



Monetary Authority of Singapore

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# review

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## LIST OF ABBREVIATIONS

ARF	Additional Registration Fee
bps	basis points
BTMICE	business travel, meetings, incentives, conventions and exhibitions
CPF	Central Provident Fund
CPI	consumer price index
DLI	Domestic Liquidity Indicator
DOS	Department of Statistics
DPS	deferred payment scheme
ECB	European Central Bank
EIA	Energy Information Administration
EPD	Economic Policy Department
FI	fiscal impulse
FY	financial year
GDP	Gross Domestic Product
GIC	Government of Singapore Investment Corporation
GST	goods and services tax
HDB	Housing and Development Board
IMF	International Monetary Fund
IPI	import price index
IRAS	Inland Revenue Authority of Singapore
LPG	liquid petroleum gas
M&A	merger and acquisition
M&OE	marine and offshore engineering
MMS	Monetary Model of Singapore
MOF	Ministry of Finance
m-o-m	month-on-month
MOM	Ministry of Manpower
MPS	Monetary Policy Statement
NBER	National Bureau of Economic Research
NEER	nominal effective exchange rate
NODX	non-oil domestic exports
NORX	non-oil re-exports
NTUC	National Trades Union Congress
OECD	Organisation of Economic Cooperation and Development
OMV	Open Market Value
OPEC	Organisation of the Petroleum Exporting Countries
PMETs	Professionals, Managers, Executives and Technicians
SPS	Standard Payment Scheme
q-o-q	quarter-on-quarter
REER	real effective exchange rate
SAAR	seasonally adjusted annualised rate
SAGE	Singapore Academy of GxP Excellence
SERS	Selective En bloc Redevelopment Scheme
STB	Singapore Tourism Board
TOP	temporary occupation permit
UBCI	unit business cost index
ULC	unit labour cost
USCI	unit services cost index
WDA	Workforce Development Agency
WTI	West Texas Intermediate
y-o-y	year-on-year

# Preface

The *Macroeconomic Review* is published twice a year in conjunction with the release of the MAS Monetary Policy Statement. The *Review* documents the **Economic Policy Department's (EPD)** analyses and assessment of macroeconomic developments in the Singapore economy, and shares with market participants, analysts and the wider public the basis for the policy decisions conveyed in the Monetary Policy Statement.

The *Review* was edited by Associate Professor Peter Wilson. The publication also benefited from guidance and comments by Professor Sam Ouliaris.

We are grateful to Professor Paul Romer for his contribution of Special Feature B, as well as Assistant Professor Anthony Tay, for his assistance with the empirical analysis on the monetary policy transmission mechanism in Singapore.

The data used in the *Review* were drawn from the following government agencies: BCA, CAAS, CPF Board, DOS, EDB, HDB, IE Singapore, IRAS, LTA, MOF, MOM, MTI, STB and URA.

The *Review* may be accessed in PDF format on the MAS website:  
[http://www.mas.gov.sg/masmcm/bin/pt1Macroeconomic\\_Review.htm](http://www.mas.gov.sg/masmcm/bin/pt1Macroeconomic_Review.htm).

The *Review* may also be purchased at major bookstores, online (<http://asp.marketasia.com.sg/Spore/sporeindex.asp>), or on an annual subscription basis (details on the last page).

# Highlights

The Singapore economy grew by an impressive 7.7% in 2007, marking the fourth consecutive year of strong growth. At the same time, job creation surpassed the previous high of 2006, bringing down the unemployment rate to a decade low of 1.6% in December last year. At the turn of 2008, domestic GDP growth continued to be firm, despite the headwinds from the slowing US economy and continuing turmoil in the global financial markets.

Looking ahead, Singapore's economic growth is likely to ease in the next few quarters in view of the deterioration in the external outlook. That said, full-year GDP growth of 4-6% is still achievable, barring a deep recession in the US economy. Regional demand is expected to hold up in the near term, while sources of support driven by sector-specific trends will also prevent the Singapore economy from sliding into a sharp downturn in 2008.

Chapter 1 of the *Review* traces the recent performance of the domestic economy. We identify the factors which impacted growth in the last two quarters, and consider how cooling investor sentiment could play out in the asset markets, particularly in the value chain of property-related activities. We also evaluate the macroeconomic policy setting and examine the relative importance of income and price (or cost of funds) effects in underpinning domestic asset prices.

Chapter 2 analyses the wage-price dynamics in the Singapore economy. CPI inflation has risen since the second half of 2007, reflecting a confluence of external and domestic cost pressures. In particular, global oil and food prices have soared, while on the domestic front, wages and rental costs have risen alongside tight labour and commercial property markets.

Chapter 3 presents our outlook for GDP growth, the labour market and inflation in Singapore, taking into account developments in the global economy and IT industry. In contrast to last year's broad-based growth story, the prospects for 2008 will vary across industries depending on their sensitivity to the US economic slump. We offer a tentative assessment

of those activities that are most insulated from a US slowdown and those most vulnerable to the risk of further US weakness. We expect CPI inflation in Singapore to stay elevated in the first half of 2008, as external and domestic cost pressures continue to pass through, before moderating in the second half of the year. This Chapter also includes an analysis of those factors that have contributed to the recent rise in global food price inflation and interpret these developments in the context of longer-term trends in real commodity prices. Separately, we offer a stylised description of the price transmission mechanism in Singapore, highlighting the importance of the import price channel and derived demand channel as underlying sources of CPI inflation.

Finally, the *Review* incorporates two Special Features, which draw on the ongoing research work of the Department and its engagement with economists in academia. The first revisits the ongoing debate on the fall of the US\$ and the implications for its role as the world's reserve currency. The general consensus is that the dollar is likely to further share its reserve currency status with other currencies over the longer term, reflecting the emergence of a more broad-based global economy and the move towards flexible exchange rate regimes. Nevertheless, given the entrenched position of the US as the default banker to the world and the strong incumbency of the US dollar, the replacement of the dollar as the world's leading currency is unlikely to occur anytime soon. The second Feature on "Rivalry and Prosperity" is contributed by Professor Paul Romer, who visited EPD in January this year under the MAS' Eminent Visitor Programme. He vividly illustrates how non-rival goods, particularly ideas, can be combined in infinite ways to give rise to an unlimited stream of innovations, which is the basis of improvements in our standard of living.

The next issue of the *Review* will be released in October 2008.

Economic Policy Department  
Monetary Authority of Singapore  
29 April 2008



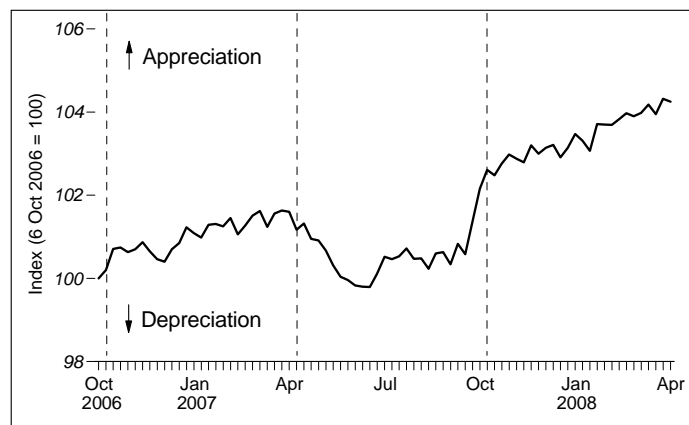
10 April 2008

# Monetary Policy Statement

## INTRODUCTION

1. Since April 2004, MAS has maintained the policy of a modest and gradual appreciation of the Singapore dollar nominal effective exchange rate (S\$NEER) policy band. In October 2007, the policy was tightened through a slight increase in the slope of the band. The gradual appreciation of the S\$ exchange rate over the past few years has helped to mitigate inflationary pressures.

**Chart 1**  
**Nominal Effective Exchange Rate (S\$NEER)**



--- indicates release of Monetary Policy Statement

2. Since the last policy review, the S\$NEER has fluctuated in the upper half of the policy band. (Chart 1) This occurred against the general weakness of the US\$ and the concomitant strengthening of other currencies including the yen and euro. Amidst the cuts in US interest rates by the Federal Reserve, the domestic three-month interbank interest rate fell from 2.75% as at end-August 2007 to 1.31% at the end of March 2008.

## OUTLOOK FOR 2008

3. Notwithstanding the slowdown in the US economy and the turbulence in financial markets, economic activity in Singapore has continued to stay firm. The *Advance Estimates* released by the Ministry of Trade and Industry today showed that GDP expanded by 7.2% on a year-on-year basis in Q1 2008, bringing average growth to 6.3% in the six months from Oct 2007 to Mar 2008. Growth was broad-based, with the manufacturing, construction, financial services and transport hub services sectors contributing to sustained economic activity.

4. Singapore's economic growth is likely to ease in the next few quarters. Recent data indicate a significant deterioration in growth prospects of the developed economies, particularly the US, amidst heightened risk aversion and tighter credit conditions. However, economic activity in Asia is expected to remain fairly resilient in the near term, reflecting strong domestic demand and regional trade flows. Asian financial institutions have also not been significantly affected by the subprime crisis in the US. In Singapore, GDP growth is expected to be supported by the continued expansion in a number of industries including marine engineering, construction, tourism, and certain segments of the services sector such as bank intermediation.

5. Our assessment at this point is for Singapore's GDP growth to ease to 4-6% this year, in line with the economy's growth potential. However, there are downside risks to growth reflecting the considerable uncertainty on the global economic front. In particular, a more severe global downturn cannot be ruled out if there is a further escalation of the financial crisis in the US. If this occurs, Singapore's growth will be adversely affected.

6. CPI inflation in Singapore has risen sharply since the second half of last year, reflecting a confluence of external and domestic factors. From 0.8% in the first half of last year, it rose to 3.4% in H2 before accelerating further to 6.6% in Jan-Feb 2008. The escalation in global oil, food and other commodity prices has contributed, directly and indirectly, to the increase in consumer prices. Domestically, business costs have risen on account of higher wages and rentals amidst tighter conditions in the labour and commercial property markets, respectively. The rise in CPI inflation also reflected an adjustment in imputed rents of residential properties.

7. Global oil and food prices are likely to remain elevated over the medium term, while domestic cost pressures will persist due to short-term capacity constraints in certain segments of the economy. In the near term, the pass-through of cost increases from both external and domestic sources will continue, albeit at a more moderate pace. Thus, CPI inflation is expected to remain high until the middle of the year, before easing in the second half. For 2008 as a whole, CPI inflation is projected to come in at the upper half of the 4.5-5.5% forecast range.

## **MONETARY POLICY**

8. The Singapore economy is expected to grow at a more moderate pace this year following several years of robust expansion. At the same time, CPI inflation has increased and is expected to remain elevated in the first half of this year. Even as the downside risks to economic growth have increased, global inflationary pressures remain high.

9. Against this backdrop of continuing external and domestic cost pressures, an upward shift of the policy band at this point will help to moderate inflation going forward, while providing support for sustainable growth in the economy. MAS will therefore re-centre the exchange rate policy band at the prevailing level of the S\$NEER. There will be no change to the slope or width of the policy band.

**CHAPTER 1**

**MACROECONOMIC  
DEVELOPMENTS**

## 1.1 External Developments

### Slower Growth in the Developed Economies

Growth in the external economies generally slowed in the fourth quarter of 2007, amidst the financial turmoil triggered by the US subprime mortgage crisis. Growth in the developed economies was particularly weak, with the US leading the downturn. Among the G3 economies, only Japan posted a sharp rebound after recording below trend growth in the two preceding quarters. (Chart 1.1) Asia ex-Japan continued to expand at a robust pace, supported by firm domestic demand and exports to emerging markets. (Table 1.1)

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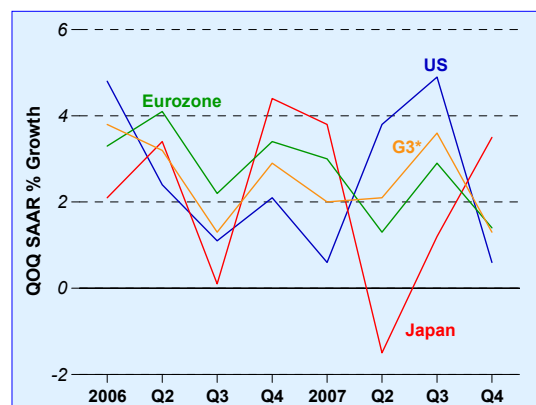
#### The US economy slowed sharply amidst a weak housing market and credit crunch.

---

The US economy grew by a tepid 0.6% q-o-q SAAR in Q4 2007, down sharply from 4.9% a quarter earlier. (Chart 1.2) The steep downturn was due to a number of factors. First, residential construction contracted at its fastest rate in 26 years, pulling down overall GDP growth by 1.3% points. Second, inventories declined sharply as businesses slowed production and reduced stocks in reaction to heightened economic and financial uncertainties. Third, personal consumption grew at a weaker pace, as households became more cautious on the back of falling house prices, the soaring cost of gasoline and food, as well as tighter credit conditions.

Recent data point to a further weakening of economic activity in early 2008. Real sales remained significantly below the peak reached in October 2007, while non-farm payrolls fell for the third straight month in March, as job losses mounted in the construction, manufacturing and retail sectors. (Charts 1.3 & 1.4) Nevertheless, the deterioration in the four indicators used by the US National Bureau of Economic Research (NBER) – real sales, real income, non-farm payrolls and industrial production – to mark a recession has been less severe thus far, compared with previous recessions.

**Chart 1.1**  
G3's GDP Growth



Source: Datastream

\* Weighted by 2006 nominal GDP in US\$

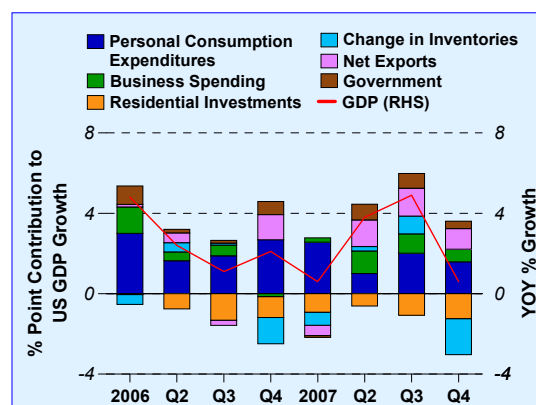
**Table 1.1**  
Asia's GDP Growth

	2006	2007	y-o-y (%)	
			2007 Q3	2007 Q4
NIE-3*	5.9	5.8	6.2	6.4
Hong Kong	7.0	6.3	6.3	6.7
Korea	5.1	5.0	5.1	5.7
Taiwan	4.9	5.7	6.9	6.4
ASEAN-4*	5.6	6.1	6.3	6.7
Indonesia	5.5	6.3	6.5	6.3
Malaysia	5.9	6.3	6.6	7.3
Thailand	5.1	4.8	4.8	5.7
Philippines	5.4	7.3	7.4	7.4
China	11.6	11.9	11.5	11.2
India	9.6	8.7	8.9	8.4

Source: CEIC

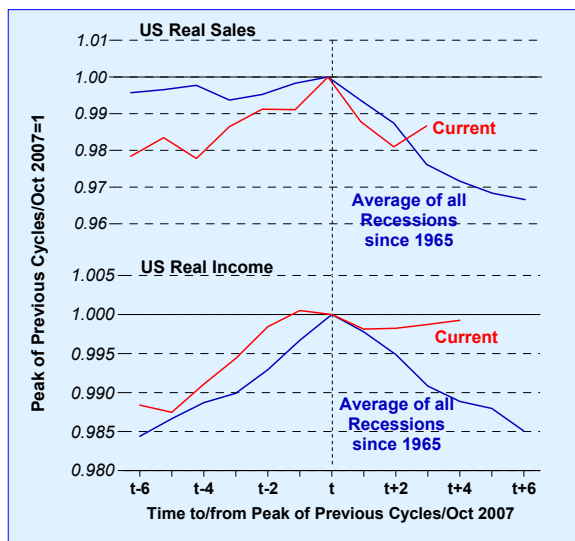
\* Weighted by shares in non-oil domestic exports

**Chart 1.2**  
Contribution to US GDP Growth



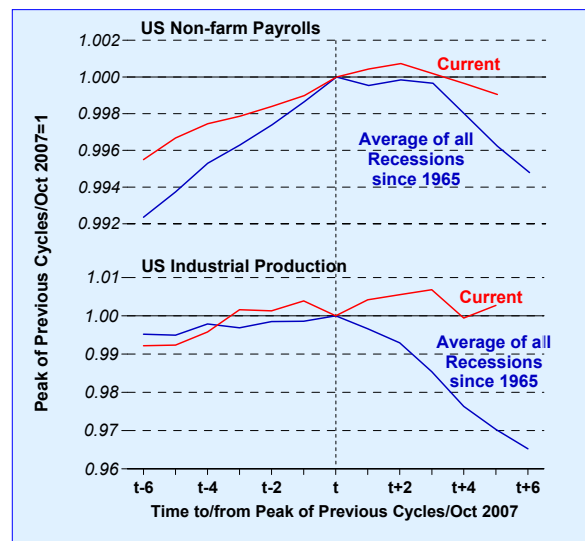
Source: US Bureau of Economic Analysis

**Chart 1.3**  
**US Real Sales and Real Income**



Source: US Department of Commerce, Bureau of Economic Analysis

**Chart 1.4**  
**US Non-farm Payrolls and Industrial Production**



Source: US Federal Reserve and US Department of Labour

### **Growth momentum weakened in the Eurozone in Q4 2007, and more recently in Japan.**

Real GDP growth in the Eurozone decelerated to 1.4% q-o-q SAAR in the fourth quarter of 2007, half the rate of Q3 2007. Domestic demand was flat, with personal consumption contracting for the first time in 24 quarters, as tighter credit conditions and escalating fuel and food prices dampened confidence. Investment growth also moderated as business sentiment turned more bearish, while export growth slowed on account of the weaker external environment and a stronger euro.

The Japanese economy expanded by 3.5% q-o-q SAAR in Q4 2007, following two quarters of sub-trend growth. Exports rose at a double-digit rate, lifted by demand from emerging markets. Domestic demand was underpinned by firm growth in private non-residential investment and public sector spending, while personal consumption also picked up slightly. However, growth momentum has slowed, with the All Industry Activity Index falling at its fastest rate in four years in February, on a month-on-month basis. The Cabinet Office has downgraded its assessment of the economy, noting that the recovery appeared "to be pausing recently".

### **Asia ex-Japan posted sustained growth, buttressed by domestic demand and exports to non-G3 markets.**

In Asia ex-Japan, growth remained generally firm in Q4 2007, supported by strong domestic and external

demand. Personal consumption expanded robustly in most Asian economies, underpinned by healthy labour market conditions. Rising commodity prices also lifted the income of primary producers in some parts of Southeast Asia, which helped to sustain consumer spending. Likewise, gross fixed investment expanded robustly, as firms faced tighter capacity after several years of rapid economic growth. Investment increased at double-digit rates in six of the nine major Asian economies (China, Hong Kong, India, Indonesia, Malaysia and the Philippines) in Q4 2007, supported by strong corporate profits. (Chart 1.5)

On the external front, Asian export growth continued to hold up in Q4 2007 and into the first two months of 2008. In part, this was due to the rise in oil and other commodity exports in some of the regional economies. It also reflected the increasing diversification of the region's export markets to tap the strong final demand in emerging economies such as China, India, Indochina and the Middle East. Thus, while Asia's shipments to the US slowed discernibly in the second half of 2007, exports bound for many of the emerging markets grew at double-digit rates. (Chart 1.6)

### Global inflationary pressures picked up, driven primarily by higher food and oil prices.

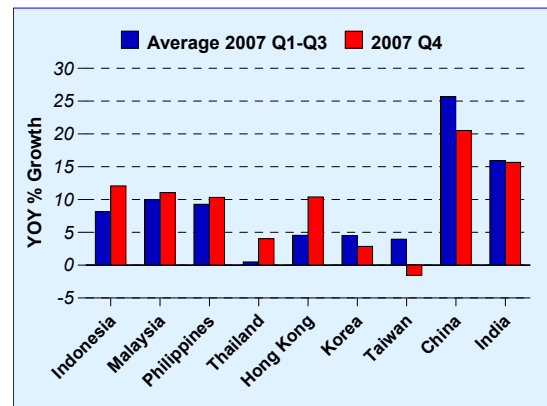
Global inflation gathered pace in the second half of last year and into 2008, even as economic activity slowed. The build up in inflationary pressures was largely due to the higher prices of oil and food, for which demand remained firm alongside short-term supply constraints.

In the US, headline CPI inflation rose to 4.0% y-o-y in Q4 2007, the fastest in one and a half years, and remained elevated in Q1 2008. Core CPI inflation, which excludes the energy and food components, was significantly lower at 2.4% in the first quarter of this year.

In the Eurozone, headline CPI inflation accelerated from 1.9% y-o-y in Q3 2007 to 2.9% in Q4 2007 and 3.2% in the first two months of 2008. This was well above the ECB's inflation target of less than but close to 2%. In tandem with the global trend of rising inflation, much of the price increase was due to food and energy. Stripping out these items, core inflation stood at 2.4% in the first two months of 2008.

In Japan, consumer prices grew by 0.5% y-o-y in Q4 2007, after three consecutive quarters of decline. This

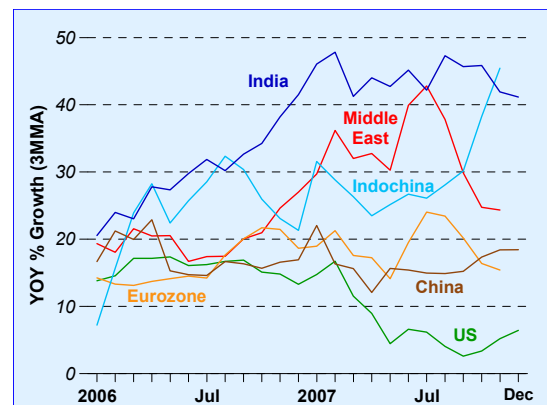
**Chart 1.5**  
**Investment Growth in Asia**



Source: CEIC and EPD, MAS estimates

Note: Data for China is based on nominal fixed asset investment; for other countries, it is real gross fixed capital formation.

**Chart 1.6**  
**Asia's Exports by Destination**



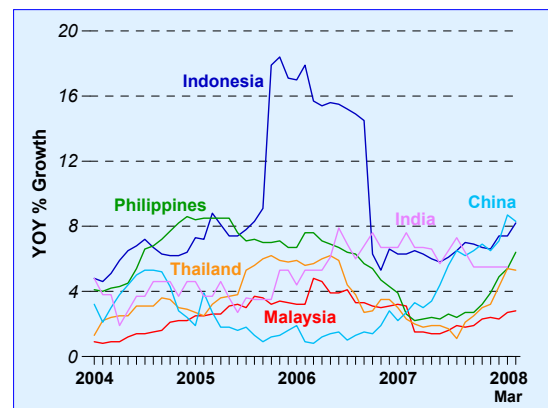
Source: CEIC and IMF Direction of Trade Statistics

Note: Asia refers to China, Hong Kong, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand.

was lifted largely by the rise in energy costs and, to a lesser degree, food prices. Since then, Japan's headline CPI inflation has doubled to 1% in February 2008.

Inflationary pressures also picked up across the rest of Asia, again driven by the surge in food and oil prices as well as tight capacity arising from strong final demand in the last few years. (Chart 1.7) In China, food prices soared to their highest level in more than a decade, exacerbated by weather-induced supply shortages. In turn, this drove up headline CPI inflation in the first quarter of 2008 to an 11-year high of 8%.

**Chart 1.7**  
**CPI Inflation in Asia**



Source: CEIC

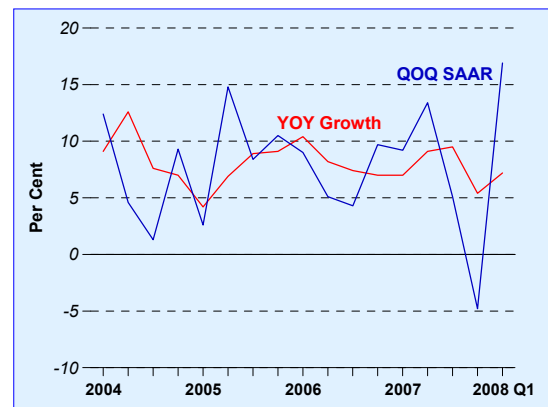
## 1.2 Domestic Economy

### Continued Momentum Despite External Vulnerabilities

#### Sharp swings in GDP growth at the turn of the year.

The Singapore economy experienced sharp swings in GDP growth in recent quarters. After contracting in Q4 2007, the economy bounced back to post an expansion of 16.9% q-o-q SAAR in Q1 2008, according to the *Advance Estimates*. (Chart 1.8) As the external environment has become increasingly uncertain, domestic economic growth momentum has slowed slightly, averaging 6.1% over the past two quarters, from 9.3% in Q2-Q3 2007. The slowdown reflected a softening in asset market-related activities such as equity trading and property transactions, following the sharp run-up in the earlier part of 2007.<sup>1</sup>

**Chart 1.8**  
**Singapore's GDP Growth**



#### The domestic economy contracted following 17 quarters of positive growth.

Economic activity eased in the final quarter of 2007. GDP shrank by 4.8% q-o-q SAAR, the first sequential contraction in 18 quarters.

The decline was due in part to a sharp pullback in the biomedical cluster. Biomedical output fell by 65% q-o-q SAAR in Q4, knocking some 26% points off overall

<sup>1</sup> The role of asset market-related activities was discussed in the October 2007 issue of the *Review*.

manufacturing growth. (Chart 1.9) In particular, pharmaceutical production contracted severely in Q4 and dipped by 2.1% for 2007 as a whole, halting the sector's run of double-digit growth since 2001.

