for more than half the total expenditure - although its share of total expenditure has fallen slightly over the 1990s. The absolute amount spent by tourists has also trended down since 1990. (Chart G) Hotel accommodation has remained steadier, accounting for a fifth of total tourist expenses during the 1990s. In contrast, spending on medical and dental consultation has risen more than five times over the 1990s, contributing to around 9.7% of total tourist expenditure in 1999. Although medical spending suffered a 13% fall in 1998, it rebounded the following year, attesting to the attractiveness of Singapore as a top regional medical service hub and medical exhibition/convention centre.

Chart F
Average Expenditure Per Person Per Day

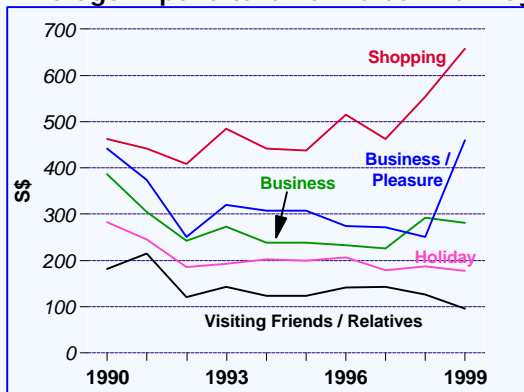
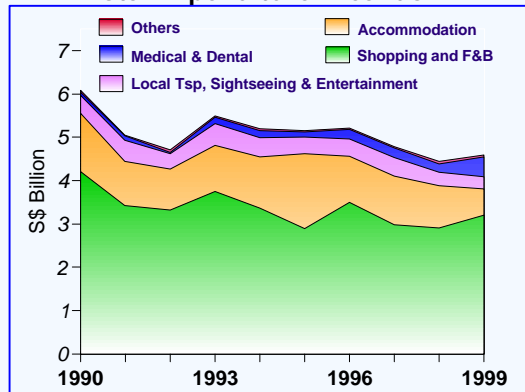
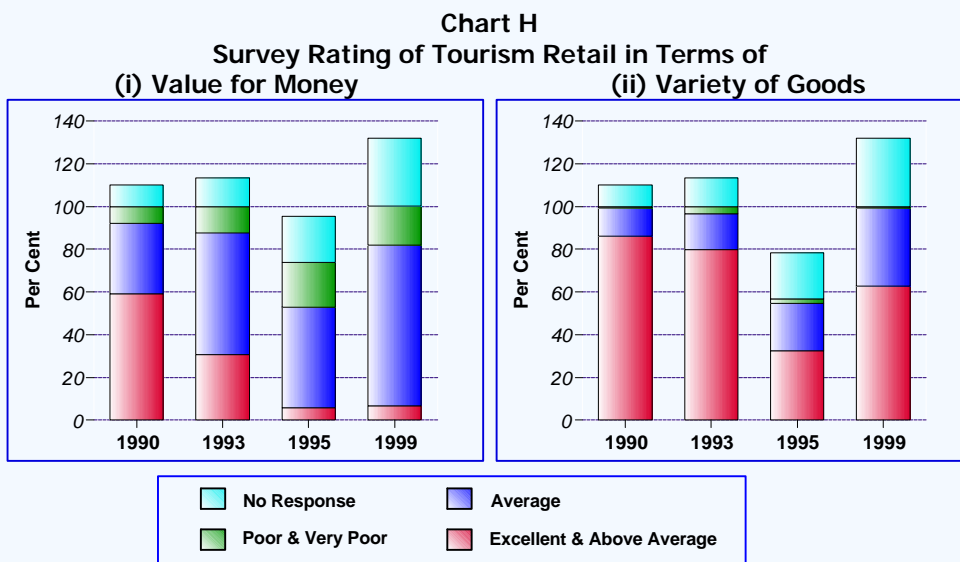


Chart G
Total Expenditure Breakdown



The slower growth in tourist expenditures may be indicative of some loss of Singapore's attractiveness as a "shopping paradise". According to the Survey of Overseas Visitors to Singapore, over the years, fewer tourists

have considered Singapore's retail products as excellent value-for-money items. (Charts H(i) & (ii)) This trend, however, could be set to change soon as the retail sector has brought in more shops selling affordable designer labels in the last two years, and more recently, a big outdoor market (with around 100 stalls) selling a wide range of international goods has been planned for the year-end. To revitalise the retail industry, a 10-year Retail 21 masterplan has also been put together, with the aim of doubling labour productivity by 2010.



Econometric Analysis of Factors Affecting Tourist Arrivals

Two factors have been commonly cited as affecting the travel plans of tourists - income and price effects. Economic prosperity raises disposable incomes and thereby, the propensity to travel. At the same time, tourists are likely to seek alternative cheaper destinations whenever the tourist destination's currency exchange rate turns unfavourable (i.e. negative price effect). To test the relative strengths of the positive income effect and the negative price effect on tourist arrivals, a pooled regression was carried out using the top 12 tourist generating countries over the Q1 1990-Q4 2000 period, yielding a data set of some 44 observation points. The results of our estimation are given in Table B.

The empirical specification was aimed at extracting a long-term relationship between visitor arrivals, real GDP and real bilateral exchange rates. Each country was allowed to have a separate intercept in order to allow deviations of the regressors from the group means. An AR(1) term was also added to soak up the remaining autocorrelation in the residuals. The results indicated that the exchange rate and income variables together explained 93% of the variation in the arrivals of the top 12 countries over the 1990s. A fairly large coefficient was found for the income variable, i.e. income elasticity was 0.95 as compared to the price elasticity of 0.53 (indicated by the exchange rate coefficient). Thus, it appears that economic prosperity (and short-term income fluctuations) in regional economies play a more important role in determining tourist arrivals into Singapore relative to the movements of the Singapore dollar. The result also provides some evidence that the appreciation of the Singapore dollar against the regional currencies may not be the *main deterring factor* behind the slight loss in Singapore's attractiveness as a tourist destination, noted in Table A. The seasonal factors, as well as a dummy variable used to account for the Gulf War and Asian crisis periods were also significant.

Variables:

LGDP	Log of real GDP (appears as a moving average representation in the regression)
LEXCH	Log of real bilateral exchange rates (appears as a moving average representation in the regression)
D	Dummy variable to account for the effects of the Gulf War and Asian Crisis
Seas(1), Seas(2), Seas(3)	Seasonal dummies

Table B: Estimation and diagnostic results

	<u>Coefficient</u>	<u>Standard Error</u>	<u>t-statistics</u>	<u>Probability</u>
LGDP	0.952	0.145	6.589	0.000
LEXCH	- 0.528	0.088	- 5.995	0.000
D	- 0.074	0.015	- 4.852	0.000
Seas(1)	0.004	0.008	0.515	0.607
Seas(2)	- 0.009	0.008	- 1.047	0.296
Seas(3)	0.032	0.008	4.224	0.000

Adjusted R-squared = 0.931, DW statistics = 2.302

We also estimated individual country-specific coefficients for the income and exchange rate terms. A number of countries including Japan, Malaysia, Hong Kong, UK, Taiwan and India had coefficients on their GDP terms which were higher than that indicated by the mean income coefficient obtained above. This result may, in part explain the slower tourist growth from Japan and Taiwan when compared with the countries in recent months as economic growth in the region has generally cooled off. On the other hand, resilient economic growth in UK and India has ensured strong arrivals from these countries during the current global downturn. Country-specific coefficients for the exchange rate elasticity were more varied. Arrivals from Japan, Thailand and Malaysia were very responsive to exchange rate changes whereas arrivals from Indonesia and UK had coefficients similar to the mean exchange rate coefficient of 0.53. Indonesia's lower exchange rate elasticity may highlight the importance of Singapore to its residents for the purposes of business and visiting relatives, particularly for the Indonesian Chinese. Singapore's role as a safe haven was also demonstrated during the peak of the Asian crisis when a number of Indonesians fled to Singapore despite the sharp fall in the Rupiah. On the other extreme, the exchange rate variable was not found to be a significant factor for arrivals from US and Hong Kong, possibly due to the large number of business arrivals from these countries (who tend to be less price sensitive).

Finally, we used the equation to forecast tourist arrivals from the top 12 tourist generating markets, using forecasts of exchange rates, CPI and GDP from the latest Consensus Forecast. The results yield a forecast of 6.2 million for the year 2001, an implied increase of about 1.5% over 2000 from these 12 tourist generating markets, compared against the average annual increase of about 12% in the past two years.

Conclusion

The tourism sector will continue to contribute significantly to our domestic economy. Last year, tourist receipts amounted to 8.0% of GDP and 21% of service receipts, due to Singapore's successful mix of attractive events, its world-class business hub nature and its strategic role as a tourist gateway to other regional destinations. Going forward, the long-term prospects of the tourism industry remain bright. According to a report by Geneva-based Air Transport Action Group (ATAG), the Asia-Pacific region will see airline passenger traffic doubling over the next 15 years. The Singapore Tourism Board has increased its promotional effects, coming up recently with a wide range of initiatives including boosting our status as the "Fashion Capital of the East", "Global City for the Arts" and "Sports Arena for Asia". With the focus on continuing to attract the high spenders (i.e. tourists who specifically come to Singapore for shopping and business/conventions), much effort will be put into revitalising the tourism-related sectors. This will prove to be beneficial to Singapore in the longer run as these tourists also tend to provide support for the domestic economy during economic downturns.

1.3 Aggregate Demand

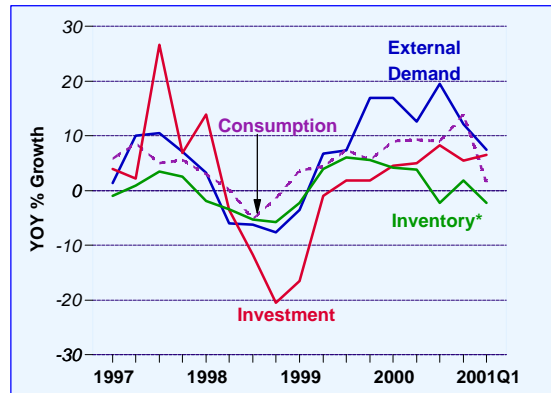
From an expenditure perspective, the slowdown was largely due to the fall-off in external demand...

From an expenditure perspective, the slowdown in Q1 2001 largely reflected the significant weakening in external demand, although domestic demand also declined. Total consumption growth decelerated sharply, mainly due to the decline in government spending, although some weakness in private consumption spending has also emerged. Growth of overall fixed investment rose slightly, supported by the double-digit increase in public investment spending. Nevertheless, private fixed investment moderated, in line with the weaker economic conditions. (Chart 1.18)

External demand for Singapore's goods and services saw slower growth of 7.5% in Q1 2001, after five consecutive quarters of double-digit expansion. Merchandise exports moderated sharply from its peak of over 20% in Q3 2000, dragged down by weakness in both re-exports and non-oil domestic exports (NODX). (Chart 1.19)

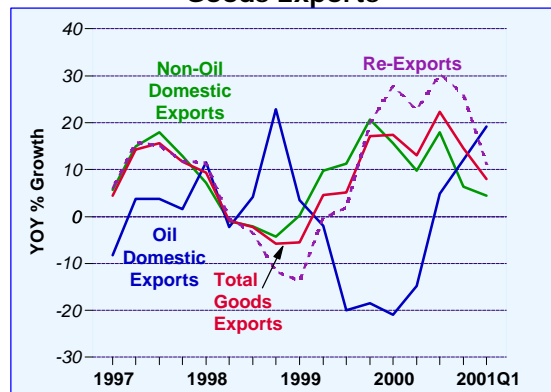
The slowdown in NODX growth in recent months mainly reflected the poor performance of electronics exports, although this was partly offset by the strong exports of chemical products. Growth of oil domestic exports rose by 19% in Q1, on the back of robust demand from Malaysia and Hong Kong. The general weakness in NODX was broad-based across most export markets. (Chart 1.20)

**Chart 1.18
Domestic vs External Demand**

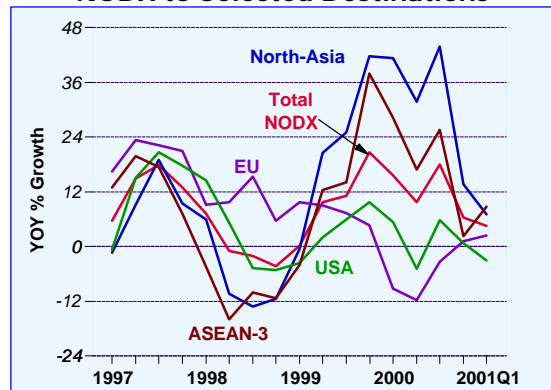


* Refers to the change in the increase in stocks as % of GDP of the previous year

**Chart 1.19
Goods Exports**



**Chart 1.20
NODX to Selected Destinations**



*ASEAN-3 refers to Malaysia, Thailand and the Philippines

Growth of services exports remained fairly soft in Q1, compared to the more robust growth rates in the last two years. Exports of travel services - which comprise about a quarter of total services exports – contracted in Q1 in line with the drop in tourist arrivals. Growth in exports of transportation services also moderated sharply, as receipts from freight services fell with the slowdown in merchandise export trade. (Chart 1.21)

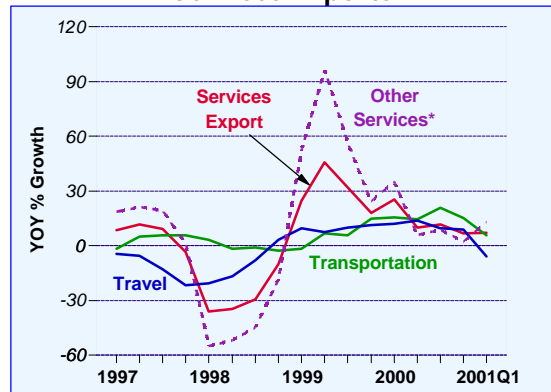
...although domestic demand also weakened

On the domestic front, private consumption growth remained fairly strong at 7.2%, slightly above the historical average of around 6%. (Chart 1.22) However, the strength in consumption was mainly concentrated in motor vehicles. The emergence of a generalised slowdown in spending was also reflected in a sharp moderation in credit card expenditures from the high double-digit rates registered last year. (Chart 1.23) Public consumption contracted in Q1, mainly due to a large fall in security spending which comprises defence, home affairs and civil defence expenditure.

Private fixed investments slowed on the back of the deterioration in business outlook while public investment rose

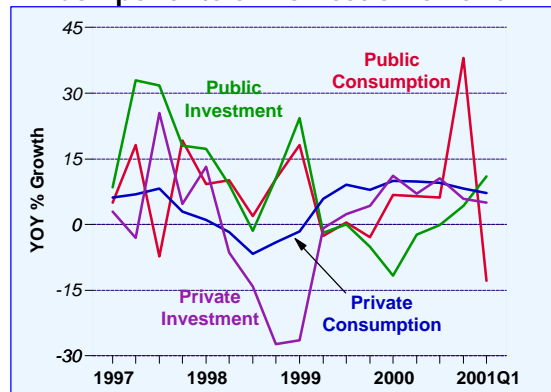
Growth of private fixed investment slowed further to 5.0% in Q1 2001, from the most recent peak of 11% in Q3 2000. In particular, growth of private investment in machinery & equipment and non-residential buildings slowed sharply as the outlook for business conditions deteriorated. Concomitantly, investment in private residential buildings contracted as the property market remained weak. Public investment, on the other hand, rose strongly on the back of an increase in investment in other construction and works, resulting from a stream of major land reclamation projects.

**Chart 1.21
Services Exports**

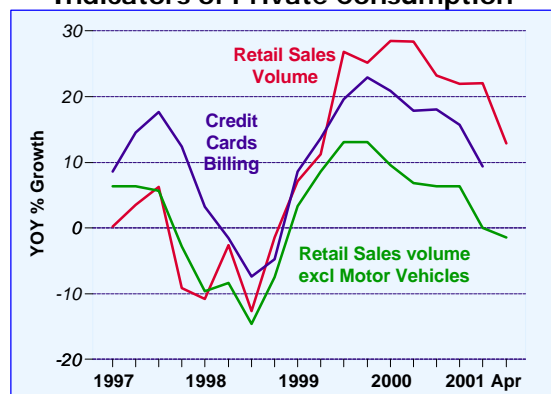


* Comprises passenger fare, financial, communication, merchanting, professional and business services

**Chart 1.22
Components of Domestic Demand**



**Chart 1.23
Indicators of Private Consumption**



1.4 Fiscal Developments

The government budget recorded a deficit in Q1 2001...

The government budget recorded a deficit in Q1 2001, amounting to some \$0.6 billion. (Chart 1.24) This followed a shortfall of \$1.7 billion in Q4 2000.¹⁰ The budget is typically in a deficit position every first quarter as ministries run down their allocations at the end of the fiscal year. This time round, however, the deficit in Q1 2001 was largely due to the slower growth in operating revenue. In fact, total government expenditure actually fell by \$678 million, compared with the quarter before.

Nonetheless, the high surpluses recorded in Q2-Q3 2000 offset the deficits in the latter two quarters, bringing the surplus for Fiscal Year (FY) 2000 as a whole to \$6.5 billion (or 4.0% of GDP). This contrasted with the estimated \$2.5 billion surplus announced at the beginning of last year in the FY2000 Budget. After the transfer of \$1.3 billion in total to the Medisave Fund and to CPF members' accounts, the overall budget surplus¹¹ came in at \$5.2 billion (or 3.2% of GDP).

...reflecting slower growth in operating revenue

Following a year of double-digit growth rates, total operating revenue increased by a smaller 5.0% in Q1 2001 to \$8.4 billion, compared to the same period last year, as the economy slowed sharply. As was discussed in the March 2001 issue of the Quarterly Bulletin, the effect of the automatic stabiliser is evident in government receipts, which expand during booms and shrink in recessions. Chart 1.25 compares the growth rates of nominal GDP, and operating revenue after adjustments for discretionary policy measures.¹² The trend of operating revenue growth has moved in tandem with that of GDP, dipping to a trough in Q4 1998 before recovering in 1999 and 2000. In Q1 2001, however, both began to moderate again. This trend is likely to continue in the coming quarters with the automatic

Chart 1.24
Government Finance

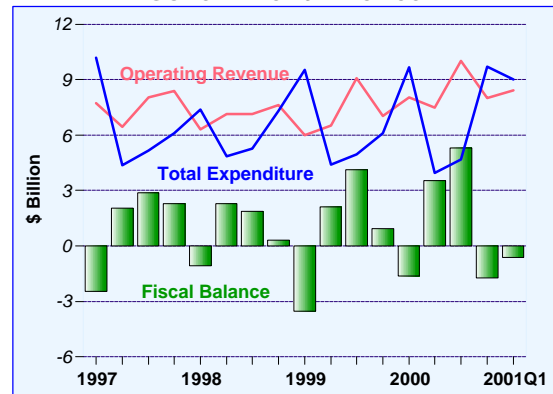
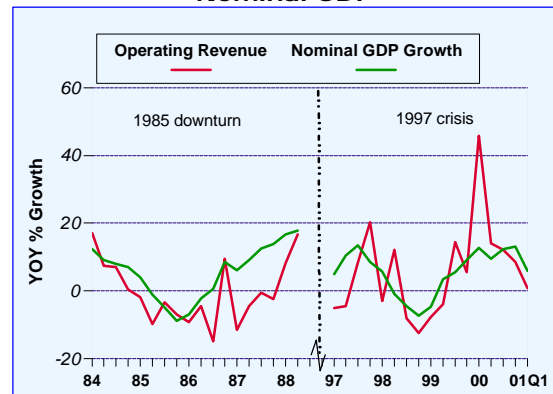


Chart 1.25
Adjusted Operating Revenue and Nominal GDP



* Operating revenue is adjusted for discretionary policy measures

¹⁰ The fiscal deficit is defined as operating revenue less total expenditure. The deficit recorded in Q4 2000 was due to the compensation paid to SingTel and StarHub (see expenditure section). Excluding the compensation, the government would have recorded a small surplus of \$0.2 billion.

¹¹ The budget surplus is defined as operating revenue less total expenditure and government transfers

¹² See March 2001 issue for more details on how the adjustments are applied.

stabiliser effects playing an appropriate countercyclical role as economic activity slows.

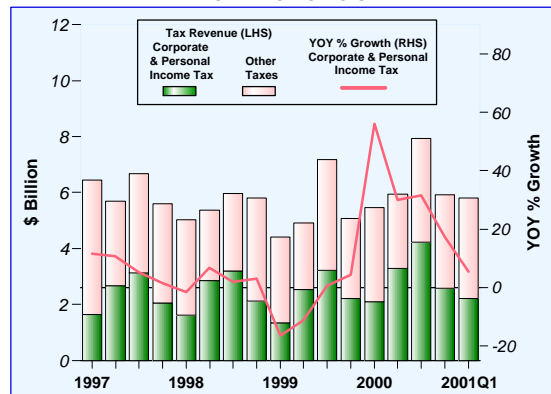
The slower revenue growth registered in Q1 2001 was broad-based across direct taxes and indirect taxes, as well as non-tax revenue. (Chart 1.26) Income tax receipts declined from the quarter before, but this fall was in line with seasonal factors as observed in previous years. Tax receipts from corporations are usually lower in the first quarter, possibly due to the timing of the instalment payments. In addition, signs of emerging weakness in consumption have manifested in lower revenue from indirect taxes, with GST collection falling off sharply from \$576 million in Q4 2000 to \$345 million in Q1 2001. The weak property market also led to a decline in stamp duty collections. (Chart 1.27) However, supported by continued strong motor vehicle sales, motor vehicle tax revenue maintained its high growth of 43%, although this has moderated from 68% in the previous quarter. At the same time, non-tax revenue saw slower growth compared to the quarter before. Despite a higher quota for COEs, collections from fees and charges increased by only 3.8%. This largely reflected the lower COE premiums registered in Q1 2001.

Total government expenditure shrank

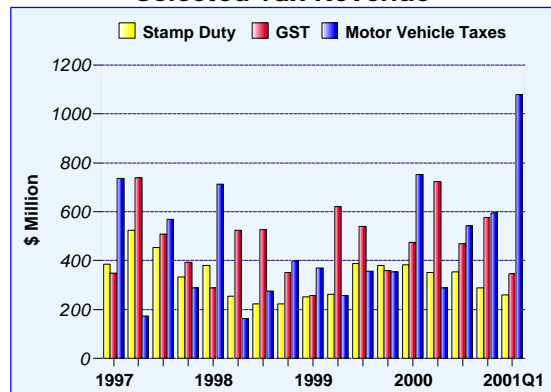
Total government expenditure contracted slightly in Q1 2001, to \$9.0 billion, compared to \$9.7 billion in the preceding quarter. (Chart 1.28) The exceptionally high level of spending in the last quarter of 2000 was due to the \$1.9 billion compensation paid out to SingTel and StarHub as the telecommunications market was opened to full competition in basic services earlier than expected. Moreover, civil servants were also rewarded with higher bonuses and wages in a year of strong economic performance.

Spending on development activities picked up, largely due to projects to improve the economic services sector. In particular, communication spending doubled as road development projects, such as the extension of roads to ease congestion and other road improvements were undertaken. With the construction of extensions to the MRT system, new trains were acquired, while plasma screen displays were installed in some MRT stations. Spending in the social and community sector was boosted by various HDB upgrading programmes and improvement work to common areas like hawker centres. At the same time, development expenditure continued to be supported by land reclamation projects.

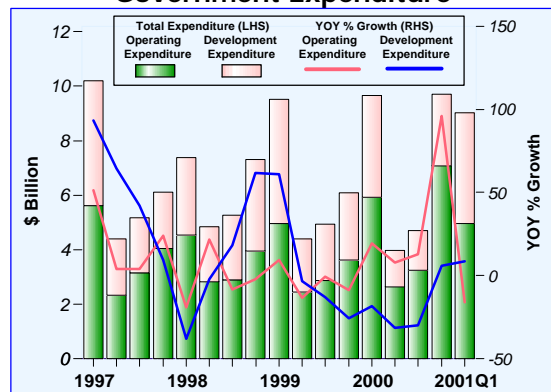
**Chart 1.26
Tax Revenue**



**Chart 1.27
Selected Tax Revenue**



**Chart 1.28
Government Expenditure**



1.5 Balance of Payments

Singapore's balance of payments surplus contracted in Q1 2001...

Singapore's balance of payments surplus contracted in Q1 2001, despite smaller capital outflows and a largely unchanged current account surplus compared with the previous quarter. (Chart 1.29 & Table 1.2) The fall in the overall surplus from \$3.8 billion in Q4 2000 to \$978.9 million was mainly due to the miscellaneous flows recorded in errors and omissions, which turned around from a positive \$5.5 billion to a deficit of \$677.9 million.

Chart 1.29
Balance of Payments

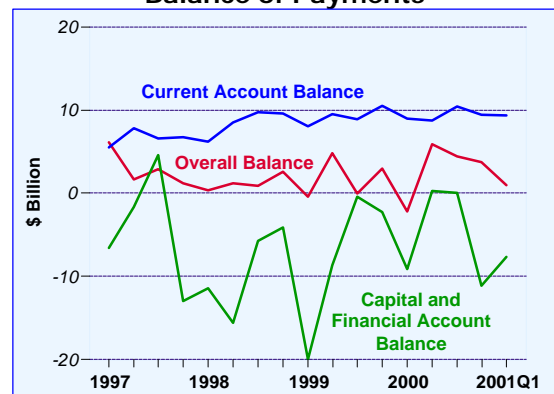


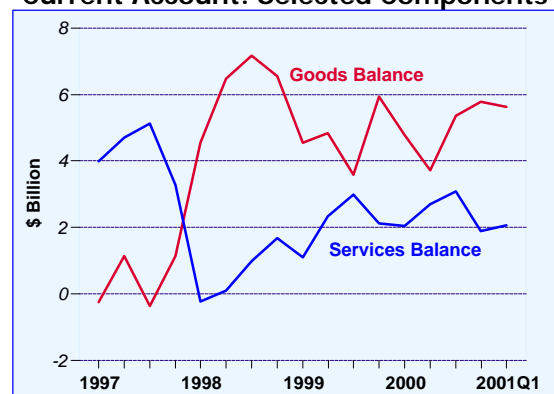
Table 1.2
Summary Accounts

	\$ Billion (% of GDP)		
	2000	Q4 2000	Q1 2001
Goods Balance	19.7 (12.4%)	5.8 (13.7%)	5.6 (14.3%)
Exports of Goods	239.5 (150.6%)	66.0 (156.1%)	57.6 (146.8%)
Imports of Goods	219.9 (138.2%)	60.2 (142.4%)	52.0 (132.5%)
Services Balance	9.7 (6.1%)	1.9 (4.5%)	2.1 (5.2%)
Current Account Balance	37.6 (23.6%)	9.4 (22.2%)	9.3 (23.8%)
Financial Account Balance	-19.7 (-12.4%)	-11.1 (-26.2%)	-7.6 (-19.4%)
Overall Balance	11.8 (7.4%)	3.8 (8.9%)	1.0 (2.5%)

...as the goods surplus moderated in line with the slowdown in the economy

Reflecting the weakening external environment, receipts from exports faltered in Q1 2001 after trend increases since Q2 1999. However, imports also declined as demand for imported raw materials by manufacturers fell. As a result, the goods account surplus moderated only marginally, by about \$160 million to \$5.6 billion. (Chart 1.30)

Chart 1.30
Current Account: Selected Components



But the services balance saw a larger surplus despite the downturn

Services receipts were hit by the downturn as well, with proceeds from all services-related accounts except insurance contracting in Q1 2001, compared with the previous quarter. (Chart 1.31) The slowdown in trade affected demand for trade-related services. There was a reduction in both freight and port receipts given the lower volume of goods passing through Singapore. Travel and its associated services like passenger fares also recorded smaller amounts in receipts. Consequently, overall service receipts registered its second consecutive quarter of decline in Q1 2001, although compared with the same quarter the year before, it was still more than 8% higher.