The plunge in Q4 2007 can be attributed to a temporary switch of product mix to lower value added active pharmaceutical ingredients (APIs). Decisions on the product mix are typically determined by global HQs on the basis of broad-ranging factors including company strategy, as well as the current level of utilisation and technology of a plant. For 2007 as a whole, extended maintenance shutdowns hampered overall growth, while no significant new capacity was added, unlike when production was boosted by a steady stream of new supply, as the industry first took off. In addition, some of the facilities in Singapore were used to make new drugs for clinical trials, which take up capacity but do not contribute to output numbers. Notwithstanding the recent contraction in output, the medium-term prospects for the pharmaceutical industry remain bright. This is further discussed in Chapter 3 of this *Review*.

#### Some retraction in IT-related activities in Q4.

Apart from the pullback in the pharmaceutical sector, there were also signs of some slowdown in the broader economy.

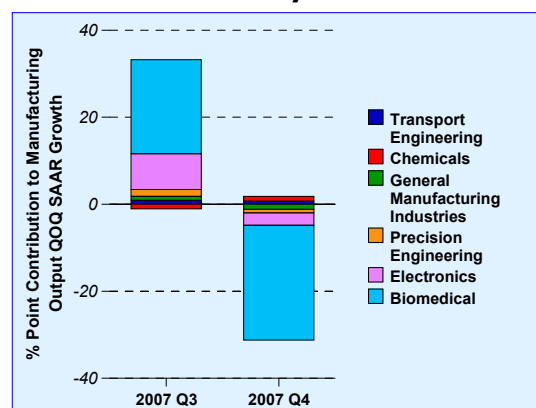
In particular, the IT-related industries, which comprise the electronics manufacturing and related services, softened in Q4. Domestic electronics output fell by 8.3% q-o-q SAAR, as the data storage and infocomms & consumer electronics segments took a turn for the worse. (Chart 1.10) This reflected, in part, the erosion in the global market share of key players in the infocomms & consumer electronics segment.

Transport-hub services were also negatively affected by the general sluggishness in the global IT market. Specifically, entrepôt trade declined by 3.6% q-o-q SAAR in Q4 2007, as electronics re-exports to the G3 and NIE markets slowed. At the same time, the volume of air cargo – the main mode of transport for electronics components – handled through Singapore dipped by 1.9% in Q4.

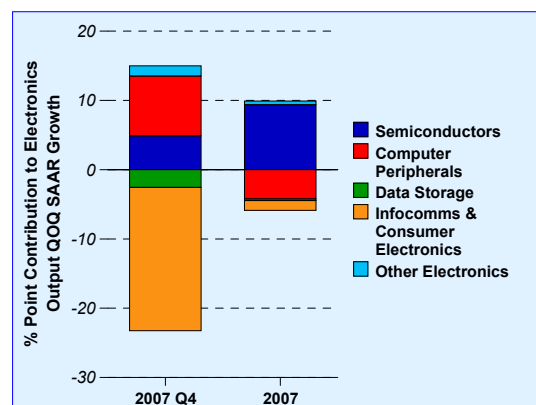
#### Asset market-related activities weakened in Q4 as the US financial turmoil continued to unfold.

Growth in asset market-related activities tapered off in Q4, following the surge earlier in the year. Specifically,

**Chart 1.9**  
Contribution to Manufacturing Output Growth by Cluster



**Chart 1.10**  
Contribution to Electronics Output Growth



Source: EPD, MAS estimates

the sentiment-sensitive industries in financial services started to falter towards the end of Q4, albeit posting positive gains for the quarter as a whole.

The deterioration was most evident in the brokerage & treasury cluster. In the equity market, the STI rebounded to hit a record high of 3,831 in early October, following the sharp correction in August 2007 when the subprime crisis first erupted. (Chart 1.11) However, towards the latter half of the quarter, weaker-than-expected earnings reports from international banks as well as growing concerns over the slowing US economy reversed investor sentiment abruptly, causing the STI to weaken and finish the year at 3,466.

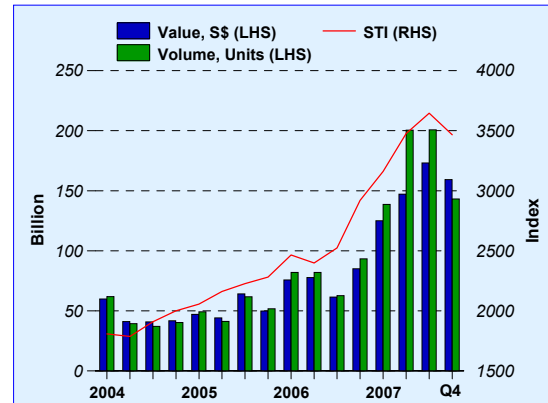
Nevertheless, the local bourse was one of the few markets that avoided a sell-down by US investors in Q4, with Singapore stock acquisitions forming the third largest component of US equity portfolios for the quarter, after the UK and Brazil. The buying activity by US investors in the final quarter of the year, to the tune of some US\$2 billion, partially offset the pullback in the STI. In contrast, during the same quarter, US investors sold off more than US\$7 billion worth of Hong Kong equities – the single largest US sale in Asian markets that quarter – and also disposed of US\$6 billion worth of Japanese stocks.

Overall turnover in the domestic stock market, however, shrank. By the end of the fourth quarter, stockmarket volume had plummeted 65% from its peak in July as heightened risk aversion induced many investors to stay on the sidelines. (Chart 1.11)

Forex market activity also slowed in Q4 2007, as some investors held back on trades due to greater uncertainty about the interest rate environment. (Chart 1.12) Investors’ mounting difficulty in predicting the actions of central banks and corresponding interest rate differentials among pairs of currencies – as reflected in the increased volatility in the Fed funds futures market – triggered a weakening in forex volumes towards the end of the quarter.

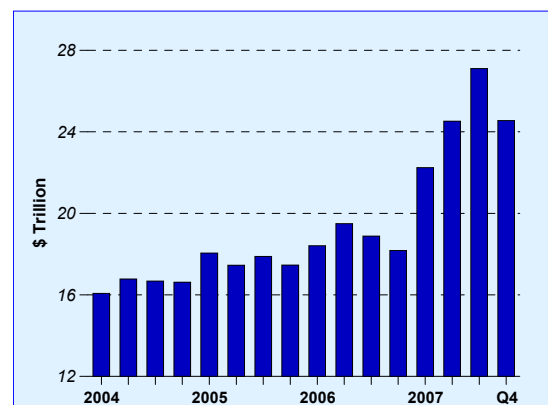
However, there were pockets of strength in the sentiment-sensitive activities. In the debt market, for instance, increased risk aversion amidst volatile equity markets prompted further demand for more stable fixed-income instruments as investors rebalanced their portfolios. In addition, as traditional sources of funding in mature markets dried up, foreign investors turned

**Chart 1.11**  
**Stock Market Total Turnover and Straits Times Index (STI)**



Source: SGX

**Chart 1.12**  
**Total Forex Turnover**



increasingly to emerging market sources, such as Singapore dollar-denominated bonds, boosting local bond issuance activity.

Fee-based income of commercial banks from loan syndication and investment banking services continued to see robust growth in Q4 2007, buoyed by firm activity in the regional merger and acquisition (M&A) market. Although the liquidity crunch slowed M&A activity in the US and Europe, Asian companies, particularly in China and India, capitalised on the weakening US dollar and cheaper target acquisitions to establish a larger presence in international markets. Emerging market sovereign wealth funds, such as the GIC, also contributed to M&A activity through a series of high-profile acquisitions.

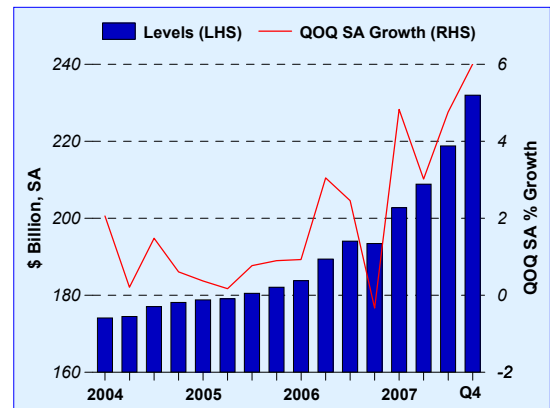
### Financial intermediation activity remained strong in Q4 2007.

Financial intermediation activity was the main source of support in the financial services sector in Q4 2007, underpinned by strong demand for loans in both the domestic and offshore banking segments.

Domestic non-bank loans posted record quarterly gains, driven primarily by continued strength in business lending. (Chart 1.13) Building and construction loans saw further increases, in tandem with the ongoing construction of mega projects such as the Marina Bay Financial Centre and the two integrated resorts. (Chart 1.14) Knock-on effects from the buoyant residential property market also spurred consumer mortgage loans, although growth was somewhat restrained towards the end of the quarter, in line with uncertainty in the global financial markets.

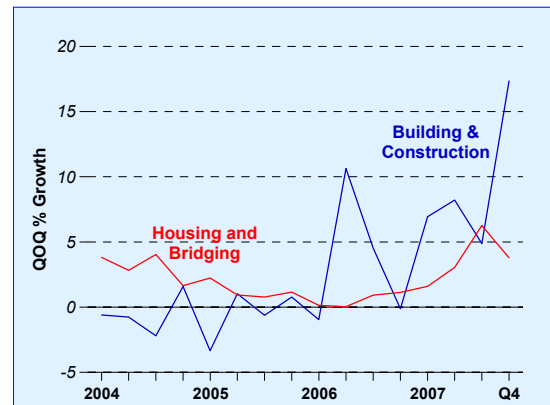
On the offshore banking front, loans in both the non-bank and interbank segments showed healthy growth. Growth in loans to Asia continued unabated as a result of continued positive business sentiment and strong investment in the region, notwithstanding the turbulence in global financial markets. (Chart 1.15)

**Chart 1.13**  
**DBU Non-bank Loans**

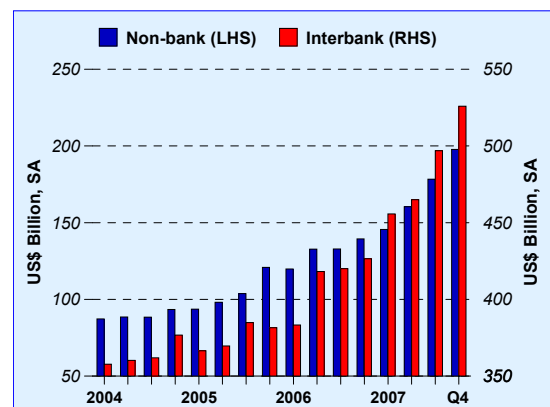


Source: EPD, MAS estimates

**Chart 1.14**  
**Property-related Lending**



**Chart 1.15**  
**ACU Non-bank and Interbank Loans**



Source: EPD, MAS estimates

**Regional-linked and domestic-oriented services was resilient in Q4.**

Meanwhile, the regional-linked and domestic-oriented industries remained resilient in Q4 last year. The tourism-related services cluster posted firm growth in Q4, supported by strong visitor arrivals from Australia, China and India. Hotel occupancy rates averaged 85% during the quarter, while the average hotel room rate scaled new heights to reach an all-time high of \$223 (per night) in November. (Chart 1.16)

Overall, 2007 was another good year for the tourism industry. Visitor arrivals rose by 5.4% to reach 10.3 million, while tourism receipts came in 11.3% higher at \$13.8 billion, both surpassing STB’s targets.

Growth in domestic-oriented services also remained firm in Q4, amidst generally positive consumer sentiment and a healthy labour market. In particular, the business services sector continued to perform well, supported by the real estate segment, which saw higher rentals in both the residential and office space markets. (Chart 1.17)

**Transitory rebound in Q1 2008?**

In Q1 2008, the economy rebounded by 16.9% q-o-q SAAR. However, the recovery from the contraction in Q4 2007 was predominantly due to the upswing in biomedical production.

**IT-related industries regained some ground.**

Electronics production was another segment that bolstered GDP growth in Q1, as output strengthened by 12% q-o-q SAAR. In particular, the computer peripherals and data storage segments saw an unexpected recovery, contributing to the bulk of total electronics growth. (Chart 1.18) Re-exports of electronics, notably semiconductors, turned in strong growth as well, following the decline in Q4 last year.

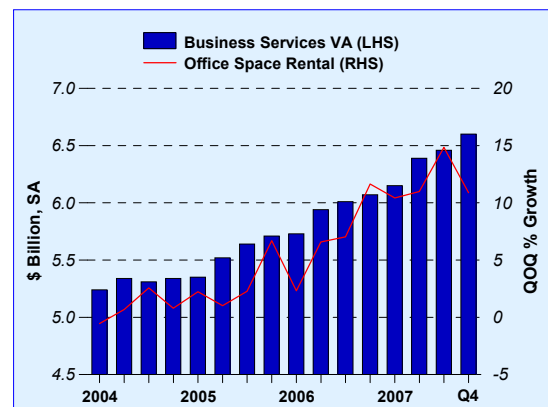
Nevertheless, even as the domestic IT-related industries saw a pick up, conditions in the global IT industry appear to be softening. Looking ahead, it remains unclear if the incipient recovery in Q1 can be sustained. A detailed outlook of the IT industry is discussed in Chapter 3 of this *Review*.

**Chart 1.16  
Visitor Arrivals and Room Rate**

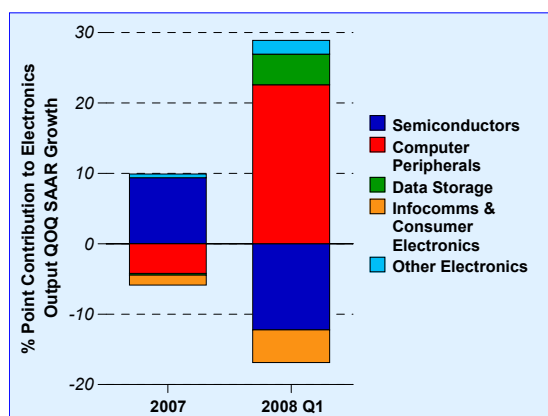


\* Data excludes Malaysian land arrivals

**Chart 1.17  
Business Services Value Added and Office Rental Growth**



**Chart 1.18  
Contribution to Electronics Output Growth**



Source: EPD, MAS estimates

### Faltering sentiment continued to affect asset markets in Q1 2008.

Sentiment-sensitive activities continued to slow in Q1 2008, with further declines in stock market and forex turnover volumes. With the ongoing credit crunch and growing investor pessimism weighing on the financial market, there were fewer IPOs in recent months. (Chart 1.19) Equities perceived by investors to be of higher risk, such as small-cap stocks and S-shares – shares of China companies listed on the Singapore Exchange – lost further ground relative to the 13% fall in the overall STI since the start of the year. (Chart 1.20)

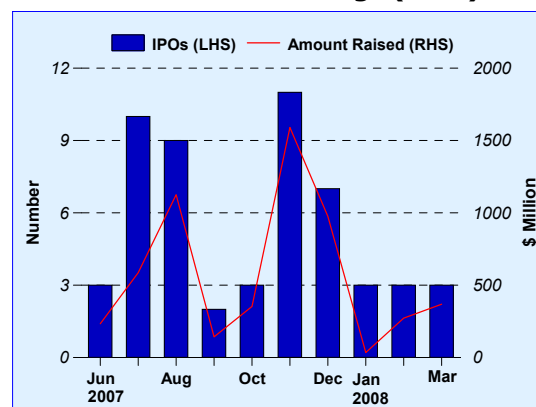
The fund management industry has also started to show some signs of a slowdown, as indicated by the increasingly pessimistic sentiment of fund managers polled in a recent Merrill Lynch survey.<sup>2</sup> The majority of respondents were downbeat on the growth of both Asian powerhouses of China and India this year. In fact, a net 64% of regional fund managers expected the Chinese economy to continue weakening, up from a net 29% in January.

### Some slowdown in property-related activities was also observed.

Meanwhile, cooling sentiment in the residential property market has started to impact some property-related activities in Q1 2008.

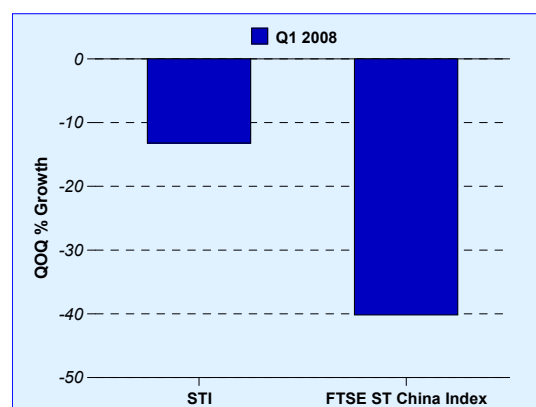
In Figure 1.1, a three-stage framework is used to characterise the impact of the residential property market cycle on downstream activities, such as financial intermediation, construction and business services. Specifically, the most recent upturn began with the recovery in the property market in the upstream phase, followed by bank loans to the property and construction sectors in the midstream phase, and subsequently the construction, real estate and architectural industries in the downstream phase.

**Chart 1.19**  
Initial Public Offerings (IPOs)



Source: SGX

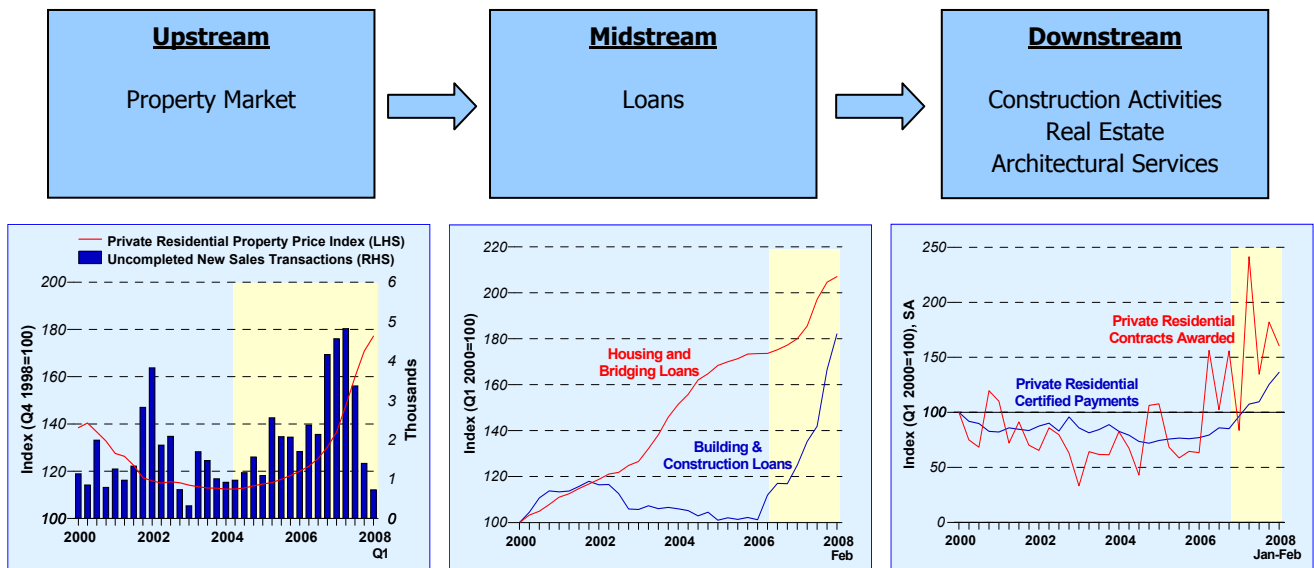
**Chart 1.20**  
STI and FTSE ST China Index



Source: SGX

<sup>2</sup> Merrill Lynch's Fund Manager Survey Global, 19 March 2008.

**Figure 1.1**  
**Phases of Property-related Activities**



### Upstream

The residential property market began to emerge from the doldrums in Q2 2004, following the sustained fall in property prices since Q3 2000. Private housing prices have climbed by an average 2.9% per quarter since then, culminating in a 31.2% gain for 2007 as a whole. Transaction volume also rose in tandem with the price appreciation, reaching a record high of 14,149 last year.

### Midstream

The turnaround in the property market spilled over to the financial sector, as developers sought funding for project development and land bank purchases (including in the non-residential segment). Indeed, construction loans started expanding in Q2 2006, hitting growth of 42% for 2007 as a whole. In addition, mortgage loans began to pick up in Q4 2006, as the rise in home purchases stimulated demand for financing.

### Downstream

Encouraged by increasing revenues, developers accelerated residential property launches, which led to a rise in contracts awarded since the beginning of 2006. This translated into a more rapid increase in certified payments<sup>3</sup> for residential projects towards the end of

<sup>3</sup> Certified payments are a proxy for construction value added.

2006, which contributed to the 20.3% growth in overall construction sector value added in 2007.

The business services sector also saw faster growth, with the property-related segments such as real estate and architectural & engineering services being the main beneficiaries in this downstream phase. The real estate segment, for instance, grew by 8% in 2007, the strongest since 2000.

### Steep decline in property transaction volumes in Q1 2008.

More recently, there have been incipient signs of slowdown in property-related activities, reflecting dampened investor sentiments. Nonetheless, the moderation appears to be largely contained within the upstream stage.

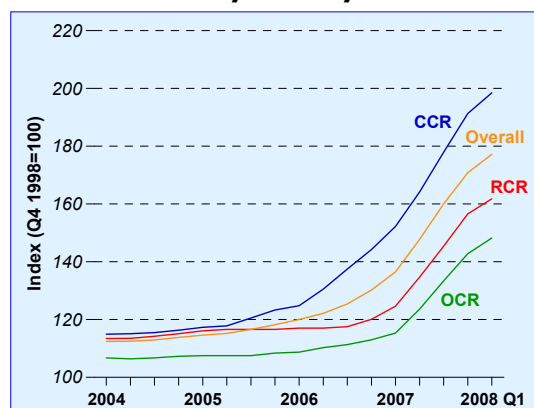
Private residential property transaction volumes weakened towards the end of 2007 and into 2008. Private home sales slowed to 361 units in December, less than half the average monthly transaction of 859 units in Q3, before falling further to 206 units in February.

Notwithstanding the slowdown in transaction volumes, private residential property prices continued to post positive, albeit slower, growth of 3.7% q-o-q in Q1. This compares with 6.8% in Q4 last year. (Chart 1.21)

Meanwhile, midstream financial intermediation activities have continued to grow, although the pace of expansion has slowed from the sharp run-up last year. In particular, the stock of housing loans grew by 1.0% in the first two months of this year, compared with last quarter's 3.9% sequential expansion. Construction loans posted growth of 9.3% in Jan-Feb, following the 17% expansion recorded in the preceding quarter.

Certified payments from private residential projects grew by an average of 4.1% m-o-m SA in Jan-Feb, on the heels of a 5.1% expansion in Q4 2007, suggesting firm downstream construction activity.

**Chart 1.21**  
Price Indices of Non-Landed Properties by Locality



Note: Core Central Region consists of postal districts 9,10,11, Downtown Core and Sentosa.

Rest of Central Region refers to central regions outside postal districts 9,10,11, Downtown Core and Sentosa.

Outside Central Region refers to the rest of Singapore.

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### The Singapore economy has remained resilient thus far.

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The Singapore economy had a strong start this year, having largely withstood the global financial turmoil and weaker external economic environment thus far.

There was firm momentum in domestic-oriented and regional-linked activities in Q1 2008, while the IT-related industries have also held up.

Looking ahead, however, the outlook on the external front has deteriorated and it is uncertain whether these supports for the Singapore economy can be sustained at the same pace of growth. The near-term outlook for the economy is further analysed in Chapter 3 of the *Review*.

## 1.3 Macroeconomic Policy

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### Singapore's macroeconomic stance has evolved in line with the economy's cyclical developments.

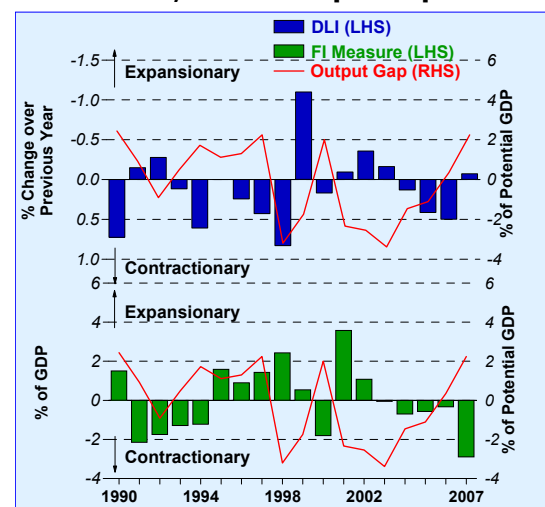
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The evolution of the macroeconomic policy setting in Singapore has been congruent with cyclical developments in the economy. This is shown in Chart 1.22, which plots both the Domestic Liquidity Indicator (DLI)<sup>4</sup> and Fiscal Impulse (FI) measure<sup>5</sup> against the economy's output gap. Points above the zero horizontal axis indicate a positive output gap and an expansionary policy stance, and vice versa for points below. Therefore, if the DLI and/or FI move in the opposite direction to the output gap along the horizontal axis, as has generally been the case, this indicates a countercyclical policy in the short term. Nevertheless, it is important to note that the overall macroeconomic policy stance in Singapore has a medium-term orientation aimed at supporting sustained and non-inflationary growth.

### Monetary Policy

Since April 2004, MAS has maintained the policy of a modest and gradual appreciation of the S\$ nominal effective exchange rate (S\$NEER) policy band. In

**Chart 1.22**  
DLI, FI and Output Gap



<sup>4</sup> The DLI is a measure of overall monetary conditions, reflecting changes in the S\$NEER and domestic interbank rate.

<sup>5</sup> Please refer to the January 2002 issue of the *Review* for more details on the methodology used to calculate the FI measure.