Offsetting the fall in receipts was a concurrent and larger decline in payments for services. Thus, on balance there was an overall increase in the services surplus to slightly more than \$2 billion from \$1.9 billion in Q4 2000.

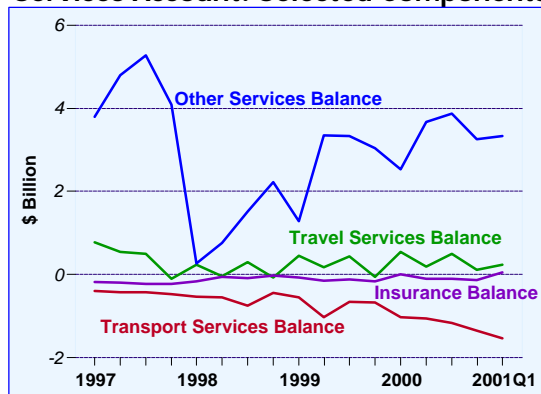
Together with a smaller surplus in the income account and a reduction in net current transfers abroad, the overall current account surplus amounted to \$9.3 billion in Q1 2001, only marginally lower than that recorded in the previous quarter.

The decline in financial account outflows was largely due to the contraction in non-bank outflows

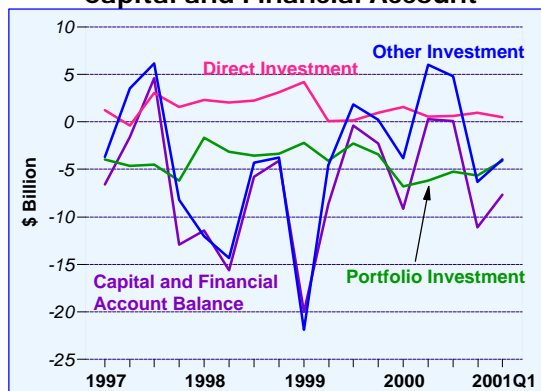
The capital and financial account recorded a smaller outflow of \$7.7 billion in Q1 2001, compared to \$11.1 billion in Q4 2000. (Chart 1.32) Given its relatively large and volatile nature, capital flows in the "Other Investment" account tend to have a considerable impact on the financial account. In Q1, the decline in overall net outflows was largely to due to the contraction in non-bank outflows, by \$6.4 billion. Unlike the past few quarters when non-bank residents were observed to be repaying their offshore loans, Q1 2001 saw a net increase in their borrowing from overseas. In addition, non-bank residents also reduced their deposits overseas.

The domestic banking sector registered a net outflow of \$1.0 billion, a turnaround from the inflow of \$3.0 billion recorded in the last quarter of 2000. This was underpinned by an increase in interbank loans to the Asian Dollar Market, in contrast to the relatively large repayment of loans by these Asian Currency Units (ACUs) in Q4 2000. However, this outflow was partly mitigated by an increase in resident banks' borrowing from abroad.

**Chart 1.31
Services Account: Selected Components**



**Chart 1.32
Capital and Financial Account**



The volatile nature of interbank funds flow from quarter to quarter reflects in part the balancing of funding needs between banks' resident Domestic Banking Units (DBUs) and their offshore ACUs. (A transfer of funds between a bank's DBU and ACU would be recorded in the financial account of the balance of payments.)

There was also a smaller outflow of net portfolio investment in Q1 2001. The greater uncertainty in global financial markets had led private residents to reduce their portfolio investment overseas. Indeed, there was a net pull back of funds from foreign equity markets. In addition, net official portfolio investment abroad also registered a third consecutive quarter of decline, falling by a further \$450 million compared with Q4 2000.

OFR was boosted mostly by the balance of payments surplus

Singapore's official foreign reserves rose by slightly more than \$1 billion in Q1 2001 to \$140.3 billion, equivalent to 7.1 months of imports. (Table 1.3) Most of the increase was due to the balance of payments surplus, while the rest resulted from valuation gains¹³.

**Table 1.3
Singapore's Official Foreign Reserves**

End of Period	Reserves S\$ Million	Months of Imports
2000 Q1	128,158.6	7.8
Q2	134,430.9	7.7
Q3	135,952.7	7.4
Q4	139,260.0	7.2
2001 Q1	140,326.7	7.1

¹³ Balance of payments are valued at book-cost, but the book value of foreign reserve assets are translated at market exchange rates prevailing at the end of each period.

2 Financial Market Developments

2.1 International Financial Markets¹⁴

Concerns over a US-led global economic slowdown, compounded by the continued meltdown in the technology, media, and telecommunications (TMT) sector were the dominant factors weighing on global financial markets for the period under review¹⁵. Nevertheless, widespread monetary easing led by the US Federal Reserve (Fed) provided much needed relief.

In the foreign exchange market, the US dollar strengthened against most currencies on the back of expectations that the combination of monetary and fiscal easing would improve US economic growth prospects relative to other industrial nations. Fears of stagflation and confusion over ECB policies weighed on the Euro, while the Yen fell amid uncertainty over the pace of structural reforms, the deteriorating economy as well as comments by the authorities favouring a weaker Yen. (Table 2.1)

Global equity markets have also largely reflected the above-mentioned factors. The tech-intensive NASDAQ continued to underperform the broader market, reflecting earnings downgrades and worries over the large inventory overhang in the TMT sector. Nevertheless, these bourses have since recovered from the recent lows in March/early April as the Fed's aggressive monetary easing stabilised expectations for economic and earnings growth.

Expectations for a Fed-supported recovery were also reflected in the bond markets, with steeper yield curves implying confidence in a prospective global upturn and rising inflationary concerns.

Table 2.1

	Level as at 1 Jan 2001	Level as at 15 Jun 2001	Change
Interest Rates			
Federal Funds Target Rate	6.50%	4.00%	-250bps
BOJ Overnight Call Rate	0.25%	0.01%	-24bps
ECB Minimum Repo Bid Rate	4.75%	4.50%	-25bps
Foreign Exchange Rates			
USD/Yen	114.35	122.93	+8%
Euro/USD	0.9423	0.8610	-9%
Euro/Yen	107.70	105.80	-2%
Equity Indices			
NASDAQ	2471	2028	-18%
S&P 500	1320	1214	-8%
Dow	10787	10624	-2%
DAX	6434	5915	-8%
FTSE	6223	5723	-8%
Nikkei 225	13786	12790	-7%
10-year Government Bond Yields			
US	5.11	5.23	+12bps
Germany	4.85	5.01	+16bps
Japan	1.63	1.19	-44bps

¹⁴ For more detailed and up-to-date discussions on financial markets, please see MAS' Financial Market Reports at <http://www.mas.gov.sg/resource/index.html>.

¹⁵ The period under review in this section encompasses 1 January to 15 June 2001.

INDUSTRIAL COUNTRIES

The Euro and Yen weakened against the US dollar, reflecting expectations of relative near-term growth prospects

After strengthening in Q4 2000, the Euro fell by 9% against the US dollar and 2% against the Yen between 1 January 2001 and mid-June 2001. (Chart 2.1) The Euro's decline reflected deteriorating growth prospects in the Euro zone relative to the US, rising inflationary pressure and more recently, questions over ECB policies. Market participants were puzzled by the ECB's surprise rate cut on 10 May given that inflation was above its 2% target rate.

Meanwhile, the Yen continued on its weakening trend against the US dollar, declining by 7% over the period under review. Factors cited for the weakness remained unchanged – faltering growth prospects and slow progress in structural (particularly banking sector) reforms, amid deflation and comments by monetary officials supporting a weaker Yen. The decline was reportedly aggravated by BOJ's shift to quantitative easing on 19 March. Nevertheless, optimism that the newly elected Koizumi administration would accelerate the pace of reforms helped the Yen to recover from its recent low of 126.8.

**Chart 2.1
Yen and Euro Against the US Dollar**

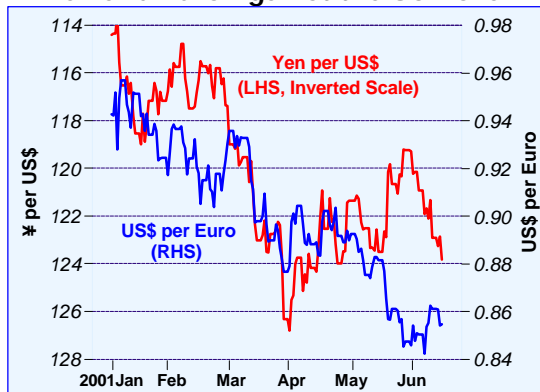


Table 2.2

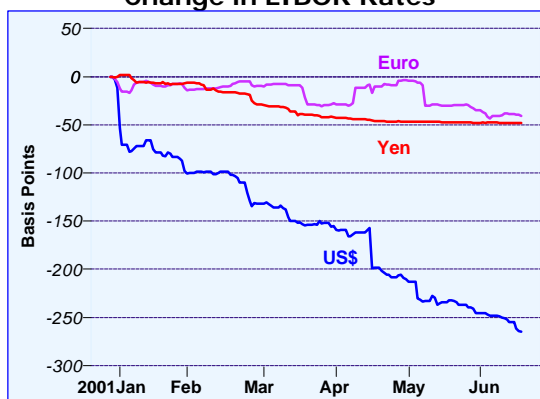
End of Period	Federal Funds Target Rate	Japan Overnight Call Rate	ECB Reference Rate
2001 Jan	5.50	0.25	4.75
2001 Feb	5.50	0.24	4.75
2001 Mar	5.00	0.12	4.75
2001 Apr	4.50	0.02	4.75
2001 May	4.00	0.01	4.50
2001 Jun*	4.00	0.01	4.50

* as at 15 Jun 2001

Short-term interest rates for the G-3 economies fell in tandem with the Fed's monetary easing

Year-to-date, the Fed has reduced the federal funds target rate five times (two of which were surprise inter-meeting cuts) to 4.0% in an effort to support growth. (Table 2.2 and Chart 2.2)

**Chart 2.2
Change in LIBOR Rates**



In Japan, economic stagnation and persistent deflation have also compelled the BOJ to ease monetary policy. On 19 March 2001, it announced a change in its monetary operation framework to target Yen 5.0 trillion bank reserves in a *de facto* return to the zero interest rate policy. Consequently, the overnight call rate fell to 0.01% and has remained at this level.

Until May, the ECB had left its reference rate unchanged due to inflationary concerns. Hence, the bank's move to lower its target-refinancing rate by 25 basis points to 4.5% on 10 May surprised the markets and sparked concerns over its credibility. However, the central bank argued that risks to inflation over the medium-term had subsided somewhat, reflecting the rapidly deteriorating economy in the Euro zone, moderate wage pressures and monetary growth.

The Fed's aggressive move led to a steeper yield curve, reflecting improved economic growth expectations in the longer term

The prices of long-term US Treasuries were initially supported by expectations of lower interest rates and plunging stock markets. However, yields subsequently rose by about 100 basis points amid optimism that the Fed's aggressive monetary easing and the Bush administration's push to cut taxes could spur a quicker recovery and higher inflation in the longer term. Similarly, yields of German Bunds also ended the period higher, reflecting persistent inflationary concerns. (Chart 2.3)

In contrast, the 10-year JGB yields ended the period lower due to the prospect of fiscal restraint and hence a possible reduction in the supply of JGBs under the new government.

Equity markets in G-3 countries were generally weaker as concerns over deteriorating macroeconomic conditions added further gloom to markets already jittery over the TMT sector

Equity markets entered the year on a bullish note, fuelled by expectations that the two successive Fed rate cuts in January and February could prevent a widespread recession from the tech-bubble burst. (Chart 2.4) However, this optimism was soon overshadowed by concerns that the economic slowdown in the US would turn out to be more broad-based than expected. Concerns over US financial institutions' exposure to newly troubled Japanese banks added further downward

Chart 2.3
Yields on G-3 10-Year Government Bonds

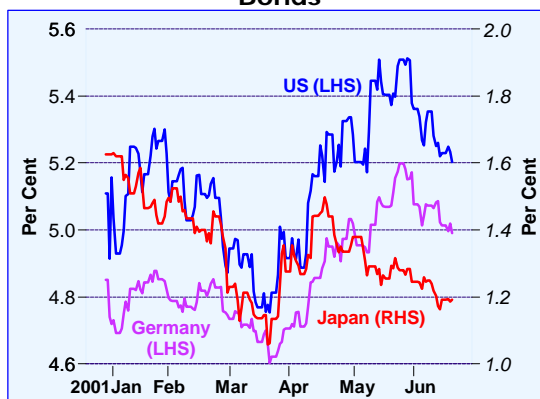
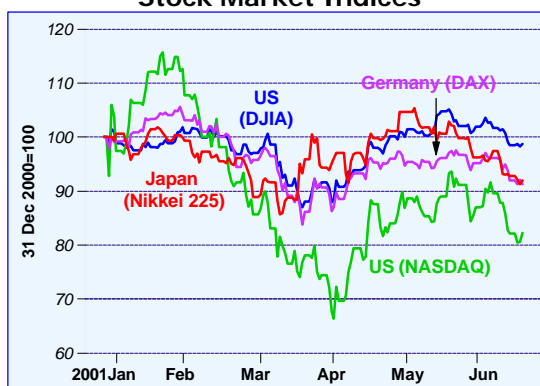


Chart 2.4
Movements of Industrial Countries' Stock Market Indices



pressure on the Dow. Overall, G-3 bourses continued their downward trend, with the NASDAQ significantly underperforming the broader market amid ongoing negative corporate earnings from the TMT sector.

The German Dax deteriorated reflecting signs of economic weakness, while inflationary pressure remained an obstacle to ECB's monetary easing. Nevertheless, the equities have since recovered from the lows following the aggressive monetary easing by the Fed.

Apart from economic growth concerns, the Nikkei was also affected by the slow progress in banking sector reforms and faltering growth.

NORTH AND SOUTHEAST ASIA

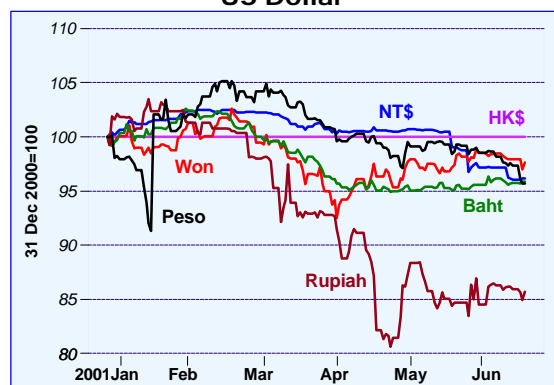
Most Asian currencies continued to depreciate against the US dollar, reflecting falling external demand, the weakening Yen and negative domestic factors

Over the first half of 2001, Asian currencies depreciated against the US dollar, on the back of falling external demand, the weakening Yen, and negative domestic factors. (Chart 2.5)

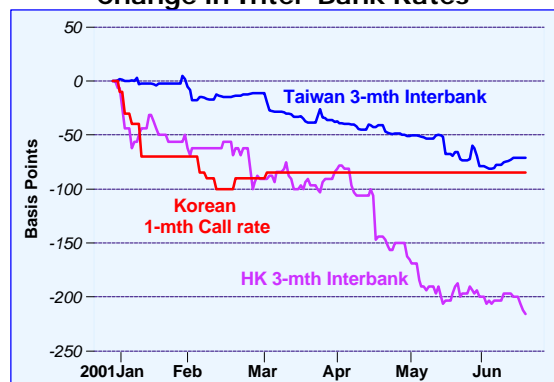
While the US growth slowdown and the collapse in the electronics cycle weighed heavily on these currencies, the Yen's weakness was another factor cited by market participants. This was especially true for the North Asian currencies, most notably the Korean Won. More recently, the Taiwan dollar was weighed down by evidence of an imminent economic slowdown especially from its large exposure to the technology sector and concerns over a hollowing out of its manufacturing base. In comparison, the Korean Won recently picked up following indications of stronger growth, capital inflows and a more stable Yen going forward.

Domestic developments continued to play a major part in the depreciation of the Thai Baht, Philippines Peso and Indonesian Rupiah vis-à-vis the US dollar in Mar-Apr 2001. However, the Baht and Peso have stabilised in recent months as political uncertainties were resolved and market participants turned more sanguine over economic prospects. The Rupiah, which had fallen about 20% since the beginning of the year, recently regained part of its losses on the back of the strengthening Yen.

**Chart 2.5
Selected Asian Currencies Against the US Dollar**



**Chart 2.6
Change in Inter-Bank Rates**



Asian short-term interest rates eased in response to the Fed cuts and weaker economic prospects

The process of monetary easing in Asia that began in January 2001 continued in the ensuing months. Central banks in the region with the exception of Indonesia have been easing interest rates to boost domestic consumption and investment. In North Asia, the Taiwanese central bank aggressively cut interest rates five times this year by a cumulative total of 100 basis points. (Charts 2.6 and 2.7)

In Southeast Asia, the decline in the Philippines' interest rates was most pronounced as pressure on the Philippine Peso receded, and the central bank continued on its "accommodative" stance, reducing its key overnight repurchase rate by 450 basis points year-to-date in response to the economic slowdown. Similarly, the Thai benchmark rate fell 125 basis points to 2.3% in May. More recently however, Thai interest rates rose following the central bank's move to raise its 14-day repurchase rate by 100 basis points to 2.5% on 8 June 2001.

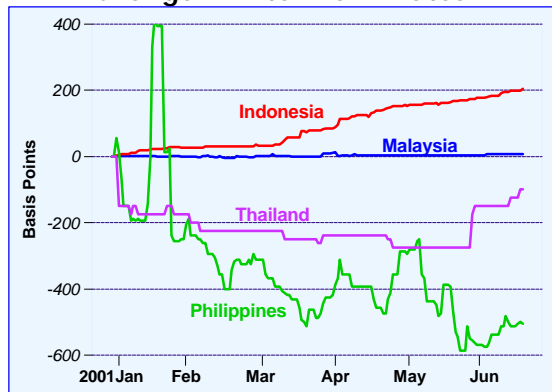
In contrast, short-term interest rates in Indonesia have risen as the central bank raised rates in response to exchange rate pressures on the Rupiah.

Most Asian equities were weighed down by uncertainty regarding the global economic outlook and pessimistic corporate earnings expectations

Asian equities were generally weighed down by concerns over global economic conditions and lacklustre corporate earnings. However, a more broad-based recovery in US equities since mid-April has led to a modest rise in Asian equities.

Most notably, the Thai and Korean markets ended the period higher after rising in early 2001 on optimism over the new Thai political leadership and expectations of an earlier Korean economic recovery respectively. Meanwhile, Chinese equities remained unaffected by global developments, performing relatively well following continued optimism over China's financial market reforms. In contrast, the Malaysian and Taiwanese markets trended lower during this period as domestic developments continued to dampen investor sentiment. (Charts 2.8 and 2.9)

**Chart 2.7
Change in Inter-Bank Rates**



**Chart 2.8
Movements of North Asian Stock Market Indices**



**Chart 2.9
Movements of Southeast Asian Stock Market Indices**



2.2 Domestic Financial Markets

EXCHANGE RATES

The Singapore dollar weakened against the US dollar but rose against the Euro

Over the first half of 2001, the Singapore dollar was weighed down by strong US dollar demand due to expectations of fresh M&A activity by Singapore companies, as well as persistent weakness in the regional currencies. As a result, the domestic currency weakened by around 4.2% against the US dollar to S\$1.8075 at end-May compared with S\$1.7315 at end-2000. In contrast, it strengthened by 4.1% against the Euro over the same period. Its gains against the Yen in Q1 2001 were largely offset by the strengthening of the Yen in the subsequent two months, on the back of expectations that the new Japanese government would implement the long-awaited economic reforms. (Chart 2.10)

The Singapore dollar was largely stable or depreciated slightly against most regional currencies, except for the Rupiah

The Singapore dollar remained largely stable or depreciated slightly against most of the regional currencies except the Rupiah in H1 2001. The local currency surged by a sharp 11% vis-à-vis the Rupiah, which came under pressure due to the uncertain political environment in Indonesia. The Singapore dollar remained stable against the Thai Baht, but depreciated slightly against the Korean Won, which benefited from both the stronger Yen as well as foreign portfolio capital inflows. (Chart 2.11)

INTEREST RATES

Local interest rates eased in line with US rate cuts

In line with the spate of interest rate cuts by the Fed over the first five months of this year, the 3-month US\$ SIBOR eased steadily from 6.39% at end-2000 to 4.88% at end-Q1 2001 and 4.00% at end-May 2001. This in turn translated into lower domestic interest rates since the end of 2000, with the 3-month interbank rate easing from 2.81% in December 2000 to 2.25% at end-May 2001. (Chart 2.12)

Chart 2.10
Singapore Dollar Against US Dollar, Euro and Yen

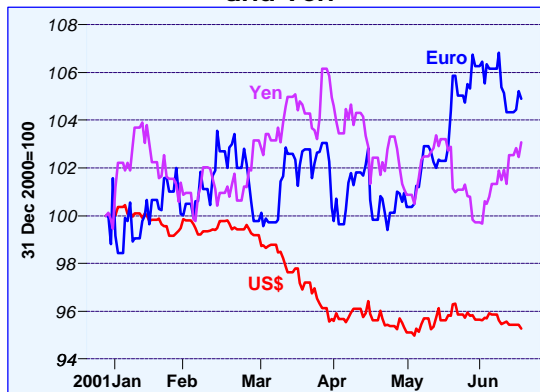


Chart 2.11
Singapore Dollar Against Selected Asian Currencies

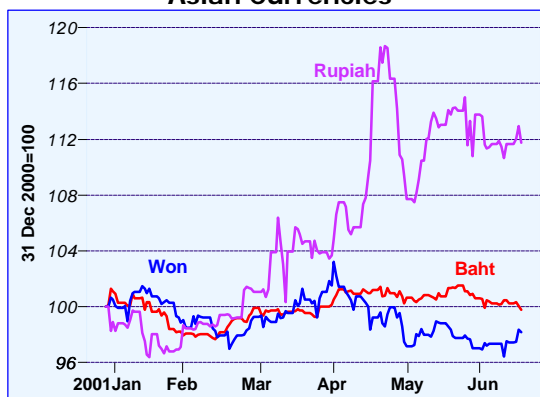
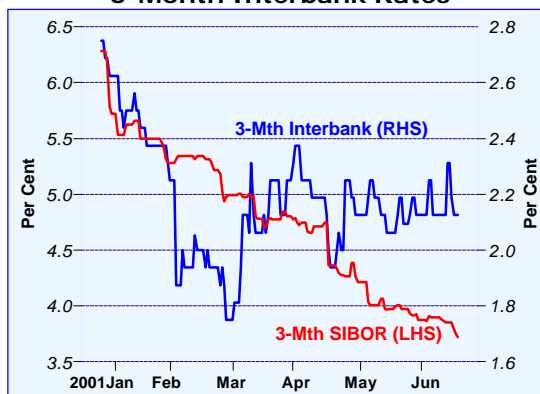


Chart 2.12
3-Month Interbank Rates



As a result, the differential between the two rates narrowed from 358 basis points at end-2000 to 175 basis points at end-May, close to its historical average of 167 basis points over the pre-crisis period of 1991-1996.

Similarly, interest rates in the retail market have stayed soft, with the 12-month fixed deposit rate easing from 2.42% to 2.38% since February 2001, while the 3-month fixed deposit rate and prime lending rate have remained unchanged at 1.70% and 5.80% respectively since end-October last year.

SGS BOND YIELDS

SGS yield curve fell across all maturities

With global monetary easing, the SGS yield curve fell across all maturities in May 2001 compared to December 2000, with the decline averaging nearly 50 basis points. (Chart 2.13) Domestic factors such as benign inflationary pressure coupled with a gloomy economic outlook also contributed to the rally in the SGS market. Concomitantly, average daily turnover of SGS in the first five months of 2001 rose to record levels.

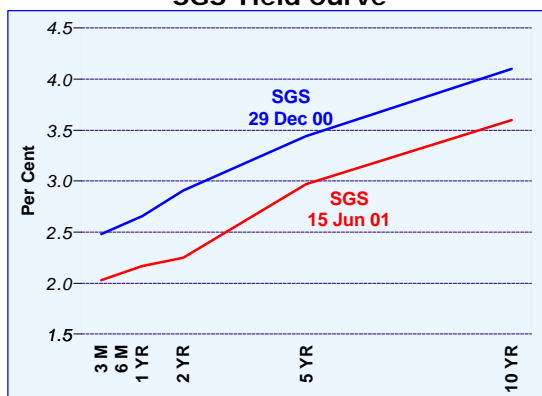
STOCK MARKET

After an initial rally in early 2001, the local stock market slumped in tandem with the NASDAQ and Dow

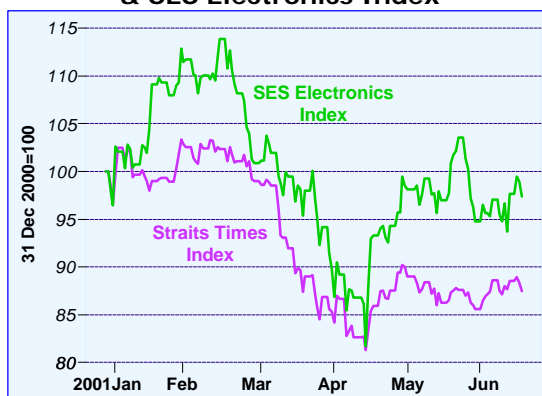
The local stock market rallied in the early part of 2001 following a surprise Fed rate cut of 50 basis points in early January. The Straits Times Index (STI) rose above the 1,900 level for most of January and February, on hopes that improved growth prospects for the US economy would support an export recovery for Singapore. (Chart 2.14) However, this rally proved unsustainable and the local bourse corrected sharply in March in tandem with NASDAQ and Dow, as reports of weak corporate earnings and massive job cuts in major technology companies and financial institutions in the US continued to stream in.

The broader market was further dragged down by investors' concerns over overseas acquisitions by two major listed companies in Mar-Apr 2001, with the STI falling to a two-year low of 1566.73 on 17 April 2001. It subsequently rebounded to above 1700 in early May, following the surprise inter-meeting rate cut by the Fed on 18 April. The STI stood at 1706 as at 15 June 2001, some 10% below its level at the beginning of the year.

**Chart 2.13
SGS Yield Curve**



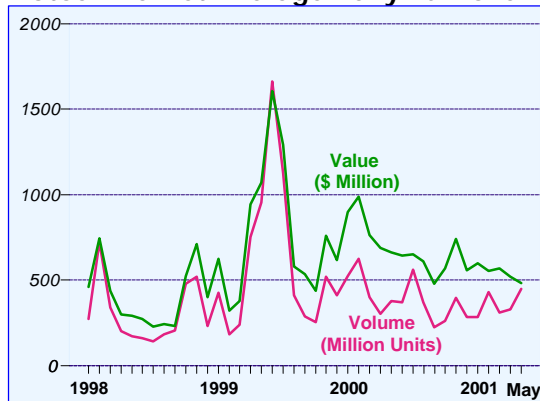
**Chart 2.14
Straits Times Index
& SES Electronics Index**



In contrast to US equities, technology stocks outperformed the STI, riding on investors' expectations that the inventory overhang in the global electronics industry was easing and that the industry could see a recovery in the second half of the year. During the rally in Jan-Feb 2001, the SES Electronics Index rose by as much as 14% compared to a 3.4% gain in the STI. The SES Electronics Index also proved to be more resilient during the subsequent weakening in the market, and saw a stronger recovery towards end of April. As at 15 June 2001, the technology index stood at 130.57, relatively unchanged compared to the beginning of the year.

Reflecting the fall in prices, average daily turnover, in value terms, edged down from \$574 million in Q1 to \$500 million in April and \$487 million in May. (Chart 2.15) The average daily number of traded shares was also lower in April at 333 million, compared to 345 million shares in Q1, although it subsequently recovered in May.

Chart 2.15
Stock Market Average Daily Turnover



Reflecting bearish stock market conditions, fewer IPOs were launched in Jan-Jun 2001

Singapore's IPO market started the year on a dismal note, with fewer listings on both the SGX mainboard and the second board, SESDAQ. The fall in the number of IPOs launched so far this year partly reflected the postponement of some IPO launches, with a number of companies citing market volatility and bearish stock market conditions. In addition, investors have increasingly shifted their fund-raising activities to the bond market, given the favourable conditions faced by bond instruments including a low interest rate environment. As a result, only 22 IPOs were launched in the period from Jan-Jun 2001, compared with 41 over the same period last year. The amount of funds raised from these IPOs totaled just \$290 million, 14% of that raised in the same period last year.

DOMESTIC CREDIT

Domestic credit continued to expand, supported by strong growth in housing loans and lending to private and professional individuals

Domestic non-bank lending expanded by around 7% in the first five months of 2001. The strong growth in bank lending since January can be partly attributed to the inclusion of loans by DBS Finance as a result of its

integration with DBS Bank. Adjusting for this, loans to non-bank customers would have grown at a slower rate of 4.7% in Q1 2001 and 4.6% in May, largely unchanged from end-2000. Loan growth was largely supported by double-digit expansion in credit to the building and construction sector (including housing), and to professional and private individuals.¹⁶ (Chart 2.16)

Housing loans expanded 11% in May, having bottomed out in early 1999 following the pick-up in the private residential property market. Although the property market has since cooled down, housing loans growth has remained relatively stable as loans committed earlier were progressively drawn down. Loans to the building and construction sector continued to post double-digit growth in May, since turning positive in August last year with the bottoming out of the construction industry. Coupled with relatively strong growth in loans to professional and private individuals, the share of these three categories of bank loans has risen significantly since 1999. (Chart 2.17)

Lending to transport and communications sector also continued to pick up, although its share in banking loans is relatively small. (Chart 2.18) Credit to manufacturing segment posted positive growth, albeit at a slower pace. In contrast, loans extended to the commerce sector and non-bank financial institutions remained sluggish. With the banking system flushed with liquidity, the loan-to-deposit ratio remained below 0.9 for the fourth consecutive month. (Chart 2.19)

Some signs of slowing have appeared, with outstanding loans showing smaller increases in the past four months. We expect overall growth of non-bank lending to remain moderate for the rest of the year, with weaknesses emerging in several areas. First, housing loans could be adversely affected by the softening private residential market, despite the attractive mortgage packages offered by banks. The number of housing units bought in Q1 2001 was 20% lower than the average sold in 2000.¹⁷ Second, loans to the professional and private individual category could also moderate further as consumers curb their spending in view of the economic

Chart 2.16
Loans to Selected Sectors

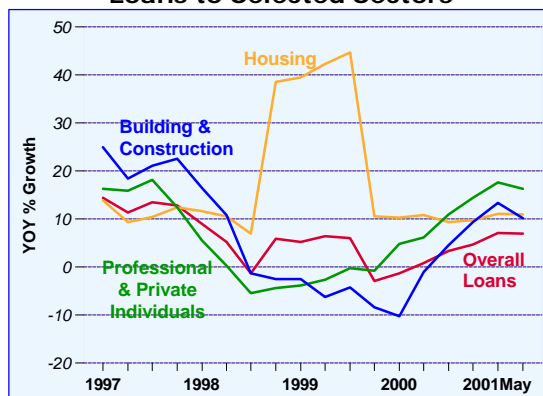


Chart 2.17
Loans to Selected Sectors

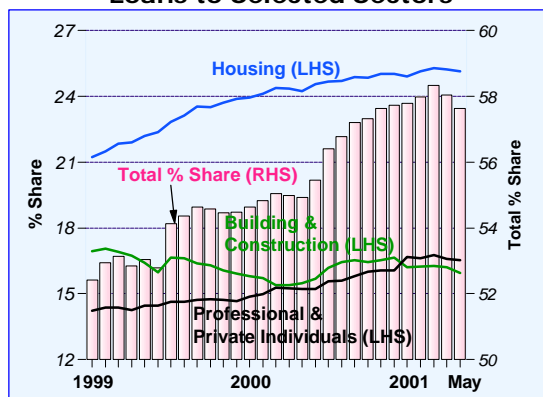
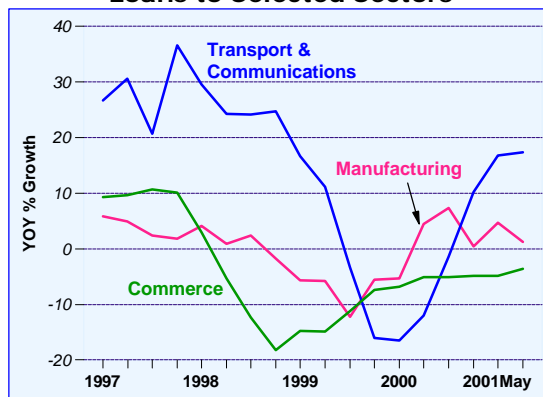


Chart 2.18
Loans to Selected Sectors



¹⁶ The loans by industrial classification were not adjusted for the inclusion of DBS Finance data. Our internal estimates showed that this would not distort the analysis significantly.

¹⁷ The number of primary transactions in 2000 was in fact the lowest for the past five years.

downturn.¹⁸ Third, lending to other segments is likely to remain lacklustre in general given the slowdown in economic activity this year.

MONETARY AGGREGATES

Narrow money continued to expand at robust rates, while broad monetary aggregates turned around to register positive growth

Narrow money, M1, continued to see robust growth of 11% in May 2001, up from 6.9% in December 2000. (Chart 2.20) This was underpinned by double-digit expansion in demand deposits and a smaller increase in currency-in-circulation.

Growth of broad monetary aggregates also saw a turnaround in Q1 2001, with both M2 and M3 continuing to record positive growth, of 4.1% and 2.6% respectively in May. The stronger M2 growth figure was due in part to the inclusion of net deposits with DBS Finance as a result of its integration with DBS Bank. Adjusting for this effect, M2 and M3 would both have recorded lower growth of 2.5%. The improvement in money supply growth reflected a turnaround in both fixed and savings deposits. Fixed deposits saw its third consecutive month of increase, while savings deposits turned around to register positive growth of 2.1% in May. These developments are not inconsistent with the desire of residents to shift their portfolio holdings away from the riskier assets such as equities, in view of the volatility in financial markets and uncertainty in world economic outlook. Also, in times of greater economic uncertainty, liquid monetary assets provide individuals with the greatest flexibility.

Chart 2.19
Loan-to-Deposit Ratio

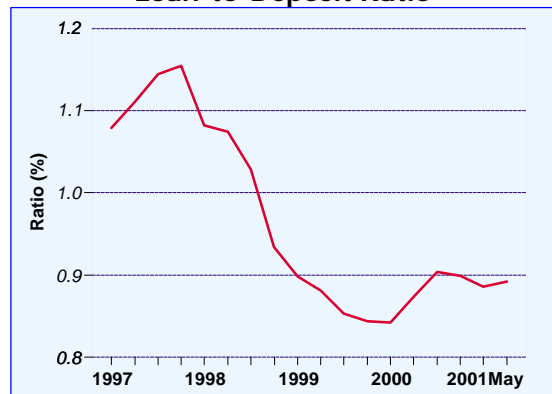
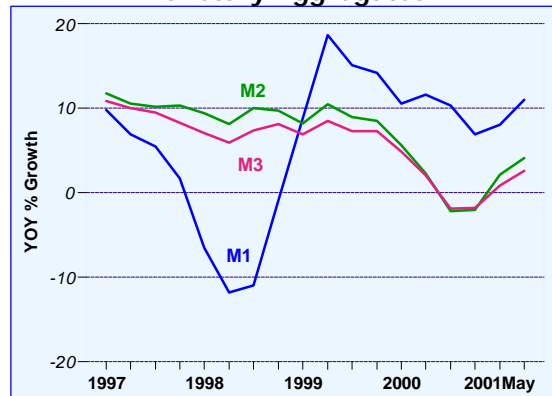


Chart 2.20
Monetary Aggregates



¹⁸ Although loans to this category continued to increase at double-digit rates, the level of outstanding loans fell by S\$63 million between February and May this year.

MONETARY CONDITIONS

Monetary conditions have eased since the beginning of 2001

Monetary conditions, as measured by the Domestic Liquidity Index (DLI), have eased since the beginning of this year, resulting in conditions generally supportive of domestic demand. (Chart 2.21) Modelled after the Monetary Conditions Index, the DLI is a weighted average of the changes in the trade-weighted S\$NEER and the 3-month interbank interest rate relative to the previous quarter, with a 60:40 weight for the exchange rate and interest rate respectively. A reading of 0 indicates that there is no change in liquidity conditions from the previous quarter. A positive DLI implies a tightening in liquidity conditions from a quarter ago while a negative reading implies an easing.

The DLI was boosted well into positive territory towards end-2000, reflecting tighter liquidity conditions as money market participants sought longer-term funding to tide themselves over the end of the year. Since January 2001, however, the DLI has turned negative as monetary conditions loosened, due to both the weakening of the Singapore dollar exchange rate on a trade-weighted basis (within the unchanged policy band), as well as the softer interest rate environment.

For further details on the DLI, please refer to the Special Feature in Chapter 5.

**Chart 2.21
Singapore's Domestic Liquidity Indicator**



3 Wage-Price Dynamics

Consumer price inflation in Singapore moderated to 1.7% in Q1 2001, after reaching a peak of 2.0% in Q4 2000. The lower CPI inflation in Q1 2001 was on account of a more subdued non-durable goods inflation, as well as a larger negative durable goods inflation. Inflation picked up slightly in April and May, due to higher-than-expected services inflation, bringing average inflation for the first five months of the year to 1.8%. Prices of commodities stayed benign, while inflationary pressures in both industrial and regional economies remained in check.

3.1 External Inflation

The average inflation rate of Singapore's main trading partners¹⁹ remained at 2.6% in Q1 2001, unchanged from the previous quarter. Relatively higher inflation in the US, Euro zone and most countries in East Asia was offset by continued deflation in Japan and subdued inflation in Malaysia and Thailand. (Chart 3.1)

Price pressures edged up in the US and the Euro zone, but deflation worsened in Japan

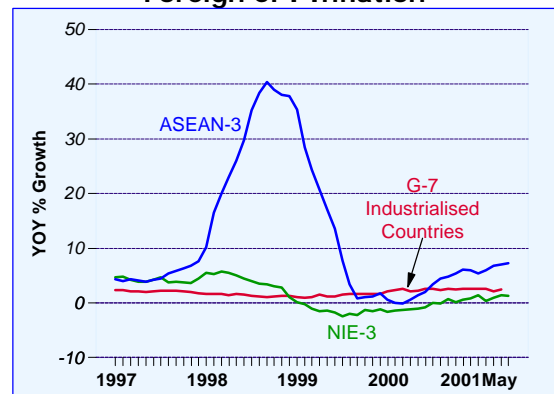
Inflation in the US reflected the lagged effects of higher energy prices and a pick-up in wage growth. While headline CPI inflation in the US remained stable at 3.4% year-on-year in Q1 2001, unchanged from Q4 2000, core inflation edged up to 2.7%.

In the Euro zone, the lingering impact of energy prices, coupled with the shortage of meat due to the outbreak of animal disease also raised price pressures. Headline inflation rose to 3.4% in May 2001, which is above the ECB's 2% target ceiling. Core inflation, under upward pressure as well, increased to 2.1% in May, from 1.9% in April.

Japan continued to suffer from deflationary pressures. Although CPI deflation lessened somewhat in December 2000 and January 2001, it worsened again in the following two months as a result of weaker demand, falling food prices due to cheaper agricultural imports

¹⁹ Average inflation of Singapore's main trading partners is calculated as a weighted average of the CPI in these countries.

Chart 3.1
Foreign CPI Inflation



*ASEAN-3 refers to Indonesia, Malaysia and Thailand

and discounts offered by eateries. Consumers in Japan have been turning to discount stores for household necessities and clothing in the face of the bleak economic outlook.

Inflation rose in most of East Asia

Despite weakening demand, inflation edged up in East Asia. Average inflation in East Asia rose to 3.0% in the first four months of 2001, compared to 1.3% for the whole of 2000. (Chart 3.2 and 3.3)

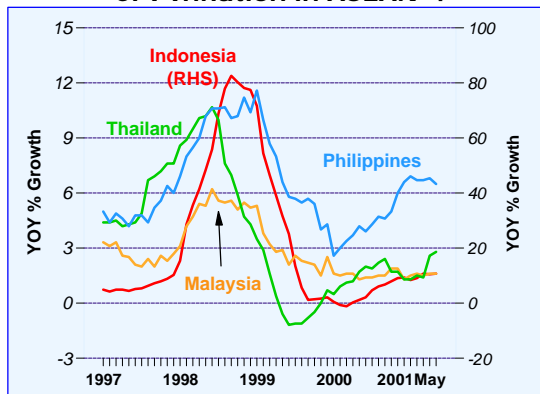
Price pressures were particularly strong in Indonesia, the Philippines and South Korea. This reflected a combination of factors, including the impact of weakening currencies, the lagged effects from past increases in energy prices, and the removal of government subsidies. In Korea and the Philippines, rising food prices also stoked inflationary pressures. In Hong Kong, deflationary pressures eased reflecting smaller declines in housing rentals and upward adjustment in some government fees and public utility charges. However, a stronger pick-up in prices was capped by weakening domestic demand and falling imported inflation, especially of fuel imports, due to the appreciation of the Hong Kong dollar in tandem with US dollar.

In other regional economies, price increases remained somewhat subdued. In Malaysia and Thailand, sluggish demand and weak food prices put a cap on inflation, while excess capacity continued to dampen consumer goods prices in China.

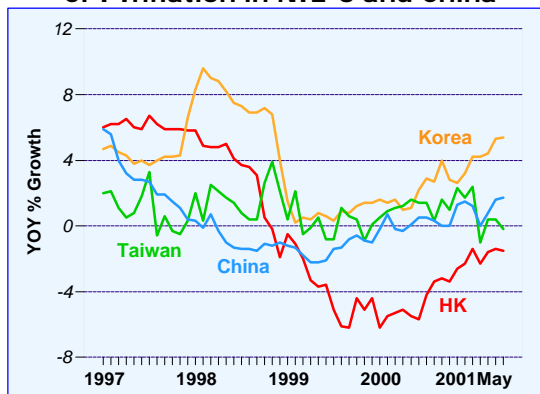
Commodity prices declined in the early part of 2001

World commodity prices declined in the first five months of the year, reflecting the downward price trends in both oil and non-oil commodities. Despite OPEC's attempts to restrain production in February and April, the price of OPEC oil retreated from its peak of US\$29.20 per barrel in Q3 2000, and hovered around US\$24.50 per barrel in Q1, before rising slightly to US\$25.45 in Apr-May. (Chart 3.4)

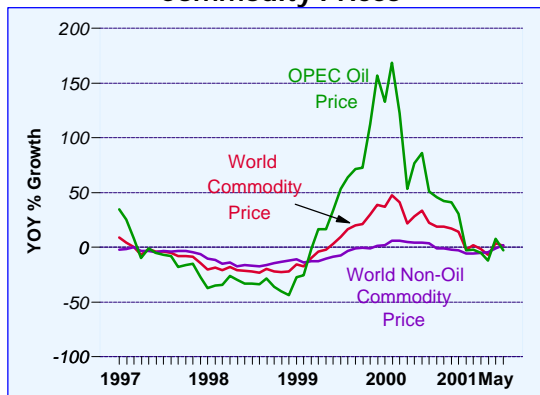
**Chart 3.2
CPI Inflation in ASEAN-4**



**Chart 3.3
CPI Inflation in NIE-3 and China**

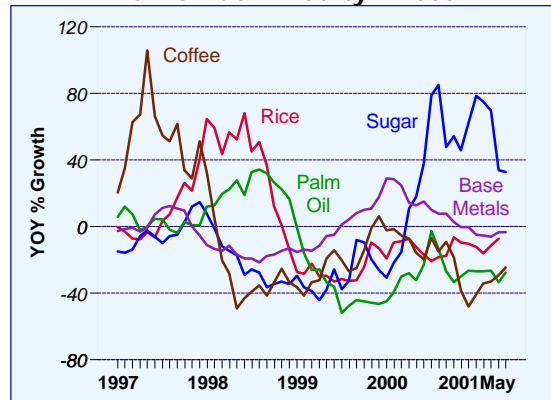


**Chart 3.4
Commodity Prices**



Meanwhile, prices of non-oil commodities, particularly that of soft commodities, remained depressed, dragged down by oversupply in the world markets. (Chart 3.5) Prices of palm oil, for example, continued to plummet, as abundant supply from Indonesia flooded the world market. The price of Thai rice was also hit by sluggish global demand. Similarly, world coffee prices remained weak on the back of a supply glut, following the threefold increase in Vietnam's production in the past five years. Efforts to support prices such as the Malaysian scheme to convert excess palm oil into bio-diesel oil (a kind of industrial fuel) and the plan to control exports by the Association of Coffee Producing Countries have largely been unsuccessful. In comparison, prices of sugar rose significantly in Q1 2001, largely due to the poor weather conditions in Brazil, as well as the requirement imposed by the government to increase the sugarcane-based ethanol content in gasoline fuel. The subsequent moderation of sugar prices in Apr-May, however, was in expectation of increased sales by other exporting countries such as India. Underpinned by the prospect of lower world demand for industrial production, prices of hard commodities (e.g. base metals) have also fallen in recent months.

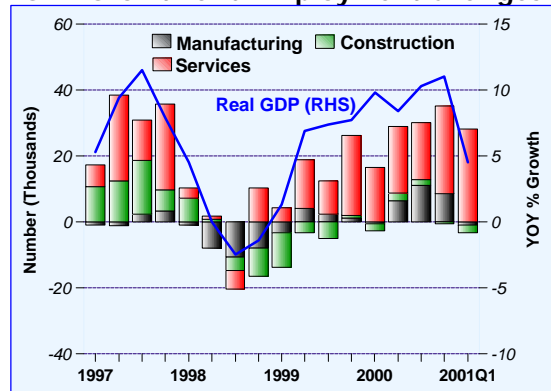
**Chart 3.5
Non-oil Commodity Prices**



3.2 Domestic Price Pressures

Despite the deceleration in GDP growth, Singapore's labour market remained relatively tight in Q1 2001. (Chart 3.6) Nevertheless, signs of easing labour demand have emerged, particularly in the manufacturing sector. At the same time, wage growth has also started to adjust downwards. Unit labour cost rose moderately in Q1, reflecting the cyclical decline in productivity growth and the 4% point restoration in employer's CPF contribution.

**Chart 3.6
GDP Growth and Employment Changes**

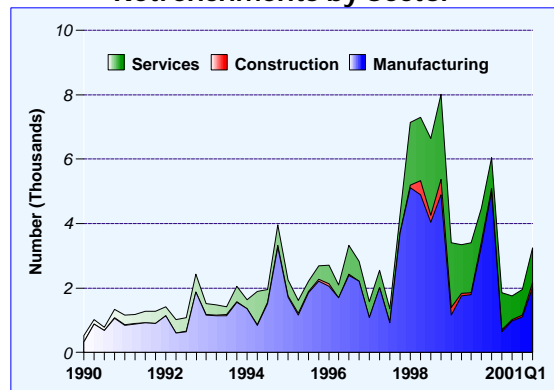


Employment continued to expand, although signs of weaknesses have emerged

Employment creation remained strong in Q1 2001, with net job gains of 23,200 in Q1 2001. At the same time, the seasonally-adjusted unemployment rate fell from 2.9% in December 2000 to 2.4% in March 2001. Nevertheless, some patches of weaknesses have appeared, as employment creation was unevenly distributed across sectors.

The increase in employment was entirely accounted for by the services sector, with the business services, wholesale and retail and "other services" (comprising community & personal services, health, education and public administration) industries contributing the largest net job gains. Employment in the manufacturing sector contracted slightly in Q1 2001, after three quarters of robust expansion. While this was partly due to a seasonal decline as foreign workers returned to their hometowns during the Chinese New Year holidays, it also reflected some weakening in underlying demand following the sharp downturn in the global electronics market. In the construction sector, employment contracted for the second consecutive quarter after posting some gains in Q2 and Q3 2000.

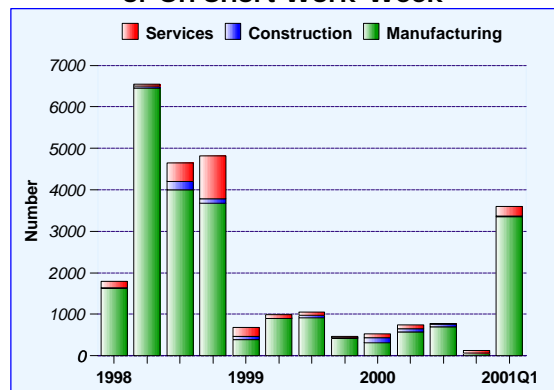
**Chart 3.7
Retrenchments by Sector**



There were other indications of emerging softness in the labour market. Retrenchments have increased across all sectors. In Q1 2001, 3,200 workers were laid off. This was markedly higher than the average of 1,900 workers in the last three quarters of 2000, but was still lower than the 6,000-8,000 workers retrenched per quarter during the downturn in 1998. In particular, retrenchments in the manufacturing sector almost doubled in Q1, to more than 2,000, accounting for almost two-thirds of total retrenchments. These retrenchments were mainly from the electronics industry. (Chart 3.7 & Table 3.1)

Chart 3.8

No. of Employees Temporarily Laid Off or On Short Work-Week



At the same time, the number of workers temporarily laid off or put on short work-week rose sharply to around 3,600 in Q1 2001. This compared with an average of around 540 in 2000. (Chart 3.8)

**Table 3.1
Announced Job Cuts by MNCs in the Electronics Industry**

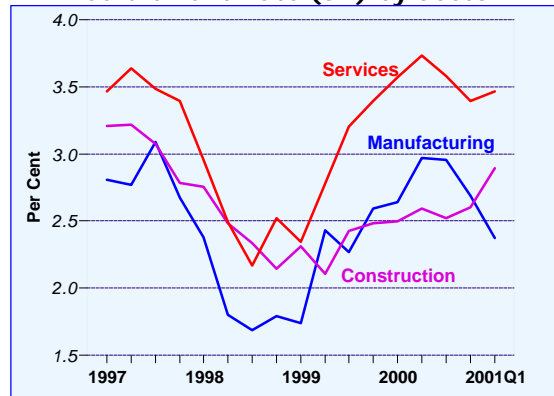
Date	Company	No. Affected
Mar-01	Creative Technology, which produces sound cards and graphics cards, to reduce Singapore workforce of 1,800 by 10%.	180
Mar-01	Electronic Manufacturing Service (EMS) provider Solectron Corporation, which acquired NatSteel Electronics last year, to cut down staff strength	120
Apr-01	Maxtor Corporation retrenched staff, following its merger with Quantum Hard Disk Drive	41
Apr-01	Flextronics International Ltd, a large contract electronics manufacturer, will move the production of high volume, low margin goods to Malaysia and China	not known
May-01	Hitachi Electronics Devices, a maker of display monitors for desktop computers, laid off 18% of its workforce in Singapore	221
May-01	National Semiconductor Corp will lay off 10% of its workforce in Singapore	about 100
Jun-01	Dutch electronics giant Philips to close a cellular phone R&D unit within Philips Consumer Communications	not known
Jun-01	Electronics giant Aiwa will be retrenching workers in R&D and international parts procurement in Singapore over the next few months	249
Jun-01	Maxtor Corporation will be cutting its workforce in Singapore by 10% over end-June/July	700
Jun-01	Adaptec Incorporated laid off workers such as clerks, warehouse staff and production operators as part of its restructuring plans	140
Jun-01	Hoya Magnetics laid off about 10% of its workforce	not known
Jun-01	Hitachi will close its television and vacuum cleaner factory some time in September and moving production to China, Indonesia and Thailand	550

The number of contract workers who had their contracts terminated early increased as well, to just under 270, up from 20-80 in the previous three quarters. Both job vacancy and recruitment rates in the manufacturing and services sectors have also come off their peaks in mid-2000, pointing to further weakness in the labour market ahead. (Charts 3.9 & 3.10)

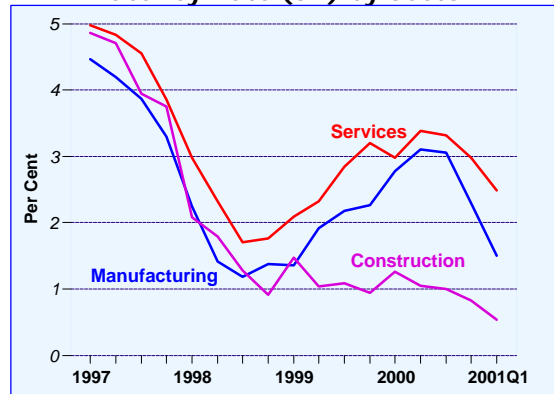
Despite the slowdown in nominal earnings, unit labour costs rose moderately reflecting cyclical factors

In line with softening labour demand, growth of nominal earnings (which excludes the employers' CPF contribution) halved from Q4 2000 to 5.7% in Q1 2001²⁰. Despite this downward adjustment, unit labour costs (ULC) rose by 6.1%, after nine quarters of decline. This reflected a sharp, cyclical slowdown in productivity growth, as well as a rise in the CPF component of wages (with the 4% point restoration in the employers' contribution rate in January 2001). (Chart 3.11)

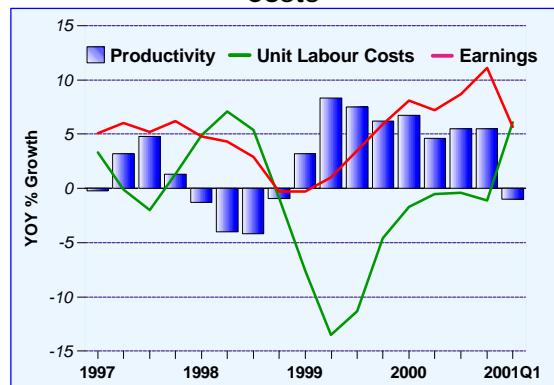
**Chart 3.9
Recruitment Rate (SA) by Sector**



**Chart 3.10
Vacancy Rate (SA) by Sector**



**Chart 3.11
Earnings, Productivity and Unit Labour Costs**



²⁰ Excluding the community, social and personal services industry, which saw a sharp spike in nominal earnings in Q4 2000 due to higher year-end bonuses in the public sector, nominal earnings growth declined from 8.1% in Q4 2000 to 4.5% in Q1 2001.