October 2007, the policy stance was tightened through a slight increase in the slope of the band, in view of the pickup in inflationary pressures.

Before the announcement of the policy stance in October 2007, there was a general consensus in the market that MAS would maintain its policy of a modest and gradual appreciation, given the uncertainty emanating from the US subprime crisis at that time.

Consequently, MAS' decision to tighten monetary policy caught market participants by surprise, although they were quick to embrace the decision and some observers even suggested that MAS should tighten further given the pickup in inflation towards the end of 2007.

At the start of this year, there were continued calls for a tighter monetary policy stance, either through a steeper rate of appreciation or a re-centring of the policy band. However, as the outlook for the US economy deteriorated, others argued that MAS should maintain the October 2007 policy stance, given the uncertain external outlook. To some extent, this difference of opinion reflected the uncertainty with regard to the severity of the US downturn and its attendant effects on the domestic economy.

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**In April 2008, MAS re-centred the exchange rate policy band at the prevailing level of the S\$NEER, with no change to its slope or width.**

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On 10 April 2008, MAS announced in its Monetary Policy Statement (MPS) that it would re-centre the exchange rate policy band at the prevailing level of the S\$NEER (Chart 1.23), with no change to the slope or width of the policy band. This policy stance was formulated to moderate inflation against the backdrop of continuing external and domestic cost pressures, while providing support for sustainable growth in the economy. Section 3.6 provides a more detailed discussion of the monetary policy stance.

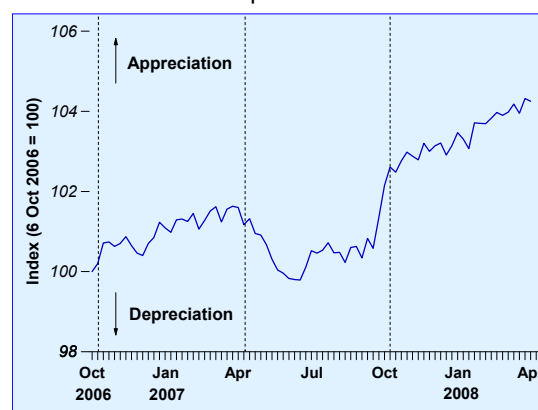
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**The S\$NEER has fluctuated in the upper half of the policy band in the past six months.**

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Over the past six months since the MPS in October 2007, the S\$NEER has fluctuated in the upper half of the policy band. (Chart 1.23) This took place against the broad-based weakness of the US\$, reflecting growing concerns over the economic fallout from the US subprime

**Chart 1.23**  
**S\$NEER**



Note: --- indicates release of Monetary Policy Statement

housing market, and the series of interest rate cuts – as well as expectations of such cuts – by the Federal Reserve.

**The S\$REER has risen in recent months due to increasing domestic price and cost pressures and the strengthening S\$.**

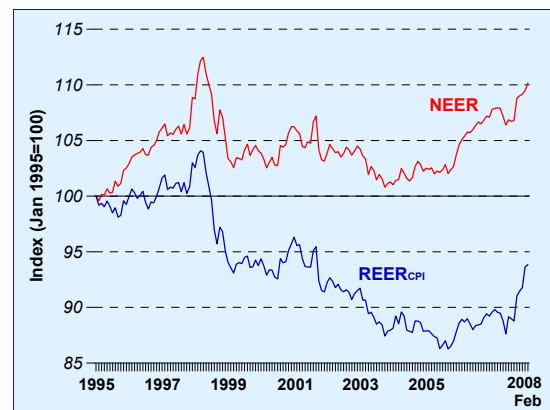
As a result of the strong appreciation of the S\$NEER and the escalation of price and cost pressures in the economy, the S\$ real effective exchange rate (S\$REER) has risen in recent months. Using monthly CPI as the price deflator, the S\$REER increased by 7.1% over the period July 2007 to February 2008 (Chart 1.24), with domestic price increases exceeding those of our trading partners. Controlling for the one-off direct effects of the GST hike in July 2007, the rise in the S\$REER was smaller at 5.7%. When deflated by quarterly manufacturing unit labour cost (ULC), the S\$REER posted an increase of 9.5% q-o-q in Q4 2007, bringing the appreciation to about 3% for the year as a whole, compared to average contractions of 4% per annum in the preceding five years. (Chart 1.25) Nevertheless, at its current level, Singapore’s real exchange rate remains fairly low, when compared to the longer-term historical trend.

**Liquidity conditions tightened in the last few months of 2007, before easing this year.**

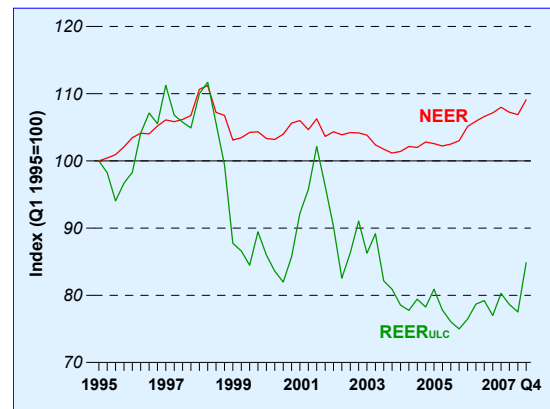
From August to December last year, the DLI was positive, suggesting a tightening in liquidity conditions. (Chart 1.26) This was predominantly due to the exchange rate component, reflecting the strengthening of the S\$NEER. However, since the beginning of 2008, liquidity conditions have eased, as shown by the switch in the DLI to negative territory. Over this period, the fall in interest rates has had a larger impact on liquidity conditions than the continued appreciation of the S\$NEER.

Since September last year, domestic interest rates have declined in tandem with the series of interest rate cuts in the US, as well as the trend appreciation of the S\$. The benchmark three-month domestic interbank rate fell by 144 bps from 2.75% in end-August 2007 to 1.31% as at end-March 2008, back to the prevailing level in the second half of 2004. (Chart 1.27) The decline was particularly sharp in January, when the Federal Reserve lowered the Fed funds rate by 75 bps on 22 January – the largest shift in interest rates since November 1994 –

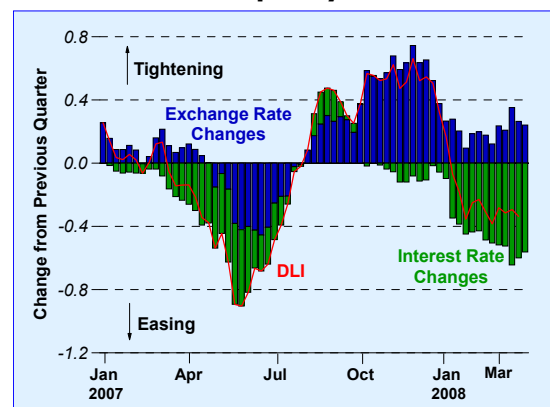
**Chart 1.24  
S\$REER deflated by CPI**



**Chart 1.25  
S\$REER deflated by ULC**



**Chart 1.26  
Domestic Liquidity Indicator**



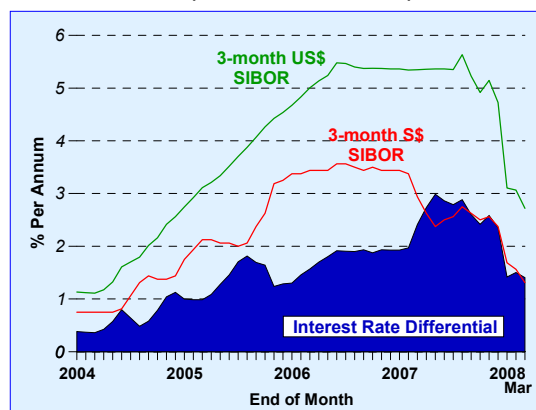
and by a further 50 bps at the end of the month. On 18 Mar 2008, the Fed slashed interest rates again by 75 bps to 2.25%.

With the fall in interbank rates, domestic mortgages have also become cheaper. Unlike in 2003, the mortgage war this time is reportedly more targeted, with banks offering promotional rates on a case-by-case basis, depending on the customer's loan quantum. Banks have also been introducing innovative packages – such as those with free re-pricings or fixed instalments for a specific period – to retain and attract new home loan customers. The drop in interbank rates has similarly affected deposit rates. The average 12-month fixed deposit rate for banks edged down from 0.85% at end-September 2007 to 0.71% at end-March this year. (Chart 1.28)

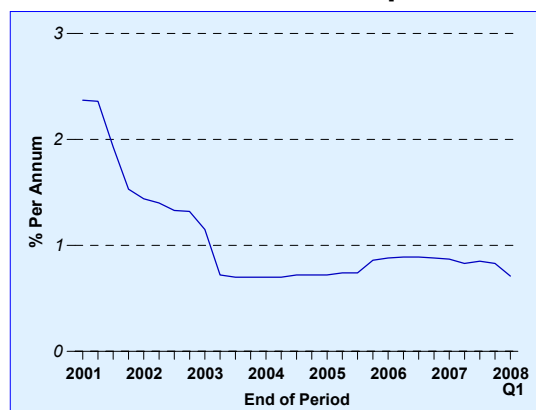
In line with strong economic activity and the low interest rate environment, domestic credit growth has outpaced deposit growth, leading to an increase in banks' loan-to-deposit ratio to 0.74 in Q4 2007. This compares with the trough of 0.68 in Q2 2007. (Chart 1.29) Growth of domestic credit activity in 2007 was boosted by steady expansions in non-bank loans. Alongside these conditions, broad money growth expanded at a healthy pace.

The monetary survey shows the combined assets and liabilities of the banking system in Singapore with respect to non-bank entities and non-residents, including the overall liquidity generated by the banking system on the liabilities side. The most recent survey revealed that the continuous rise in broad money growth since 2006 was due to the increase in the quasi-money component of M2 or fixed and savings deposits. However, demand deposits have recently become more important as a source of M2 expansion. In 2007, 29% of the \$35 billion increase in M2 was due to the rise in demand deposits, more than double its contribution to M2 growth (13%) in 2006. (Chart 1.30a) The asset side of the survey showed that the rise in bank liabilities was associated with an increase in domestic credit to the private sector, in line with the rise in bank intermediation activities and strong growth in domestic demand in 2007. (Chart 1.30b) There was a \$34 billion net increase in the combined assets of the banking system last year.

**Chart 1.27**  
**3-month S\$ SIBOR and US\$ SIBOR**

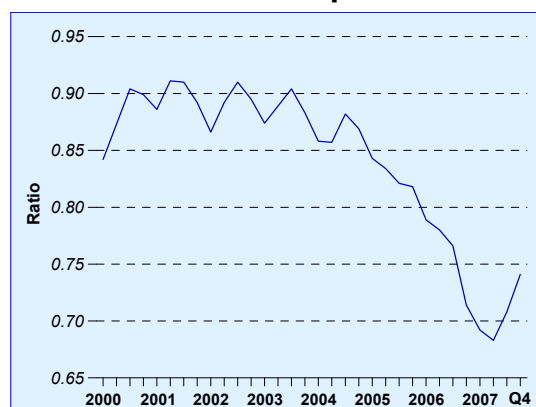


**Chart 1.28**  
**Banks' 12-month Fixed Deposit Rate**



Note: This is the simple average of the top 10 banks' 12-month fixed deposit rates.

**Chart 1.29**  
**Banks' Loan-to-Deposit Ratio**



**Monetary aggregates are endogenously determined by money demand.**

Given that Singapore maintains an open capital account, the robust growth of broad money in 2007 is largely an artefact of increased capital inflows. While this makes money supply appear to be driven by an exogenous rise in foreign demand for S\$ assets, this overlooks the fact that domestic money supply is endogenous owing to Singapore’s exchange rate-centred monetary policy regime.<sup>6</sup> Specifically, increased money supply reflects the underlying demand for money, which in turn is determined by the domestic interest rate (price effect) and overall activity in the economy (income effect).

**Income is a stronger determinant of money demand than interest rates.**

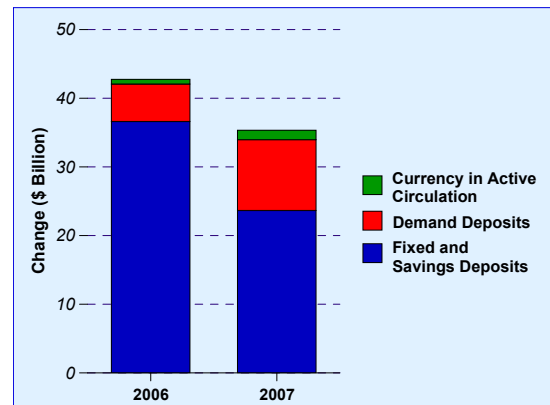
Given the structure of the Singapore economy, these two determinants of money demand have varying effects on the demand for money and hence money supply. Indeed, recent trends in economic growth, interest rates and the broad monetary aggregates provide some evidence for the relatively stronger influence of income effects over price effects on the demand and hence supply of money.

For 2007 as a whole, the Singapore economy grew by 7.7%. However, GDP growth excluding pharmaceuticals moderated to an average of 0.6% q-o-q SAAR in the second half of the year, even though interest rates declined. (Chart 1.31) M2 growth averaged 0.7% q-o-q SA in the second half of 2007, down from 5.8% q-o-q SA in the first half of the year. Given that moderating economic growth and declining interest rates have opposing effects on money demand, the slowdown in M2 growth suggests that the negative impact from slower economic growth more than offset the positive impact from lower interest rates.

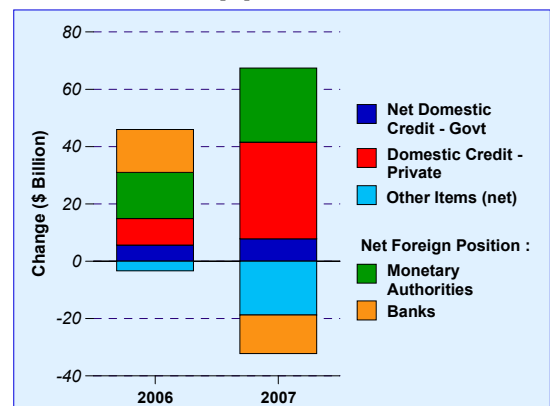
**Asset prices are underpinned by the underlying income and demand conditions in the economy.**

This stylised relationship between money demand, economic activity and interest rates also applies to equity and property market transactions. This is underscored by the recent run-up in property and equity

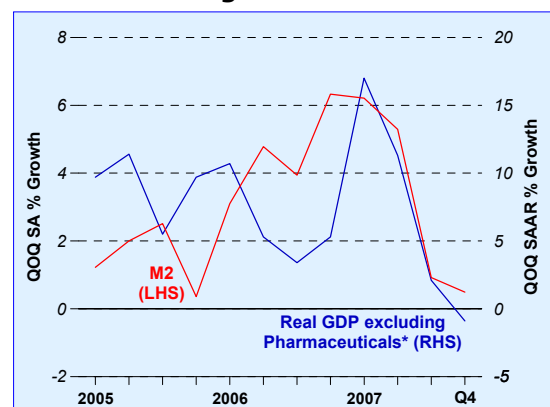
**Chart 1.30  
Monetary Survey  
(a) Liabilities**



**(b) Assets**



**Chart 1.31  
Broad Money Growth and GDP Growth  
excluding Pharmaceuticals**



\* EPD, MAS estimates

<sup>6</sup> In accordance with the “Open Economy Trilemma”, and given Singapore’s exchange rate-centred monetary policy regime and free capital mobility, the MAS has to accommodate any changes in money demand by injecting the requisite amount of liquidity into the system. Capital flows are therefore reflected in the underlying demand for money in Singapore.

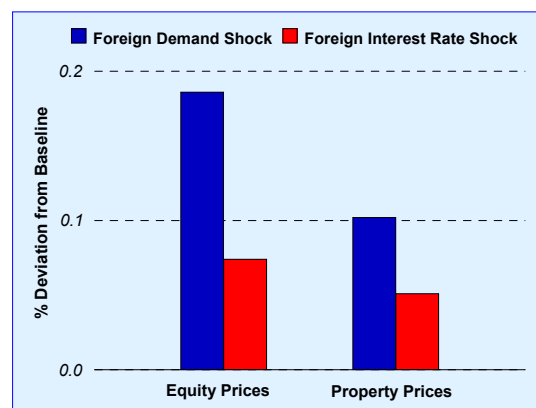
prices that have coincided with robust growth in M2. This linkage has been misunderstood by some analysts, who expressed concern that the increase in domestic liquidity, in and of itself, has fuelled the run-up in asset prices. However, as noted above, the factors behind the increase in liquidity are much more complex in view of Singapore's monetary policy framework.

To shed more light on this issue, EPD has developed a quarterly structural vector autoregressive model (SVAR) for the Singapore economy, which consists of a set of 12 key macroeconomic variables to capture the principal interactions within the economy, as well as the transmission mechanism of monetary policy in Singapore.<sup>7</sup> One of the desirable properties of a SVAR model is that it allows for contemporaneous relations among the variables as opposed to an unrestricted VAR specification where only lagged relationships are accommodated. Furthermore, the model allows for the specification of the number of lags for each variable in each reduced form equation.

The relevant set of variables (ordered from most exogenous to endogenous) includes foreign output, a measure of foreign interest rates, domestic asset prices, exports, domestic output, inflation, domestic interest rate and the exchange rate. The SVAR model allows for the analysis of the transmission effects of shocks through the key macroeconomic variables specified above. Each of these variables is associated with a structural equation and a corresponding shock. For example, the shock or innovation associated with the structural equation of foreign output is usually defined to be a foreign demand shock.<sup>8</sup>

Chart 1.32 shows the impact on asset prices from a positive shock to the foreign interest rate and foreign demand.<sup>9</sup> As Singapore is a small economy with a high degree of openness, domestic economic activity is clearly affected by exogenous changes in foreign demand.

**Chart 1.32**  
Effects of Foreign Demand and Interest Rate Shocks on Asset Price Inflation



Source: EPD, MAS estimates

<sup>7</sup> This project was undertaken in collaboration with Anthony Tay, Assistant Professor of Economics, Singapore Management University.

<sup>8</sup> The innovations are normalised by their standard errors so that the shocks and their effects can be reported in percentage terms.

<sup>9</sup> Foreign demand and foreign interest rate innovations are used to proxy for income and price shocks as these are the most exogenous variables in the SVAR specification.

Similarly, changes in foreign interest rates affect the domestic interest rate.<sup>10</sup> On average, the price effect on asset prices from a negative 1% point foreign interest rate shock is less than half of the income effect from a positive 1% foreign demand shock.<sup>11</sup> The smaller impact of interest rates on asset prices mimics their relatively weak relationship with the overall price level, which is the ultimate target of monetary policy over the medium term.

The empirical results thus confirm that asset prices in Singapore are largely driven by income effects rather than price (or cost of funds) effects. Asset price inflation reflects an underlying increase in income growth augmented in part by favourable sentiment towards domestic assets, which in turn leads to an increase in the demand for money to finance these transactions.

## Fiscal Policy

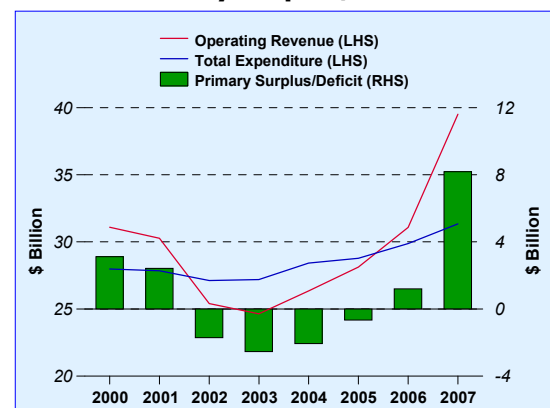
### The government's primary surplus hit an 11-year high in 2007.

The government recorded a primary surplus<sup>12</sup> of \$8.2 billion (3.4% of GDP) in CY2007, a marked increase from the \$1.2 billion surplus in 2006, and deficits averaging \$1.8 billion over 2002-05. (Chart 1.33) This was driven by strong gains in the government's operating revenue, which well exceeded the rise in its expenditure.

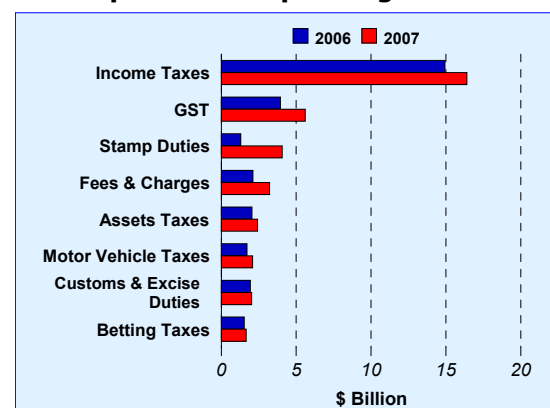
### Operating revenue was boosted by property-related taxes, income taxes and GST.

Operating revenue surged to a record high of \$39.5 billion (16.3% of GDP) in 2007, from \$31.1 billion in the previous year. In particular, property-related revenue such as stamp duty rose significantly, as a consequence of the buoyant private residential property market last year. (Chart 1.34)

**Chart 1.33**  
Primary Surplus/Deficit



**Chart 1.34**  
Components of Operating Revenue



<sup>10</sup> The Singapore economy is generally well-characterised by the uncovered interest parity (UIP) relation. Indeed, as shown in the October 2006 issue of the *Review*, the differential between US and domestic interest rates continues to be largely "explained" by the expected appreciation of the S\$ against the US\$. Given that this is constrained by the policy band, the ability of domestic interest rates to affect money demand is largely dictated by the variability of world interest rates.

<sup>11</sup> This is supported by our findings in the October 2007 issue of the *Review* that Asian financial markets provide another channel through which shocks in the US could be transmitted to Asian economies in the short term since Asian financial markets have become increasingly correlated with those in the US.

<sup>12</sup> This is defined as operating revenue (excluding net investment income) less operating and development expenditure.

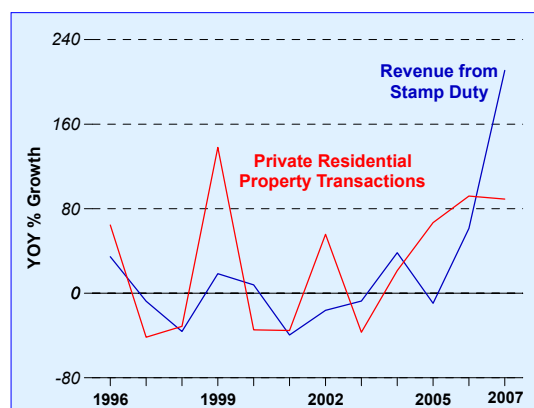
Stamp duty collected in 2007 amounted to \$4.1 billion, an approximately threefold increase from 2006. This took place amidst a booming property market, with both the number of private property transactions and prices rising significantly. (Chart 1.35) At the same time, stamp duty was boosted by the withdrawal of the stamp duty deferment concession with effect from December 2006.<sup>13</sup> This meant that stamp duty takings came not only from new property sales in 2007, but also from deferred payments in previous years. For the whole of 2007, stamp duty accounted for 10% of the government's total operating revenue, the third largest source of tax revenue after income taxes (42%) and GST (14%).

Although stamp duty collections surpassed asset taxes, custom and excise duties, motor vehicle-related taxes, and betting taxes in terms of its contribution to operating revenue, they tend to be volatile and driven by market sentiment, and cannot be relied upon as a main source of funding for regular expenditures.

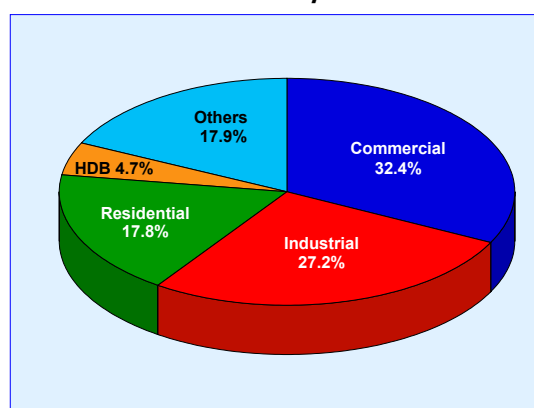
Property tax collections, which form the bulk of asset taxes, also increased last year, due to the rise in both the number of private residential, commercial and industrial units, as well as their values. According to data from IRAS, HDB flats typically account for less than 5% of total property tax collected, compared to around 18% for private residential property (Chart 1.36), even though there are about 3.5 times more HDB flats than private residential homes. This reflects the lower Annual Values (AVs) of HDB flats, as well as the property tax rebates that have been granted by the government.<sup>14</sup> Moreover, as part of the GST Offset Package announced in the FY2007 Budget, all owner-occupied residential properties will be given an additional property tax rebate of up to \$100 per year in 2008 and 2009. As a result, 90% of all HDB flat owners will not pay more property tax in 2008 despite the increase in the AVs of their flats.

Against the backdrop of robust economic growth over the past two years and strong wage growth, averaging around 5% in 2006-07, income taxes grew by \$1.5 billion to a high of \$16.4 billion in 2007.<sup>15</sup> This was in

**Chart 1.35**  
**Property Cycle and Stamp Duty Collection**



**Chart 1.36**  
**Property Tax by Property Type, FY2006/07**



<sup>13</sup> The concession was introduced in June 1998 as part of the off-Budget measures to cushion the impact of the economic slowdown. The concession allowed property buyers to pay the stamp duty at a later date. Without the concession, property buyers are required to pay the stamp duty within 14 days from the date of acceptance of the Option to Purchase.

<sup>14</sup> As of 2007, the owners of all 1-room, 2-room and 13% of 3-room HDB flats did not have to pay property tax because their property tax liability has been offset by property tax rebates given by the government since 1994 when GST was introduced.

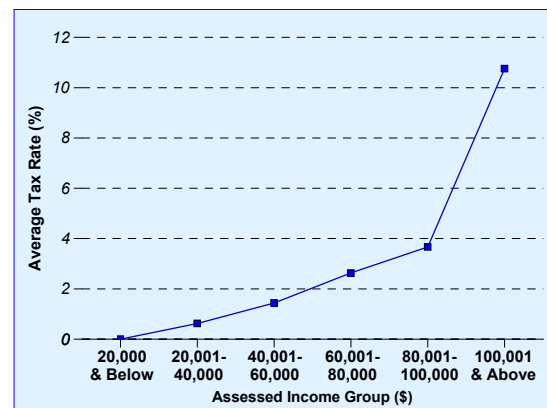
<sup>15</sup> Income tax assessment is based on a preceding year basis. Companies are required to file their tax returns three months after the close of their financial year based on their estimates of chargeable income for that year.

spite of the reduction in the top personal income tax rate from 21% to 20%, with comparable reductions in all other tax brackets.

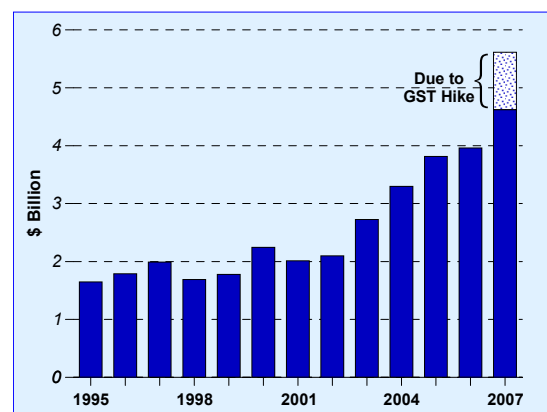
Based on IRAS data, a total of \$3.8 billion of income taxes were collected from approximately 745,000 resident individuals with total assessable income of \$60 billion for the Year of Assessment (YA) 2006. This implies an average tax rate or ratio of net tax assessed to assessable income of 6.3%.<sup>16</sup> Given the progressive nature of the personal income tax structure, the average tax rate increases with income, as shown in Chart 1.37. In fact, the average tax rate is less than 5% for the majority (about 80%) of resident taxpayers, with only the top 20% of income earners paying an average tax rate of 11%. About three-fifths of employed residents in Singapore also do not need to pay income taxes, as their chargeable income falls below the threshold of \$20,000.

Another source of tax revenue which grew significantly last year was GST. The government collected \$5.6 billion of GST in 2007, compared with \$4.0 billion in the previous year. (Chart 1.38) Out of the \$1.6 billion increase, more than half (about \$1 billion) was due to the hike in the GST rate from 5% to 7% with effect from 1 Jul 2007 which netted a 3.2% growth in revenue for the government. For Singaporeans in general, the tax impact was largely neutral in the first six months of the new GST rate, against the GST credits and senior citizens' bonus (\$0.7 billion), other GST offsets (\$0.4 billion) and Workfare Income Supplement (\$0.3 billion) given out in FY2007.

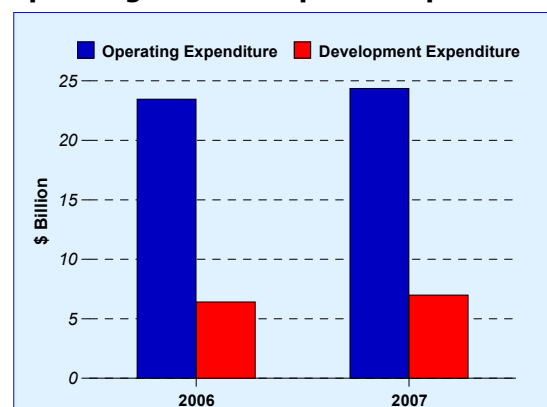
**Chart 1.37**  
**Average Tax Rate by Income Group**



**Chart 1.38**  
**GST Collections**



**Chart 1.39**  
**Operating and Development Expenditure**



**Both operating and development expenditure rose in 2007.**

On the expenditure side, total government spending rose by \$1.5 billion in 2007 to \$31.3 billion (12.9% of GDP), with increases in both operating and development expenditure. (Chart 1.39)

The government spent \$24.4 billion (10.0% of GDP) on operating expenses last year, an increase of \$0.9 billion from 2006. The bulk of this increase came from education expenditure (Chart 1.40), reflecting, in part, the higher bonus payout to staff, revision in the salary schemes for education officers and executive & administrative staff, as well as the hiring of more

<sup>16</sup> The headline personal income tax rate is assessed on chargeable income rather than assessable income, with chargeable income = assessable income less personal reliefs.

education officers. Spending on education typically accounts for about a quarter of total operating expenditure by the government. In 2007, the ratio was 27%.

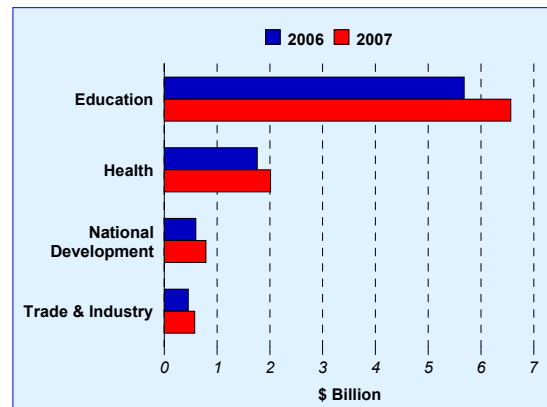
Besides education, operating expenditure on health also increased – albeit by a smaller magnitude of \$0.3 billion. The additional funds were used to support higher manpower costs due to salary revisions in the civil service, new initiatives by the Health Promotion Board, and more funding for the restructured hospitals and Voluntary Welfare Organisations to ensure that healthcare remained affordable to the general public.

Meanwhile, development expenditure was \$0.6 billion higher at \$7.0 billion (2.9% of GDP) in 2007, largely as a result of increased spending by the Ministries of National Development, and Trade and Industry. (Chart 1.41) For the former, more funds were used for the HDB’s Selective En bloc Redevelopment Scheme (SERS) and the upgrading of HDB flats and estates under the Public Housing Development programme. For the latter, there was higher expenditure on projects such as the Science & Technology Plan 2010 and Formula One Project.

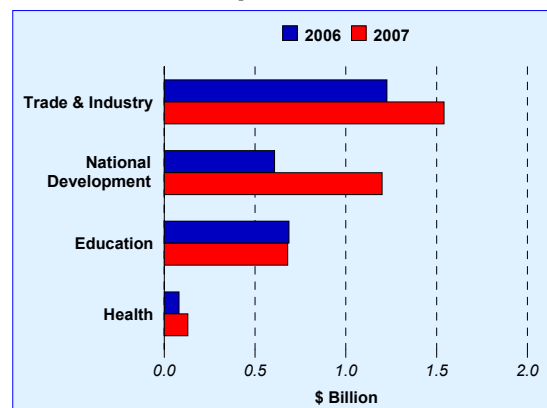
**The fiscal policy stance was contractionary in 2007.**

The FI measure provides a useful summary of the overall fiscal stance, with a positive value indicating a more expansionary stance and vice versa. Given the better-than-expected budget outturn, the FI measure was negative at -2.9% of GDP in 2007. (Chart 1.42) As it turned out, this contractionary stance was not inappropriate, given the strong growth in domestic economic activity and acceleration in domestic cost pressures in the latter half of 2007.

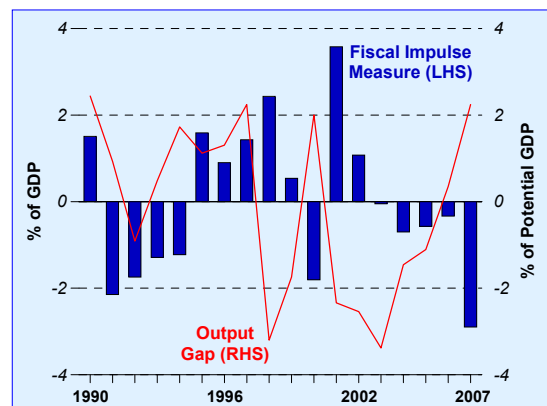
**Chart 1.40**  
Selected Components of Operating Expenditure



**Chart 1.41**  
Selected Components of Development Expenditure



**Chart 1.42**  
Fiscal Impulse Measure



## CHAPTER 2

# WAGE-PRICE DYNAMICS

## 2.1 Labour Market

### Singapore saw record job creation in 2007.

Driven by robust economic growth since 2004, net employment grew by an unprecedented 234,900 or 9.4% in 2007, far surpassing the previous peak of 176,000 (7.6%) in 2006. (Chart 2.1) As indicated by the Employment Diffusion Index<sup>1</sup>, almost all industries contributed to this record job creation. (Chart 2.2)

### Manufacturing, construction, financial and business services recorded the largest employment gains.

Manufacturing employment rose by 49,300 in 2007 (Chart 2.3), with the transport equipment industry accounting for almost two-thirds of the new jobs created. Since taking over electronics as the largest manufacturing employer in 2005, the transport equipment industry has witnessed strong employment growth averaging 23% per annum. Meanwhile, electronics employment shrank by 600 in 2007, the first decline since 2004, as it reverted to the downsizing trend it had witnessed for most of the last 15 years.

The construction boom saw total contracts awarded hit an all-time high of \$24.5 billion in 2007. As a result of the numerous residential and mega commercial projects, 40,400 jobs were created in this sector in 2007, twice that of 2006.

Employment in the services sector grew by 143,100 in 2007, propelled by strong hiring in the financial and business services sectors. The financial services sector hired nearly twice as many people (21,900) in 2007 compared to a year earlier, reflecting the cyclical upturn as well as Singapore's growing role as an international financial centre. Last year, UK's Standard Chartered became the first international bank to make Singapore its global private banking headquarters. Several other private banks, such as Lombard Odier Darier Hentsch, Nomura Wealth Management and BHI Switzerland, also established bases in Singapore, further fuelling the demand for fund managers, relationship managers and operations staff. For the business services sector, employment rose by 41,700 last year, boosted by the

Chart 2.1  
Total Employment Growth

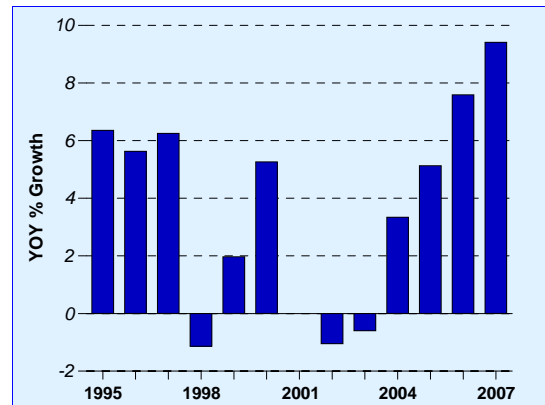
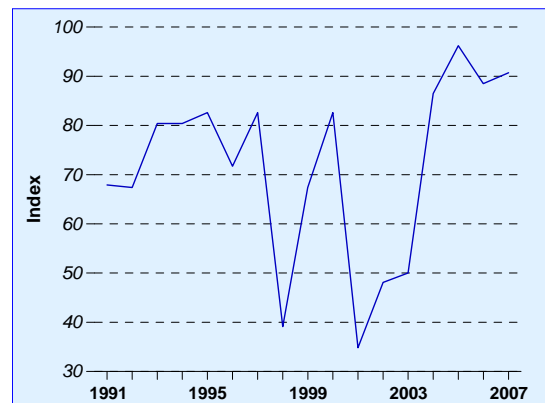
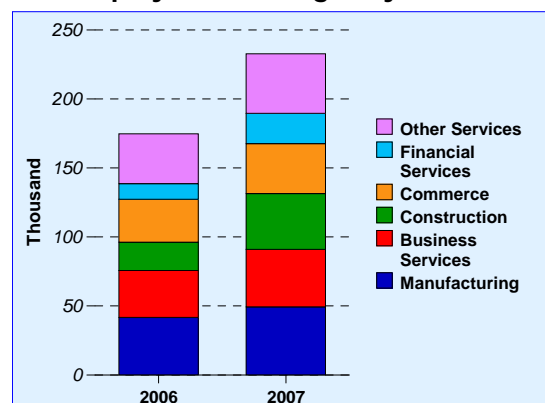


Chart 2.2  
Employment Diffusion Index



Source: EPD, MAS estimates

Chart 2.3  
Employment Changes by Sector



Note : Business Services comprise Real Estate & Leasing Services, Professional Services and Administrative & Support Services. Commerce includes Wholesale & Retail Trade and Hotels & Restaurants.

<sup>1</sup> The index is equal to 100 when all industries are increasing employment and zero when all are decreasing employment. An index of 50 indicates an equal balance between industries with increasing and decreasing employment.

real estate market boom and the strong intermediate demand for legal and accountancy professionals from other industries.

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### Labour market conditions tightened further in 2007.

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As a result of strong job creation, the overall unemployment rate dropped to a decade low of 1.6% in December last year. For the whole of 2007, it averaged 2.1%, down significantly from 2.7% in 2006. Similarly, the resident unemployment rate fell to 3.0% in 2007, from 3.6% in 2006.

As at December 2007, there were 37,400 job vacancies, representing a 17% increase from December 2006. The ratio of vacancies to unemployed persons surged to a high of 1.38, indicating that there were 138 job openings for every 100 job seekers. (Chart 2.4)

With the resident labour force participation rate breaching 65% since 2006, there were insufficient local workers to meet the surge in labour demand. (Chart 2.5) Last year, local employment increased by 90,400, slightly less than the 90,900 in 2006. Correspondingly, much of the rise in labour demand was met by foreign workers. The total number of employed foreigners increased by an unprecedented 144,500 in 2007 and brought the Foreign Dependency Ratio to a new peak of 33%, up from 30% in 2006. This suggests an increasing reliance on foreign labour to support economic growth beyond the limits of the indigenous workforce.

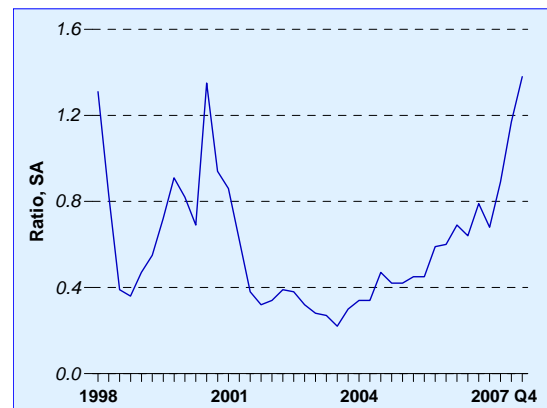
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### Retrenchment fell to a 14-year low.

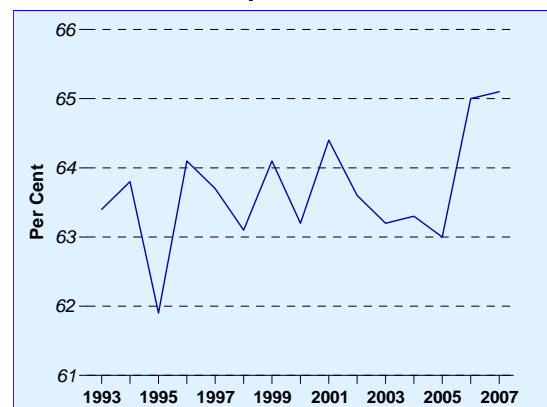
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In tandem with the robust labour market, the number of retrenched workers fell across all sectors to 7,700 in 2007, a substantial drop from 12,600 in 2006. (Chart 2.6) In particular, the manufacturing sector recorded the largest decrease, mainly due to the fewer number of layoffs in the electronics industry (from 6,500 in 2006 to 2,600 in 2007). Nevertheless, manufacturing still accounted for the largest share (69%) of retrenched workers. Production & related workers continued to be the most vulnerable group, accounting for 43% of retrenched residents in 2007, which was disproportionately higher than their share in the workforce (22%). (See Box A at the end of this Chapter.)

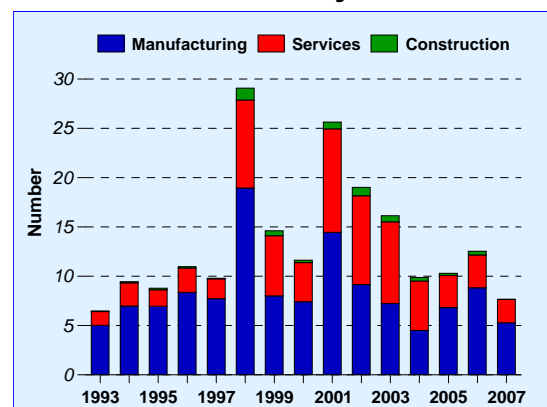
**Chart 2.4**  
Ratio of Job Vacancies to Unemployed Persons



**Chart 2.5**  
Resident Labour Force Participation Rate



**Chart 2.6**  
Retrenchment by Sector



### Real wage gains outpaced productivity growth in 2007 ...

Nominal wage growth peaked at 8.5% in Q2 2007, before easing to 6.9% in Q3 and 4.3% in Q4. (Chart 2.7) This partly reflected the easing of wage pressures in the real estate segment (business services sector) as the property market cooled. For 2007, overall wage growth was 6.2%, up from 3.2% in 2006. This followed generally subdued wage increases averaging 2.6% per annum in the preceding five years.

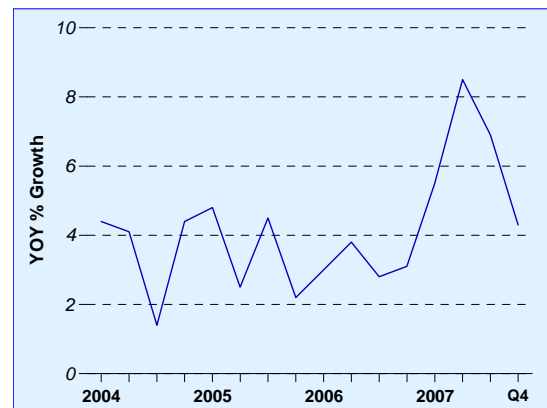
Accounting for inflation, real wages rose by 4.0%, compared to 2.2% a year ago. All sectors experienced an increase in real wages, with transport & storage and financial services recording the largest rises of 5.6% and 5.4% respectively. Local employees in manufacturing experienced the smallest increase in real wages of 1.9%.

In contrast to strong wage growth, labour productivity growth showed some cyclical weakness due primarily to the surge in hiring. Total value added per worker shrank by 0.9% in 2007, after rising by 2.8% in 2005 and 1.5% in 2006. Controlling for the number of hours worked, labour productivity measured by value added per hour worked declined by 1.1% in 2007, following growth of 2.3% in 2005 and 2.1% in 2006. The difference in the two measures follows from the increase in hours worked in 2007 compared to 2006.

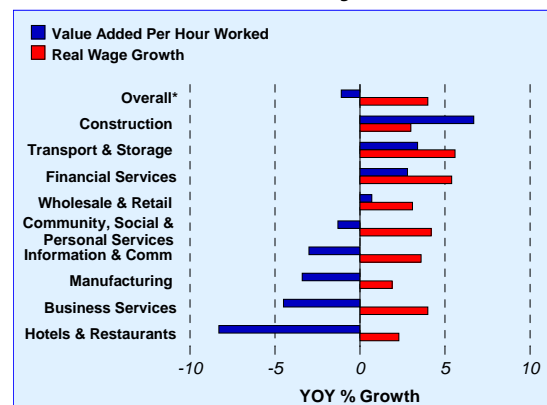
A decomposition of growth in labour productivity, as measured by value added per hour worked by sector, showed that labour productivity in 2007 contracted the most in labour-intensive service sectors, such as hotel & restaurants (-8.3%) and business services (-4.5%). (Chart 2.8) Manufacturing productivity growth also turned negative from 3.4% in 2006 to -3.4% in 2007, due to a surge in total hours worked while output growth slowed.

Meanwhile, the strong growth sectors, such as construction, transport & storage, and financial services, continued to post firm cyclical productivity gains of 6.7%, 3.4% and 2.8% respectively last year. Productivity growth for construction employees staged a dramatic comeback after five years of contraction, as the hefty 20% expansion in construction output exceeded the 12% increase in employment and the slight increase in average hours worked per worker. Although productivity growth remained positive in wholesale & retail trade (0.7%), it was considerably lower than the stellar growth rates averaging 10% y-o-y

**Chart 2.7**  
Nominal Wage Growth



**Chart 2.8**  
Real Wage Growth and Value Added Per Hour Worked Growth by Sector, 2007



\* EPD, MAS estimates

Note: Business Services include Real Estate & Leasing Services, Professional Services and Administrative & Support Services.

in the previous five years. The decline in productivity growth was due to a sharp slowdown in output growth, which was compounded by high employment growth and an increase in hours worked per worker.

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**... although they have mostly moved in tandem over the past few years.**

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During an economic upturn, companies tend to increase the hours of work of the existing workforce, subject to constraints such as the labour law or union rules, while stepping up recruitment at the same time. As such, growth in value added per hour worked tends to be lower than growth in value added per worker. This appeared to be the case, to some extent, during 2004-07 when the domestic labour market was on the mend. However, in 1998-2003, when the economy was hit by several shocks, the reverse was true as companies cut back on overtime work. (Table 2.1)

Nevertheless, productivity growth has largely kept pace with real earnings growth when they are averaged over a longer time period.

## 2.2 Consumer Price Developments

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**CPI inflation picked up in H2 2007 and Q1 2008.**

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Domestic headline CPI inflation averaged 2.1% for the whole of 2007, higher than the 1.0% in 2006. This was in line with the forecast of around 2% made during the October 2007 policy review.

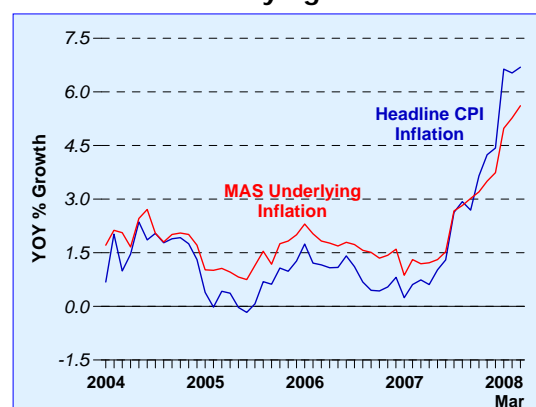
In H1 2007, inflation was benign at 0.8%, due mainly to the lagged impact of falling oil prices – during the period August 2006 and January 2007 – on domestic energy-related items. However, inflation rose to 3.4% in H2 2007 and 6.6% in Q1 2008. (Chart 2.9)

The MAS underlying inflation rate, which excludes accommodation and private road transport costs, followed a similar profile. For the whole of 2007, it stood at 2.2%, compared to 1.7% in 2006. In Q1 2008, it rose to 5.3% due to higher oil and food prices.

**Table 2.1**  
**Labour Productivity and Real Wages**

	Annualised Growth (%)	
	1998-2003	2004-2007
Value Added Per Hour Worked	2.7	2.4
Value Added Per Worker	2.2	2.6
Real Wage	2.8	2.8

**Chart 2.9**  
**CPI Inflation and MAS Underlying Inflation**



### Rising consumer prices reflected a confluence of external and domestic factors.

The pickup in CPI inflation in H2 2007 can be attributed to three main factors. First, global oil and food commodity prices have surged, while the pass-through to domestic consumer prices has increased amidst rising domestic business costs. As a result, the contribution of food and direct energy-related items<sup>2</sup> to CPI inflation rose from 0.1% point in H1 2007 to 0.9% point in H2 2007 and 2.6% points in Q1 2008.<sup>3</sup> (Chart 2.10) Second, the 2% point hike in the Goods and Services Tax (GST) in July 2007 contributed up to 1.4% points to CPI inflation in H2 2007 and Q1 2008. Third, reflecting the buoyant property market, rising accommodation costs added 0.5% point and 1.4% points to inflation in Q4 2007 and Q1 2008 respectively.

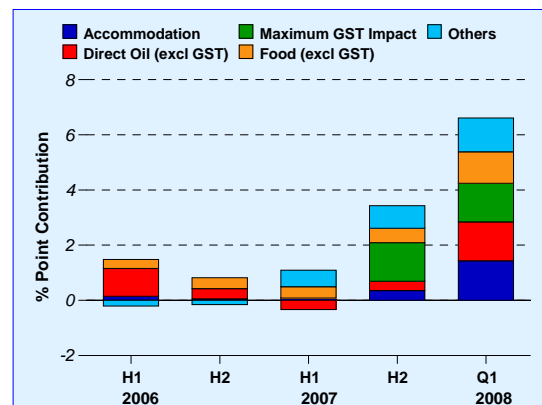
The step-up in inflation, however, was not unique to Singapore. As seen from Chart 2.11, soaring food and oil prices have led to a sharp rise in the global inflation rate, which rose from 3.2% in January 2007 to 5.4% in January 2008, the highest in nearly eight years.

### Oil-related inflation increased as global oil prices soared.

Global oil prices have been on the rise since early 2007, hitting a new record of US\$119.90 per barrel in April 2008, more than double the average price in January 2007. This was due to tight market conditions as global demand for oil remained high, while supply was constrained by production capacity, geopolitical tensions and low OECD inventories that dipped below the previous five-year average. Given these developments, oil commodities have become more attractive investments compared to equity and fixed income assets. This has prompted speculative flows into the energy market, which has driven up oil prices further.