3.3 CPI Inflation in Singapore

Headline CPI inflation moderated to 1.7% in Q1 2001, after trending upwards for most part of last year to 2.0% in Q4 2000. The decline reflected the continued easing of commodity prices as well as the faster-than-expected slowdown in the economy.

CPI inflation moderated in the first five months of 2001, compared with Q4 2000

Although overall CPI inflation rose to 2.0% in Apr-May 2001 on account of higher "other miscellaneous" inflation, average inflation of 1.8% for the first five months of the year remained lower than the peak in Q4 2000. The momentum of price increases has also subsided, with the seasonally-adjusted, annualised, 3-month moving span rate (3M-SAAR) moderating this year compared with Q4 2000. (Chart 3.12) The MAS underlying inflation came in slightly higher than the headline CPI figure, at 2.3% in Jan-May 2001, unchanged from that in Q4 2000. The divergence reflected in part the exclusion of private road transport from the MAS underlying measure, which was experiencing negative inflation during the period. Other measures of core inflation²¹ registered increases ranging from 0.9-2.1% in Jan-May. (Chart 3.13) Although there were several instances of divergences between the headline and underlying CPI measures, they have generally moved in a similar trend over the longer-term. (Box Item 3.1 discusses in greater detail the recent behaviour of the MAS underlying inflation measure.)

Prices of consumer items in Singapore have been dominated by three major influences in recent months, and these are likely to continue to determine the inflationary dynamics in the economy for the rest of the year. The factors are: (a) the easing of prices of oil-related consumer items; (b) the moderation in the price increases of a number of expenditure items that are particularly sensitive to fluctuations in the business cycle; and (c) price hikes in various consumer services due largely to rising labour and other operating costs.

Chart 3.12
Overall Inflation

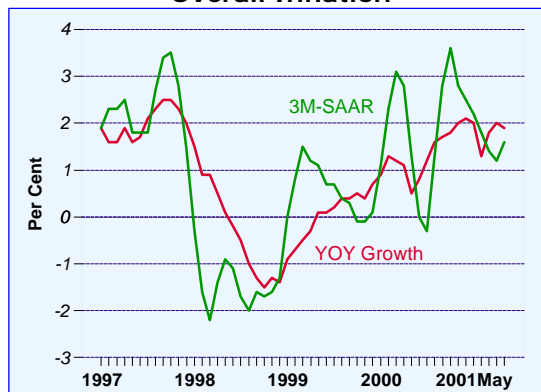
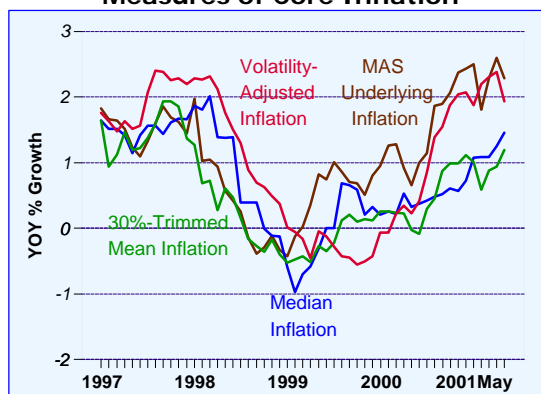


Chart 3.13
Measures of Core Inflation

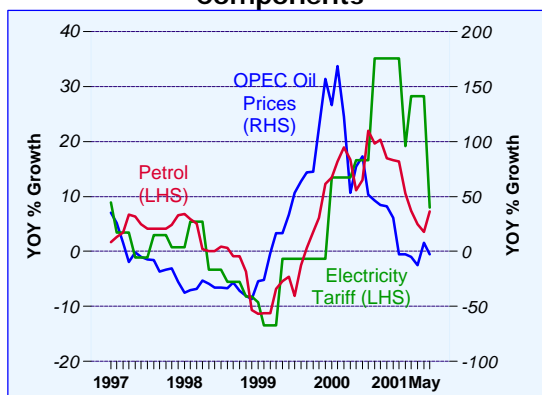


²¹ These measures include the volatility-adjusted inflation (which exclude items that exhibit volatile price inflation); the median inflation (which refers to the 50th percentile inflation rate at which half the components in the CPI basket have higher inflation and the other half lower); and the 30%-trimmed mean (which is calculated after removing 15% each of the components with smallest and largest inflation rates).

Lower inflation of oil-related consumer items

First, the prices of consumer items with heavy oil component have levelled off as global oil prices trended down from its peak in September 2000. Local petrol pump prices were cut at end-December following four OPEC output increases in 2000, and have fallen by an average of 4.9% over Jan-May 2001. In addition, the electricity tariff cut in May 2001 by Singapore Power more than offset the temporary rise it introduced in February to recover earlier losses due to higher operating costs. (Chart 3.14)

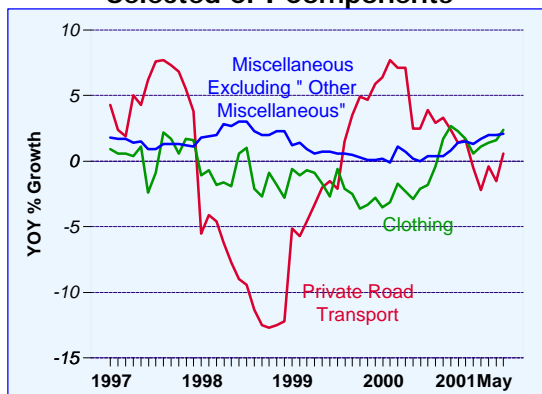
**Chart 3.14
OPEC Oil Prices and Selected CPI Components**



Prices of retail items have been dampened as consumer sentiments weakened

Second, the run-up in prices of some cyclical-sensitive expenditure items seen in the last quarter of 2000, were not sustained into this year. (Chart 3.15) These are mainly retail items, the prices of which have in the past shown a fairly strong co-movement with fluctuations in GDP growth.²² (Chart 3.16) It is estimated that inflation of these retail items²³ - which constitute about 36% of the CPI basket - came in at 0.2% in the first five months of the year, from 0.9% in H2 2000. This reflected the increasing restraint by consumers, in line with the unexpectedly sharp slowdown in the economy.

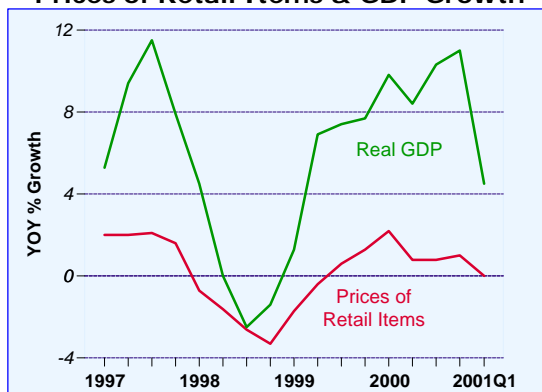
**Chart 3.15
Selected CPI Components**



Upward price pressures arising from higher labour and other operating costs in some services sectors

Third, in contrast to the previous factors, inflation in the healthcare and education categories, which has a combined weight of about 10% in the CPI basket, rose further in Jan-May, on the back of rising costs in these sectors. Meanwhile, higher inflation of cooked food and "other miscellaneous" items (which comprises largely holiday tour packages) also contributed significantly to the headline CPI inflation in Jan-May. (Chart 3.17)

**Chart 3.16
Prices of Retail Items & GDP Growth**



²² The correlation between inflation of retail items and GDP growth over the period 1993-2000 is relatively high (0.75). This compares to that between housing inflation and GDP growth (0.26), health inflation and GDP growth (0.0), as well as education inflation and GDP growth (-0.1).

²³ The classification of the retail items in the CPI basket is in accordance with "Singapore Standard Industrial Classification, 2000".

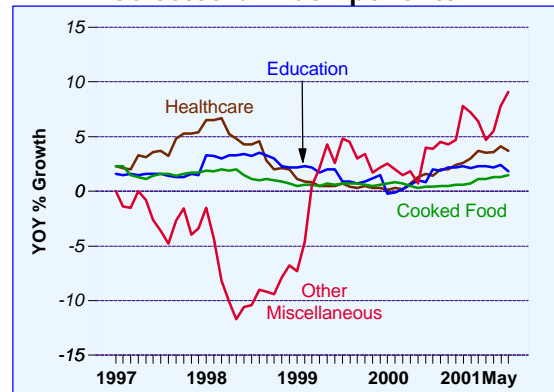
From 0.7% in H1 2000, healthcare inflation rose steadily to 2.2% in H2 2000, and further to 3.7% in Jan-May 2001. The increase in the cost of medical treatment was due to higher medical fees and specialist charges at both government/restructured as well as private hospitals. There was also a significant increase in the cost of dental treatment in April, following the recommendation by the Singapore Dental Association to cover rising costs.

A similar upward trend was also observed in education costs, which rose by 2.2% in Jan-May, after recording price increases of 0.4% in H1 2000, and 2.2% in H2 2000. Upward adjustment in fees for private kindergarten and nursery classes followed from the hike in training costs and wages for teachers in childcare centres.

Cooked food inflation also doubled to 1.2% in the first five months of the year, compared with the last quarter of 2000. The recent increase in prices of restaurant meals partly reflected the lag in the pass-through of higher operating costs to consumers including higher wages and utilities charges.

Costs of "other miscellaneous" items increased by 5.5% in Q1, before rising further by 8.4% in Apr-May. The hike was largely due to the upward revision in airfares. As some of the items in the tour packages are priced in US dollars (or other foreign currencies), the weakening of Singapore dollar against US dollar could have also had some impact on the overall price of the tour packages. Abstracting from the effects of these increases, overall CPI inflation would have been 1.5%²⁴ in Apr-May, instead of the 2.0% actually recorded.

Chart 3.17
Selected CPI Components

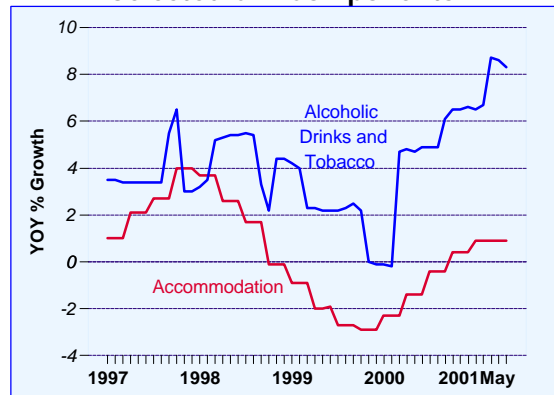


²⁴ This estimate was obtained by holding the inflation rate of "Other Miscellaneous" items constant at the historical average of the previous year.

Modest increases in accommodation costs and administrative charges

Other influences on CPI inflation in the first few months of 2001 include the modest price pressures from accommodation costs²⁵, which crept up in Jan-May, despite the weakening of property prices. (Chart 3.18) The lagged response of imputed rents to changes in property prices has meant that the effect of the recovery in private residential property prices till Q3 2000, is only now being reflected in accommodation costs. In line with the government's effort to discourage smoking, the upward revision of excise tax for tobacco in February, by about 7%, also added further pressures on overall consumer prices.

**Chart 3.18
Selected CPI Components**



²⁵ Costs of owner-occupied accommodation are calculated using the imputed rent approach. It estimates the rentals that homeowners would have to pay if they were tenants.

Box Item 3.1: The MAS Underlying Inflation

The Consumer Price Index (CPI) can be subjected to one-off price shocks, and therefore may not always reflect the underlying and persistent inflationary pressures in an economy under all circumstances. Researchers and central banks have expended much effort in developing alternative core inflation measures that capture the underlying trend in prices caused by aggregate demand pressures and shifting expectations of inflation, but disregard temporary fluctuations in inflation. The rationale for monitoring core inflation measures stems from the fact that central banks should focus on the persistent sources of inflationary pressures and not be unduly concerned with short-term and reversible price movements. This is consistent with Blinder's (1997)¹ definition of core inflation as the "durable or persistent component of aggregate inflation". The persistent part of inflation should capture the on-going element of price changes and therefore be correlated with future inflation. This is ultimately what policymakers are concerned about in a forward-looking policy framework.

Survey of Different Core Inflation Measures

There are many measures that are available to purge the raw overall CPI of transitory influences. Table A provides a summary of the commonly used measures of core inflation that MAS monitors on a regular basis. These measures are jointly monitored, taking into account their complementary nature.

Table A
Summary of Different Core Inflation Measures

Measures of Core Inflation (Monitored by MAS)	Description	Advantages	Disadvantages
Smoothed CPI Inflation (3M-SAAR CPI Inflation)	CPI inflation smoothed using moving seasonal adjustment factors	<ul style="list-style-type: none"> ▪ Easy to compute 	<ul style="list-style-type: none"> ▪ No economic justification ▪ Not robust in dealing with the effects of transient shocks
Exclusion-based CPI Inflation (MAS Underlying Inflation, Volatility-Adjusted Inflation)	This approach permanently removes the effects of pre-determined items that have volatile prices	<ul style="list-style-type: none"> ▪ Easy to compute and understand 	<ul style="list-style-type: none"> ▪ No control for temporary shocks to components retained in the CPI basket ▪ Information is discarded with the permanent exclusion of various components
Specific Adjustment CPI Inflation (CPI excluding Oil-related Items & Administrative Charges)	The approach adjusts for specific price shocks considered to be of a one-off nature	<ul style="list-style-type: none"> ▪ Easy to understand 	<ul style="list-style-type: none"> ▪ Requires a great deal of information ▪ Difficult to identify effects of particular price shocks as other prices are continuously changing
Statistical Measures of CPI Inflation (30% Trimmed Mean & Median Inflation)	This approach systematically removes outlying price changes in various CPI sub-components temporarily	<ul style="list-style-type: none"> ▪ Adjustment is systematic ▪ Less judgmental in which components are removed 	<ul style="list-style-type: none"> ▪ Potential loss of information from prices of components that are removed

¹ Blinder, A. (1997) "Commentary", *Federal Reserve Bank of St Louis Review*, May/June.

Although most inflation-targeting countries specify their target in terms of a headline inflation rate, many

are also guided by some core inflation measure in their conduct of monetary policy. (See Table B) Among the various measures, exclusion-based measures of core inflation, which permanently remove distortionary changes in components of inflation, are the most widely used. Although this measure is relatively intuitive and easily understood, information may be discarded with the exclusion of the various components. In addition, it requires the *ex ante* identification of the price series to be excluded, and the resulting core series may be unrepresentative if the excluded components have prices with significantly different dynamics. Moreover, there is no procedure to control for temporary shocks affecting the components retained within the CPI basket.

Table B
Core Inflation Measures Monitored by Other Central Banks

Central Bank	Core Inflation Measures	Target Variable
Bank of Canada	CPIXFET - excludes food, energy, and indirect taxes CPIX - excludes eight most volatile items (fruit, vegetables, gasoline, fuel oil, natural gas, mortgage interest costs, transportation costs, tobacco) and indirect taxes CPIW ² - all items in the CPI basket are retained but less weights are assigned to those volatile items	Headline CPI
Bank of England	RPIX - excludes mortgage interest payments RPIY - excludes mortgage interest payments, indirect and local taxes RPIXFE - excludes mortgage interest payments, food and energy	RPIX
European Central Bank	HICP excluding unprocessed food and energy	HICP
Reserve Bank of New Zealand	CPIX - excludes credit services	Headline CPI
Bank of Korea	Core Inflation - excludes non-cereal agricultural products and petroleum-based products	Core CPI
Bank of Thailand	Core Inflation - excludes raw food and energy items	Core CPI

MAS Underlying Inflation

The MAS underlying inflation, which excludes the costs of private road transport and accommodation from the overall CPI basket, is the measure that we monitor closely. The cost of private road transport is excluded as it is largely driven by government policy and socio-economic considerations. Import duties, Electronic Road Pricing, parking charges, road and fuel taxes, and the vehicle quota system (i.e. the Certificates of Entitlement or COE) aim to regulate the growth of the vehicle population to avoid congestion on the roads. In particular, the number of COEs is rationed based on the estimated number of cars deregistered over the year.

The exclusion of accommodation cost, however, is due to its computation. The price of owner-occupied accommodation in the CPI is calculated using the imputed rent approach. It estimates the rentals that homeowners would have to pay if they were tenants. However, given that the majority of Singaporean households live in government-constructed, owner-occupied housing where there is a limited rental market, the estimates used may not be representative of the price pressures faced by consumers.

² CPIW adjusts each CPI basket weight by a factor that is inversely proportional to the component's variability (i.e. the reciprocal of the standard deviation of the change in relative prices).

Recent Movements in the MAS Underlying Inflation

The MAS underlying inflation rate has, on average, come in lower at 1.3% over the sample period of 1985-2000, compared with headline CPI inflation of 1.5%. This was due to the impact of private road transport and accommodation inflation, which averaged a higher 2.7% and 2.1% respectively, and contributed to slightly more than 35% to CPI inflation over the period. (Chart A and Table C.)

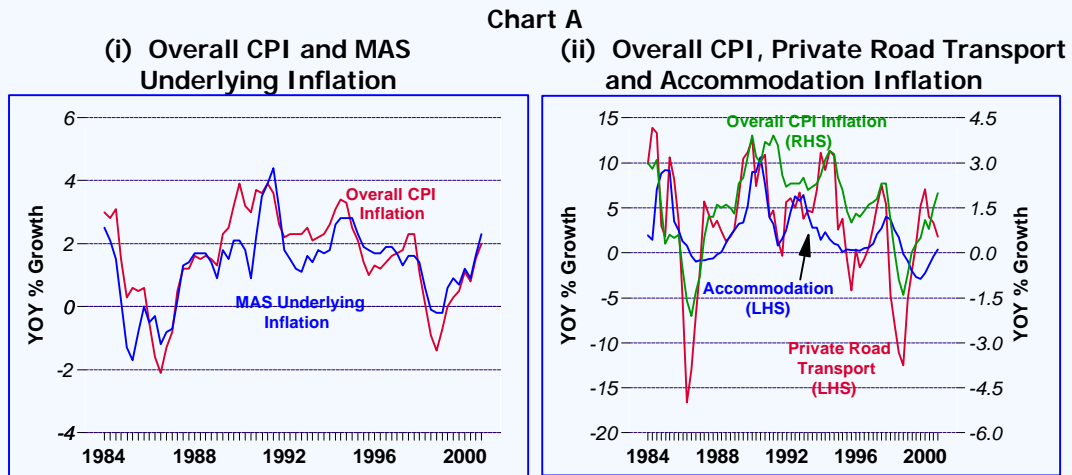


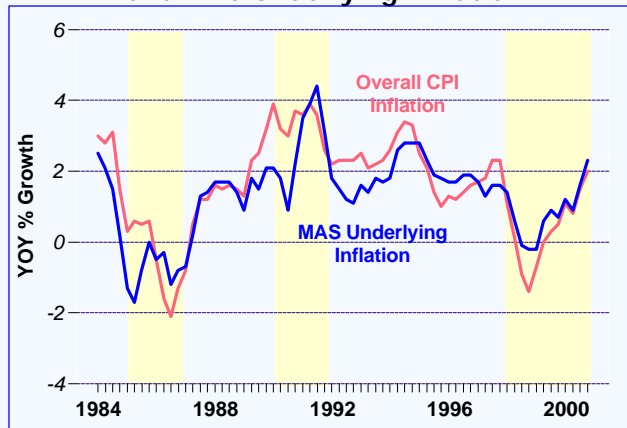
Table C summarises some statistics of the various inflation measures. The standard deviation of headline CPI changes was 1.4, higher than the 1.2 for the underlying measure for 1985-2000.

Table C
Averages and Standard Deviations of Headline CPI and Various Core Inflation Measures

	Average Annual Inflation, % (Standard Deviation)	
	1985-2000	1990-2000
Headline CPI Inflation	1.5 (1.4)	1.9 (1.3)
MAS Underlying Inflation	1.3 (1.2)	1.7 (1.0)
Volatility-Adjusted Inflation	1.6 (1.1)	1.9 (1.1)
30% Trimmed Mean Inflation	1.4 (1.0)	1.5 (0.9)
Median Inflation	1.3 (1.1)	1.5 (1.0)

We next look at the instances of divergences between the headline and underlying CPI measures over the period as identified by the shaded portions of Chart B.

Chart B
Periods of Divergence between Overall CPI
and MAS Underlying Inflation



Period 1: 1985-1986

In the period just preceding Singapore's first major downturn in 1985, the headline CPI figure suggested a sharp run-up in inflationary pressures in the economy. From 1.2% in 1983, CPI inflation rose to 2.6% by 1984. However, the underlying measure was suggestive of a much more moderate increase in prices, recording inflation of 1.6% in 1984. The discrepancy was largely explained by the sharp rise in prices of private road transport and accommodation. These were due to higher road tax, Additional Registration Fees (ARF) and duties on petrol, while a revaluation of owner-occupied properties by IRAS had pushed up imputed rentals. Thus, the pick-up in headline CPI numbers was in fact largely limited to these asset prices and not reflective of a generalised pick up in inflation trends in the economy, despite the relatively strong rates of GDP growth during that period. In the downturn phase of 1986-87 the two excluded components contracted sharply, causing the headline CPI figure to fall more sharply than the underlying inflation series. In essence, the divergence between the two series over the mid-80s reflected the dynamics of asset price inflation, particularly the sharp run-up in property prices in the early 80s and the subsequent collapse of the market during the recession. The relatively low inflationary environment as captured by the underlying measure allowed MAS to ease exchange rate policy in 1986, supporting the government's efforts to revive the economy.

Period 2: 1990-1991

Rising private road transport costs drove CPI inflation higher in 1990, due to the culmination of the introduction of COEs, and the hike in petrol prices with the onset of the Gulf war crisis. At the same time, accommodation costs were raised by higher conservancy and services charges for flats. As a result, the MAS underlying inflation rate came in at 1.7%, compared with an overall inflation rate of 3.5%. However, the dynamics of the underlying inflationary process changed quickly in 1991, when the MAS underlying inflation rate shot past the headline number to hit a historic peak of 4.4% in Q3, as the effects of tight labour market conditions filtered into higher cost pressures. Thus, while the initial uptake in CPI was driven by the volatile private transport series and the one-off effect of the oil hike, the pick-up in the underlying measure was a signal that price pressures were becoming more entrenched in the economy. The policy of appreciating the trade-weighted Singapore dollar was appropriate in cooling the economy at that time.

Period 3: 1998-2000

In the recent economic downturn of 1998, the MAS underlying inflation rate fell by a lesser extent compared to the headline measure, due to the exclusion of private road transport, which recorded price

declines in 1998 and early 1999. Weighed down by weak consumer sentiments, COE premiums tumbled by more than 50% in Q4 1998, bringing private road transport inflation to -12.5%. Hence, while the headline CPI inflation rate had fallen to -0.3% in 1998, the MAS underlying inflation was still supported at 0.4% by price increases of various services. This indicated that although prices had generally moderated with the economic downturn, there were still some sources of cost and price pressures in the system.

The contraction in prices began to bottom out in early 1999, with the MAS underlying inflation picking up relatively faster than overall CPI inflation, reflecting the decline in accommodation costs. From the second half of 2000, both the underlying and headline rates rose more rapidly in tandem with the strong GDP rebound, although the boost was also partly due to several one-off price hikes in oil-related items and administrative charges. To cap incipient price pressures, the MAS adopted a policy of allowing a gradual, modest appreciation of the exchange rate.

Information Content of the MAS Underlying Inflation

Core inflation measures are useful in the analysis of new developments by separating the short-run fluctuations in the data from its more persistent trend, thereby minimising misleading signals about the future trend in inflation. This section attempts to assess whether the MAS underlying inflation has any indicator properties for the future trend in inflation. In particular, we would like to evaluate the MAS underlying inflation measure by its information content in terms of its predictive value for future movement in the headline inflation rate. This is based on the notion that the underlying inflation series captures the underlying price dynamics in the economy and therefore would have predictive content for future inflation. Conversely, the excluded components, i.e. private transport and accommodation, should represent the temporary movements in inflation and should therefore not contain any forward-looking information about future inflation.

The statistical measure for assessing information content is to compare the mean squared forecasting error (MSFE) obtained from the test regressions to the MSFE from the benchmark auto-regressive models.³ The former includes the past values of both CPI and underlying inflation as explanatory variables, while the latter contains only past values of CPI inflation. Table D summarises the results of our out-of-sample inflation forecasts at the 2-, 4-, and 8-quarter horizons. The sample period included observations from Q1 1985 to Q4 1996 for estimation, and Q1 1997 to Q1 2001 for forecasting. However, the forecast period was characterised by relative volatility in the headline CPI due to the effects of one-off increases in administrative charges and oil prices during 1999-2000. Hence, a different sample for the forecasting period (Q1 1997 to Q4 1998) was also examined for testing the predictive content of the MAS underlying inflation.

Table D
Information Content of MAS Underlying Inflation for Headline CPI Inflation

	Forecast Periods	
	Q1 1997- Q1 2001	Q1 1997- Q4 1998
2-quarters	✓	✓
4-quarters	✓	✓
8-quarters	X	X

✓: Indicator has information content over and above past values of CPI inflation alone, based on the relative MSFE measure⁴.

X: No stable, predictive relationship was estimated.

³ This follows the methodology employed by Stock and Watson (2000), "Forecasting Output and Inflation: The Role of Asset Prices".

⁴ The relative MSFE is the MSFE of the regression models over the MSFE of the benchmark auto-regressive models.

Based on the results shown in Table D, the MAS underlying inflation was found to have some predictive power for overall inflation over the short-term horizon, up to four quarters. The same conclusion can be drawn for both the different forecasting periods. However, we found evidence of instability in the relationship between the headline and underlying inflation for the 8-quarter horizon.

Concluding Remarks

The monitoring of underlying or core measures of inflation can be useful in assessing persistent sources of cost and price pressures in the economy. The results here confirm the information content of the MAS underlying inflation measure on future inflation over the next 4 quarters. The excluded components of transport and accommodation costs have from time to time caused divergent paths in overall CPI inflation and the underlying measure (although their paths have moved together over the longer term). As seen in the two main episodes of divergence, in the mid-80s and again in the late-90s, the MAS underlying inflation rate reflected the remaining inflationary pressures in the economy after discounting the impact from transitory price movements. Thus, it provides information on the persistent sources of inflationary pressures and contributes to the decision process on the appropriate monetary policy response. Nonetheless, it is important to understand the factors causing the divergences between the headline and underlying measure, and assess the information that the different contributory factors contain with respect to the underlying inflationary dynamics in the economy.

We continually evaluate our core inflation measures, with a view to gaining useful insights into how inflation evolves, and obtaining a more accurate picture of the underlying inflation process that can help in the conduct of exchange rate policy. In assessing the risks with respect to our price stability objective, we consider all core inflation measures and are not unduly influenced by a numerical target for any specific index.

4 Outlook

4.1 External Outlook

There are uncertainties over the depth and severity of the current global economic slowdown and on the timing of its turnaround.

Uncertainties over the recovery of investment spending in the US

In the US, investment spending may not pick up as strongly and as quickly as the optimists had expected, given that over-investment in the late 1990s, coupled with the sharp contraction in demand, particularly in the IT sector, has resulted in excess capacity. The capacity utilisation rate in the US fell to 77% in May 2001, the lowest since August 1983. Private consumption in the US could weaken in the near term as households turn more cautious about spending amid an economic slowdown and softening labour market conditions. However, a sharp fall in private consumption growth would be limited by the stimulus from tax rebates and the lagged effects from the Federal Reserve's aggressive interest rate cuts, which had buttressed equity prices somewhat in recent months.

Worsening outlook for Japan and the Euro zone

In Japan and the Euro zone, the economic outlook for 2001 has worsened since the beginning of the year.

In Japan, slowing export growth is expected to weigh heavily on domestic demand. Thus, private investment, which was a key support of growth last year, is expected to weaken. This is evident from various leading indicators, including the latest Tankan survey published by the Bank of Japan (BOJ), which showed the first ever decline in business outlook in two years. Capital goods shipment fell 2.8% from a quarter earlier while industrial production slipped into negative territory. Private consumption is also likely to worsen in the next two quarters as a result of persistently weak labour market conditions. The unemployment rate has been hovering near record highs of 4.7% to 4.9% since the beginning of 2001, and is likely to rise if the banking and corporate reforms are pushed through. Given Prime Minister Koizumi's plans to curb government spending, the economy is not likely to be stimulated by fiscal policy.

Japan is therefore unlikely to provide much support to the regional economies this year through demand for their exports. At the end of this section, we explain in greater depth the changing nature of economic linkages between Japan and the economies of the East Asian region. (Box Item 4.1)

Most recent estimates for growth in the Euro zone now point to the lower end of the 2.2-2.8% range projected by the European Central Bank (ECB) in June 2001. Monetary policy may not offer much support for domestic demand, as persistent inflationary pressure is likely to prevent the ECB from easing monetary policy as quickly as desired. Nevertheless, fiscal policy is expected to be broadly stimulative to growth, with fiscal reforms leading to lower tax burdens across several countries in Europe.

Sharp slowdown in East Asia

Against the backdrop of a global downturn that has been quicker and sharper than expected, East Asia's average real GDP growth is projected to fall to around 3.5% in 2001, sharply down from 6.9% in 2000.

Stronger economies in the region have more leeway to turn to expansionary fiscal and monetary policies to tide them over the slowdown. Countries with large fiscal reserves and low government debt can afford to pump-prime. At the same time, declining world interest rates, steady oil prices and benign inflation should create an environment favourable to monetary easing. China, for instance, can generate enough domestic demand through government spending to offset the slack in the export sector, while in Hong Kong, interest rate cuts can help to spur domestic demand.

For some other countries, the scope for expansionary macroeconomic policies is limited by structural weaknesses. The fragility of the banking systems in Indonesia, Thailand, Taiwan and Korea is undermining the effectiveness of monetary policy. Even if the central banks were to ease monetary policy, banks will remain cautious about lending. Indonesia, Thailand and the Philippines are constrained by their already large fiscal deficits and government debt. Government debt in Indonesia and Thailand ballooned in the last three and a half years due to heavy pump-priming and bank bail-outs, reaching nearly 100% of GDP in Indonesia and about 60% of GDP in Thailand.

Box Item 4.1: Is Japan's Role In East Asia Diminishing?

Introduction

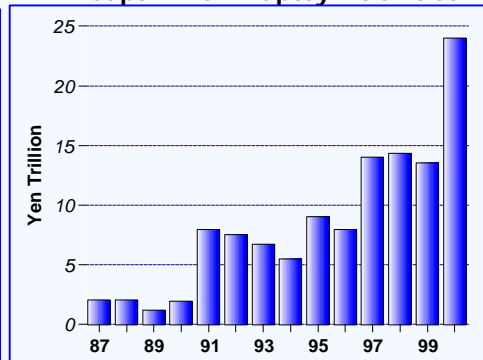
Since the collapse of the asset bubble in the early 1990s, the Japanese economy has been in a prolonged slump. Real GDP growth averaged just 1.4% during 1991-2000, one-third the average growth rate recorded during 1981-90. The performance in the past 10 years also compared poorly with average growth rates of 3.4% for the US and 2.1% for the EU.

The decade long economic slump in Japan has led to fundamental changes within the country, particularly in recent years. Lifetime employment is no longer guaranteed as the unemployment rate surged to reach a historical high of 4.9% at end-2000. (Chart A) Corporate bankruptcies rose 12-fold from just 2 trillion Yen in 1990 to 24 trillion Yen in 2000. (Chart B) These developments have already led to major shifts in Japan's economic relations with the rest of East Asia. Our findings show that Japan's importance as a market for East Asian exports and a source of long-term direct capital to the region has diminished over the years. In addition, Japanese banks have turned from being net providers of credit to the region to net withdrawers, while Japanese portfolio investors have looked to the more developed markets outside Asia.

Chart A
Japan: Unemployment Rate

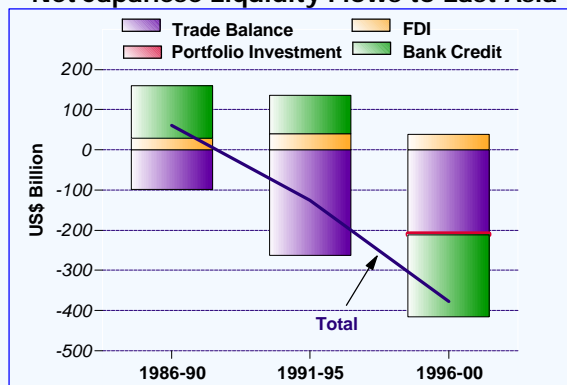


Chart B
Japan: Bankruptcy Liabilities



Source: CEIC

Chart C
Net Japanese Liquidity Flows to East Asia



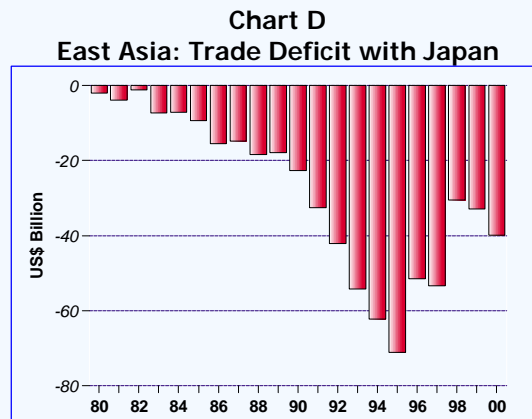
Note: Data were compiled from various sources. The overall figure provides only an estimate of net liquidity flows. Sources: CEIC; BIS; Japan Ministry of Finance

Japan: Withdrawing Liquidity From East Asia

Since the early 1990s, Japan has had a negative impact on liquidity flows to the region. According to our calculations, Japan added a total of US\$69 billion in net liquidity to East Asia during the second half of the

1980s, based on the aggregate of trade, foreign direct investment, portfolio investment and bank credit flows.¹ The net liquidity inflow, however, turned to a net outflow of US\$126 billion during 1991-95 and an even larger net outflow of US\$374 billion during 1996-2000 (Chart C).

The net outflow of liquidity from the region was contributed by two main factors. First, it reflected East Asia's large and persistent trade deficit with Japan. In 1985, East Asia's trade deficit with Japan stood at US\$9 billion. By 1995, however, the shortfall had ballooned to US\$71 billion (Chart D). The uptrend was interrupted briefly by the Asian crisis, when the collapse of regional demand helped to shrink the deficit with Japan. Nonetheless, with the economic recovery last year, the shortfall has risen again.



Source: CEIC

Second, the liquidity outflow from the region was due to Japanese banks' withdrawal of credit. During 1986-90, Japanese banks extended a total of US\$130 billion worth of new loans to borrowers in East Asia. Following the collapse of the asset market in Japan, this was reduced by a quarter to US\$97 billion during 1991-95. In the second half of the 1990s, however, Japanese banks turned from being net suppliers of credit to East Asia to become net withdrawers. During this period, Japanese banks withdrew some US\$204 billion worth of credit from the region.

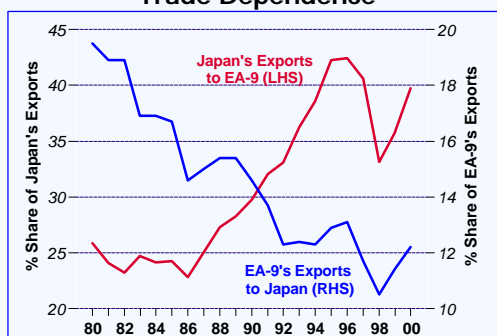
The combined trade and bank credit outflows more than offset the inflow of Japanese FDI to the region. The first big wave of Japanese FDI to East Asia started in the late 1980s on the back of the rising Yen, hitting US\$40 billion in the first half of the 1990s. The inflow continued until the onset of the Asian crisis compelled Japanese investors to pull back. The size of portfolio investments by Japanese investors, totalling some US\$3 billion during 1996-2000, was insignificant in relation to the overall flow of funds picture.

Trade: Shifting Roles

East Asia's persistent trade deficit with Japan reflects two important underlying trends. First, Japan's increasing dependence on East Asia as an export market. Today, East Asia is Japan's largest export market, accounting for 40% of Japanese exports compared to 23% in 1986 (Chart E). The steady rise in market share is explained largely by the rapid growth of the regional economies till the Asian financial crisis. With its enormous appetite for consumer, intermediate and capital goods, the region had helped to absorb Japanese exports at a time when Japanese domestic demand was weakening. This was assisted by Japanese overseas affiliates in the region, which increased their purchases of sophisticated machinery and other capital goods to upgrade their production operations.

¹ The calculations are based on data taken from different sources and are only intended to provide a rough estimate of liquidity flows. Japanese portfolio investment by country is also not available before 1993, but is believed to be small.

Chart E
Trade Dependence



Source: CEIC

In the medium term, East Asia's strong fundamentals suggest that it will rebound from the setback of the financial crisis. Although the region's growth may not return to the same rapid rates enjoyed during the pre-crisis period, the region will nevertheless remain one of the fastest growing areas in the world economy. As a result, it will continue to provide a solid and ready market for Japanese exports despite two offsetting trends: (a) Japanese overseas affiliates in Asia have started to look for cheaper local sources of intermediate and capital goods following the sharp depreciation of the regional currencies; and (b) some of the regional economies had imposed greater import restrictions on selected product lines in the aftermath of the crisis (Table A).

Table A
Key Import Restrictions Imposed Following the Currency Crisis

Country	Measures	Import Category	Raise in Tariffs
Thailand	<ul style="list-style-type: none"> Raise in tariff on finished vehicles and luxury goods Raise in tariff on iron and steel products 	<ul style="list-style-type: none"> Finished vehicles Up to 2400cc Over 2400cc Perfumes, cosmetics, leather bags, etc Cameras, clocks/watches, spectacles, lighters, etc Neckties, underwear, etc Hot rolled sheet iron and bar steel, etc Cold rolled sheet iron and bar steel, etc Surface treated sheet steel and steel pipe Chains, etc 	<ul style="list-style-type: none"> 42% → 80% 68.5% → 80% 20% → 40% 5% → 30% 30% → 60% 0.4 bahts/kg → 10% 0.4 bahts/kg → 12% 10% → 15% 12% → 20%
Malaysia	<ul style="list-style-type: none"> Heavy machinery import licensing system introduced Support for domestic production and curbs on imports of large goods (e.g. aircraft, ships, etc) Raise in tariffs on construction machinery building materials, automobiles, bicycles/motorcycles, etc 	<ul style="list-style-type: none"> Construction machinery and building materials, etc Finished vehicles 	<ul style="list-style-type: none"> 5 ~ 25% → 10 ~ 30% 140% ~ 200% → 140% ~ 300%
Philippines	<ul style="list-style-type: none"> Raise in tariffs on textiles, automobile parts, etc 	<ul style="list-style-type: none"> Textiles Automobile parts 	<ul style="list-style-type: none"> 10% → 15% 3% → 7%

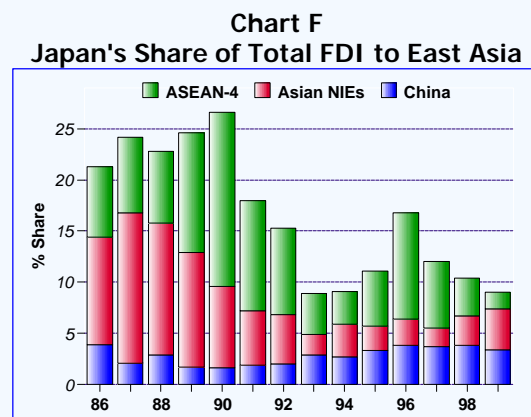
Source: JETRO

The second important trend is the declining dependence of East Asia on Japan as an export market. From 20% in 1980, Japan's share of East Asian exports fell to 12% in 2000. The frail Japanese economy was a contributing factor. Since the collapse of the asset bubble, domestic demand in Japan has grown by a mere 1.2% per annum on average. With domestic demand expanding significantly faster elsewhere, e.g. three times more in the US, this has meant that East Asia's exports to destinations outside Japan have grown at a stronger pace, with Japan's share of the region's exports falling correspondingly. This was despite the rapid expansion of "reverse imports" – exports by Japanese overseas affiliates to Japan. Between 1992 and 2000, "reverse imports" by Japanese affiliates in East Asia jumped 275%. "Reverse imports" now account for around 28% of total Japanese imports from East Asia, double from that in 1992.

As an export market to East Asia, Japan's role is unlikely to gain greater importance in the near term. There will be some spin-offs for East Asia as Japanese consumers and firms increasingly turn to cheaper foreign-made products, particularly from China. However, on balance, the importance of Japan as an export market will be constrained by its weak domestic demand. A recovery in the latter is unlikely in the next 2-3 years as unemployment and corporate failures are expected to rise as Japan undertakes deep structural reforms to clean up the banks and clear out uncompetitive industries.

Foreign Direct Investment: Past Its Peak

Over the years, East Asia has reduced its dependence on Japan as a source of FDI. Following the large inflows in the late 1980s and early 1990s as a result of the strong Yen, the trend of Japanese FDI as a share of total FDI to East Asia has broadly been on the decline. (Chart F) At its peak in 1990, Japan accounted for 27% of total FDI to East Asia. By 1999, Japan's share had fallen to just 9%. Further, the benefits of Japanese FDI have not been spread evenly across the region. In terms of market share, Japanese FDI to East Asia has been gravitating towards China. In a span of just 10 years, China's share of Japanese FDI to East Asia rose from a mere 5% in 1990 to a phenomenal 36% in 1999. This was largely at the expense of the other Asian economies such as Malaysia, Thailand and Indonesia.



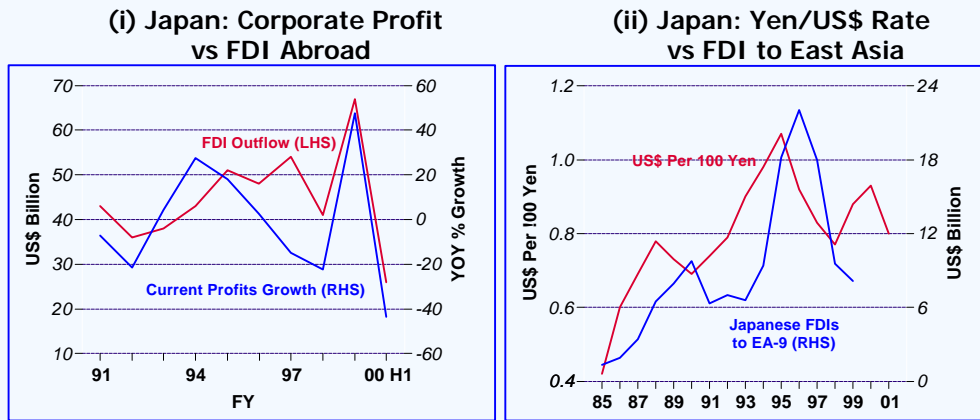
Source: CEIC

The outlook for Japanese FDI to East Asia does not appear promising in the near term. First, neither corporate profit nor real GDP growth in Japan is likely to show significant upside due to the negative short-term consequences of economic restructuring. Based on past evidence, this will cause Japanese FDI abroad to be restrained (Chart G). The strong correlation between corporate profits and overseas investments is to be expected as around half of the financing for Japanese manufacturers' investment abroad has historically come from their parent companies. With less generous access to financing from banks compared to the pre-crisis period, internal funding from parent companies is likely to become an even more crucial factor.

Second, the prospect for the Yen/US DOLLAR exchange rate will not favour Japanese FDI to East Asia. The Yen has lost some 6% against the US dollar so far this year, with potentially further downside risk. Just as a

strengthening Yen vis-à-vis the US dollar had helped to push Japanese FDI to the region in the late 1980s and early 1990s, a weakening Yen will have the reverse effect.

Chart G



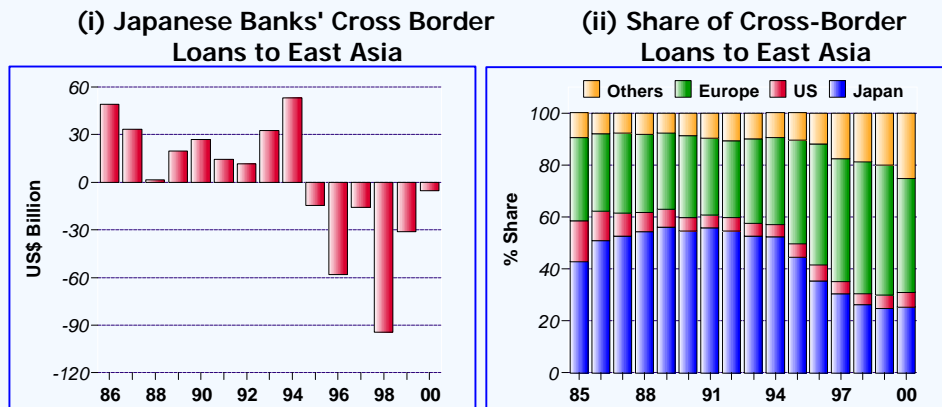
Source: CEIC

Third, while the overall environment in East Asia has become less attractive for foreign investors, the long-term capital outflow from Japan may continue to favour the North. In the South, issues such as political uncertainty and macroeconomic sustainability, including the pace of reforms and currency risks, will continue to be of concern to international investors. While the North is not completely sheltered from these risks, it is opening up rapidly and has the vast Chinese hinterland as a major draw. Northeast Asia currently has a two-thirds share of Japanese FDI to the region.

Bank Credit: Crunch Time

The role of Japanese banks as a provider of cross-border credit to East Asia has been declining over the years (Chart H). During 1986-90, Japanese banks expanded their loan books rapidly, often to build market share at the expense of margin. This strategy, however, could not be sustained. Following the collapse of the asset market in Japan, banks were forced to re-focus on asset quality. This, and the Asian crisis, caused Japanese banks not only to reduce new lending activities but to actually shrink their outstanding loan positions in East Asia in the second half of the 1990s.

Chart H



Source: BIS

Japanese banks were not alone in withdrawing credit from the region during 1996-2000. American and European banks had done likewise. Nonetheless, the sharper pullout by Japanese banks caused their share of total cross-border loans to East Asia to fall from 45% at end-1995 to 25% in 2000. Data show that Japanese

credit withdrawn from East Asia was largely diverted to Europe. Outstanding Japanese bank loans to Europe surged from just US\$2 billion as at end-1998 to US\$339 billion as at end-2000.

Looking ahead, Japanese banks are not expected to return in a significant way in the medium term. These banks were badly hurt by the Asian crisis as one-third of their outstanding loans to East Asia prior to the crisis were to the four most affected countries. Rather than extend fresh loans to the region and risk being hit again, Japanese banks are now likely to be cautious and hold safer and more liquid assets, such as JGBs. Indeed, Japanese banks' holding of government bonds has risen by 147% since the start of the Asian crisis, while bank loans have declined sharply (Chart I).

Chart I
Japanese Banks: Outstanding Bank Loans and Bond Holdings



Source: CEIC

Portfolio Investment: Playing It Safe

In the overall portfolio allocation, East Asia has never been an important market for Japanese investors, whether in equities or bonds. Instead, Japanese investors have shown a clear preference for the securities of the developed markets. In the past five years, 60-80% of Japan's net portfolio acquisitions abroad annually were made in six developed markets -- the US, Germany, UK, France, Luxembourg and the Netherlands. In 1997-98, the ratio rose to more than 100% as international investors sought refuge in safe havens following the Asian crisis. In contrast, East Asia's share amounted to less than 2%, with Japanese investors actually being net sellers of Asian securities in 1997-98.

It is difficult to see a change in the attitude of Japanese investors towards the East Asian capital markets. The most serious drawback is the lack of liquidity. Stock market turnover, for example, has already fallen to a fraction of pre-crisis levels. In addition, the region is still grappling with issues of corporate governance and transparency, political uncertainty, among others. Financial and corporate reforms will help in the longer term to address some of these concerns.

Conclusion

In the past decade, Japan's domestic economic woes had prevented it from playing a larger role in East Asia. While Japan continued to absorb exports from and invest long-term capital in East Asia, its share in the region's trade and FDI vis-à-vis the other countries declined significantly. Over and above these, Japanese banks have been pulling out credit from the region while Japanese portfolio investors continued to focus on the more developed markets in the West.

To play a bigger role in the region, Japan has to first get its own house in order. The election of the highly popular Koizumi government has raised market expectations that structural reforms that are essential to the recovery of the economy will be implemented even if these lead to short-term pains. It is still early days, but the signs are encouraging.

4.2 Domestic Output

Forecast of GDP growth for 2001 has been downgraded to 0.5-1.5%

In line with the weakening external environment, GDP growth is now expected to come in at between 0.5-1.5% in 2001. This compares with the earlier forecast range of 3.5-5.5%. The revision stemmed largely from weaker growth forecasts for the manufacturing, commerce and transport sectors, the three sectors most vulnerable to the deterioration in the external economic environment and global tech sector. Indeed, advance estimates for Q2 2001 show that GDP contracted by 0.8%, pointing to a much sharper downturn than previously anticipated.

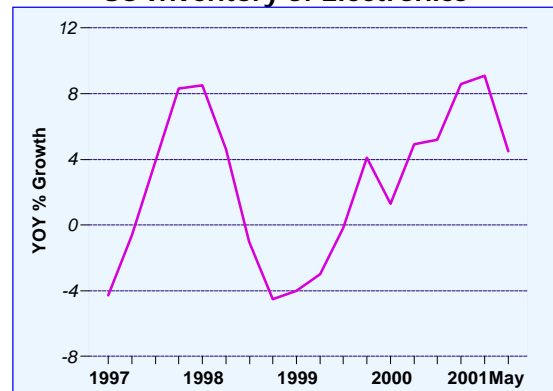
Electronics industry dynamics point to continued weakness in the months ahead

The analyses in Chapter 1 indicate a weak second quarter for the global electronics industry. Looking ahead, we believe that the dynamics of the global electronics industry in the coming quarters would progress in the following sequence: (1) price adjustments and clearing of inventory, (2) pick-up in end-user demand, (3) recovery in components market, (4) recovery in capital spending, and (5) emergence of the expansion phase of a new cycle.

The electronics industry is currently at stage 1, as prices have generally adjusted downward in response to the supply overhang. Figures from the US Department of Commerce also show that US inventory of electronics has been accumulating at a less rapid pace over the past few months. (Chart 4.1) Some reports indicate that inventories in the PC segment have fallen to "normal" levels more recently, but there are still few signs of the industry reaching stage 2. Demand in the PC and telecommunication segments remains sluggish. According to International Data Corp (IDC), an industry research firm, consumer PC shipments in the US fell 26% in Q1 2001 and are expected to contract by 17% in 2001. The telecommunication segment remains in the doldrums, as evidenced for example by the series of announcements of lay-offs by US telecommunication firms.

However, there are a few factors that could provide some support to the recovery of end-user demand towards the end of the year. First, replacement

Chart 4.1
US Inventory of Electronics



spending on PCs, which typically follows a 2-3 year cycle, would give some boost to IT spending in late 2001/2002. Second, the impending launch of Microsoft's Windows XP in the latter half of the year should give some support to PC demand as some of the previous upturns were associated with Microsoft's launches. Third, the rock-bottom semiconductor prices could be an added incentive for PC upgrades. Fourth, the Japanese market could provide some support for end-user products as demand for high-capacity computers is expected to be strong²⁶.

The industry is unlikely to reach stage 3 in the next quarter as sales and orders of the semiconductor segment remain depressed. (Chart 4.2) Semiconductor prices continue to be on the downtrend. Prices for the mainstream 128MB DRAM plunged to less than US\$2 at end-June 2001. (Chart 4.3)

The industry would probably need a few more quarters to reach stage 4. The book-to-bill ratio for semiconductor equipment (a proxy for capital spending) has declined sharply over Jan-May 2001. This ratio is unlikely to improve significantly in Q2 and Q3, as the recovery in capital equipment production is predicated on a sustained upturn taking place in end-user demand. There is a risk that the rapid cutback in capital spending will bring a second wave of downward pressure on growth, which would in turn depress margins further and reduce the profitability of investing in new capacity.

We believe the industry would take another few quarters to work out the excess supply, and is expected to remain relatively weak in the second half of the year. We would probably see the industry reaching stage 5 (emergence of new cycle) sometime early next year. During the previous two periods of downturn – in 1996 and again in 1998 – global chip sales typically contracted for four quarters before recovering. Assuming that the same pattern is repeated in the current downturn, the electronics cycle would only recover in the beginning of next year. While the current downturn has been sharper than the previous two cycles in 1996 and 1998, the introduction of more efficient supply management practices in the industry might also ensure that the contraction phase this time round is not any more protracted than before. This is consistent with the

Chart 4.2
Indicators of the Semiconductor Segment

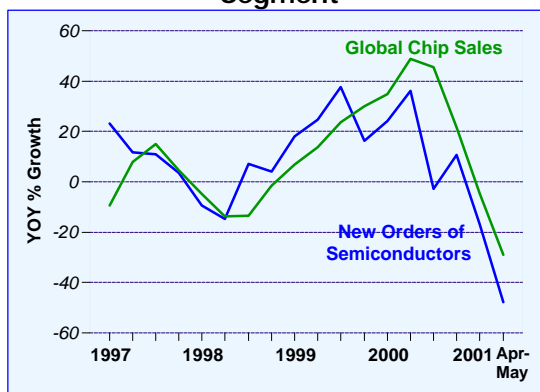
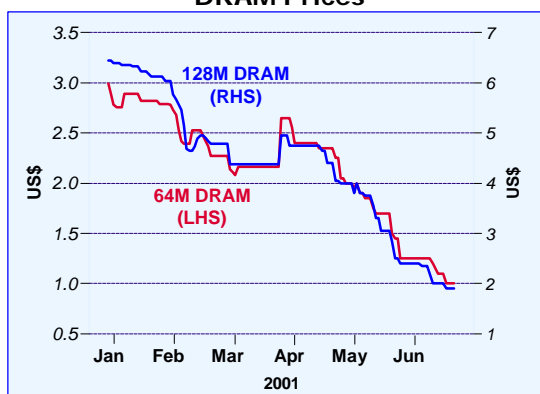


Chart 4.3
DRAM Prices



²⁶ According to figures from Japan Electronics & Information Technology Industries, PC shipments to Japan rose 17% in Q1 2001, boosted by higher sales to companies and consumers who require Internet access. This trend is expected to continue, albeit at a more moderate rate.