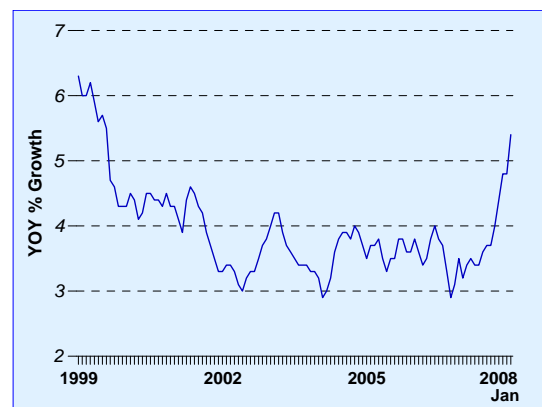
Following the run-up in oil prices, domestic prices of electricity, petrol and gas were also revised upwards. Notably, electricity tariffs were raised in three consecutive quarters (Q3 2007-Q1 2008) by a total of 21%. Similarly, the CPI for petrol and liquefied petroleum gas (LPG) went up by about 20% since June 2007. (Chart 2.12) Indirect pass-through effects<sup>4</sup> from

Chart 2.10  
Contribution to CPI Inflation



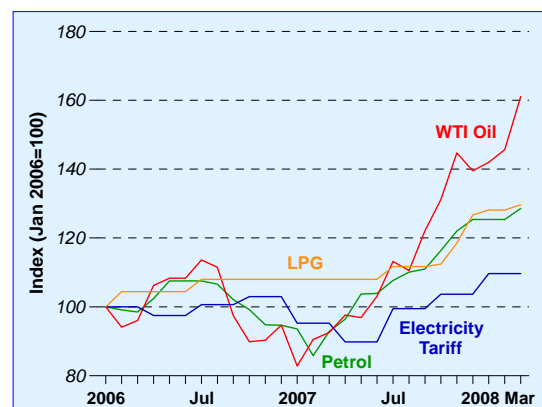
Source: EPD, MAS estimates

Chart 2.11  
World CPI Inflation



Source: IMF

Chart 2.12  
WTI Oil Prices, Electricity, Petrol and LPG CPI



Source: Bloomberg for WTI oil prices

<sup>2</sup> Direct energy-related items in the CPI basket are electricity, residential piped gas, LPG and petrol.

<sup>3</sup> The estimated impact of the GST hike on these items was excluded from the computations.

<sup>4</sup> Indirect energy-related items are public road transport, other travel & transport and cooked food.

higher global oil prices were also more prominent in H2 2007 and Q1 2008, particularly for transport operators. Mounting fuel costs prompted taxi and public bus operators to raise fares, and also airlines to increase fuel surcharges.

As a result, the contribution of direct and indirect oil-related items to headline inflation jumped from 0.1% point in H1 2007 to 0.9% point in H2 2007 and a hefty 2.5% points in Q1 2008. (Chart 2.13)

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### Global food prices rose sharply in H2 2007 and early 2008 ...

---

Global food price inflation intensified in H2 2007 and early 2008. The IMF food and beverage commodity price index surged by an unprecedented 34% between July 2007 and March 2008 (Chart 2.14), with sharp price increases across a wide spectrum of food commodities, ranging from staple crops to meat and dairy products.

A number of long-term structural factors served to drive up global food prices in H2 2007. In particular, rising affluence in populous developing countries such as China and India spurred demand for meat and dairy products, while mounting oil prices pushed up demand for biofuel crops, resulting in acreage competition. At the same time, the prolonged drought in Australia and the export restrictions/taxes imposed by some countries also constrained food supply, driving up global food prices.

On top of these factors, there was also a boom in “investment demand” for commodities as exchange-traded commodities have evolved into an investment class of their own. In recent months, the bearish stock market has induced investment funds to switch out of stocks into commodities, helping to push food prices to record highs. (See Box B in Chapter 3 for more details on global food price inflation.)

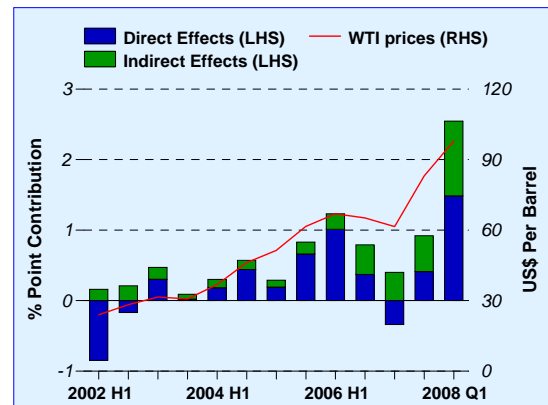
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### ... with increasing pass-through to domestic food prices.

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As a price taker in the world market, Singapore has been directly impacted by soaring global food prices. The domestic import price index (IPI) for food registered a sizeable gain of 7.3% in 2007 and 13% in Jan-Feb 2008, compared to an average annual increase of 0.7% over 2000-06. (Chart 2.15)

**Chart 2.13**  
Contribution to CPI Inflation from Oil-related Items



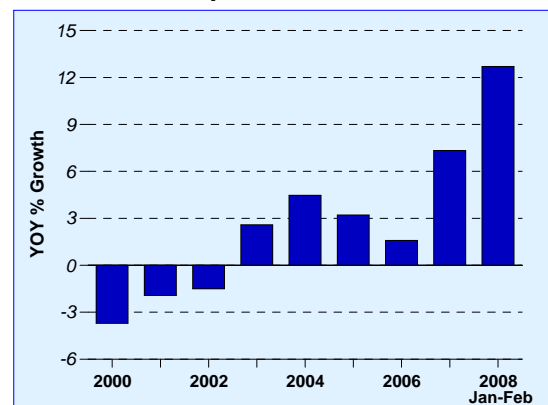
Source: Bloomberg for WTI oil prices; EPD, MAS estimates for pass-through effects.

**Chart 2.14**  
IMF Food and Beverage Commodity Price Index



Source: IMF

**Chart 2.15**  
Food Import Price Inflation



The sharp increase in imported food prices has fed through to various consumer non-cooked food items. For instance, strong global demand for biofuels, such as palm oil and soybean oil, has led to a substantial 33% increase in the cooking oils & fats component of the CPI since the end of 2006. Prices of meat & poultry also rose by 12% over the same period due to higher animal feed costs, while prices of dairy products and eggs jumped 14% owing to tight supplies. There were marked increases in the prices of bread, biscuits and noodles (subsumed under the rice & cereal component of the CPI) as bakeries and producers faced soaring wheat flour prices. Prices of non-alcoholic beverages also rose due to escalating prices of cocoa, coffee beans and milk. (Chart 2.16)

At the same time, significant increases in transport and electricity charges, alongside higher rentals and wage costs, have pressured domestic cooked food retailers to raise prices substantially. (Chart 2.17) Overall, the non-cooked food and cooked food components of the CPI rose by 9.9% and 6.2% respectively since the end of 2006, compared to an average annual increase of about 1.0% each over 2000-06.

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**Food price inflation in Singapore has been lower than that in many other countries.**

---

Although non-cooked food prices in Singapore have been on an uptrend, the extent of the increase has been relatively moderate. For example, while global food commodity prices (as proxied by the IMF food and beverage commodity price index) have risen by about 92% since 2003, domestic prices of non-cooked food have increased at a more subdued rate of around 20%.

Overall food price inflation has also been milder in Singapore relative to its main import sources. Chart 2.18 compares overall food prices in Singapore with a trade-weighted index of food CPI of its top six import source countries – Malaysia, Australia, Indonesia, China, Thailand and the US – which together account for 65% of Singapore's food imports. Between Q1 2003 and Q1 2008, food prices in the major import countries shot up twice as fast as that in Singapore.

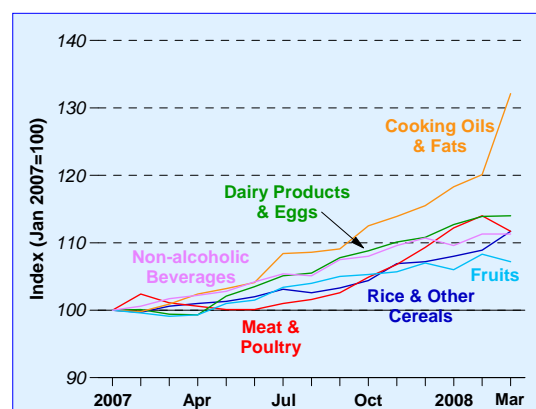
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**Accommodation costs in the CPI accelerated, due to the upturn in the property market.**

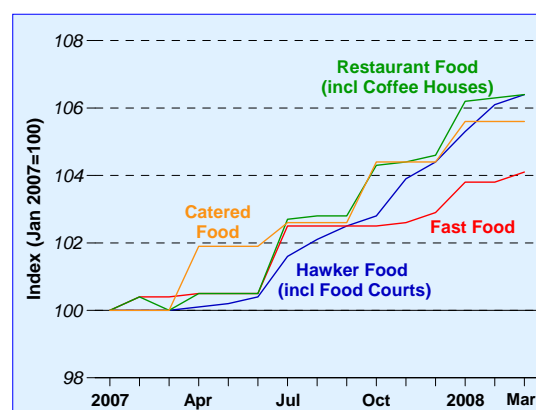
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Turning to domestic sources of inflation, apart from the GST hike, a major factor behind the recent step-up in inflation was the rise in accommodation costs. In 2007,

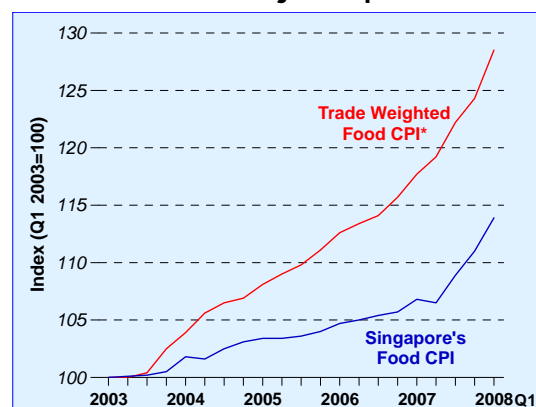
**Chart 2.16**  
**Selected Non-cooked Food CPI**



**Chart 2.17**  
**Cooked Food CPI**



**Chart 2.18**  
**Singapore's Food CPI and Weighted Food CPI of Six Major Import Sources**



\* EPD, MAS estimates

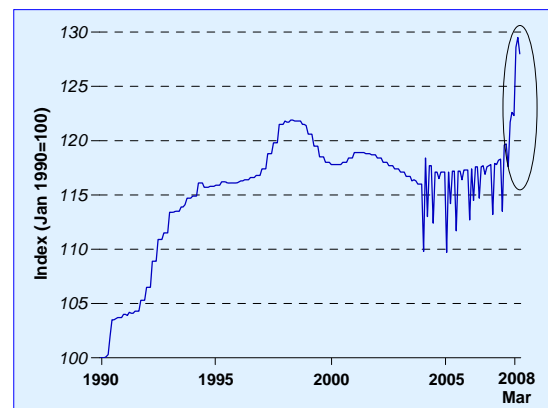
the private residential property price index increased by 31%, while the HDB resale price index strengthened by 17%. These gains were much stronger than the respective 10% and 2% increases in 2006. In the CPI, owner-occupied housing costs are computed on the basis of imputed rents, i.e. the expected rental that a property would fetch if it was leased. Imputed rents are in turn based on the AV of the properties, as assessed by IRAS for tax purposes. With the significant rise in the rentals of both HDB flats and private properties over the last two years, their AVs have been revised upwards. Accommodation costs in the CPI thus surged from 1.3% y-o-y in Q1 2007 to 11% in Q1 2008. (Chart 2.19)

### **Domestic consumer services registered larger price increases due to intensified cost pressures.**

Meanwhile, prices of consumer services in the CPI have stepped up in tandem with rising business costs. For instance, child care centres and commercial educational institutions revised their fees upwards at the start of 2008, which in turn pushed up the CPI for school, tuition & other fees by 3.4% m-o-m in January, the largest increase since July 1991. (Chart 2.20) The 2.0% jump in the costs of dental treatment in January 2008 was also substantial compared to the past. Similarly, significant gains were seen in the cost of medical treatment, particularly by private institutions, as well as in the cost of other consumer services, such as recreation and entertainment.

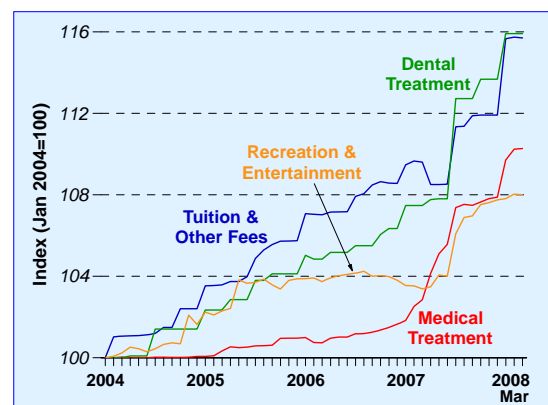
Indeed, recent indicators point to mounting cost pressures for businesses. The Unit Business Cost Index (UBCI) for the manufacturing sector rose by 4.5% y-o-y in Q4 2007, the seventh consecutive quarter of growth and the most rapid rate of increase since Q4 2001. This was mainly due to the sharp rise in the Unit Labour Cost (ULC) as well as government rates and fees. The latter can be attributed to higher property tax payments arising from the run-up in property prices. Similarly, the Unit Services Cost Index (USCI) – EPD's gauge of cost pressures in the services sector – posted strong growth of 9.1% y-o-y in Q3 2007 and 10% y-o-y in Q4 2007. (Chart 2.21) The increase in costs was evident across all the service industries. Overall, rentals contributed about 39% to the increase in the USCI in Q4 2007 while labour costs accounted for another 24%. Other components, such as transport costs, also saw substantial gains.

**Chart 2.19  
Accommodation Cost CPI**

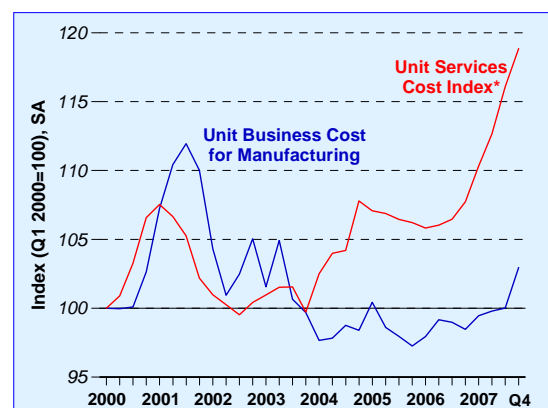


Note: Since 2005, rebates for S&C charges and rents, previously excluded from the CPI, were incorporated as part of the new methodological changes introduced in the rebased CPI. As the rebates are given out only in certain months of the year, they introduce significant variation to the monthly accommodation cost CPI.

**Chart 2.20  
CPI of Selected Consumer Services**



**Chart 2.21  
Unit Business Cost Index and  
Unit Services Cost Index**



\* EPD, MAS estimates

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**Unit labour costs rose in H2 2007 ...**


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The ULC rose by 6.1% y-o-y in Q4 2007, double that of a quarter earlier. The seasonally-adjusted ULC index climbed to its highest level since Q2 2003. (Chart 2.22) The jump in the ULC in 2007 came on the back of strong wage growth, coupled with negative productivity growth of -0.9%. Nominal wages increased by 6.2% in 2007, the fastest growth since 2000, as the strong momentum in job creation persisted into H2 2007.

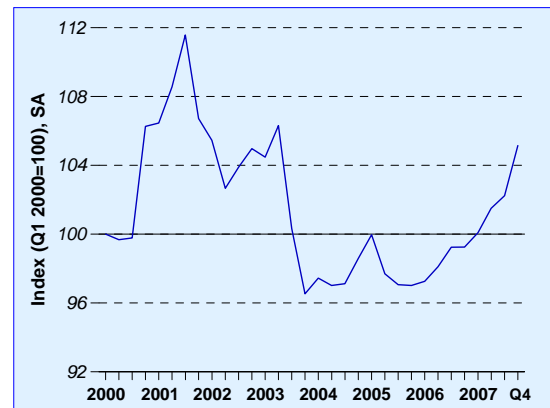
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**... while rental costs escalated further.**

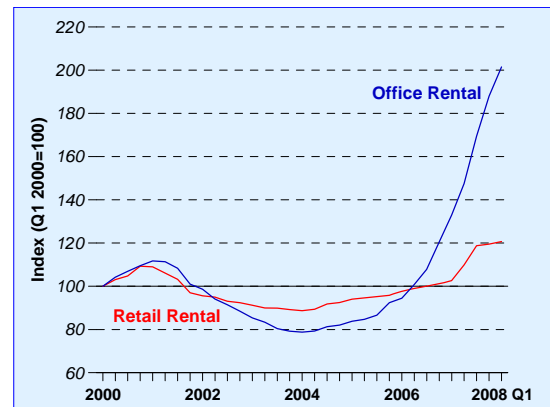

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Commercial rentals continued to rise, underpinned by supply constraints and robust business expansion. Office rental in the central region surged by 27% in H2 2007 and 7.3% in Q1 2008, after jumping some 22% in H1 2007 and 30% in 2006. Retail space rental in the central region also rose, by 8.8% in H2 2007 and 1.0% in Q1 2008, following increases of 8.6% and 5.6% in H1 2007 and 2006 respectively. (Chart 2.23)

**Chart 2.22**  
Unit Labour Cost Index



**Chart 2.23**  
Office and Retail Rentals in the Central Region



**Box A****Job Tenure and Re-employment of Lower-skilled Workers in Singapore*****Introduction***

New dynamics have emerged in the domestic labour market as Singapore restructures its economy towards higher value added activities. For example, job losses occur alongside job creation even within an expanding sector, and there is a broader adoption of new labour market practices such as fixed tenure contractual employment. In addition, there has been a fall in the average job tenure across all occupational groups in Singapore, especially in the last two years, as shown by the increasing share of resident employees who have been working for less than a year in their current jobs. (Table A1) These developments have implications for job stability and job security, particularly for the lower-skilled workers.

**Table A1**  
**Share of Resident Workers who are Less than a Year into their Current Jobs**

(%)

	2001	2002	2003	2004	2006	2007
PMETs	20.1	15.0	15.6	16.6	20.2	20.3
Clerical, Sales & Services	25.4	21.6	21.6	25.3	27.8	27.9
Production & Related	20.4	20.5	20.6	23.0	24.7	24.2

Source: MOM

Note: PMETs are Professionals, Managers, Executives and Technicians

Data for 2005 is unavailable as the June Labour Force Survey was not conducted that year, on account of the General Household Survey 2005 carried out by the Department of Statistics. Data exclude full-time National Servicemen and self-employed.

A recent study by the Federal Reserve Bank of San Francisco by Valletta (2007) also noted a similar development in the US, with the median job tenure of employees falling in tandem with a rising proportion of "involuntary job losers" among the newly unemployed. For example, between 1983 and 2006, job tenure fell 30-38% on average for men aged 35-64.

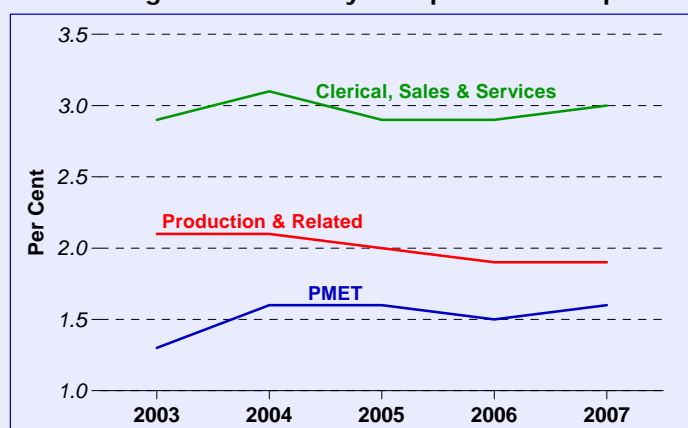
In this box, we review the available evidence on job tenure and re-employment in Singapore. Our findings suggest that shorter job tenure for the lower-skilled production & related workers could be involuntary due to structural changes in the economy, which also may have lowered their incidence of successful re-employment. This group accounted for about one-fifth of all employed residents in June 2007.

***Involuntary Reasons Behind Falling Job Tenure for Production & Related Workers***

It should be noted at the outset that shorter tenures could simply reflect increased job-hopping in a robust job market. However, it could also mean less job stability if workers are unable to stay in their jobs for reasons beyond their control, such as retrenchment, cessation of business, and the completion of employment contract.

In Singapore, the resignation rate, a proxy indicator for voluntary turnover, fell between 2003 and 2007 for production & related workers, while it increased for clerical, sales & services workers and PMETs. This could indicate that the shorter tenure for the relatively less skilled production & related workers is likely to be involuntary. In comparison, the shorter tenure observed for the clerical, sales & services workers and PMETs could be more a consequence of voluntary job-switching as evident from the pickup in resignation rates. (Chart A1)

**Chart A1**  
**Resignation Rates by Occupational Group**



Source: MOM

This hypothesis is supported by the vulnerability ratio, which is the resident retrenchment share over the resident employment share. The ratio shows that the “vulnerability” of production workers has increased since 2003 despite the recovery of the labour market. In comparison, clerical, sales & services workers and PMETs have seen a decline in their vulnerability ratios from the highs in 2003-04 and 2002 respectively. In addition, production & related workers are now more susceptible to retrenchment even when compared to 2001-2003, when the labour market was in the doldrums. (Table A2) Not surprisingly, the percentage of resident unemployed who cited retrenchment as the main reason for leaving their previous job was higher for production & related workers at 14%, compared to 11% and 9.2% for PMETs and clerical, sales & services workers, respectively in June 2007.<sup>1/</sup>

**Table A2**  
**Vulnerability Ratio<sup>2/</sup>**

	2001	2002	2003	2004	2006	2007
PMETs	0.9	1.0	0.9	0.8	0.8	0.8
Clerical, Sales & Services	0.7	0.9	1.0	1.0	0.6	0.6
Production & Related	1.7	1.4	1.4	1.6	1.9	1.9

Source: MOM and EPD, MAS estimates.

Data for 2005 is unavailable as the June Labour Force Survey was not conducted that year, on account of the General Household Survey 2005 carried out by the Department of Statistics. Before 2006, data pertain to private sector establishments with at least 25 employees. From 2006 onwards, the public sector is also included.

Aside from retrenchment, contract work could be another factor behind the shorter tenure of lower-skilled workers as it tends to be short-term in nature. Indeed, the share of resident production & related workers who were contract employees in 2007 was the highest at 19%, compared to 13% and 8% for clerical, sales & services workers and PMETs respectively.

<sup>1/</sup> Report on Labour Force in Singapore 2007.

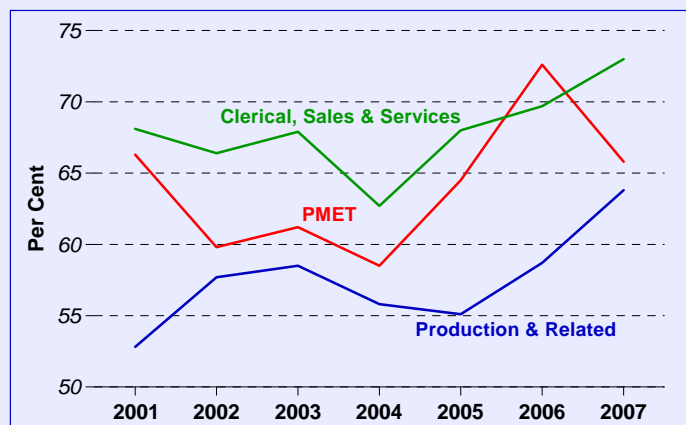
<sup>2/</sup> A ratio exceeding one indicates the group is more vulnerable to retrenchment.

### ***Structural Changes in Singapore could have Asymmetrically Impacted Lower-skilled Workers***

The increasing incidence of involuntary falling tenure observed among lower-skilled local employees despite the healthy job market may be attributed to structural shifts in the economy, which could render certain skills obsolete or increase “churn” for lower-skilled jobs. The impact on the manufacturing sector would be more apparent given the unrelenting restructuring in this sector towards higher capital and knowledge-intensive activities in recent years.

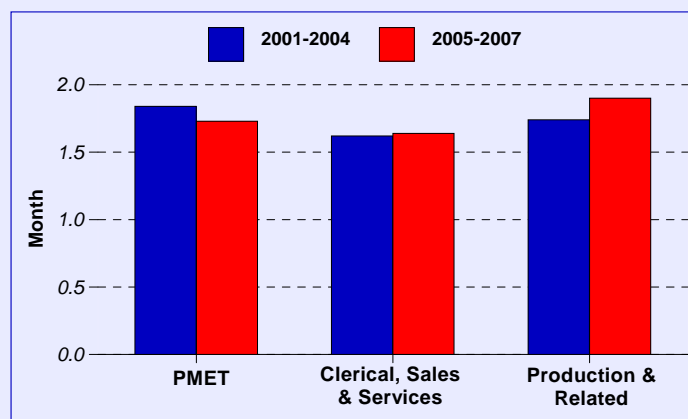
These structural changes in the economy may have contributed to the relatively weaker prospects for re-employment of lower-skilled workers. The average re-employment rate (within six months after retrenchment) of retrenched production & related workers is the lowest among the occupational groups. (Chart A2) In addition, the average time taken by retrenched production & related workers to secure new jobs is higher than that for the other occupations and has even increased in the recent 2005-07 period compared to when the labour market was far weaker in 2001-04. (Chart A3)

**Chart A2**  
**Re-employment Rate of Retrenched Residents by Occupational Group**



Source: MOM

**Chart A3**  
**Average Time taken by Retrenched Residents to Secure a New Job by Occupational Group**



Source: MOM

**Sum Up**

The data reviewed here suggest that production & related local workers in Singapore may face the prospect of involuntary decline in job tenure in conjunction with a relatively lower rate of re-employment. To assist these lower-skilled workers, the Singapore government has made considerable effort to improve their employability. For example, the Singapore Workforce Skills Qualifications (WSQ) system and the Singapore Employability Skills System (ESS) were introduced as alternatives to formal academic qualifications, such as the 'N' and 'O' levels, for use as entry criteria into occupations and training programmes. In particular, the WSQ Certificate in Generic Manufacturing Skills assists production & related workers to upgrade and certify their skills, and also facilitates the transition of retrenched workers to growing industries within the manufacturing sector. In 2007, for example, 5,500 companies adopted either or both programmes in their recruitment or staff development policies. In addition, the government implemented the Workfare Income Supplement (WIS) Scheme for older lower-wage workers that year. CPF contribution rates were reduced for these employees and their employers, and offset by the bi-annual WIS payouts into their CPF accounts. The WIS scheme will increase these workers' employability and take-home pay, and also build up their savings for retirement. These policies should go some way towards improving the job prospects of the lower-skilled in Singapore.