Semiconductor Industry Association's view that the global semiconductor market would experience a rebound in 2002.²⁷

A recovery next year is predicated on a turnaround in the IT market

So what are the implications for Singapore's electronics industry? Singapore's electronics output has historically tracked global chip sales closely – contracting one quarter after global chip sales decline but rebounding concurrently. This cyclical pattern was also borne out recently, when domestic electronics output continued to expand in Q1 2001 despite the decline in world chip sales during the same quarter. Going forward, we forecast domestic electronics output to contract most sharply in Q2 and Q3 2001, with a smaller decline in Q4 2001. A sustained recovery in production levels is unlikely until the turnaround in IT demand early next year. However, significant uncertainties remain in the near-term and the possibility of a more prolonged downturn cannot be entirely ruled out at this point.

Non-electronics is also expected to weaken

The slowdown in the domestic electronics industry will also have a dampening effect on certain segments of the non-electronics industry (such as fabricated metal, machinery and equipment) which support electronics production. With their performance closely tied to the electronics sector, output of fabricated metal products, machinery and equipment, and electrical machinery industries – which account for about 15% of total manufacturing output – declined by 13% in Apr-May 2001. Nevertheless, some support will come from the aviation and marine transport equipment industries, the latter reflecting the improved competitiveness of the industry following the consolidation among local shipyards, and increased contracts for oilrig production and repairs.

Weakness of the manufacturing sector will drag down growth of the trade-related services sectors

The weakening of the manufacturing sector and external environment in the next few quarters is likely to dampen

²⁷ The association said that while the industry took 12 quarters to reduce capacity during the 1996 global electronics slowdown, adjustments to capacity were reduced within two quarters more recently.

growth of the services sector. The commerce and transport sectors will be especially hard hit, given their relatively strong linkages with the manufacturing sector. According to the latest quarterly Business Expectations Survey by the Department of Statistics, around 56% of the retailers and 46% of the caterers surveyed expected business prospects to worsen in the next six months. Our econometric study also pointed to slower visitor arrivals from 12 top tourist-generating markets in 2001 (Please refer to Box Item 1.1 for further details). However, some of the major events planned for the year, including the Caltex Singapore Masters golf tournament and the Manchester United exhibition soccer match could provide some support for the tourism industry.

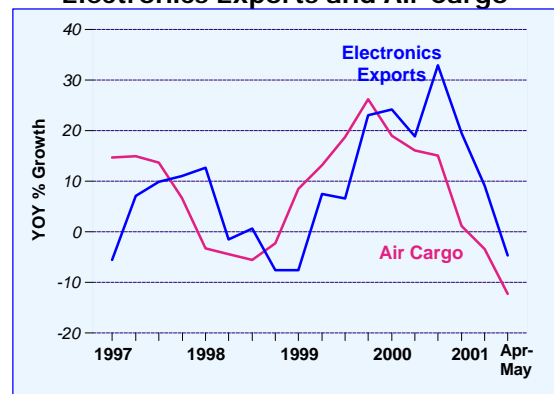
The transport sector is also expected to deteriorate in the next few quarters, as air cargo traffic is likely to be dragged down by the continued weakness in global electronics demand. (Chart 4.4) The communications industry, on the other hand, is expected to continue to post healthy growth rates, as lower internet and mobile phone costs encourage greater usage by consumers.²⁸

The pace of expansion in the business services sector is expected to slow down further for the rest of the year. According to the latest Business Expectation Survey, there were more firms from the professional services segment expecting unfavourable business conditions for the period Apr–Sep 2001. In addition, the softening property market would continue to act as a drag on the real estate services segment.

Performance of financial services sector will be supported by the insurance segment

As with the other sectors, the outlook for the financial services would depend to some extent on the timing and strength of the recovery in the US economy. At the same time, we believe that the bulk of the upturn will be supported by strong growth in the insurance industry. With an estimated \$64 billion in CPF Ordinary and Special Accounts potentially available for investment as at end-2000 – of which \$2.9 billion have been withdrawn for investment in insurance products as at end of Q1 2001 – we can expect a further withdrawal of funds during the

**Chart 4.4
Electronics Exports and Air Cargo**



²⁸ Growth in the telecom industry is likely to continue on the back of improved services in the mobile phone and broadband segments, supported by: (1) increased competition among different broadband and mobile phone service providers; (2) government's initiatives (including the \$200 million Wired With Wireless Programme) to promote e-business, e-learning and broadband usage; and (3) lower cost of broadband access.

year, especially given the current low interest rate environment. The commercial banking industry is also expected to expand at a steady pace, supported by the growth in loans to non-bank customers, although fee-based income could be dampened by fewer IPO launches in view of poor market sentiments.

Other financial services industries are likely to remain relatively weak. Uncertainty about the outlook for the US economy and the electronics cycle could continue to dampen US stock prices, which could in turn adversely affect sentiments in the local market. Weaker stock market activity, coupled with the liberalisation of brokerage fees, could also lead to further consolidation in the stock brokerage industry. In the Asian Dollar Market, activity is likely to remain subdued, as investments to the regional economies remain constrained by political difficulties and slower economic growth.

Surge in contracts awarded last year may provide some support for the construction sector

The construction sector is expected to find some support from the 50% surge in contracts awarded last year. This should translate strongly into certified payments in the latter half of the year. Our econometric analysis suggests that, on average, about half the certified payments of any given project are made within the first year from the initial award of the contract. The bulk of certified payments are estimated to flow through over some two and a half years from the initial awarding of the contract.²⁹

We expect support to come largely from civil engineering works, in line with the surge in contracts awarded for such projects last year and into this year. The private non-residential segment, which has fallen off sharply from last year's highs, is also expected to pick up later in the year, spurred by construction of new economy projects like wafer fabrication and pharmaceutical plants.³⁰ However, in the light of deteriorating economic conditions, the demand for office space is likely to ease from the strong growth experienced in 2000. Companies

²⁹ Our econometric model imposes a polynomial distributed lag (PDL) function to capture the dynamics between contracts awarded and certified payments.

³⁰ These include projects such as Singapore Power's generating unit on Pulau Seraya, Schering-Plough's sterile filling plant, wafer foundries by Chartered Semiconductor and United Microelectronics Corp/ Infineon Technologies AG, and a slew of shops and offices along Jalan Besar and Serangoon Road to be completed in September 2001.

are already pushing the excess supply of office space back to the market for sub-lease. In response, the government is trimming the release of industrial land as well as office and shop space by 60% and 50% respectively under the Government Land Sales (GLS) programme to curb the glut in both industrial property and office space.

Construction activity in the residential segment is expected to remain weak, on the back of cautious sentiment in the private residential property market. Contracts awarded in the private residential property market declined in Q4 2000 and Q1 2001, following growth in the previous five quarters. In addition, the number of applications received by the Central Provident Fund under its residential property scheme (RPS) plunged 33% in Q1 2001.

There are increasing signs of a supply overhang in the private residential segment

The slower demand for private housing has led to an increasing overhang in the market. The stock of total unsold private homes (with prerequisite launch approvals) jumped from 16,575 in Q4 2000 to 18,563 in Q1 2001, the highest since Q3 1998 (Chart 4.5). Furthermore, the 13,419 unlaunched units in Q1 2001 have exceeded the peak Asian crisis level of 11,980 recorded in Q2 1998, suggesting that developers may be postponing projects in view of poor sentiment. The continued acquisitions being made through en bloc deals could also further exacerbate the excess supply situation. To curtail the overhang, the government recently cut the release of land for private homes and executive condos this year by more than 30% from its initial projections under the GLS programme. In the public residential sector, construction activity continues to be affected by HDB's cutback in the building of new units last year, although the rate of decline is projected to slow in the second half of 2001.

Medium to long-term prospects for Singapore economy remain intact

Notwithstanding the cyclical fall-off in external demand, the medium to long-term prospects of the domestic economy are still intact. The continued investments in capacity expansion would enable us to position ourselves to take advantage of the expected upturn next year. Net investment commitments in the manufacturing sector remained strong at \$3.2 billion in Q1 2001. (Chart 4.6) When fully committed, these projects will translate to \$1.5 billion of value-added and 3,500 jobs, of which

**Chart 4.5
Stock of Unsold Residential Units**

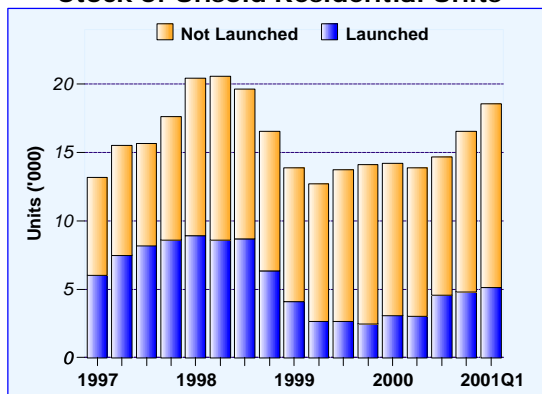


Chart 4.6

Net Investment Commitments into the Manufacturing Sector

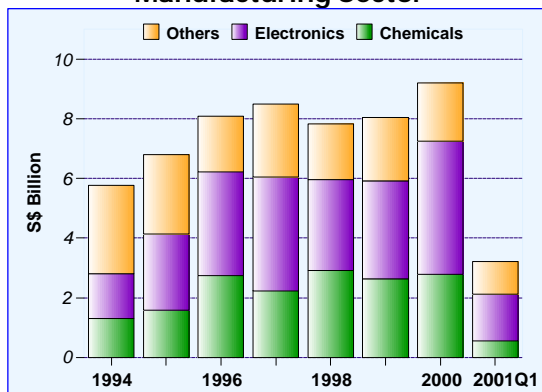
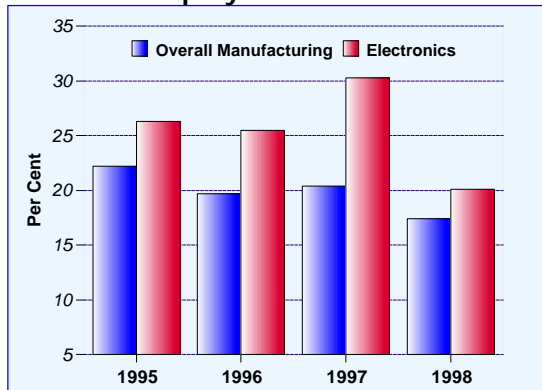


Chart 4.7

Annual Rate of Returns on Foreign Equity Investment



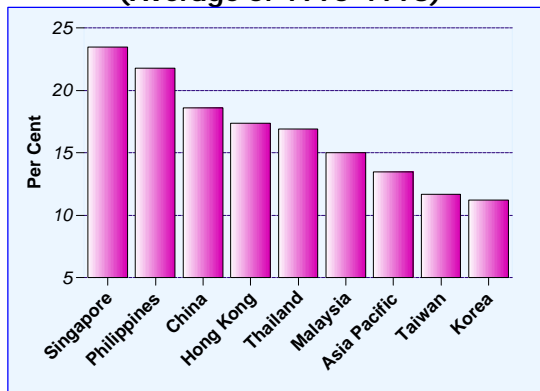
Source: Foreign Direct Investment in Singapore

about 60% will be knowledge and skill intensive.

The continued strong growth in foreign investments over the years reflected in part the sustained high rates of return to capital in Singapore. Return on foreign equity investment in the domestic manufacturing sector registered double-digit growth rates each year between 1995-1998. (Chart 4.7) Investment in electronics was the most profitable, with the rate of return consistently above the manufacturing sector average during this period.

The return to investment in Singapore also fared well compared to other countries in the Asian region. Figures from the US Department of Commerce showed that Singapore topped the Asia-Pacific region in terms of average return on foreign equity in the manufacturing sector by US corporations. (Chart 4.8)

Chart 4.8
Rate of Return to US Corporations
(Average of 1995-1998)



Source: US Dept of Commerce

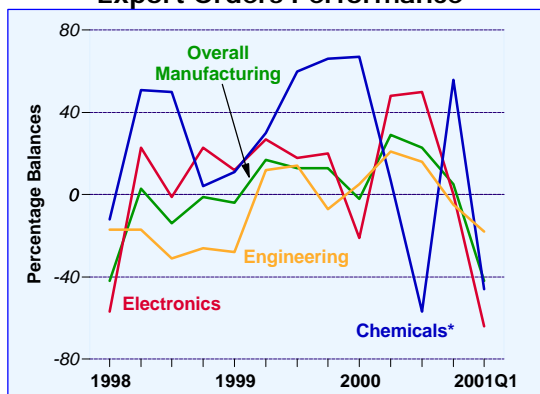
Medium-term prospects for the transport segment are also favourable. In preparation for the rebound in air cargo, Changi Airport has invested in its eighth airfreight terminal due to start operations some time this year. This is set to increase its annual cargo handling capacity by some 800,000. Singapore Airlines is also launching an all-cargo airline in July to take advantage of the expected upturn in regional trade, and expects growth of 10% per annum in cargo capacity in the next five years.³¹

4.3 Aggregate Demand

From the expenditure perspective, external demand is expected to remain weak...

From the expenditure perspective, external demand for Singapore's goods and services would continue to be dampened by the global electronics downturn over the next few quarters. This was reflected in the Survey of Business Expectations of the Manufacturing Sector by EDB, as export orders for the next three months turned down sharply in Q1 2001, with the electronics sector hit the worst. (Chart 4.9)

Chart 4.9
Export Orders Performance



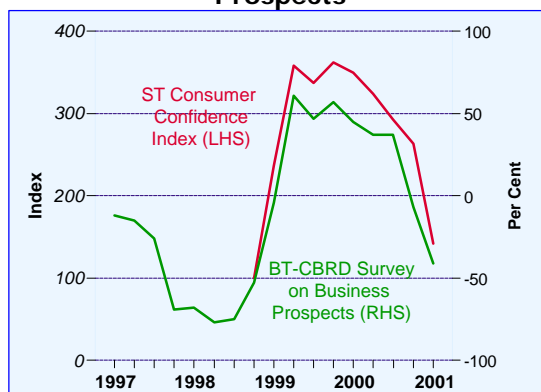
* Comprises petrochemicals, pharmaceuticals & specialty / industrial chemicals

³¹ Business Times, 17 April 2001

...while consumption will be dampened by slower income growth and weak asset markets

While private consumption continued to see fairly strong growth in Q1 2001, we expect growth to moderate in the quarters ahead. In 2001, our forecast is for private consumption growth to halve as both income and wage growth fall by about 6-8 percentage points year-on-year. We think that robust growth in private consumption in 2000 will not be sustainable for several reasons. First, the strong increase last year was boosted by rapid growth in private disposable income as well as buoyant consumer sentiments. Strong growth had followed a period of weakness in spending during the 1998 Asian crisis. Second, the poor performance of the stock market and the protracted weakness in the property market would exert a negative wealth effect on private spending. In fact, consumer confidence declined sharply in Q1, with the Straits Times Consumer Confidence Index falling to 142, almost half the value of the index in Q4 2000. (Chart 4.10)

**Chart 4.10
Straits Times Consumer Confidence Index and BT-CBRD Survey on Business Prospects**



Growth in private fixed investments will slow with weak business sentiments

Growth in private fixed investment, excluding residential construction, is expected to slow down as well, to around 1% this year, from 14% in 2000. The BT-CBRD survey showed that business sentiments turned sharply negative in Q1 2001, pointing to some weakness in capital spending over the next few quarters. If the current economic downturn is sustained, the moderation in private fixed investment growth could be even more severe. Nevertheless, long-term capacity expansion projects mainly in the chemical and pharmaceutical companies are likely to continue and provide support for overall private fixed investments this year. (Table 4.1)

**Table 4.1
Major Manufacturing Projects Coming On-Stream in 2001**

Company Name	Products	Project Value
Pharmaceuticals		
Merck, Sharp & Dohme (US)	Bulk active ingredients	US\$300 mil
Wyeth-Ayerst	Hormone Replacement Therapy Product and infant nutritional formula	US\$300 mil
Petrochemicals		
Exxon-Mobil	Ethylene Polyethylene Oxo-alcohol Phenol	US\$2 bil
Mitsui Phenol	Phenol	US\$170 mil
Specialty Chemicals		
Asia Plasticizer	Plasticizers	US\$34 mil

4.4 Labour Market

Labour market likely to weaken in the coming quarters

The labour market is expected to weaken in the coming quarters. (Chart 4.11) Historically, there has been a 1-2 quarter lag between a slowdown in economic activity and an adjustment in employment. For example, this lag relationship was evident during the 1998 recession. We expect a similar response this time round, although the speed and *magnitude* of adjustment in employment would also depend crucially on the degree of uncertainty in economic outlook. If employers view the current downturn as a temporary correction, they could have an incentive to hoard workers, since there is a cost to retrenching workers and subsequently re-hiring them when economic conditions turnaround. On balance, we expect the unemployment rate to increase to about 3.5% this year.

While nominal earnings growth is expected to slow in 2001...

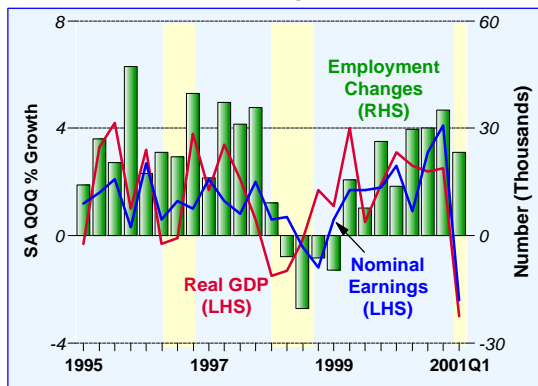
We expect headline nominal earnings, which exclude employers' CPF contribution, to see slower growth of 1-3% in 2001, compared with the 8.9% increase last year. Nominal earnings have responded fairly quickly to the current slowdown, similar to 1996, when GDP growth dipped briefly below zero on a quarter-on-quarter seasonally adjusted basis. This is in contrast to the 1998 downturn, when wages adjusted with a lag of around 2-3 quarters. On-going efforts by the NTUC to encourage employers to increase the monthly variable component (MVC) of wages³² have also resulted in greater downward flexibility for wages.

...cyclical factors will contribute to higher unit labour costs

Nevertheless, unit labour costs are projected to rise by 4-6% in 2001, compared with a slight decline last year. The effect of weaker wage growth is expected to be more than offset by the cyclical decline in productivity. Another offsetting factor is the impact of the 4 percentage point restoration to the employers' CPF contribution rate in January 2001.

³² At the end of last year, 29% of employers in the unionised sector had adopted the MVC system, but only 2.4% of employers in the non-unionised sector had done so.

Chart 4.11
Real GDP Growth vs Employment
Changes



Note: The highlighted areas represent periods when GDP growth contracted for two consecutive quarters. The recent moderation is also shaded. In 1996 and 2001, wages adjusted relatively quickly. However, in 1998, the bulk of the adjustment fell on employment, which lagged output by 1-2 quarters. Wages then responded to the decline in output with a lag of about two quarters.

4.5 Inflation

The external inflation environment is expected to be subdued for the rest of the year. With the anticipated slowing of the world economy, commodity prices including oil prices are unlikely to rise significantly. Indeed, going forward, the International Energy Agency has lowered its projection of growth in world oil demand in 2001, by an average of one million barrels per day from last year.

Benign external inflation environment expected for the rest of the year

Price pressures in the US and Euro zone are expected to moderate in the second half of 2001 as domestic demand weakens, and the effects of last year's energy price increases recedes. In addition, Japan's CPI is likely to continue its decline through 2001 due to the streamlining of distribution channels, declining communication fees resulting from deregulation measures, and the inclusion of new items in the CPI basket. The latter include personal computers, mobile phone fees and low-priced "gyudon" beef bowls, all of which are experiencing falling prices.

A pick up in inflation rates in East Asia could be looming if the regional currencies continue to weaken against the US dollar. However, other than in Indonesia and Korea where higher inflation is expected³³, overall inflation is likely to remain relatively subdued as a result of weak demand conditions.

In Singapore, headline CPI inflation is expected to have reached its peak for the year in Q1 2001, and is forecast to moderate further for the rest of the year, in line with more cautious consumer sentiments and benign foreign prices.

For oil-related items, downside pressures would come from the announced cut in electricity tariffs in May, and an expected lowering of retail petrol prices given the lower crude prices. Moreover, weaker consumer sentiments would dampen the rise in COE prices. Our baseline forecast has also taken into account the impact of further slowing economic growth on the other

³³ In Indonesia, following parliament's approval of the revised budget on 15 June 2001, fuel prices have increased by an average of 30% with effect from 16 June, and electricity rates are to be raised by an average of 17% from 1 July 2001.

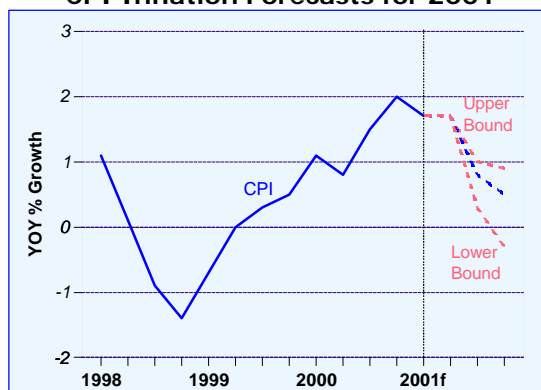
sentiment-sensitive sectors such as clothing, personal effects, and household goods.

The upward trend in the cost of education, health, accommodation, and "other miscellaneous" items (mainly holiday tour packages) are likely to be sustained, although for the latter, effects of the one-off price hike in air fares would be partially offset by the more competitively priced tour promotions³⁴. There remains also the underlying prevalence of competition across many sectors including telecommunication, retail and food, contributing to continued low or negative inflation in these sectors.

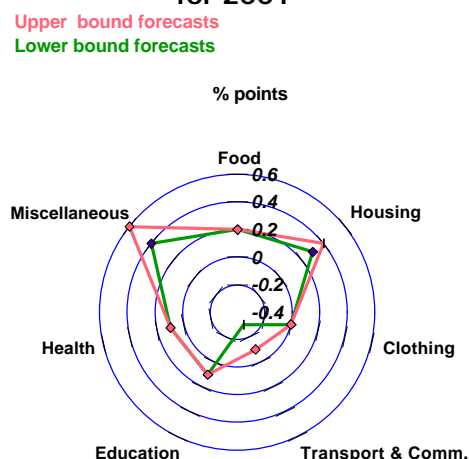
Chart 4.12 shows our forecast range for Q2-Q4 2001. Generally, the upper and lower bounds are determined by the uncertainty surrounding the economic outlook for the rest of the year, and hence consumer sentiment and prices. Chart 4.13 exhibits the corresponding main components of the CPI basket and shows the percentage point contribution of each item to the overall CPI inflation forecast. If the contributions were equal in magnitude across the different sources (i.e. the various items in the CPI basket) then the upper (red) and lower (green) boundaries would form perfect circles, and perfectly coincide with the concentric (blue) radar circles. The unevenness of the upper and lower boundaries marking the forecast reflects the different contributions of the various items to overall inflationary pressures.

From Chart 4.13, we see that the key uncertainties in the forecast for 2001 rest with the transport and communication, miscellaneous and housing categories. Overall CPI inflation would be pushed to the upper bound of the forecast range if there were to be an unexpectedly strong rebound in the economy in H2 2001, boosting the prices of cars and most retail items. Moreover, price inflation at cooked food outlets could also rise with the increase in patronage. Despite the failure of the various commodity-producing countries to prop up prices, efforts are reported to be continuing in this regard and significant progress to increase prices could feed into food prices towards the end of the year.

**Chart 4.12
CPI Inflation Forecasts for 2001**



**Chart 4.13
Contributions to CPI Inflation Forecasts for 2001**



³⁴ Feedback from some tour agencies suggests that although demand for holiday tour packages would remain strong, consumers have generally become more cost conscious.

More severe pessimism on the part of consumers would put further pressure on CPI towards the lower bound of our forecast. There is also more uncertainty on the downside for oil-related items in the CPI. Petrol prices could see further cuts.³⁵ It is also uncertain if electricity charges would be cut again after May, which could bring the cost of utilities even lower affecting housing inflation. Moreover, the shift in demand towards parallel-importing of new cars, coupled with the emergence of self-import groups would create more competitive prices in the car market.³⁶

On balance, after incorporating our best assessment of the implications of these uncertainties, we expect CPI inflation in 2001 to come in at the lower end of the 1-1.5% range. This is about 0.5 percentage point lower than our previous forecast made in the March Report. The downward revision has been principally due to the lower-than-expected inflation of various cyclical-sensitive components and some services categories in Q1, following the sharp slowdown in the economy. In particular, prices of non-cooked food, private transport, clothing, and some miscellaneous items came in lower despite the positive boost from the Chinese New Year festivities. In addition, the rate of increase in the cost of services, particularly that of education, was also more moderate. This was because the anticipated increase in prices of newspapers³⁷ in Q1 did not materialise, as the newspaper companies continue to absorb the higher operating expenses related to the rising cost of newsprint. In addition, the downward revision also takes into account the surprise plunge in COE premiums in June.

³⁵ Since end-December 2000, petrol companies have cut prices directly a further two times, in July 2001, despite continued high production costs. There have been periodic discounts offered at some petrol kiosks, in an attempt by the companies to gain market share. These ad-hoc price cuts are, however, not reflected in the computation of the CPI.

³⁶ Parallel imports account for more than 15% of the local car market. Self-import groups provide online/offline services on self-import and export of vehicles.

³⁷ The newspaper, magazines and books component has a weight of about 14% in the education category.

5 Special Feature on Measuring Changes in Liquidity Conditions in Singapore

5.1 Introduction

Monetary policy in Singapore is centered on the exchange rate. In the context of an open capital account, this means that domestic interest rates are largely determined by foreign interest rates and investor expectations of the future movement in the Singapore dollar. Nonetheless, the impact of domestic interest rates on economic activity should not be overlooked. Indeed, previous econometric work has shown that interest rates could have an impact on activity in the non-tradeable sectors. Thus it is useful to monitor financial conditions in the economy using a measure of changes in liquidity conditions, which conveys the combined effect of movements in both the exchange and interest rates.

In this chapter, we describe the Domestic Liquidity Indicator (DLI) for Singapore, which is similar to the familiar Monetary Conditions Index (MCI) used by several central banks. The reasons for compiling an indicator of liquidity or monetary conditions are first set out. We then turn to review the DLI, explaining its construction and highlighting its movements in the past few years. Most recently, the DLI has shown an easing of monetary conditions compared to Q4 2000. (A box item at the end of the chapter describes the construct of a generic MCI, as well as its limitations.)

5.2 What is a Monetary Conditions Index?

An MCI is a summary measure of changes in monetary or liquidity conditions in the economy implied by movements in current levels of financial variables, such as the interest and exchange rates, from the levels in a chosen base period.

This definition captures the essence of MCI formulations, and also allows for slight conceptual variations among the specifications of different MCIs by various central banks and organisations like the IMF.