**Reference**

Valletta, R (2007), "Anxious Workers", *Federal Reserve Bank of San Francisco Economic Letter*, No. 13.

## **CHAPTER 3**

# **OUTLOOK**

## 3.1 External Outlook

### Subdued Growth Ahead

#### Weaker global growth in 2008 ...

The global economy is expected to slow in 2008, led by the US and other developed economies, amidst falling asset prices and tighter credit conditions. This will have a negative impact on Asia ex-Japan, although the region's more diversified export markets, robust corporate and household balance sheets, and limited exposure to US mortgage-backed securities should cushion the downside to growth. However, at this juncture, the global economic environment is highly uncertain and a more adverse outcome cannot be ruled out. Notably, there is the risk of negative feedback between the real and financial sectors in the US, where slower economic growth could lead to further falls in house prices and greater defaults on consumer and corporate loans. These in turn could cause banks to tighten credit standards and further depress economic activity. In the event that the US economy experiences a deeper and more protracted downturn, the contagion to the rest of the world, including Asia ex-Japan, will be more significant, and global growth will be much weaker than is currently envisaged.

#### ... led by downturn in the US and other developed economies.

Compared to the forecasts made in October 2007, the outlook for the global economy in 2008 has softened sharply, owing largely to lower growth projections for the major industrial economies. (Table 3.1) The growth revision broadly mirrors the movement in the OECD Composite Leading Indicators for developed economies, which have been declining since June 2006. (Chart 3.1)

The US economy is likely to experience another year of sub-trend growth in 2008. Economic activity is expected to be sluggish and may contract in H1 2008 as the fallout from the housing market correction spills over to the wider economy. The consequent increase in job losses, coupled with rising inflation, will erode real personal income, which will then weigh on household consumption.

**Table 3.1**  
Forecasts of GDP Growth

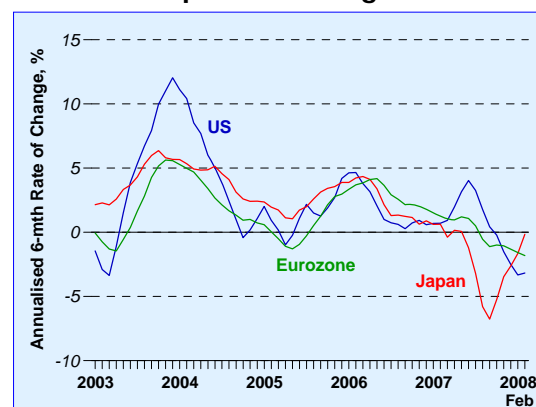
	Oct 07	Apr 08	
	2008F	2008F	2009F
<b>Total*</b>	<b>4.6</b>	<b>3.9</b>	<b>4.2</b>
Industrial Countries*	2.2	1.5	1.9
US	2.4	1.3	2.1
Eurozone	2.0 <sup>#</sup>	1.5	1.7
Japan	1.9	1.3	1.7
NIE-3*	5.0	4.5	4.8
Hong Kong	5.2	4.7	4.9
Korea	5.1	4.5	4.8
Taiwan	4.6	4.1	4.6
ASEAN-4*	5.7	5.5	5.6
Indonesia	6.2	5.9	5.9
Malaysia	5.9	5.5	5.6
Thailand	4.8	4.7	5.0
Philippines	5.8	5.3	5.4
China	10.7	9.9	9.3
India (FY)	8.2	7.7	8.2

Source: Consensus Economics Inc., October 2007 and April 2008

\* Weighted by shares in Singapore's non-oil domestic exports.

# Data for Eurozone covers 13 member countries.

**Chart 3.1**  
OECD Composite Leading Indicators



Source: Datastream

The economy is expected to improve somewhat in the second half of the year, when the government's US\$150 billion (around 1% of GDP) fiscal package for households and businesses takes effect. As at April 2008, the consensus forecast for US economic growth this year stood at 1.3%, a full percentage point below the forecast in October 2007.

In the Eurozone, GDP growth is also forecast to moderate in 2008. In particular, increased uncertainties owing to turbulence in the financial markets and tight credit conditions will continue to subdue domestic demand, while softer external demand and the strong euro will constrain export growth. The weaker growth outlook is also consistent with the continued fall in a number of forward-looking indicators in March, including the consumer confidence and Purchasing Managers' indices. (Chart 3.2)

Meanwhile, the near-term prospects for the Japanese economy have worsened. The Tankan Business Conditions Diffusion Index has declined steadily (Chart 3.3), while business confidence is at a three-year low. Corporate profits in Japan have also fallen, as producer costs rose sharply and export earnings were dampened by the strong yen. Private consumption is also likely to soften, as real income has declined steadily over the last six months.

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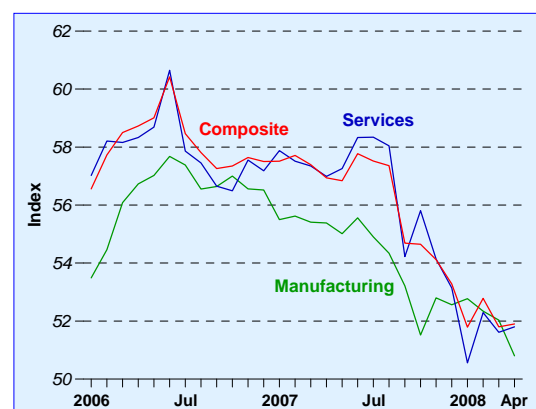
#### **A number of mitigating factors could help cushion the slowdown in Asia ex-Japan.**

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While growth in Asia ex-Japan will slow in tandem with the easing in the G3 economies, the slowdown will be mitigated by several factors.

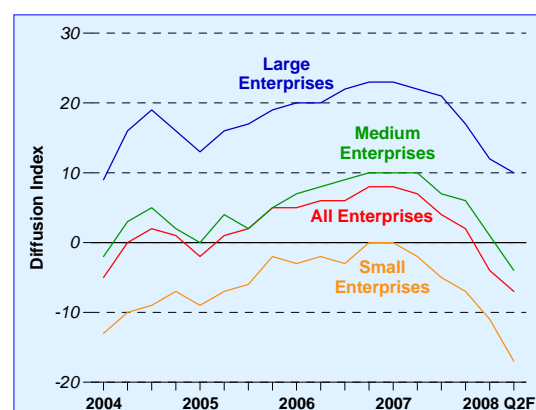
First, domestic demand in Asia is expected to remain relatively firm, as household and corporate balance sheets are generally healthy. (Tables 3.2 & 3.3) Moreover, primary producers in Southeast Asia will benefit from high commodity prices. The strong pipeline of FDI approvals in 2007 will also support business investment, and strong fiscal positions will allow some governments to pump-prime the economy, should it become necessary.

**Chart 3.2**  
**Eurozone PMI**



Source: Reuters

**Chart 3.3**  
**Japan Tankan Survey of Business Conditions**



Source: Bank of Japan

**Table 3.2**  
**Asian Household Indebtedness**  
(% of GDP)

	2003	2004	2005	2006	2007
Mortgage					
NEA	26.8	27.6	29.0	30.3	29.9
SEA	9.4	10.0	10.5	10.5	10.4
Non-mortgage					
NEA	14.5	15.2	16.1	15.7	15.9
SEA	12.0	12.4	13.0	12.4	12.1
Total					
NEA	41.3	42.8	45.1	46.0	45.8
SEA	21.5	22.4	23.5	22.8	22.5

Source: CEIC

Note for Table 3.2 and 3.4: NEA comprises Hong Kong, Korea and Taiwan; SEA comprises Indonesia, Malaysia, the Philippines and Thailand.

Figures are averages weighted by 2006 nominal GDP.

Due to rounding, figures may not sum to total.

Second, Asian banks have strengthened their balance sheets after the Asian crisis and have limited exposure to US mortgage-backed securities. (Table 3.4) They are thus better positioned to cope with external shocks, and credit tightening in the developed markets will be less likely to impinge upon real economic activity in the region.

Third, while exports to the US are likely to slow, this will be partly cushioned by shipments to the emerging economies in the Middle East, Eastern Europe and Latin America.

**Table 3.3**  
**Financial Ratios of Non-financial Corporations (Median)**  
(%)

	2003	2004	2005	2006	2007
Return-on-Assets					
NEA	4.7	5.2	4.8	5.0	6.6
SEA	4.8	5.3	5.0	5.3	5.7
Debt-to-Equity Ratio					
NEA	42.9	43.0	41.3	39.2	33.9
SEA	33.1	32.7	35.5	34.9	32.5

Source: Thomson Financial

Note: NEA comprises China, Hong Kong, Korea, and Taiwan; SEA comprises Indonesia, Malaysia, the Philippines and Thailand.

**Table 3.4**  
**Selected Ratios of Asian Banks**  
(%)

	2003	2004	2005	2006	2007*
Non-performing Loan Ratio					
NEA	N/A	2.0	1.4	1.2	1.0
SEA	10.8	9.0	7.6	6.2	4.9
Capital Adequacy Ratio					
NEA	12.2	12.7	12.7	12.6	12.1
SEA	16.2	16.4	16.3	16.7	15.8

Source: CEIC

Note: Figures are simple averages.

\* Latest available figures.

## The US-Asia “Weak Synchronicity” Hypothesis – Some Evidence from Recent Trade Data

### Can regional demand offset US weakness?

The US-Asia decoupling hypothesis has continued to be keenly debated, amidst the weakening of the US economy and the still-firm performance in much of Asia. An earlier study of this issue in the *Review*<sup>1</sup> concluded that Asian exports remained vulnerable to a downturn in the US – and more broadly to a downturn in the G3 economies – because final demand for goods manufactured in Asia ultimately originated from the developed countries. However, the study also pointed

<sup>1</sup> “Revisiting the US-Asia Decoupling Hypothesis” may be found in the October 2007 issue of the *Review*.

out that there could be some scope for substitution of demand in Asia in the short run if the US and Asia were experiencing only “weak synchronicity” in economic activity, rather than a decoupling. Thus, in the event of a relatively mild downturn in the US economy, other regions of the world could provide some short-term buffer to Asian growth.

To shed more light on the validity of the weak synchronicity factor in explaining growth in Asia, the rest of this section looks at the recent trade performance in the East Asian region.<sup>2</sup>

### Regional export performance appears resilient despite slowing US economic activity ...

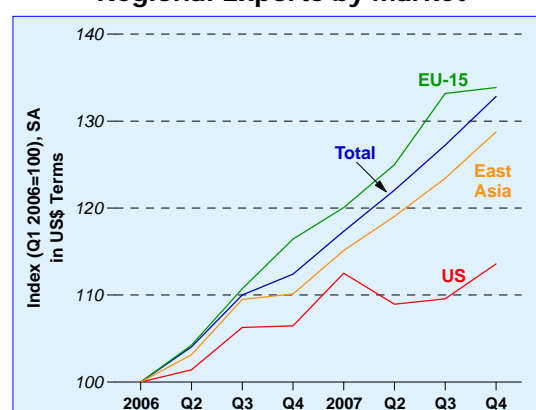
Recent regional export data indicate that growth momentum has held up, even though US economic activity weakened significantly in Q4 last year, due to higher intra-regional demand.

Indeed, while regional exports to the US have been lagging for several quarters, exports between countries in the East Asian region have continued to post robust growth. (Chart 3.4) Intra-regional exports contributed some 1.5% points to an average quarterly growth of around 4%, outstripping the 0.3% point contribution for exports to the US market. (Chart 3.5) This trend has held up in the first quarter of 2008, based on available data for China, Korea, Singapore and Taiwan.

### ... supported by strong domestic demand, especially from China.

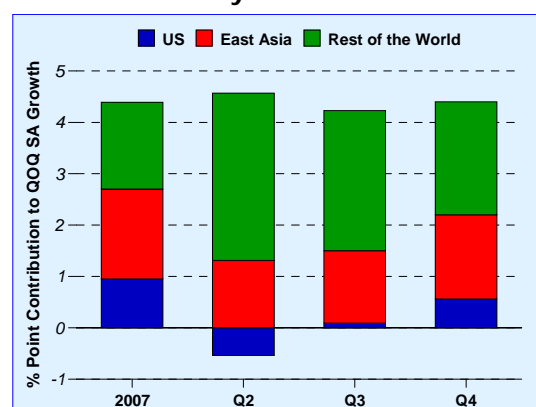
Strong export growth in East Asia has been supported by domestic demand, which has grown more rapidly in 2007 than on average between 2001 and 2006. (Chart 3.6) In particular, China’s domestic demand expanded by almost 12% last year, compared with the average growth of 10% over 2001-06. As shown in Chart 3.7, China is also the largest source of domestic demand in the region, accounting for 54% of East Asia’s domestic demand in 2007. This represents a significant jump from the 44% share in 2000.

**Chart 3.4**  
Regional Exports by Market



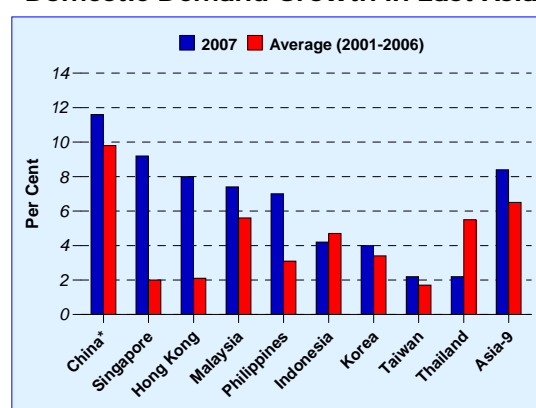
Source: CEIC

**Chart 3.5**  
Contribution to Regional Export Growth by Market



Source: CEIC

**Chart 3.6**  
Domestic Demand Growth in East Asia



Source: CEIC

\* EPD, MAS and United Nations estimates as no official series is available.

<sup>2</sup> East Asia refers to China, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

The rising importance of China is also borne out by data from the 2000 Asian Input-Output tables, which traces the region's production networks and the final destination of regional exports. Specifically, the size of final demand for the region's exports from the US and from China was compared. US final demand for regional exports was estimated to be close to 8.8 times that of China in 2000. Factoring in the rapid growth of China's domestic economy since then, EPD estimates that this ratio has fallen to around 5 times in 2007. This suggests that while the US market continues to be the region's main export destination, growing Chinese final demand has become increasingly able to buffer the region from a slowdown in the US economy, at least over the short term.

### Northeast Asian economies feed China's increasing appetite for consumer electronics ...

The expansion in China's demand for regional exports benefited the Northeast Asian economies the most last year. China's imports from Taiwan and Korea continued to grow by double-digits in 2007, bolstered mainly by strong Chinese demand for electronics products. (Chart 3.8)

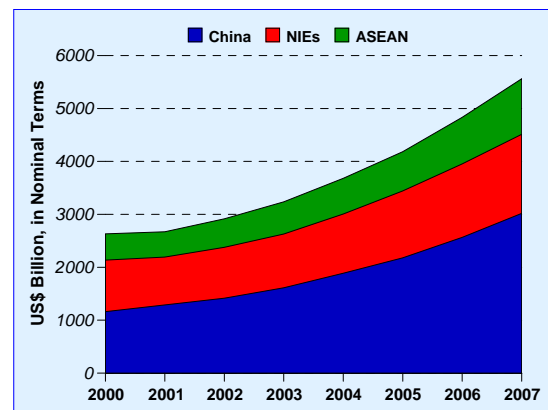
In particular, as market leaders among component makers and Original Design Manufacturers of key consumer electronics products, Taiwanese and Korean companies saw strong growth in the exports of handsets and flat-panel TVs to China last year. Indeed, consumer electronics contributed most to Korea's electronics exports to China in 2007. (Chart 3.9)

### ... while some ASEAN countries have also benefited from China's industrial expansion.

A number of resource-rich Asian economies have also been able to tap into China's demand for industrial inputs and commodities, which power its rapid industrial expansion. (Chart 3.10) For instance, China's imports of primary commodities from Malaysia surged by 71% last year, on account of higher imports of palm oil, while China's imports of capital equipment from Thailand saw a 41% expansion over the same period.

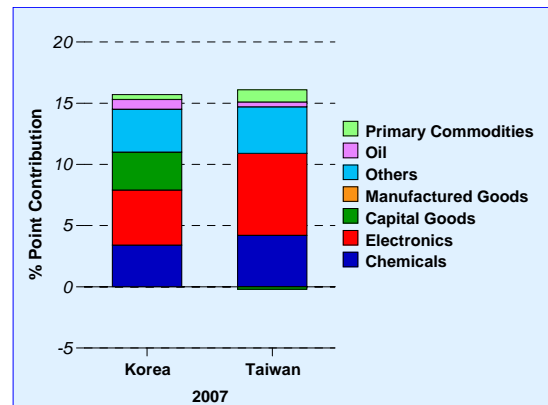
Going forward, notwithstanding some moderation in overall economic growth, domestic demand drivers in China should remain firm. In particular, favourable labour market conditions built up during recent strong

**Chart 3.7**  
Domestic Demand in East Asia



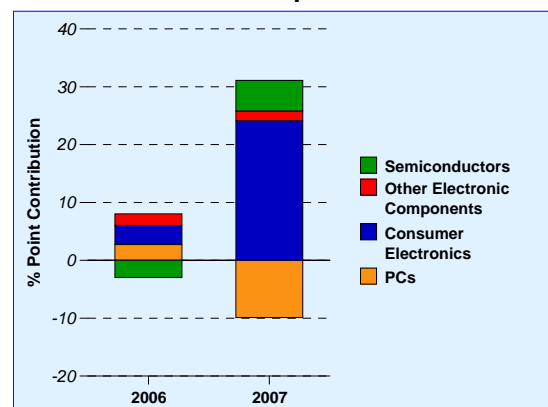
Source: CEIC

**Chart 3.8**  
China's Imports from Korea and Taiwan



Source: CEIC

**Chart 3.9**  
China's Contribution to Korea's Electronics Export Growth



Source: UN Comtrade

growth will help maintain momentum in household spending. Moreover, while business margins may narrow amidst rising costs, corporate profits in China are likely to remain relatively high, thus lending some support to investment.

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### Other emerging economies have grown rapidly as export markets for East Asia.

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Besides intra-regional demand, buoyant demand from emerging markets has also provided some support to East Asia's export growth, albeit from a much smaller base. Indeed, regional exports to the Gulf Cooperation Council (GCC),<sup>3</sup> such as electronics and machinery and equipment, have surged in recent years to meet the construction needs of the booming Gulf economies. (Chart 3.11)

However, the Middle East market still accounts for a very small fraction of East Asia's exports. Only 3.3% of the region's exports were destined for the Middle East in the first eleven months of last year. Nonetheless, the Middle East could become a more important market going forward.

Indeed, the rapid rise of oil prices in recent years has fuelled a flurry of infrastructure and real estate projects funded by Middle Eastern wealth, which should contribute to strong employment and income growth. The consequent expansion in development expenditure and household spending should then stimulate further demand for capital equipment and manufactured goods exports from the region.

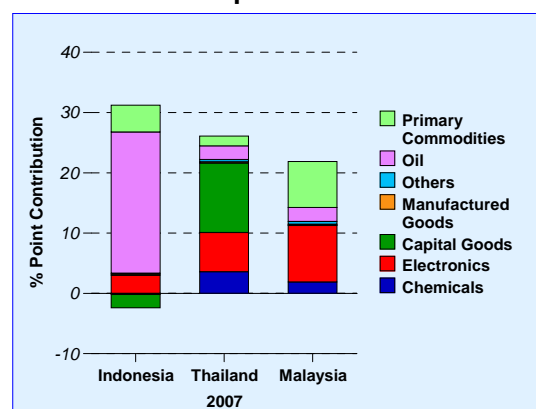
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### Some short-term substitution is evident in the trade patterns of regional exporters.

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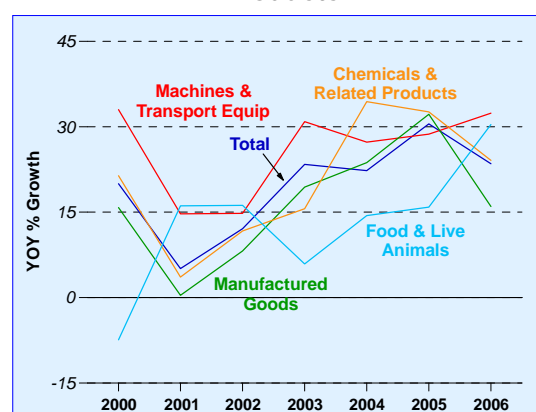
Thus, based on the latest trade data, there appears to be some short-term substitution taking place as regional countries seek out further opportunities in the growing China and Middle East markets to partially offset the drag in US import demand. If this continues, the hypothesis of weak synchronicity between the US and Asia could materialise, although it is necessary to continue monitoring export performance closely to see if these trends persist.

**Chart 3.10**  
China's Imports from ASEAN



Source: CEIC

**Chart 3.11**  
Regional Exports to the GCC by Products



Source: UN Comtrade

<sup>3</sup> GCC refers to Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates (UAE).

## 3.2 Global IT Outlook

### A Turn for the Worse

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**The outlook for the global IT sector has weakened.**

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During the last quarter of 2007, there were indications that the global IT market had turned the corner, with capacity cutbacks trimming the chip inventory overhang and global semiconductor capacity utilisation – a forerunner of global chip sales – showing signs of recovery.

While these supply-side adjustments have continued in recent months, prospects for the global IT industry have been somewhat dampened by weak demand conditions in the G3 markets. Against this backdrop, the anticipated rebound in the global IT industry may not materialise this year. Barring a severe downturn in the US economy, the industry is still expected to show small positive growth in 2008.

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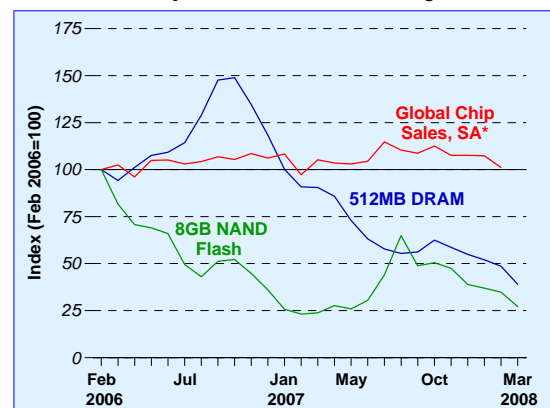
**Global IT supply and demand trends have diverged.**

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Compared to 2007, global industry dynamics are expected to be very different for 2008. Indeed, 2007 could be viewed as a “correction” year, when supply-side overcapacity led to plummeting average selling prices (ASPs) and an inventory build-up, despite end-demand generally holding up. In 2008, while the supply-side has started out much healthier, end-demand conditions, particularly in the US, are weak and uncertain. Compared to a supply-side imbalance, a demand-led slowdown – which in turn could throw supply trends out of kilter – would take a longer while to work through the global IT industry.

The memory segment – which accounts for about a fifth of overall chip revenues – remains the bête noire of the global IT industry, with plummeting memory ASPs driving down overall revenue growth. (Chart 3.12) In particular, stiff price declines in the NAND flash memory market have prompted leading market research firms Gartner and iSuppli to slash their 2008 growth forecasts for global chip sales to 3.4% and 4.0% respectively,

**Chart 3.12**  
**Global Chip Sales and Memory Prices**



\* EPD, MAS estimates

Source: Semiconductor Industry Association for global chip sales, Bloomberg for DRAM and NAND flash prices

down from 6.2% and 7.5% in December last year. Compounded by weak demand conditions, the memory sub-cycle is mired in a severe, supply-led downturn that is only expected to level off at the tail-end of the year.

**Tentative signs of a fall-off in US end-demand ...**

To a large extent, the IT outlook hinges on US end-demand. In this regard, some signs of consumer restraint have emerged, as macroeconomic concerns weigh on discretionary spending. US electronics retail sales, for example, began sliding in December last year, and fell a further 1.5% q-o-q SA in Q1 this year. (Chart 3.13)

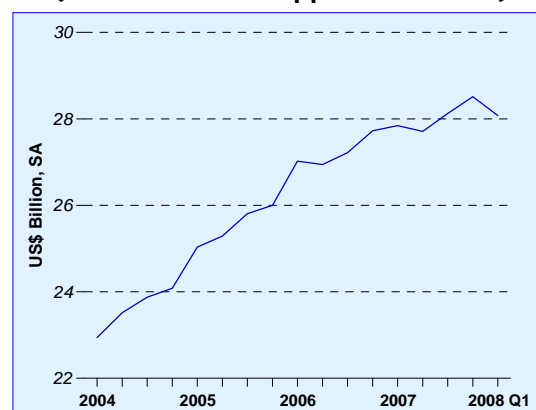
In particular, high-end consumer electronics goods are expected to bear the brunt of a soft US end market. To a certain extent, this is already being played out in the handset market, where anecdotal evidence from leading handset vendors point to slowing demand for mid- to high-end handsets across the US and Europe. Meanwhile, corporate demand, which accounted for some 40% of annual PC unit growth last year, has been hit by tighter IT spending budgets, amidst the credit crunch.