The variations reflect several issues which will be explored later in this chapter, such as which financial variables offers the most accurate indication of monetary conditions, which econometric framework should be used to construct the MCI, and how the MCI should be interpreted.

5.3 Reasons for Constructing and Using an MCI

Various central banks and organisations had in the mid-90s begun to construct and monitor MCIs, with several including the central banks of New Zealand, Canada, Sweden and Norway, using it as a means to indicate and explain changes to their monetary policy stance. The Reserve Bank of New Zealand had in fact taken it a step further and utilised the MCI as an operational policy target. While the specific use of the MCI as an explicit tool of monetary policy management has largely been discontinued and most reporting of MCI diminished, the usefulness of a measure to determine changes in overall monetary conditions in the economy remains.

For the central banks which had monitored and used MCIs, one of the main reasons for doing so stemmed from the fact that changes in monetary policy in a small, open economy can potentially affect inflation through several channels. This is especially relevant for Singapore, as there are three distinct transmission paths of the exchange rate policy.

First, there is the direct exchange rate channel on consumer prices, that is, the 'filtering effect' of nominal exchange rates on **imported inflation**. As the nominal exchange rate strengthens and weakens, prices of traded goods in Singapore dollars, and hence CPI inflation would decrease or increase respectively. This is a short-term transmission channel that is especially important for small open economies.

The second channel works through the effect of monetary policy on **aggregate demand**. In Singapore where external demand accounts for two-thirds of total demand, the exchange rate has an important influence on the demand for domestic resources, especially labour, and hence domestic cost and price pressures. Third, aside from the two main channels, exchange rate policy also impacts the economy through **domestic demand**. This could be via the interest rate, which is affected by expectations of the future movement of the exchange rate.

The monitoring of the MCI is especially appropriate under circumstances such as when policy actions or other shocks cause exchange rate and interest rate movements to differ in direction or magnitude due to market responses. For example, under the uncovered interest rate parity condition, an exchange rate appreciation (which is contractionary) is accompanied by declining interest rates (expansionary), *ceteris paribus*. There are also different implications of interest rate and exchange rate changes across the various sectors, as well as on aggregate demand and prices. Finally, the simple calculations of the MCI offer a way of monitoring monetary conditions in a direct and timely manner. Nonetheless, it is recognised that the MCI should not replace separate analyses of exchange rate and interest rate developments. While the MCI may offer information on the net effect of changes in monetary conditions, its component variables would provide more specific information pertaining to the sectoral impact.

5.4 Towards a Measure of Liquidity Conditions for Singapore

For the Singapore economy, we have constructed a Domestic Liquidity Indicator (DLI), which is modelled closely after the MCI. The process of constructing the indicator is outlined below.

CHOICE OF MODEL

First, to obtain the appropriate weights for an indicator of changes in monetary conditions in Singapore, we estimated the relationship between the dependent variable, in this case real GDP (RGDP) or CPI (CPII), and changes in the nominal effective exchange rates (NEER) and 3-month interbank interest rates (NIIR). The choice of the weights on NEER and NIIR depend upon the time horizon of interest, i.e. whether we adopt short-, medium-, or long-run multipliers of the NEER and NIIR. We have chosen to base the weights on the simulation results of the MAS MMS model of the Singapore economy over the medium-term, extending over a period of 6-8 quarters.³⁸

Our simulation results are summarised in Charts 5.1 and 5.2, and show that the impact of a 1% increase in the NEER on real GDP is slightly over one-and-a-half times that of a similar increase in interest rates over the 6-8 quarter time period.

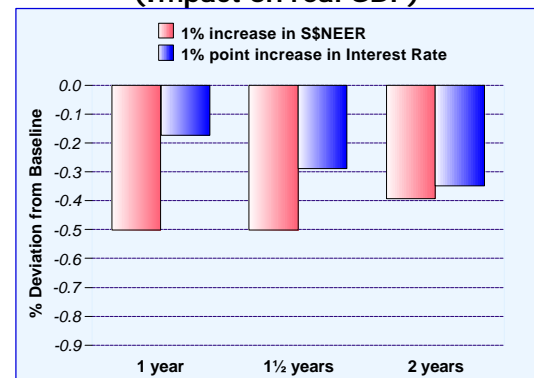
DLI FORMULATION

For illustrative purposes, we focus on the version of the DLI, which captures the impact of changes in financial conditions on real economic activity (GDP).³⁹ The DLI for Singapore takes the following general form:

$$DLI = a(\Delta NEER)/s_e^2 + b(\Delta NIIR)/s_i^2$$

The weights, α and β , reflect the relative impact of the NEER and NIIR on GDP and inflation as conveyed by the simulation results. We then fine-tuned these estimates using evidence from VAR models, VECMs and other dynamic regressions, to obtain the final values of α and β .⁴⁰

Chart 5.1
MMS Simulations
(Impact on real GDP)



³⁸ We extract multipliers from MMS, because even if the focus is on the medium-term, it is important to ensure that the whole sequence of multipliers are consistent and bounded. Thus, we have based the DLI on the MMS which has stable long-run properties (finite long-run multipliers).

³⁹ A DLI based on the weights for the CPI can be also constructed. The inferences on liquidity conditions are similar across the two versions of the DLI.

⁴⁰ These methods are also commonly relied upon by other central banks in their computation of the MCI.

There are a number of differences between the MAS DLI and the generic MCI:

- Given that the S\$NEER has tended to see a trend appreciation over time, we decided to use a rolling base for calculations, instead of choosing a fixed base period for the DLI. As such, we calculated the changes in interest rate and S\$NEER compared with the previous quarter. (For e.g. $\Delta NEER_{Q1\ 01} = NEER_{Q1\ 01} - NEER_{Q4\ 00}$.)
- We have scaled the changes in the S\$NEER and NIIR by their respective variances (σ_e and σ_i) so as to ensure that the contributions of each component of the DLI are not exaggerated by the differing volatility of the S\$NEER and NIIR series.
- Unlike the MCI, where a reading of 1.0 indicates neutral monetary conditions, a reading of 0 on the DLI indicates that there is no change in liquidity conditions from the previous quarter. A positive DLI implies a tightening in liquidity conditions from a quarter ago while a negative reading implies an easing.⁴¹

**Chart 5.2
MMS Simulations
(Impact on CPI)**

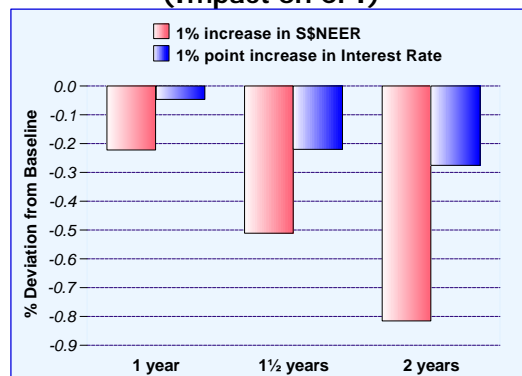
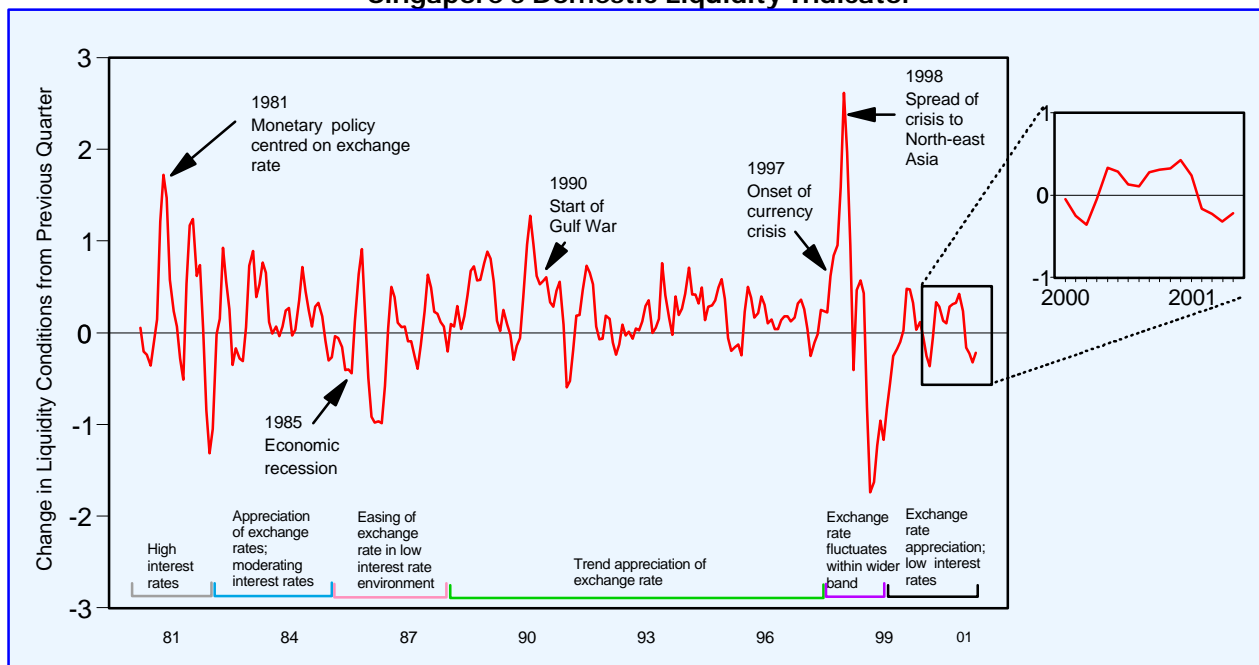


Chart 5.3 is the resulting DLI plotted on a monthly frequency, which shows changes in liquidity conditions compared with that three months ago.

**Chart 5.3
Singapore's Domestic Liquidity Indicator**



⁴¹ As the DLI can take negative values and is centred around zero (rather than unity), it is more appropriate to label the measure as an "indicator", rather than an "index".

Over the last two decades, the DLI has generally fluctuated around zero, indicating that liquidity conditions were generally stable, quickly reverting after each period of easing or tightening. The magnitudes of the changes were also relatively small except during the 1997-98 period. In June 1997, the regional currency crisis struck, bringing with it contagion effects. Singapore's 3-month interbank interest rate escalated to hit a high of more than 9% in the beginning of 1998, as the crisis spread to Northeast Asia, causing monetary conditions to tighten considerably.

However, in the latter half of 1998, the depreciation of the S\$NEER was accompanied by even sharper declines in interest rates. As a result, overall monetary conditions in the economy eased markedly, with the DLI falling sharply to below zero in the second half of 1998, from a peak of more than 2.0 in January 1998. It remained negative throughout the first few months in 1999, amidst a soft interest rate environment. Some tightening in monetary conditions was observed from May 1999, with the DLI turning positive as domestic interest rates rose in line with a series of interest rate hikes by the Federal Reserve and other major central banks.

More recently, monetary conditions tightened again towards the end of 2000, as money market participants sought funding to tide themselves over the end of the year. Interest rates also rose in anticipation of increased demand for Singapore dollar funds following MAS' announcement in December that it would further liberalise the Singapore dollar non-internationalisation policy. In 2001, however, the DLI has turned negative as monetary conditions loosened. This partly reflected the softer interest rate environment, as well as some weakening of the Singapore dollar exchange rate on a trade-weighted basis. The easing of monetary conditions in Q1 2001 compared to that in Q4 2000 has resulted in conditions generally supportive of domestic demand.

It is important to emphasise the role and limitations of the DLI. The DLI serves as a useful means to monitor short-term changes in the liquidity conditions in the economy. It plays the role of an **indicator** of changes in monetary developments in the economy. The DLI is not a MAS instrument or target, nor does it represent the principal focus of our policy formulation. The Box Item 5.1 highlights some further limitations in the application of MCIs.

Box Item 5.1: Constructing an MCI

Choice of macroeconomic variable

In order to construct an MCI, it is necessary to first decide which economic variable the MCI will relate to. The aim would be to have a macroeconomic variable that would summarise the impact of monetary conditions on the economy, whether it is inflation or the output gap. For example, the Bank of Canada (BoC) chose the output gap as it is the principal driving force behind the changes in inflationary pressures in Canada, while in the US, the relatively small external sector rendered direct exchange rate effects less important.

Component variables

The variables to be included in an MCI have to be selected as well. Many variables contain information on monetary conditions. These include the exchange rate, interest rates, monetary aggregates, stock prices and expectations. Many MCIs would include only the exchange rate and interest rate, as these variables are thought to contain the most policy information and are easily available.

Weights

With the selection of the target variable and the variables to be included in the MCI, the weights for the latter variables need to be estimated. The weights should reflect the relative effect of the financial variables on the target variable.

The weights are used in the construction of the MCI as follows:

$$\text{MCI} = g(e_t / e_0) + q(i_t / i_0), \text{ where } g + q = 1$$

and e_t is the nominal effective exchange rate in logs, at time t ;

i_t is the benchmark (nominal) interest rate in logs, at time t ;

e_0 and i_0 are the corresponding exchange and interest rates in the base period;

g and q are the weights on e and i respectively;

The weights are estimated by econometric methods. An equation specifying the relationship between the target variable (e.g. the output gap) and the financial variables (e.g. the nominal effective exchange rate and the nominal interest rate) is estimated. The ratios of the estimated coefficients of e and i will give the required MCI weights.

The ratio of these weights gives an indication of the relative importance of the exchange rate vis-à-vis the interest rate in influencing the target variable. If, for instance, using the example above, the ratio g/q , is 1:3, it means that a 1 percentage point movement in the interest rate, would have the equivalent impact on the output gap as a 3 percentage point movement in the exchange rate. To put it another way, by normalising the weights to 1, $g = 0.25$, and $q = 0.75$. Substituting into the equation above gives:

$$\text{MCI} = 0.25(e_t / e_0) + 0.75(i_t / i_0)$$

Base period

The constructed MCI is an index that takes its reference from a specific base period. The base period can be determined arbitrarily, although conceptually it should be characterised by internal and external balance in the economy. The exchange rate and interest rate in the chosen base period would enter the MCI as e_0 and i_0 respectively.

Hazards of the MCI

The problems associated with the implementation of an MCI are mostly empirical in nature. As the weights of an MCI are derived from an empirical model of the economy, the MCI is **model-dependent**. An MCI that is based on an output equation would produce weights that are different from those based on a price equation. The model would have also incorporated assumptions, which if untested, would call into question the usefulness of an MCI. Other econometric issues that have been raised include the following:

- the **choice of weights** used in the MCI depends on the time horizon of interest; an output equation could produce different mixes of interest rates and exchange rates, and the response of the various sectors of the economy to the mix would also differ;
- **nonconstant weights** can arise due to misspecified dynamics, improper treatment of nonstationarity or incorrect exogeneity assumptions.

Even when the assumptions are valid and robust, the **interpretation of an MCI** as an indicator of monetary policy is still difficult. For example, various random shocks like changes in world oil and commodity prices, world interest rates, and domestic portfolio preferences, may also affect short-run movements in interest rates and exchange rates.

Further, the distinction between operational targets and policy instruments introduces an additional link in the monetary transmission mechanism through which non-policy variables have an effect on interest and exchange rates. The MCI itself is also not sufficient to judge whether monetary conditions are tight or loose for a given policy objective. There would be **exogenous variables**, which may influence the ultimate target variable, but not the calculated MCI. A complete empirical model of monetary transmission would be needed so as to determine a path for the MCI that is consistent with the policy target, as well as the projected development of the exogenous variables.

Statistical Appendices

Table 1: Real GDP Growth by Sector

Table 2: Real GDP Growth by Expenditure

Table 3: Consumer Price Index

Table 4: External Trade

Table 5: Non-Oil Domestic Exports by Selected Countries

Table 6: Labour Market

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Table 10: Balance of Payments – Capital & Financial Accounts

Table 11: Exchange Rates

TABLE 1: REAL GDP GROWTH by sector

Period	Total	Manu- facturing	Financial & Business Services				Con- struction	Commerce			Transport & Comm.	Total	Manu- facturing	Financial & Business Services				Con- struction	Commerce			Transport & Comm.
			Total	Financial Services	Business Services	Total		Wholesale & Retail	Hotels & Rest.	Total				Financial Services	Business Services	Total	Wholesale & Retail		Hotels & Rest.			
Year-on-Year % Change											Seasonally-adjusted Quarter-on-Quarter % Change											
1992	6.5	2.3	8.5	8.2	8.8	22.3	3.8	2.4	9.5	5.8	6.5	2.3	8.5	8.2	8.8	22.3	3.8	2.4	9.5	5.8		
1993	12.7	9.6	15.2	25.0	6.6	9.0	19.7	23.2	6.0	10.7	12.7	9.6	15.2	25.0	6.6	9.0	19.7	23.2	6.0	10.7		
1994	11.4	12.8	11.6	11.7	11.5	15.5	12.1	13.7	5.0	10.2	11.4	12.8	11.6	11.7	11.5	15.5	12.1	13.7	5.0	10.2		
1995	8.0	10.0	5.3	2.8	7.9	9.6	8.8	9.6	4.9	10.6	8.0	10.0	5.3	2.8	7.9	9.6	8.8	9.6	4.9	10.6		
1996	7.6	2.9	8.4	7.3	9.4	23.1	6.1	6.1	6.0	8.2	7.6	2.9	8.4	7.3	9.4	23.1	6.1	6.1	6.0	8.2		
1997	8.5	4.5	13.4	18.6	8.3	16.1	6.4	6.4	6.5	8.8	8.5	4.5	13.4	18.6	8.3	16.1	6.4	6.4	6.5	8.8		
1998	0.1	-0.6	-3.9	-8.6	1.1	3.0	-4.7	-4.1	-7.5	6.4	0.1	-0.6	-3.9	-8.6	1.1	3.0	-4.7	-4.1	-7.5	6.4		
1999	5.9	13.6	1.2	0.8	1.5	-8.8	6.6	7.1	4.0	7.1	5.9	13.6	1.2	0.8	1.5	-8.8	6.6	7.1	4.0	7.1		
2000	9.9	15.2	5.4	4.1	6.6	-4.6	14.1	15.2	8.2	9.0	9.9	15.2	5.4	4.1	6.6	-4.6	14.1	15.2	8.2	9.0		
1998 Q1	4.5	6.4	-2.0	-8.4	4.9	16.0	0.8	1.9	-4.6	7.6	-6.0	-9.4	-17.6	-26.1	-8.3	0.1	-9.9	-8.6	-16.5	7.8		
Q2	0.0	-0.3	-5.9	-13.8	2.7	8.7	-5.2	-4.9	-6.9	6.9	-5.0	-10.0	-6.0	-11.8	-0.3	-1.2	-12.2	-13.3	-6.3	6.7		
Q3	-2.5	-4.3	-7.2	-13.1	-0.8	-0.7	-6.9	-6.1	-11.0	5.2	-0.7	-0.4	-0.2	1.7	-1.9	-10.0	-2.7	-1.0	-11.5	1.1		
Q4	-1.4	-2.9	-0.2	1.9	-2.2	-9.0	-7.1	-7.1	-7.4	6.1	7.2	10.4	28.2	61.1	2.4	-21.9	-2.5	-4.1	6.3	9.6		
1999 Q1	1.3	6.5	-3.6	-7.6	0.3	-4.0	-2.3	-2.3	-2.2	5.8	4.4	29.6	-27.9	-49.5	1.1	21.9	9.7	10.8	4.0	5.8		
Q2	6.9	14.6	6.6	12.7	0.9	-11.8	6.3	6.6	4.7	6.3	16.9	20.0	39.8	94.7	2.1	-29.4	22.0	22.1	21.9	8.2		
Q3	7.4	16.7	3.6	5.2	2.2	-11.9	8.8	9.4	5.5	7.8	1.9	7.9	-10.3	-22.0	3.1	-11.1	7.2	10.1	-7.4	8.2		
Q4	7.7	16.2	-2.0	-6.5	2.5	-7.6	13.6	14.7	8.0	8.2	8.0	9.6	0.9	-2.0	3.9	-4.0	16.7	16.8	15.8	11.0		
2000 Q1	9.8	13.2	8.2	11.6	5.2	-10.9	16.3	17.3	10.7	9.9	13.0	15.4	8.5	5.0	11.9	4.4	20.1	20.9	15.2	12.2		
Q2	8.4	13.2	1.1	-4.0	6.5	-3.9	14.0	15.3	6.8	9.7	10.8	19.8	6.6	5.9	7.3	-4.4	11.8	13.1	4.9	7.4		
Q3	10.3	15.2	5.3	3.1	7.4	-1.1	14.6	15.4	9.9	9.5	9.8	16.0	5.2	3.7	6.7	-0.7	10.1	11.1	4.5	7.8		
Q4	11.0	18.8	7.3	7.5	7.1	-1.9	12.0	13.1	5.6	6.8	10.3	24.9	8.6	15.0	3.0	-5.9	6.8	8.2	-1.6	0.0		
2001 Q1	4.5	2.3	4.2	3.0	5.4	0.0	6.1	6.9	1.5	4.6	-11.3	-37.1	-3.1	-10.8	4.6	11.9	-3.5	-3.8	-1.5	3.5		

Source: Singapore Department of Statistics

TABLE 2: REAL GDP GROWTH by expenditure

Period	Total Demand	Domestic Demand							External Demand
		Total	Consumption			Gross Fixed Capital Formation			
			Total	Private	Public	Total	Private	Public	
1992	7.0	6.8	4.8	5.8	0.4	11.8	14.5	1.9	7.1
1993	16.3	14.4	12.4	11.9	14.7	10.3	10.9	7.6	17.2
1994	15.3	4.0	5.8	7.5	-1.7	9.6	6.5	22.8	20.5
1995	12.5	8.6	4.4	3.0	11.7	11.8	14.6	1.7	14.0
1996	9.1	12.8	9.7	7.6	19.3	23.1	27.3	5.7	7.7
1997	7.9	9.5	6.2	6.0	7.1	9.6	7.0	22.3	7.3
1998	-5.4	-7.8	-0.8	-2.9	8.0	-6.4	-9.9	8.4	-4.4
1999	6.5	5.3	5.2	5.3	5.0	-3.9	-6.1	4.1	6.9
2000	14.0	10.7	10.3	9.4	13.7	5.9	8.6	-2.9	15.2
1998 Q1	3.9	5.5	3.0	1.0	9.2	13.9	13.2	17.2	3.2
Q2	-5.8	-5.4	0.2	-1.7	10.1	-3.5	-6.4	9.1	-6.0
Q3	-8.4	-13.9	-5.2	-6.7	1.9	-11.7	-14.2	-1.5	-6.2
Q4	-10.2	-16.6	-1.4	-4.1	10.4	-20.5	-27.3	10.5	-7.6
1999 Q1	-4.8	-7.7	3.6	-1.6	18.2	-16.5	-26.4	24.3	-3.5
Q2	6.8	6.8	4.4	5.9	-2.7	-1.0	-0.8	-1.9	6.8
Q3	8.7	12.6	7.4	9.1	0.4	1.8	2.3	0.0	7.3
Q4	15.5	11.5	5.6	7.9	-2.9	1.9	4.3	-5.1	16.9
2000 Q1	15.5	12.4	9.0	9.9	6.8	4.6	11.2	-11.6	16.9
Q2	12.4	11.9	9.3	9.8	6.4	5.0	7.0	-2.3	12.6
Q3	15.8	5.9	9.0	9.6	6.2	8.3	10.5	-0.1	19.5
Q4	12.3	12.7	13.9	8.2	38.0	5.5	5.9	4.2	12.2
2001 Q1	5.5	0.7	1.3	7.2	-12.9	6.5	5.0	11.0	7.5

Source: Singapore Department of Statistics

TABLE 3: CONSUMER PRICE INDEX

Period	All Items	Food	Housing	Clothing	Transport & Comms.	Education & Stationery	Health	Misc- ellaneous	All Items	Food	Housing	Clothing	Transport & Comms.	Education & Stationery	Health	Misc- ellaneous
	Nov 1997- Oct 1998 = 100								Year-on-Year % Change							
1992	90.1	89.6	90.5	95.2	90.8	84.1	83.4	90.8	2.3	1.3	2.0	2.2	2.9	4.7	2.9	3.2
1993	92.2	90.4	93.5	96.3	93.2	86.9	86.5	94.6	2.3	0.8	3.2	1.2	2.6	3.3	3.7	4.1
1994	95.1	93.6	94.7	98.5	99.5	89.1	89.2	96.2	3.1	3.6	1.3	2.2	6.7	2.5	3.1	1.7
1995	96.7	95.7	95.4	99.9	100.1	92.8	90.7	98.6	1.7	2.3	0.7	1.5	0.6	4.2	1.6	2.5
1996	98.0	97.7	95.9	100.4	100.4	95.6	92.7	100.4	1.4	2.1	0.5	0.5	0.4	3.0	2.3	1.8
1997	100.0	99.7	98.1	101.1	104.3	97.1	96.1	100.6	2.0	2.0	2.3	0.7	3.9	1.5	3.7	0.2
1998	99.7	99.9	99.9	99.8	99.2	100.1	100.2	99.5	-0.3	0.2	1.9	-1.3	-4.9	3.1	4.3	-1.1
1999	99.8	100.8	98.6	97.9	98.7	101.6	100.8	100.3	0.0	0.9	-1.4	-1.9	-0.6	1.5	0.6	0.8
2000	101.1	101.4	100.6	97.1	100.7	102.9	102.3	101.9	1.3	0.6	2.0	-0.8	2.1	1.3	1.5	1.5
1998 Q1	100.2	100.3	100.4	100.3	100.1	99.5	100.0	100.5	1.1	0.8	3.9	-1.2	-1.5	3.2	6.6	-0.2
Q2	99.7	100.0	99.7	99.9	99.8	99.7	100.1	99.2	0.1	0.6	2.6	-1.0	-3.9	3.3	4.8	-1.6
Q3	99.6	99.8	100.0	99.4	99.2	100.9	100.4	98.6	-0.9	-0.2	1.3	-1.3	-6.8	3.4	3.9	-1.4
Q4	99.4	99.7	99.7	99.5	97.9	100.2	100.6	99.6	-1.4	-0.3	-0.1	-1.8	-7.2	2.5	2.0	-1.1
1999 Q1	99.5	100.3	99.1	99.4	97.2	101.7	100.9	100.1	-0.7	0.0	-1.3	-0.8	-2.9	2.2	1.0	-0.4
Q2	99.7	101.0	98.4	98.2	98.2	101.6	100.6	100.6	0.0	1.0	-1.3	-1.7	-1.6	1.9	0.5	1.4
Q3	99.9	101.1	98.5	97.6	99.3	101.7	100.8	100.2	0.3	1.3	-1.4	-1.7	0.1	0.8	0.5	1.6
Q4	99.9	101.0	98.2	96.3	100.0	101.4	101.0	100.5	0.5	1.3	-1.4	-3.3	2.2	1.2	0.4	0.8
2000 Q1	100.6	102.1	99.2	96.7	100.4	101.7	101.1	101.0	1.1	1.8	0.1	-2.7	3.4	0.0	0.2	0.9
Q2	100.5	101.3	99.5	95.8	100.1	102.4	101.7	101.4	0.8	0.3	1.1	-2.4	1.9	0.8	1.2	0.9
Q3	101.4	101.1	101.4	97.5	101.3	103.8	102.6	101.7	1.5	0.0	2.9	-0.2	2.0	2.0	1.8	1.5
Q4	101.9	101.1	102.2	98.4	101.2	103.6	103.7	103.3	2.0	0.1	4.0	2.2	1.2	2.2	2.7	2.8
2001 Q1	102.4	102.5	103.0	97.7	100.1	104.0	104.8	103.9	1.7	0.4	3.8	1.0	-0.3	2.3	3.6	2.8