**... but emerging markets will provide some offset.**

A severe IT correction similar in magnitude to the 2001 tech downturn is, however, unlikely this time round. Crucially, emerging market demand may provide some offset to US end-demand weakness. In particular, the global handset market is expected to remain relatively resilient to a US recession as emerging markets provide the main support to growth in 2008, driven by increasing penetration as well as rising replacement demand. Indeed, the number of new handphone subscribers in China, which represents a fifth of worldwide handset demand, has continued to expand at double-digit rates. (Chart 3.14)

Emerging market PC demand is also expected to surpass that of developed markets. While global PC shipments have tracked US personal consumption expenditure (PCE) in computer and peripherals fairly closely over the years, a gap has emerged in recent quarters, as low-cost PC shipments to emerging markets have outpaced US end-demand for PCs. (Chart 3.15) The lower penetration rates in the emerging markets have provided opportunities for further growth in 2008. According to

**Chart 3.13  
US Retail Sales  
(Electronics and Appliance Stores)**



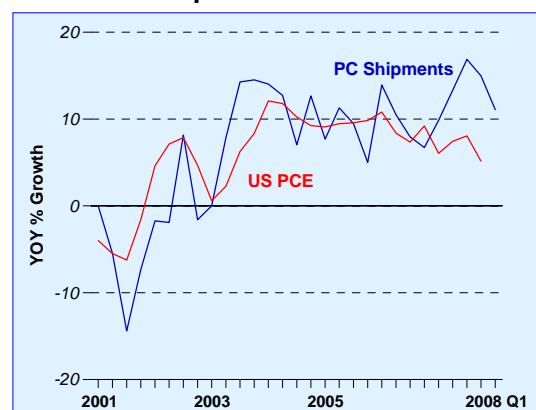
Source: CEIC

**Chart 3.14  
Handset Subscribers in China**



Source: CEIC

**Chart 3.15  
PC Shipments and US PCE**



Source: CEIC and Gartner

Gartner, the PC penetration rate in China, the second largest PC market behind the US, stands at 111 computers per 1,000 people, compared to the US penetration rate of 850 PCs per 1,000 people.

All in, emerging markets are expected to hold up growth in the key handset and PC end markets, which account for the bulk (60%) of overall semiconductor consumption. According to Gartner, the handset and PC markets are forecast to grow at a healthy clip of 10% and 11% respectively in 2008, albeit moderating from 16% and 13% growth in 2007 as end-demand from developed markets cools. While revenue growth may moderate as emerging market demand shifts the product mix towards the lower end, rising affluence in emerging markets, particularly in China and India, will over time drive replacement demand for higher-end handsets and PCs.

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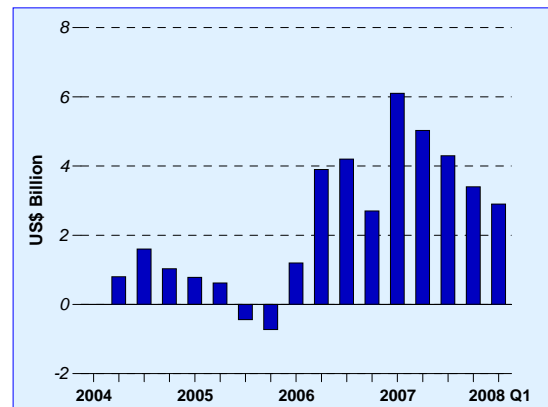
**Leaner inventories will alleviate  
end-demand weakness.**

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Healthier supply-side conditions, in the form of leaner semiconductor inventories and lower levels of capital expenditure, should also mitigate the impact of end-demand weakness from the US. Indeed, excess semiconductor inventories have levelled down to an estimated US\$2.9 billion in Q1 2008, from the peak of US\$6.1 billion in Q1 last year. (Chart 3.16)

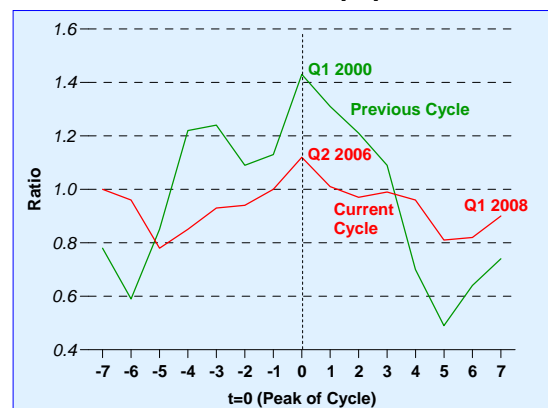
The trend towards supply rationalisation in the global IT industry will cap the downside risk from a fall-off in US end-demand. Specifically, while there was a massive build-up in capacity in 2000 – as proxied by the book-to-bill ratio for semiconductor equipment – prior to the bursting of the tech bubble in 2001, the pace of expansion has been more moderate this time round, signalling that a correction in the IT industry, if any, will be relatively milder. (Chart 3.17)

**Chart 3.16  
Excess Semiconductor Inventories**



Source: iSuppli Corp

**Chart 3.17  
Book-to-Bill Ratio for  
Semiconductor Equipment**



Source: SEMI

### 3.3 Outlook for the Singapore Economy

#### Navigating Through the Turbulence

Against the backdrop of a weaker external environment, Singapore's growth momentum is expected to ease from its double-digit sequential pace in Q1 to a slower rate for the rest of the year.

However, the extent of the slowdown is not likely to be severe. While industries which rely directly on G3 demand or are sentiment-driven will be more adversely affected by global headwinds, there are other sectors that will remain buoyant and supportive of GDP growth throughout 2008. In particular, domestic and regional sources of support should prevent the Singapore economy from sliding into a sharp downturn in 2008. On balance, full-year GDP growth of between 4-6% is still achievable, barring a sharp downturn in the US economy.

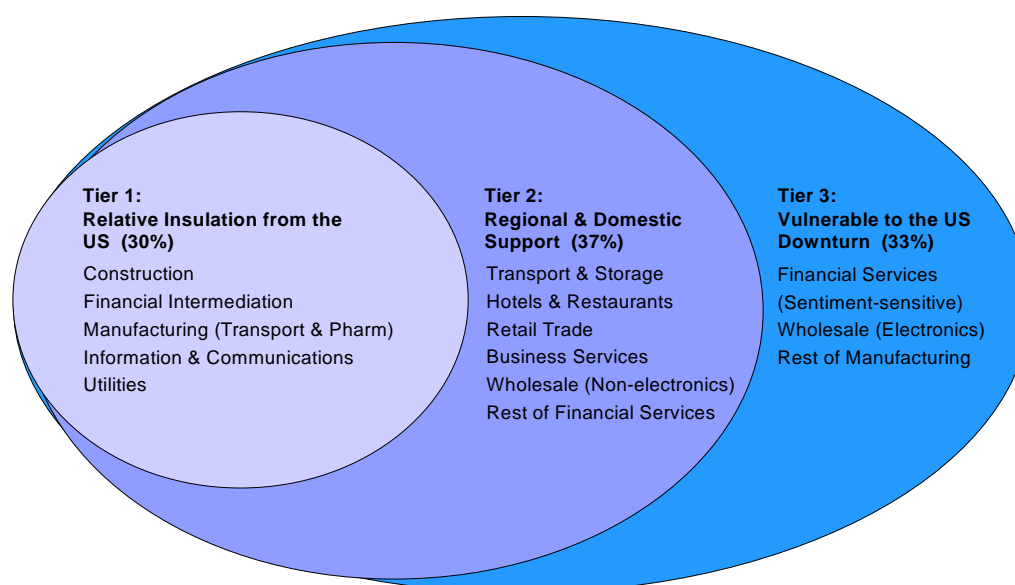
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**Sectoral performance will depend on exposure to the US market.**

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In contrast to last year's broad-based growth story, the outlook for the Singapore economy in 2008 will vary significantly from industry to industry, depending on their exposure to the US. (Figure 3.1)

**Figure 3.1  
Impact of a US Recession on the Domestic Economy\***



\* EPD, MAS estimates

Note: Numbers in parentheses refer to % of real GDP

## First Tier: Relatively Insulated from the US

The first tier represents a core group of activities that is likely to be relatively insulated from a US downturn, as output is largely driven by industry-specific factors. One of the main pillars of this tier is the construction sector, which has a strong pipeline of projects, with completion dates that stretch to 2013. Indeed, the total value of construction contracts awarded hit \$24.5 billion last year, reflecting strong demand from both the residential and non-residential segments. (Chart 3.18) This suggests a possible surge in construction activity over the next two to three quarters, as work on projects progresses into the phase where the bulk of payment streams occurs. Future demand should also remain firm, with contracts for major projects such as the integrated resorts yet to be fully awarded.

These projects will have spillover effects on services such as bank intermediation. For instance, the ongoing construction of the integrated resorts and the Marina Bay Financial Centre will continue to provide impetus for building & construction loan activity. Meanwhile, consumer mortgage loans are expected to remain firm, supported by loans that will be extended when a number of private residential projects obtain their temporary occupation permits (TOP) this year, some of which have been taken out under the deferred payment scheme (DPS). As shown in Table 3.5, housing loans taken up under the DPS, rather than the usual standard payment scheme (SPS), should pick up towards the end of the project.

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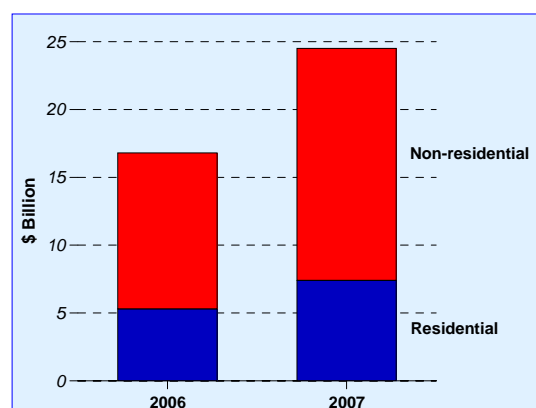
### Strong orders for ship and rig builders ...

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Activity in the marine and offshore engineering (M&OE) industry should remain brisk this year as high oil prices continue to drive oil exploration, spurring demand for oil rigs and rig-conversion projects. This is borne out by robust net order books of the two leading local shipyards, which should translate into firm output and exports over the next few years. (Chart 3.19)

The rig delivery schedule, as estimated by the shipyards at the time contracts are awarded, can provide a gauge of the impact of strong order books on export figures over the next few years, as oil rigs are recorded as exports only when the entire project is completed. (Chart 3.20) However, it is less straightforward to capture the impact on output as, unlike exports, the production of oil rigs is recorded in stages.

**Chart 3.18**  
Contracts Awarded Excluding Reclamation



**Table 3.5**  
Payment Under Different Schemes

Stage	Payment (% of purchase price)	
	Under SPS	Under DPS
Option to Purchase (OTP)	5-10% (booking fee)	5% (booking fee)
Sale & Purchase Agreement or within 8 weeks from OTP	20% less booking fee	10% less booking fee
Completion of foundation work	10%	-
Completion of superstructure	30%	-
Notice of Vacant Possession	25%	75%
Completion	15%	15%

Source: URA

Ideally, the amount of output at each stage should be estimated from the relationship between contracts awarded (order books data) and production. However, as high frequency data for order books is not available, the production profile was estimated from the lagged relationship between production and exports.<sup>4</sup>

Based on industry feedback, the entire process from the placement of orders to the completion of production (when the rig is exported) is estimated to average two years. In addition, there is typically an average eight-month lag between the contract being awarded and the start of production. EPD's calculations suggest that the impact on output would be most evident in the four months before export delivery, i.e. 12-16 months from the initial construction of oil rigs.<sup>5</sup>

As a record number of oil rigs are expected to be delivered this year, the impact on production numbers should fall in the current year. A stylised production timeline is presented in Figure 3.2.

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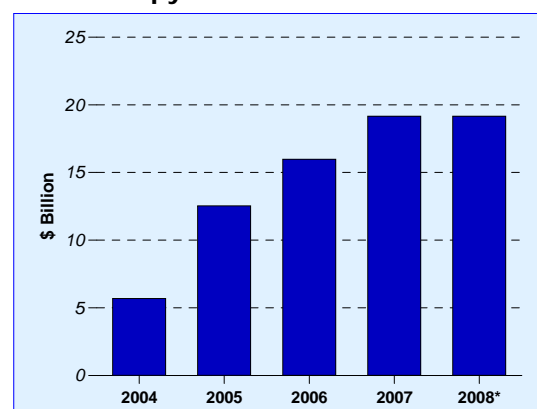
#### ... and some support from the domestic pharmaceutical industry in the short term.

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Another sector that is largely resilient to the vagaries of the business cycle is the domestic pharmaceutical industry, as output is primarily determined by supply-side factors such as the introduction of new products, patent protection and the availability of suitable manufacturing facilities. Nevertheless, elevated levels of production from the Q1 rebound this year are unlikely to be sustained and the outlook for 2008 as a whole remains fairly muted, as no significant new capacity is slated to come onstream this year. In addition, there could be some impact from the fall-off in US sales of cholesterol drugs *Vytorin* and *Zetia*, which are manufactured locally by Schering-Plough.<sup>6</sup>

Prospects for the medium term, however, are considerably brighter. In particular, the pharmaceutical industry has been gearing up for the next wave of expansion on the biotechnology front, with four biologics facilities by Genentech, GlaxoSmithKline, Lonza and

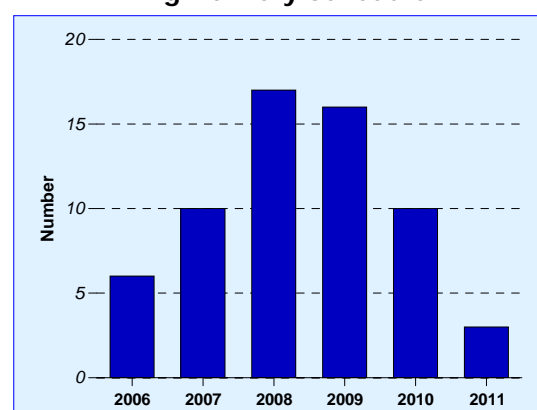
**Chart 3.19**  
**Shipyards Net Order Books**



\* as of end-March 2008

Source: Keppel Corp. and SembCorp Marine

**Chart 3.20**  
**Rig Delivery Schedule**



Source: Keppel Corp. and SembCorp Marine

<sup>4</sup> The estimation was done using a polynomial distributed lag model.

<sup>5</sup> Further empirical estimates of a cross correlogram function between exports and output suggest a similar lag between the series.

<sup>6</sup> *Vytorin* and *Zetia* are jointly marketed by Merck and Schering-Plough. US sales of the drugs began sliding after the release of the ENHANCE trial on 14 Jan 2008, which found that *Vytorin*, a combination of cholesterol reducers *Zetia* and *Zocor*, was no better than *Zocor* (generic *simvastatin*) in slowing artery clogging despite reducing bad cholesterol to a greater extent.

Novartis due to come onstream between 2009 and 2011. These biologics plants amount to a total investment of US\$940 million, and could create up to 850 highly skilled jobs when fully operational.

**Second Tier:  
Support from Regional Demand**

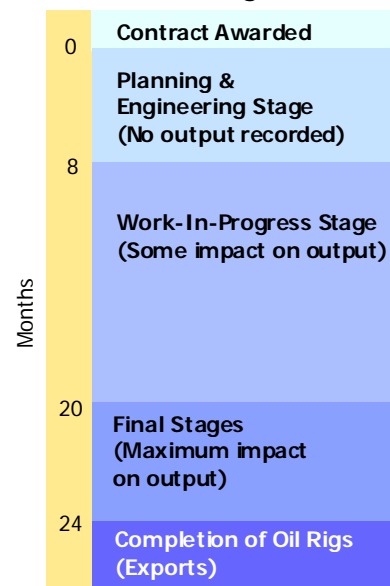
The second tier includes industries which will be supported by strong domestic and regional fundamentals, but are susceptible if the US downturn affects the region more significantly. In particular, Asia is an important end market for the services sector, accounting for slightly more than half of Singapore's services exports to the world, according to the latest survey data from DOS. (Chart 3.21)

A key area is transport-hub services. East Asia was the main pillar of growth for the entrepôt sector last year, offsetting declines in the G3 markets. (Chart 3.22) The strong growth of re-exports to East Asia was largely underpinned by firm domestic demand in these countries. Some 7% points of the 9% growth in re-exports to East Asia last year was contributed by goods meant for its domestic consumption and investment. Broadly, these included primary commodities, manufactured goods and consumer electronics and machinery. (Chart 3.23) Going forward, these product categories are expected to provide further support to the entrepôt sector, alongside healthy domestic demand in the region.

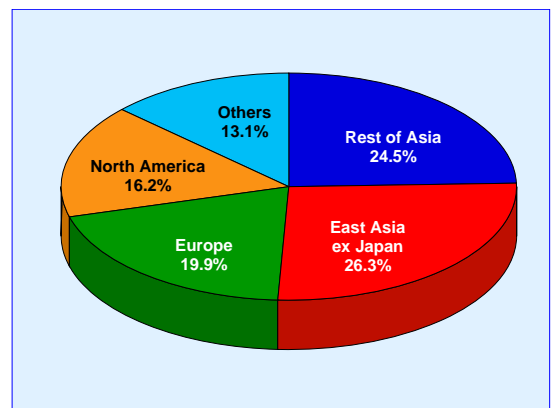
The tourism-related industry will also benefit from resilient regional demand. As shown in Chart 3.24, visitors from Asia contributed more than 60% to the increase in total visitor arrivals last year, and this should strengthen over the next few years. Visitor arrivals from the region will be boosted by intra-regional travel, driven by the expansion of road and air routes throughout Asia. A recent report by Cushman & Wakefield (C&W) projected the number of visitors to Singapore from the Chinese mainland to grow by 16% over the period 2007 to 2009.

In addition, tourism-related activities will be boosted by several mega events in the pipeline. The hotel sector, in particular, will benefit from Singapore's hosting of the inaugural Formula One Grand Prix race in September. For 2008, the STB is expecting overall visitor arrivals of 10.8 million and tourist receipts of \$15.5 billion, up from 10.3 million and \$13.8 billion respectively in 2007.

**Figure 3.2  
Stylised Production Timeline  
for Oil Rigs**

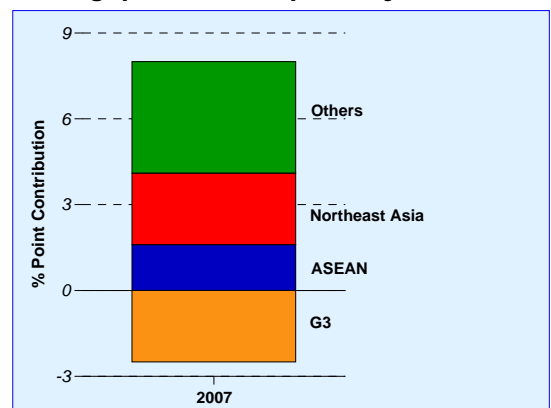


**Chart 3.21  
Singapore's Services Exports  
to the World**



Source: Singapore's International Trade in Services, 2006, DOS

**Chart 3.22  
Singapore's Re-exports by Markets**



Air passenger volumes are also projected to rise in tandem with higher visitor inflows, facilitated by greater accessibility to low-cost carriers as well as the rapid growth of aviation markets in the region, particularly in China. Nevertheless, growth could be dampened by some weakness in the US routes. Indeed, lower US load factors due to demand softness have surfaced recently, pulling SIA's average passenger load factors down to 79.4% in Q1 2008, from its peak of 82% in Q3 last year.

**Domestic-linked activities will also remain healthy.**

Meanwhile, retail sales and business services that are closely tied to domestic economic conditions are expected to record fairly respectable growth this year, amidst generally healthy conditions in the labour market.

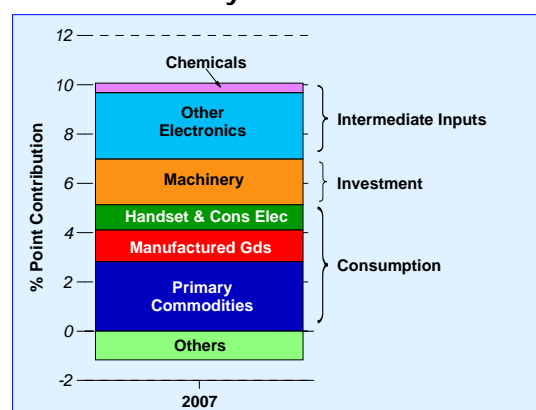
In particular, business services will see continued firm performance in 2008, although growth is unlikely to exceed that of last year, when the real estate and professional services segments benefited from the buoyant growth in asset market-related activities.

Apart from cyclical factors, growth in the business services sector has been underpinned by two emerging trends in the manufacturing sector: "servicisation" and outsourcing. These trends have also been observed in developed economies such as the UK. Indeed, the strong growth in UK's business services sector in the 1990s was very much the result of outsourcing and specialisation.

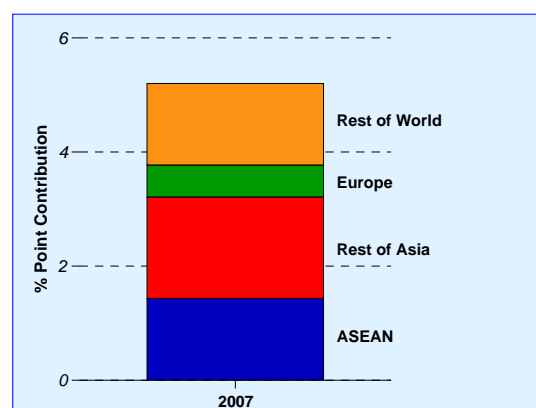
"Servicisation" refers to the broadening of manufacturing capabilities to encompass services-related activities ranging from R&D and marketing to logistics and regional operations. A good example is pharmaceutical manufacturer GlaxoSmithKline, whose first production facility in Singapore dates back to 1972, and which has since broadened its activities to include regional HQ operations in 1999 and R&D in 2004.

The increasing tendency of companies, particularly in the financial sector, to outsource their accounting, consulting and HR functions to specialised firms in the business services sector also drives growth in the latter sector. According to the MAS annual survey of financial institutions, the domestic banking sector spends close to \$1.5 billion per year on these activities.

**Chart 3.23**  
**Singapore's Re-exports to East Asia by Product**



**Chart 3.24**  
**Contribution to Visitor Arrivals**



### Third Tier: Most Vulnerable to a US Downturn

The industries which are most vulnerable to a US/G3 downturn comprise the sentiment-sensitive segments in financial services, and IT-related activities.

The sentiment-driven financial industries will remain volatile and sensitive to incoming economic data, particularly from the US, as they are closely tied to conditions in international financial markets. In particular, investors' risk aversion amidst ongoing concerns over the financial and economic health of the US is likely to cap growth in the wealth advisory and brokerage & treasury segments in the coming quarters.

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#### Equity markets are likely to bear the brunt of the slowdown ...

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On the equities front, concerns over a US recession and fears of further mortgage-related write-downs by major financial institutions have caused investor confidence to falter, as reflected in significant falls in the STI and stockmarket turnover volumes. (Chart 3.25) This is in line with retreating regional bourses, as illustrated by the 18% tumble year-to-date in the MSCI Asia ex-Japan Index. Transaction volumes are thus likely to remain thin in the coming months.

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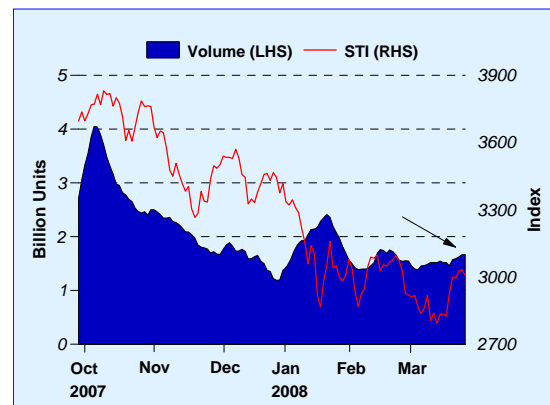
#### ... while wealth management expansion slows.

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Prevailing uncertainties in the global financial markets have also caused sentiment in the Asian hedge funds industry to sag, as reflected in the dip in the EurekaHedge Asian Hedge Fund Index in recent months. (Chart 3.26) This index is often used by industry observers as a proxy for investor sentiment.

Marked by high levels of caution and risk aversion, the wealth advisory industry is likely to see a pullback in growth in the near term. Even as Singapore continues to attract new industry players, such as Australia's Macquarie Group and RBS Coutts, the industry is likely to take a breather this year from the rapid pace of growth in the last six years. This pause, however, is expected to be mild relative to that in the equity markets, as private bankers have taken several measures to deal with the current global financial environment.

**Chart 3.25**  
Stock Market Turnover Volume and  
Straits Times Index (STI)



Source: SGX

**Chart 3.26**  
EurekaHedge Asian Hedge Fund Index



Source: Bloomberg

For example, private wealth managers have diversified investment portfolios to a greater extent, with a larger portion of funds going into fixed income instruments and cash holdings. In addition, they have started to move beyond the traditional focus of preserving family wealth into private investment banking – providing high net worth individuals with advice on integrating personal wealth with business ventures – in response to demand from the growing pool of family entrepreneurs in the region.

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**IT-related industries remain vulnerable to a global downturn.**

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Given the muted outlook for the global electronics industry (see Section 3.2), the domestic IT-related cluster is expected to remain weak this year. In particular, projects in the pipeline could be affected by weak industry conditions. The pushing back of the proposed NAND flash fab by Intel-Micron from H2 2008 to 2009, due to severe pricing conditions in the NAND flash market, is a case in point.