Source: Singapore Department of Statistics

TABLE 4: EXTERNAL TRADE

Period	Total Trade	Exports	Year-on-Year % Change													
			Domestic Exports					Re-exports	Imports	Domestic Exports					Re-exports	Imports
			Total	Oil	Non-oil					Total	Oil	Non-oil				
					Total	Electronics	Non-electronics									
At Current Prices										At 1995 Prices						
1992	2.2	1.4	0.5	-22.1	8.4	11.9	3.3	3.3	2.9	7.6	8.9	-11.0	14.6	5.5	6.5	
1993	16.4	15.6	13.7	8.6	14.9	21.4	4.9	19.1	17.1	17.2	16.1	15.6	16.3	18.9	18.9	
1994	18.1	23.3	17.4	-3.9	22.5	30.3	8.4	33.4	13.7	27.6	24.0	11.0	26.8	33.5	14.7	
1995	13.2	13.7	11.2	-1.9	13.7	16.3	8.1	17.4	12.7	16.5	14.9	-0.1	17.7	18.8	14.0	
1996	5.1	5.2	5.2	20.6	2.7	4.3	-1.0	5.3	5.0	10.1	9.3	3.6	10.3	11.1	9.5	
1997	5.7	5.3	3.8	-3.9	5.3	3.4	9.8	7.4	6.2	11.6	11.2	0.1	12.9	12.2	10.2	
1998	-7.5	-1.0	-1.5	-15.3	0.9	-0.5	4.2	-0.3	-13.6	-0.3	0.7	8.5	-0.4	-1.6	-12.9	
1999	8.1	5.7	9.8	12.4	9.5	6.1	16.8	0.2	10.8	5.4	8.1	-9.3	10.6	1.6	9.5	
2000	22.9	22.4	16.9	51.0	11.8	10.1	15.0	30.7	23.4	16.8	10.2	-6.0	12.2	26.7	14.8	
1998 Q1	4.1	9.7	6.7	-14.1	10.7	8.5	15.9	14.0	-1.1	9.3	7.7	11.5	7.2	11.4	-0.7	
Q2	-7.7	-1.3	-3.3	-19.5	-0.2	-2.1	4.3	1.4	-13.8	-0.9	-1.2	-2.2	-1.0	-0.5	-13.8	
Q3	-9.3	-1.1	-0.9	-15.4	1.4	-0.6	6.0	-1.3	-16.9	-2.3	-1.4	4.2	-2.1	-3.5	-17.4	
Q4	-15.5	-9.7	-7.4	-11.8	-6.7	-6.6	-7.0	-12.8	-21.0	-5.8	-1.5	22.9	-4.3	-11.8	-18.0	
1999 Q1	-9.4	-9.0	-3.8	-7.9	-3.2	-4.8	0.2	-15.7	-9.9	-5.5	0.6	3.5	0.2	-13.7	-7.2	
Q2	8.0	5.2	9.8	6.9	10.3	5.4	21.1	-1.0	11.1	4.6	8.2	-2.0	9.7	-0.4	9.8	
Q3	10.3	5.2	9.6	13.7	9.0	5.1	17.3	-0.6	16.0	5.1	7.4	-20.0	11.2	1.9	15.0	
Q4	24.6	21.9	23.6	37.8	21.5	18.4	28.5	19.6	27.4	17.2	15.6	-18.5	20.7	19.8	21.2	
2000 Q1	23.7	22.8	19.4	53.5	14.5	13.4	16.8	27.9	24.6	17.4	10.7	-21.0	15.6	27.9	16.8	
Q2	20.7	18.7	13.4	42.6	9.1	6.5	14.1	26.5	22.9	13.1	6.9	-14.8	9.7	22.7	13.2	
Q3	26.8	28.4	22.9	59.6	17.8	19.9	13.9	36.6	25.1	22.3	16.8	4.9	18.0	30.3	15.9	
Q4	20.6	19.9	12.4	49.3	6.3	2.0	15.6	31.1	21.4	14.5	6.8	12.1	6.3	26.0	13.5	
2001 Q1	9.9	10.6	6.4	20.8	3.6	-3.8	18.4	16.5	9.1	8.0	5.9	19.1	4.5	11.0	4.0	

Source: Singapore Trade Development Board



TABLE 5: NON-OIL DOMESTIC EXPORTS by selected countries

Period	All Countries	ASEAN				NIEs				USA	Japan	EU 15	Others
		Total	of which:			Total	Hong Kong	S. Korea	Taiwan				
			Malaysia	Thailand	Philippines								
Year-on-Year % Change													
1996	2.7	-0.2	-3.4	-0.4	21.0	-1.2	-4.8	16.6	-5.8	5.8	5.2	2.3	3.1
1997	5.3	7.1	4.9	1.3	40.3	9.2	9.7	-1.7	16.6	4.6	-15.4	12.0	6.1
1998	0.9	-9.6	-9.7	-9.1	-10.2	-10.4	-9.3	-22.2	-4.6	3.1	-8.7	11.1	16.3
1999	9.5	11.7	12.4	18.5	11.4	20.2	2.2	50.3	32.3	2.2	27.7	7.0	7.6
2000	11.8	17.1	19.6	13.3	13.7	35.4	17.0	44.2	52.1	1.7	26.8	-5.3	21.0
1999 Q1	-3.2	-8.6	-7.1	-5.7	-14.3	-7.6	-21.3	43.3	-10.0	-6.8	-0.9	6.4	0.1
Q2	10.3	9.9	12.5	11.4	15.3	12.2	-14.8	50.2	44.6	2.3	38.9	10.2	13.0
Q3	9.0	10.4	6.0	31.0	14.8	25.7	12.0	44.8	37.5	3.2	27.3	6.3	1.9
Q4	21.5	35.8	38.3	43.0	32.1	52.8	41.7	60.3	62.7	9.9	48.4	5.6	15.4
2000 Q1	14.5	26.6	29.0	17.0	41.5	54.6	44.7	60.5	62.8	4.5	33.6	-9.3	14.7
Q2	9.1	17.5	15.6	21.5	20.5	46.4	27.7	53.2	64.3	-4.7	14.2	-11.6	21.3
Q3	17.8	25.6	34.4	12.1	6.7	44.6	16.1	53.1	76.6	6.9	40.1	-3.4	25.9
Q4	6.3	2.8	4.0	4.2	-4.4	6.3	-9.3	19.3	16.3	0.1	22.5	2.2	20.9
2001 Q1	3.6	8.9	-1.4	-1.3	85.9	-8.1	-8.2	-3.8	-11.0	-5.1	17.9	1.8	20.0
% Share of All Countries													
1996	100.0	19.8	12.9	4.0	1.6	12.5	6.2	2.7	3.6	29.2	9.5	18.2	10.9
1997	100.0	20.1	12.8	3.9	2.1	13.0	6.5	2.5	4.0	29.0	7.6	19.3	10.9
1998	100.0	18.0	11.5	3.5	1.9	11.5	5.8	2.0	3.7	29.7	6.9	21.3	12.6
1999	100.0	18.4	11.8	3.8	1.9	12.7	5.4	2.7	4.5	27.7	8.0	20.8	12.4
2000	100.0	19.3	12.6	3.8	1.9	15.3	5.7	3.5	6.2	25.2	9.1	17.6	13.4

Source: Singapore Trade Development Board

TABLE 6: LABOUR MARKET

Period	Average Monthly Earnings	Labour Productivity									Unit Labour Cost		Changes in Employment								
		All Sectors	Manu- facturing	Con- struction	Wholesale & Retail Trade	Hotels & Rest- aurants	Transport & Comms.	Financial Services	Business Services	Overall Economy	Manu- facturing	All Sectors	Manu- facturing	Con- struction	Wholesale & Retail Trade	Hotels & Rest- aurants	Transport & Comms.	Financial Services	Business Services		
Year-on-Year % Change												Thousand									
1992	7.5	3.2	2.8	14.5	-0.8	6.0	1.7	4.8	3.2	3.5	6.5	40.3	-7.9	11.3	8.1	1.0	6.2	1.8	6.5		
1993	6.3	9.2	11.6	-4.9	18.6	6.4	6.1	18.7	1.6	-0.9	-2.5	70.8	-3.1	26.4	12.3	2.6	4.8	4.8	7.3		
1994	8.8	6.6	11.3	4.0	10.0	0.8	8.1	3.2	4.3	2.3	-3.1	72.1	11.6	13.1	8.6	4.8	2.6	5.1	10.9		
1995	6.4	2.9	6.5	-2.9	6.2	3.5	6.1	-4.0	-0.9	2.5	-1.4	109.0	12.5	40.6	11.4	2.7	9.3	4.8	13.2		
1996	5.8	1.3	2.9	-2.0	3.2	2.9	3.4	1.2	0.2	2.6	2.3	102.6	-7.7	52.8	5.7	3.2	6.2	5.4	13.0		
1997	5.7	2.3	5.5	-3.3	3.9	1.9	4.6	9.3	-0.4	0.7	0.7	120.3	3.7	45.8	7.5	5.2	6.2	8.1	18.0		
1998	2.8	-2.7	1.4	-4.2	-3.3	-9.0	4.7	-10.9	-6.4	3.9	-1.1	-23.4	-27.6	-4.7	-11.9	-1.6	-0.5	-2.0	8.5		
1999	2.7	6.3	17.6	-2.3	8.8	3.9	6.2	-0.3	-4.5	-9.1	-17.3	39.9	4.4	-18.0	3.4	1.4	4.5	4.7	17.4		
2000	8.9	5.6	11.6	-3.3	10.9	5.7	4.0	-3.9	-3.3	-1.0	-7.1	108.5	25.8	1.1	15.2	3.5	10.4	8.1	23.0		
1998 Q1	4.8	-1.3	5.4	1.6	0.0	-8.2	3.9	-15.2	-5.9	4.9	-3.5	9.1	-1.0	7.1	-1.7	-3.7	-0.6	-1.0	3.3		
Q2	4.3	-4.0	0.0	-2.3	-4.7	-8.3	4.5	-17.8	-5.0	7.1	1.7	-5.9	-8.0	0.9	-5.0	-0.4	0.3	0.4	0.7		
Q3	2.9	-4.2	-1.5	-6.0	-4.6	-12.5	4.1	-12.9	-7.5	5.4	1.1	-20.3	-10.6	-4.1	-3.8	-0.5	-0.4	-3.8	5.3		
Q4	-0.3	-0.9	2.9	-9.0	-3.9	-7.1	6.3	4.1	-7.4	-0.9	-3.2	-6.3	-7.9	-8.6	-1.3	3.0	0.2	2.3	-0.8		
1999 Q1	-0.3	3.2	14.1	0.3	1.4	-0.7	6.3	-5.2	-3.4	-7.6	-14.4	-9.6	-3.3	-10.5	-0.2	-2.9	-0.2	-0.6	2.7		
Q2	1.0	8.3	20.5	-4.6	8.9	4.5	6.0	14.3	-5.5	-13.5	-22.6	15.5	4.1	-3.3	0.0	0.7	1.0	1.1	7.0		
Q3	3.5	7.5	19.1	-3.9	11.0	5.1	6.5	1.8	-4.0	-11.3	-19.8	7.7	2.4	-5.1	-0.8	-0.1	1.8	2.0	2.8		
Q4	5.9	6.2	15.7	-1.0	13.9	6.7	5.9	-11.0	-5.2	-4.6	-13.0	26.3	1.2	0.9	4.4	3.8	2.0	2.1	4.9		
2000 Q1	8.1	6.7	11.4	-7.2	15.0	8.3	6.2	4.0	-4.6	-1.7	-6.4	13.7	-0.5	-2.2	3.9	-1.8	2.0	1.7	5.9		
Q2	7.2	4.6	11.0	-2.1	11.4	4.4	4.9	-11.6	-2.9	-0.5	-6.5	29.7	6.5	2.3	4.5	0.4	2.7	2.0	6.8		
Q3	8.7	5.5	11.1	-1.3	9.9	8.0	4.3	-5.1	-2.7	-0.4	-5.8	30.0	11.1	1.7	2.5	-0.2	2.6	1.9	4.4		
Q4	11.1	5.5	12.5	-2.4	7.8	2.9	0.7	-1.3	-3.2	-1.1	-9.5	35.1	8.7	-0.6	4.3	5.1	3.1	2.6	6.0		
2001 Q1	5.7	-1.0	-3.6	-0.7	1.6	-1.3	-1.1	-5.1	-6.5	6.1	8.0	23.2	-1.1	-2.2	4.5	-2.0	1.5	1.7	11.0		

Source: Singapore Department of Statistics /
Ministry of Manpower

TABLE 7: MONETARY

End of Period	Money Supply								Interest Rates				
	Narrow Money M1	Broad Money M2	Broad Money M3	Reserve Money	Narrow Money M1	Broad Money M2	Broad Money M3	Reserve Money	Prime Lending Rate	3-month Interbank Rate	3-month SIBOR (US\$)	Banks	
												Savings Rate	12-month Fixed Deposit Rate
	S\$ Billion				Year-on-Year % Change				Rate % Per Annum				
1992	18.5	75.7	101.5	13.5	12.7	8.9	9.5	10.6	5.55	2.31	3.50	1.79	2.97
1993	22.9	82.1	111.4	14.7	23.6	8.5	9.7	8.4	5.34	3.31	3.38	1.59	2.79
1994	23.4	94.0	125.8	15.6	2.3	14.4	13.0	6.2	6.49	4.38	6.50	2.93	4.23
1995	25.3	102.0	136.7	17.0	8.3	8.5	8.7	9.4	6.26	2.56	5.56	2.72	4.01
1996	27.0	112.0	148.5	18.2	6.7	9.8	8.6	6.7	6.26	3.13	5.56	2.72	3.99
1997	27.5	123.4	160.8	19.2	1.7	10.3	8.3	5.6	6.96	6.75	5.81	3.08	4.41
1998	27.2	160.8	173.6	16.6	-1.0	30.2	8.0	-13.3	5.90	1.88	5.13	1.43	2.51
1999	31.1	174.5	186.2	21.4	14.2	8.5	7.3	28.6	5.80	2.75	6.06	1.36	2.46
2000	33.3	170.9	182.9	18.5	6.9	-2.0	-1.8	-13.7	5.80	2.81	6.39	1.30	2.42
1998 Q1	26.6	128.0	164.8	19.1	-6.5	9.4	7.1	-1.3	7.74	5.00	5.69	3.46	5.32
Q2	24.9	128.7	165.5	18.8	-11.8	8.1	5.9	2.5	7.79	6.25	5.69	3.49	5.38
Q3	24.9	132.6	169.5	15.2	-11.0	10.0	7.4	-18.3	7.54	4.13	5.31	3.24	4.94
Q4	27.2	160.8	173.6	16.6	-1.0	30.2	8.0	-13.3	5.90	1.88	5.13	1.43	2.51
1999 Q1	29.0	163.6	176.0	17.3	8.9	27.8	6.8	-9.5	5.80	1.75	5.00	1.36	2.46
Q2	29.6	167.9	179.6	16.7	18.9	30.4	8.5	-10.9	5.80	1.88	5.34	1.36	2.46
Q3	28.8	170.3	181.8	17.0	15.4	28.4	7.3	11.5	5.80	2.50	6.06	1.36	2.46
Q4	31.1	174.5	186.2	21.4	14.2	8.5	7.3	28.6	5.80	2.75	6.06	1.36	2.46
2000 Q1	32.1	172.7	184.5	17.7	10.6	5.6	4.9	2.2	5.85	2.38	6.28	1.33	2.46
Q2	33.1	171.7	183.3	17.7	11.6	2.3	2.1	5.8	5.85	2.50	6.78	1.33	2.46
Q3	31.7	166.6	178.4	17.4	10.3	-2.2	-1.9	2.5	5.85	2.56	6.81	1.33	2.46
Q4	33.3	170.9	182.9	18.5	6.9	-2.0	-1.8	-13.7	5.80	2.81	6.39	1.30	2.42
2001 Q1	34.7	176.4	186.1	19.0	8.0	2.2	0.8	7.3	5.80	2.38	4.88	1.30	2.38

Source: Monetary Authority of Singapore

TABLE 8: FISCAL

Period	Operating Revenue							Expenditure			Surplus (+)/ Deficit (-)	
	Total	Tax Revenue					Non-tax Revenue	Total	Operating	Development		
		Total	Income Tax	Asset Tax	Stamp Duty	GST						
S\$ Million												% of GDP
FY1992	17772	14237	7147	1498	673	0	3535	12161	8512	3649	5611	6.8
FY1993	20656	16224	7735	1645	1107	0	4432	12896	9001	3895	7759	8.0
FY1994	23713	19000	8296	1844	1394	1523	4714	14043	10072	3971	9670	8.9
FY1995	25255	19896	8773	1757	1271	1626	5359	17410	11449	5962	7844	6.4
FY1996	28930	23205	10951	1823	1878	1746	5725	23288	14159	9129	5642	4.3
FY1997	29181	23011	10195	2335	1688	1927	6170	23042	14080	8962	6139	4.3
FY1998	27911	21551	11331	1529	953	1657	6360	26933	14651	12282	978	0.7
FY1999	30645	22624	11748	1314	1413	1995	8021	25079	14867	10212	5566	3.8
FY 2000 (Revised)	33323	25959	11261	1783	1600	1900	7364	27943	18514	9429	5381	3.4
FY 2001 (Estimated)	34271	28332	13592	1609	1370	2200	5939	28055	18656	9399	6217	3.7
1998 Q1	6305	5025	1616	659	380	287	1280	7376	4547	2829	-1071	-3.1
Q2	7141	5363	2861	389	255	523	1778	4841	2834	2007	2300	6.7
Q3	7140	5957	3200	488	224	527	1183	5268	2893	2375	1872	5.4
Q4	7626	5809	3289	313	222	352	1817	7308	3962	3346	318	0.9
1999 Q1	6004	4422	1981	339	252	256	1582	9516	4962	4554	-3512	-10.7
Q2	6522	4909	2537	241	262	622	1613	4390	2454	1936	2132	6.0
Q3	9072	7182	4377	389	387	539	1890	4942	2874	2068	4130	11.3
Q4	7021	5065	2729	212	379	360	1956	6098	3617	2481	923	2.5
2000 Q1	8030	5468	2105	472	384	474	2562	9649	5922	3727	-1619	-4.4
Q2	7492	5952	3298	285	352	724	1540	3968	2646	1322	3524	9.1
Q3	10005	7937	4956	462	354	470	2068	4692	3245	1447	5313	13.0
Q4	8000	5921	3064	266	289	576	2079	9706	7084	2622	-1706	-4.0
2001 Q1	8428	5806	2221	593	261	345	2622	9028	4975	4053	-600	-1.5

Source: Ministry of Finance

TABLE 9: BALANCE OF PAYMENTS – Current Account

Period	Current Account Balance		Goods Account			Services Account						Income Balance	Current Transfers
			Exports	Imports	Balance	Total	Transportation	Travel	Insurance	Govt. Servs	Other		
	S\$ Million	% of GNP	S\$ Million										
1992	9635	11.7	108432	111400	-2967	10854	-1330	5239	-596	-14	7556	2522	-774
1993	6804	7.3	125802	130204	-4401	11757	-1359	5253	-599	-8	8469	315	-866
1994	17413	16.0	149566	147497	2069	13970	-1153	4450	-674	10	11337	2384	-1010
1995	21119	17.4	167897	166512	1384	17407	-1376	4413	-878	-36	15284	3583	-1255
1996	18080	13.9	177680	174543	3136	14417	-1538	2436	-855	1	14374	2031	-1505
1997	26618	17.8	186708	185048	1660	17093	-1721	1709	-823	-28	17957	9600	-1736
1998	34031	23.3	185035	160301	24735	2555	-2273	414	-328	-27	4767	8579	-1837
1999	36866	24.0	195798	176888	18911	8569	-2903	1015	-490	-50	10997	11358	-1972
2000	37576	22.2	239512	219859	19653	9710	-4602	1352	-321	-47	13329	10555	-2342
1998 Q1	6208	n.a.	46651	42109	4542	-215	-528	230	-166	-12	260	2330	-449
Q2	8487	n.a.	45590	39118	6473	101	-554	-47	-50	-5	757	2368	-454
Q3	9740	n.a.	47546	40374	7172	991	-744	303	-81	-8	1523	2048	-470
Q4	9596	n.a.	45248	38700	6548	1678	-447	-71	-30	-2	2228	1834	-464
1999 Q1	8013	n.a.	42320	37766	4554	1110	-547	460	-68	-18	1283	2839	-490
Q2	9468	n.a.	48087	43255	4831	2339	-1020	173	-150	-6	3342	2777	-480
Q3	8897	n.a.	50265	46683	3582	2987	-657	433	-113	-12	3337	2821	-494
Q4	10488	n.a.	55127	49183	5943	2133	-679	-51	-159	-13	3035	2921	-509
2000 Q1	8975	n.a.	52092	47309	4784	2040	-1025	546	8	-22	2533	2664	-512
Q2	8771	n.a.	57195	53465	3730	2693	-1063	196	-105	-9	3673	2886	-537
Q3	10421	n.a.	64211	58851	5360	3092	-1173	492	-95	-9	3875	2542	-572
Q4	9408	n.a.	66014	60234	5779	1886	-1341	118	-130	-9	3248	2464	-721
2001 Q1	9332	n.a.	57637	52017	5620	2059	-1539	230	51	-22	3339	2210	-557

Source: Singapore Department of Statistics

TABLE 10: BALANCE OF PAYMENTS – Capital & Financial Accounts

S\$ Million

Period	Capital & Financial Account Balance	Capital Account	Financial Account						Errors & Omissions	Overall Balance	Official Foreign Reserves (End-of-Period)
			Total	Direct Investment	Portfolio Investment	Other Investment					
						Total	Banks	Others			
1992	2859	-62	2921	1446	4056	-2580	-1173	-1408	-2535	9959	65788
1993	-2074	-115	-1958	4095	-8024	1971	4391	-2421	7423	12154	77867
1994	-13633	-129	-13504	6069	-11801	-7772	1707	-9479	3522	7302	85166
1995	-1345	-101	-1244	7577	-10430	1609	7904	-6295	-7600	12174	97337
1996	-6999	-196	-6803	4998	-16480	4678	6344	-1665	-674	10407	107751
1997	-16555	-257	-16298	5356	-19310	-2344	9362	-11705	1793	11856	119617
1998	-36884	-378	-36507	9642	-11728	-34420	-17689	-16731	7834	4981	124584
1999	-31308	-324	-30984	5400	-12009	-24375	-12636	-11739	1764	7321	128457
2000	-19932	-281	-19651	3645	-23889	593	15083	-14490	-5809	11835	139260
1998 Q1	-11434	-84	-11351	2317	-1642	-12025	-7877	-4149	5567	340	119956
Q2	-15603	-108	-15496	2001	-3171	-14326	-979	-13347	8326	1210	121196
Q3	-5767	-101	-5666	2205	-3568	-4303	-7985	3682	-3108	866	122062
Q4	-4080	-86	-3994	3119	-3348	-3766	-849	-2917	-2951	2566	124584
1999 Q1	-19983	-83	-19900	4194	-2224	-21871	-5965	-15906	11556	-415	124327
Q2	-8665	-93	-8572	73	-4093	-4553	-358	-4196	3997	4799	125856
Q3	-406	-82	-324	171	-2294	1799	-9026	10825	-8496	-6	129593
Q4	-2253	-66	-2187	962	-3398	250	2713	-2463	-5293	2943	128457
2000 Q1	-9140	-71	-9069	1569	-6796	-3842	-1645	-2196	-2006	-2171	128159
Q2	279	-79	358	575	-6196	5979	6245	-265	-3191	5860	134431
Q3	49	-71	120	583	-5262	4799	7489	-2691	-6076	4394	135953
Q4	-11120	-59	-11061	918	-5635	-6344	2995	-9338	5465	3753	139260
2001 Q1	-7675	-66	-7609	458	-4090	-3977	-1050	-2928	-678	979	140327

Source: Singapore Department of Statistics /
Monetary Authority of Singapore

TABLE 11: EXCHANGE RATES

End of Period	Singapore Dollar Per									
	US Dollar	Pound Sterling	EURO	100 Swiss Franc	100 Japanese Yen	Malaysian Ringgit	Hong Kong Dollar	100 New Taiwan Dollar	100 Korean Won	Australian Dollar
1992	1.6449	2.4867		112.39	1.3198	0.6306	0.2125	6.4758	0.2086	1.1312
1993	1.6080	2.3802		108.61	1.4364	0.5953	0.2082	6.0338	0.1989	1.0885
1994	1.4607	2.2782		111.18	1.4628	0.5707	0.1888	5.5370	0.1850	1.1341
1995	1.4143	2.1884		122.61	1.3744	0.5567	0.1829	5.1821	0.1827	1.0540
1996	1.3998	2.3670		103.80	1.2046	0.5538	0.1809	5.0919	0.1657	1.1150
1997	1.6755	2.7771		115.23	1.2893	0.4313	0.2162	5.1433	0.0993	1.0935
1998	1.6605	2.7666		120.15	1.4484	0.4370	0.2143	5.1552	0.1394	1.0190
1999	1.6660	2.6914	1.6810	104.50	1.6272	0.4384	0.2143	5.3142	0.1471	1.0896
2000	1.7315	2.5818	1.6095	105.86	1.5091	0.4557	0.2220	5.2224	0.1377	0.9605
1998 Q1	1.6060	2.6926		105.54	1.2200	0.4412	0.2073	4.8951	0.1155	1.0673
Q2	1.7068	2.8461		112.16	1.2141	0.4098	0.2203	4.9509	0.1237	1.0462
Q3	1.6850	2.8783		121.59	1.2456	0.4434	0.2175	4.8954	0.1216	1.0070
Q4	1.6605	2.7666		120.15	1.4484	0.4370	0.2143	5.1552	0.1394	1.0190
1999 Q1	1.7322	2.7914	1.8548	116.21	1.4385	0.4558	0.2235	5.2253	0.1413	1.0886
Q2	1.7013	2.6787	1.7562	109.76	1.4105	0.4477	0.2193	5.2736	0.1468	1.1255
Q3	1.7026	2.8002	1.8129	113.28	1.5941	0.4480	0.2192	5.3556	0.1399	1.1124
Q4	1.6660	2.6914	1.6810	104.50	1.6272	0.4384	0.2143	5.3142	0.1471	1.0896
2000 Q1	1.7189	2.7406	1.6488	103.48	1.6279	0.4523	0.2208	5.6394	0.1554	1.0431
Q2	1.7294	2.6252	1.6468	105.76	1.6393	0.4551	0.2218	5.6139	0.1551	1.0348
Q3	1.7410	2.5479	1.5336	100.62	1.6122	0.4582	0.2233	5.5587	0.1561	0.9472
Q4	1.7315	2.5818	1.6095	105.86	1.5091	0.4557	0.2220	5.2224	0.1377	0.9605
2001 Q1	1.8005	2.5714	1.5825	103.85	1.4471	0.4738	0.2309	5.4860	0.1353	0.8822

Source: Monetary Authority of Singapore