Aside from the semiconductor industry, performance in other IT manufacturing industries will be a mixed bag this year. The year-end closure of Motorola's handset manufacturing plant in Singapore, for example, will entail a negative structural shift in the infocomms & consumer electronics segment. However, the data storage segment is set to receive a boost from production at Seagate's third hard disk media plant, which began production in Q1 this year.

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**Singapore's GDP growth should come in at around 4-6% in 2008.**

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Since the last *Review*, the external environment, especially in the US, has deteriorated. Given the weakening external outlook, some moderate slowdown in growth momentum is likely to take place over the next two to three quarters. At this stage, Singapore's GDP growth should come in at around 4-6% this year.

This baseline forecast is predicated on a mild US downturn for 2008. However, if there is a more widespread decline in global and regional economic activity, Singapore's GDP growth will be more significantly affected, dragged down by the collapse in activity in the second and third tier industries.

### 3.4 Labour Market

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#### Labour demand is likely to moderate in 2008.

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In line with an easing in economic growth, manpower demand is projected to moderate in 2008, but should remain at a healthy level. According to a recent poll by Hudson, a large proportion (49%) of the 733 employers surveyed from various sectors planned to increase headcount in Q2 2008. Only 2% expected a decrease in employment, while 49% projected no change in headcount. Nonetheless, the net hiring expectation of 47% is a slight decline from the 50% reading in the previous quarter and 55% a year ago. (Chart 3.27) Given the generally healthy job market, the unemployment rate is expected to remain under 2% in 2008.

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#### Strong employment growth is expected in the transport engineering, construction and tourism-related industries.

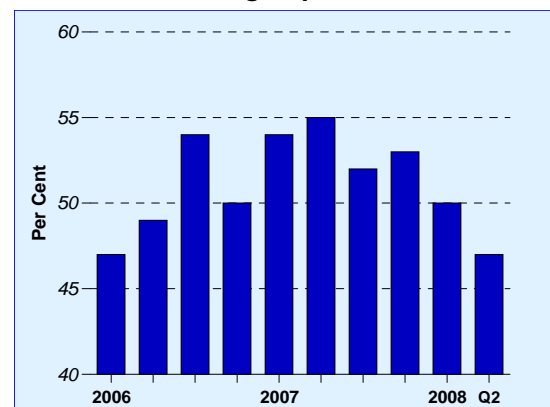
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Part of the optimism in the labour market stems from expected robust activity in some segments of the economy over the next few years. For example, major marine & offshore engineering industry players have announced strong net order books with completion and deliveries stretching to 2011. This should sustain job creation in the transport engineering industry.

The construction sector also has a packed pipeline of upcoming projects until 2013, including a number of mega commercial, residential, leisure and transport infrastructure projects. In addition, the impact of the building boom will spill over to other related industries, such as the real estate and architectural industries in the business services sector, leading to further job creation.

The tourism-related segment will also require more manpower to keep up with the expected growth in visitor arrivals, due to several major international events such as the Singapore Air Show and the upcoming Formula One Grand Prix race in September this year. Furthermore, three major international BTMICE industry players – Kellen Company, Leipziger Messe GmbH and Kenes International – will set up base here in 2008, boosting Singapore's position as a major venue for BTMICE events. In total, STB expects some 50,000 to 60,000 tourism jobs to be created by 2010.

**Chart 3.27**  
Net Hiring Expectations



Source: The Hudson Report

Note: The net hiring expectation is derived by subtracting the percentage of employers expecting to see a decrease in total employment in the next quarter, from the percentage anticipating an increase.

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**Foreigners will remain an important source of labour.**

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With the economy at full employment, there will be increasing reliance on foreigners to fill the manpower needs of the economy. In recognition of this, MOM has announced a comprehensive package of foreign workforce measures in November 2007.

Notably, the maximum foreign worker dependency ratio was raised for all sectors, with effect from 1 Jan 2008. (Table 3.6) To meet the demand for foreign semi-skilled workers, such as technicians, the S-Pass quota was raised from 15% to 25% of the total company workforce. MOM further revised the Man-Year Entitlement (MYE) waiver requirement for Non-Traditional Source (NTS) workers in the construction sector, which reportedly faces the tightest squeeze. This revision will simplify the work permit renewal procedures for NTS foreign workers to that comparable for Malaysian workers.

In addition, to strengthen global talent attraction and retention, MOM opened the application for the Personalised Employment Pass (PEP) to all foreigners whose last drawn monthly salary was at least \$7,000. Previously, only foreigners who had worked or were working in Singapore on employment passes were eligible. The PEP enables skilled foreign professionals to enter or remain in Singapore without being in employment for a period up to six months in order to evaluate job opportunities.

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**The economically inactive will be tapped to augment the indigenous labour supply.**

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Apart from supplementing the local workforce with foreign labour, MOM intends to tap the economically inactive population. After registering an increase of 7.8% in 2006 due to the buoyant job market, the resident labour force expanded by only 2.0% in 2007. Of the one million economically inactive residents, MOM has identified about 140,000 potential entrants – economically inactive people who indicated an intention to look for work within the next two years. Of these, around 60% were interested in full time work while 72% had prior work experience.

**Table 3.6  
Changes to Foreign Worker  
Dependency Ratios**

Sectors	Before 2008	From 1 Jan 2008
Construction and Process*	1 Local : 5 Foreigners	1 Local : 7 Foreigners
Marine	1 Local : 3 Foreigners	1 Local : 5 Foreigners
Manufacturing	60%	65%
Services	45%	50%

\* Petroleum, Petrochemicals, Speciality Chemicals and Pharmaceuticals.

MOM believes that some of these people are voluntary drop-outs who will rejoin the labour force on flexible work arrangements. Hence, in conjunction with WDA, NTUC and SNEF, the ministry launched the Flexi-Works! programme in November 2007, a \$3 million funding scheme that offers grants of up to \$100,000 per company to defray part of the cost of implementing flexible work arrangements. The programme aims to bring at least 1,500 individuals aged 35 and above back into the workforce every year.

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**Training of adult workers is a government priority.**

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To ensure sustainable job creation and continuous income growth in the longer term, the local workforce has to be more productive and efficient. Under the Continuing Education and Training (CET) Masterplan, MOM envisions a radically different workforce in 2020, with nearly 60% of the employed residents having at least a diploma qualification, significantly higher than 36% in 2007.

The Employment and Employability Institute, which officially opened in January 2008, is a significant milestone in the CET Masterplan. It is a one-stop shop for skills upgrading, job placement and career consulting, and is much larger in scale than the existing 19 CET centres. In this year's Committee of Supply Speech, the Minister for Manpower announced a top-up of \$800 million in the Lifelong Learning Endowment Fund (LLEF), bringing it to \$3 billion. The fund will be used to increase the annual training capacity from 22,000 workers to 80,000 workers by adding ten more CET centres in certain high-growth sectors. Upcoming industry-specific training centres include a Singapore Academy of GxP Excellence (SAGE) that will facilitate the discovery of new technologies in the development and manufacture of pharmaceuticals, biologics and medical devices. In the financial services sector, five CET centres specialising in areas such as risk management, wealth management and insurance have also been established.

## 3.5 Inflation

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### Continued pass-through of external and domestic cost pressures is expected in 2008.

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Domestic CPI inflation stepped up sharply in H2 2007 and Q1 2008, reflecting both external sources of price pressures as well as the build-up of domestic costs following several years of strong economic growth. On the external front, CPI inflation is projected to be higher in almost all regions of the world, including the US, Eurozone, Japan and Asia ex-Japan, due to increased demand for food, oil and other commodities. Based on the latest consensus estimates, global CPI inflation<sup>7</sup> will average 3.7% in 2008, compared to 3.1% in 2007.

Moreover, as input costs rise, the disinflationary effects of positive supply shocks in low-cost producers, such as China, have also dissipated. This will add to rising domestic business costs, with firms continuing to pass through these costs to retail prices. Nonetheless, for the rest of 2008, domestic prices are expected to rise at a more moderate pace.

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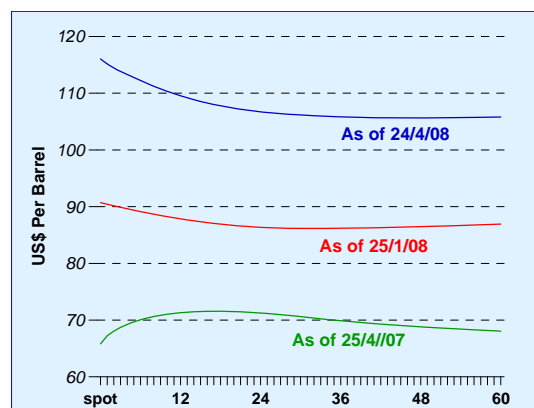
### Tight market conditions will support global oil prices.

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The global oil market is expected to remain tight in the near term. The Energy Information Administration (EIA) anticipates global oil demand to rise by 1.2 million barrels per day in 2008, with non-OECD countries accounting for about 90% of the increase. At the same time, short-term supply remains constrained by OPEC production quotas, project delays in non-OPEC countries and limited spare production capacity due to insufficient investment in the past decade. Even in the medium term, supply rigidities are unlikely to abate as the costs of oil production and exploration escalate. As such, oil prices are likely to remain high even if global demand falls, due to a downturn in the US and other advanced economies. Meanwhile, strong investment interest in oil as a hedge against the declining US dollar will contribute to price volatility.

These short-term and structural factors drove up near-term and long-dated oil prices to record highs in March and April this year, causing an almost parallel upward shift in the entire WTI forward curve. (Chart 3.28) The

**Chart 3.28**  
**NYMEX WTI Crude Oil Forward Prices**



Source: Bloomberg

<sup>7</sup> Global CPI inflation are weighted averages calculated using 2006 GDP weights, converted at average 2006 exchange rates.

EIA projected that prices of WTI crude oil will average US\$101 per barrel in 2008, up from US\$72 per barrel in 2007. Both the futures prices and EIA's projections suggest that oil prices will only ease slightly in H2 2008.

With higher oil prices this year, prices of domestic energy-related items will increase. Electricity tariffs have been adjusted upwards by 5.7% for Q2 2008 and petrol pump prices were raised by 11 cents over March and April. At the same time, the indirect pass-through effects of higher oil prices are likely to persist via increases in public road transport fares and cooked food prices.

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**Structural rally in food commodity prices will continue amidst tight inventories.**

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Meanwhile, global food prices will remain high over the medium term, owing to low inventory levels (Chart 3.29), rising disposable income and changing food consumption patterns in emerging markets, as well as high food production and transportation costs. (See Box B on "Global Food Price Inflation" at the end of the section.)

Nonetheless, the futures market suggests that while food prices are likely to remain high, the pace of increase should be more moderate. (Chart 3.30) However, this may only be seen in the latter part of the year when additional supplies from the autumn harvest become available. In the meantime, with operating costs rising, domestic hawkers and restaurants are likely to continue to pass on the high raw material costs to consumers.

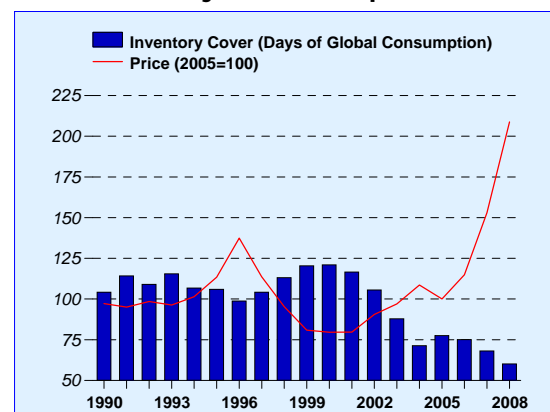
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**Excluding oil and food, overall import price inflation is expected to be benign.**

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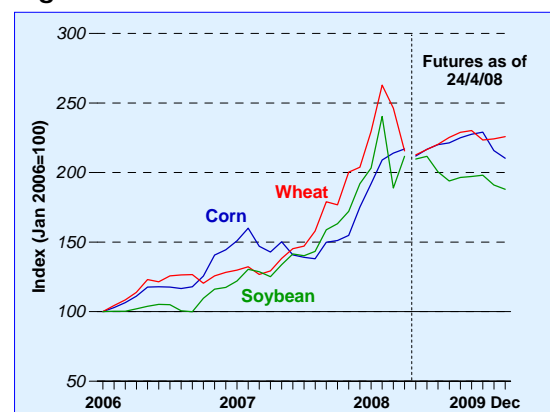
Apart from oil and food, imported prices of other primary commodities, such as metals, are also likely to remain firm due to strong industrial demand from developing countries. For instance, the rapid pace of infrastructure build-up in emerging economies is likely to underpin the price of copper, nickel and zinc. However, the higher imported prices of these non-oil and non-food commodities are expected to be offset by further declines in the prices of electronics and other technological products due to the slowdown in the global IT industry.

**Chart 3.29  
Price and Inventory Cover of  
Major Food Crops**



Source: IMF

**Chart 3.30  
Agricultural Commodities Future Prices**



Source: Bloomberg

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**Global travel boom and higher oil prices will continue to lead to costlier holiday travel.**

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The brisk economic growth worldwide in recent years, particularly in the Asia-Pacific region, has sparked a boom in business and leisure travel, driving up hotel room rates globally. As a result, holiday expenses have increased, contributing 0.4% point to CPI inflation in 2007 and Q1 2008. (Chart 3.31) Airfares in the CPI basket have also surged since 2007, in part due to airlines passing on higher fuel costs and hikes in airport charges. (Chart 3.32) For example, SIA raised its fuel surcharge by 40% in March this year.

Given that Asia's economic growth is expected to remain relatively healthy, barring a sharp downturn in the US economy, the boom in regional business and leisure travel is expected to continue. As the supply of hotel rooms will be constrained in the near term, hotel room rates are likely to continue to rise in 2008. Similarly, airfares are expected to increase further as airlines pass on rising fuel prices and operating costs.

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**Accommodation cost index will climb in 2008.**

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Turning to domestic factors, accommodation costs in the CPI are set to rise in 2008, largely due to the upward adjustment in the imputed rents of HDB flats following the AV revision by IRAS. The contribution of accommodation costs to CPI inflation could thus rise substantially to more than 1% point in 2008, from 0.2% point in 2007.

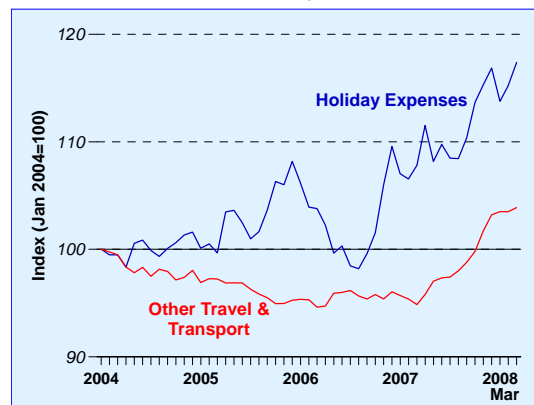
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**Private road transport costs is set to climb in 2008.**

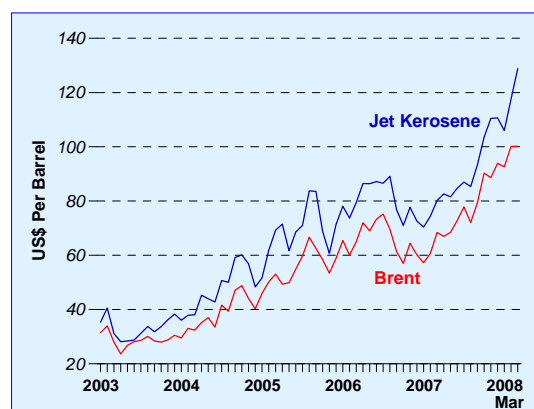
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After nearly four consecutive years of negative contribution, car prices added positively to CPI inflation in 2007, albeit by a mild 0.1% point. This could increase further in 2008. While the Additional Registration Fee (ARF) – the main car tax that constitutes around 30% of the selling price of a car without a COE – has been reduced by 10% points and road tax will be reduced by 15% points in July, COE premiums could rise due to the 7.5% decrease in COE quotas in the new quota year (Apr 2008-Mar 2009). The increase in COE premiums in recent bidding exercises suggests that there could be some frontloading of demand in expectation of even higher premiums in 2009, when there will be a further cut in the COE quota in tandem with the lower targeted

**Chart 3.31  
Airfares and Holiday Expenses CPI**



**Chart 3.32  
Jet Fuel and Oil Prices**



vehicle growth rate of 1.5%, compared to the current 3%. (Chart 3.33) However, growing economic uncertainty could dampen buying sentiments and limit the upside to COE premiums.

Apart from more expensive cars and petrol, private road transport costs will also be lifted by the increase in Electronic Road Pricing (ERP) charges as well as the implementation of 16 new ERP gantries, following the government's plan to shift the tax burden from car ownership to car usage.

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**Business costs will remain elevated due to firm wages and commercial rentals.**

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As mentioned above, labour demand is expected to remain relatively firm this year, albeit moderating from last year. Overall, the unemployment rate for the year should still come in under 2%. Given the tight labour market conditions, wage pressures are likely to persist, such that nominal wage growth could average around 5-6% in 2008, only slightly lower than the 6.2% last year.

Meanwhile, with demand for commercial space remaining firm and significant new supply not coming onstream until 2009-10, domestic office and retail rentals could stay elevated.

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**Inflation is expected to stay high in H1 2008 but should moderate in H2.**

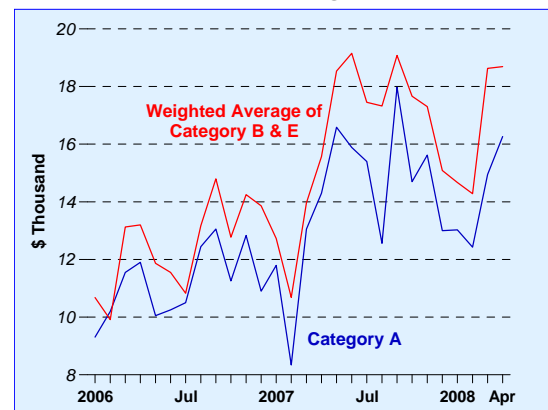
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In summary, inflation will stay high in 2008 due to a confluence of external and domestic factors, although it should moderate somewhat in the second half.

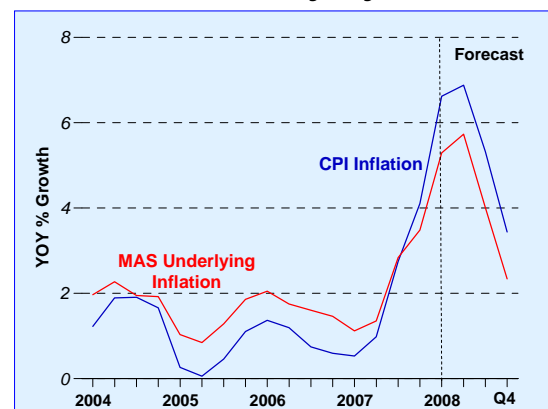
However, there are upside risks to global oil and food prices. Even if these prices were to level off, upward pressure on wages and rentals, reflecting domestic capacity constraints, are likely to remain.

Taking all these factors into consideration, together with the low base in H1 2007, CPI inflation could average above 6% in H1 2008. (Chart 3.34) In H2 2008, inflation is expected to taper off to an average of around 4%, partly due to the dissipation of the GST hike effect.

**Chart 3.33**  
COE Premiums for Categories A, B and E



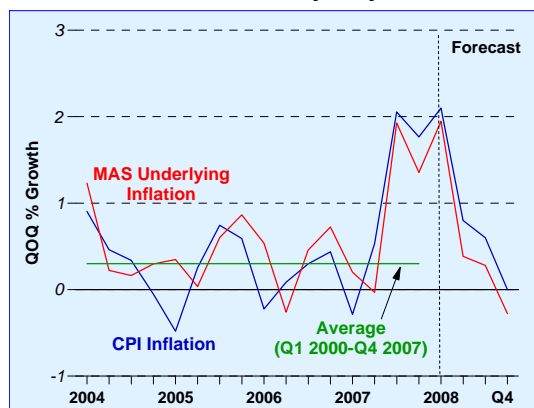
**Chart 3.34**  
Headline and MAS Underlying Inflation Forecast (y-o-y)



On a sequential basis, inflation should moderate over the rest of the year and come closer to its historical average rate of increase of 0.3%. (Chart 3.35)

For the whole of 2008, CPI inflation is likely to come in at the upper half of the 4.5-5.5% forecast range, with the MAS underlying inflation, which excludes private road accommodation and private road transport, coming in at 3.5-4.5%.

**Chart 3.35**  
**Headline and MAS Underlying Inflation Forecast (q-o-q)**



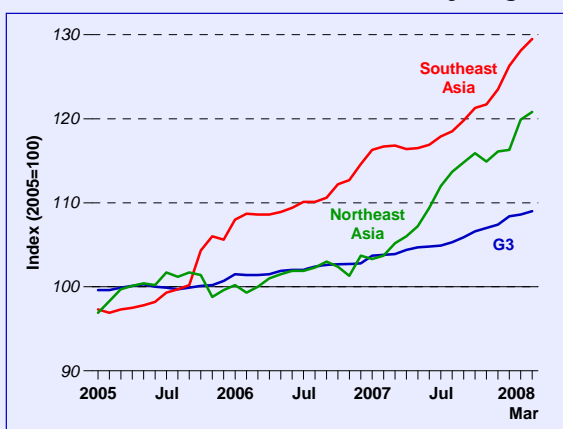
**Box B**  
**Global Food Price Inflation**

Food prices have risen sharply in the last two years, raising concerns about heightened inflationary pressures, rising poverty levels, worsening income distribution and social unrest. Indeed, World Bank President Robert Zoellick recently commented that higher food prices could mean “seven lost years” in the fight against global poverty. In this box, we consider recent developments in food and other primary commodity prices and assess them in the context of their longer-term historical trends.

**(1) Recent Developments in Global Food Price Inflation**

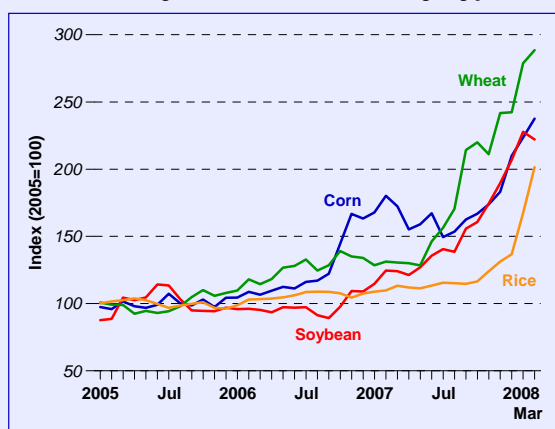
Data compiled by the IMF indicate that commodity food prices have risen by approximately 60% over the past two years, with the bulk of the increases taking place since mid-2007. This has filtered down – to a varying extent – to prices at the retail level. By region, the rise in consumer food price inflation has been significantly higher in developing economies, such as Northeast and Southeast Asia, than in the developed countries (G3). (Chart B1) This is largely due to the higher share of non-farm value added embodied in the final price of agricultural commodities in the developed economies, where non-farm costs, such as transport, marketing and rentals, typically account for over 90% of the retail price of many agricultural products.

**Chart B1**  
**Consumer Food Price Index by Region**



Source: CEIC and Datastream

**Chart B2**  
**Commodity Food Price Index by Type**



Source: IMF and Rice Exporters Association, Thailand

Chart B2 shows that the recent increase in food prices began in early 2006, when wheat prices escalated sharply due to drought in several wheat exporting countries, such as Australia, US and Ukraine, which reduced production. This was followed by increases in the prices of corn, soybean and, more recently, rice.

### ***Factors that have Contributed to Recent Food Price Inflation***

Among the factors that have contributed to the sharp rise in global food prices are:

#### ***(i) Rising global incomes***

The world economy has expanded at a rapid pace over the past five years, leading to significant increases in real household incomes. The average global GDP growth of 4.8% per annum between 2003 and 2007 is the highest on record since the 1980s. Furthermore, over the past 1-2 decades, robust growth in several large developing economies, such as China and India, has led to significant increases in household incomes and greatly increased the number of households in the middle-class segment, given their large populations. As incomes rise from a very low level, food (and especially meat) consumption increases significantly. Per capita consumption of meat in China, for instance, has more than doubled from 20kg in 1980 to 50kg last year. IMF estimates suggest that China has become a very important source of global food demand growth, accounting for approximately 35-40% of the increase in global consumption of soybeans and meat, for example.

#### ***(ii) Supply disruptions***

On the supply side, adverse shocks have contributed to the food price inflation. Given the overall low price elasticity of demand for food in both developed and developing countries, market clearing prices tend to increase sharply even in the face of a modest reduction in supply. For example, disease outbreaks and bad weather in Australia (which led to a 50% reduction in harvests of its three major crops) and China (where freezing conditions killed some 16 million livestock) have contributed to the steep hikes in a variety of food prices, such as flour, milk and pork. More recently, drought and other weather-related influences have impacted rice output as well. The amount of land available for planting paddy has been reduced by factors such as urbanisation and industrialisation, as well as a diversion of land to the planting of cash crops. As a result, the price of Thai B-grade white rice, a global benchmark, rose to an all-time high of over US\$1,000 per metric tonne in April 2008, three times the average price of US\$330 last year.

#### ***(iii) Diversion of land to the production of biofuels***

Another major global development which has had the unintended effect of pushing up food prices is the increased use of biofuels<sup>1/</sup> as a substitute for fossil fuels. Ethanol is currently the major type of biofuel used globally, and a number of governments have been actively promoting its production. The US, for instance, has a long history of providing subsidies<sup>2/</sup> for the production of ethanol. While the initial objective was to support corn prices and thereby farm income, its focus has changed. With the passage of the Clean Air Act of 1990, for example, ethanol became an important means to add oxygen to gasoline, contributing to cleaner combustion. More recently, two other objectives have come to the fore: energy security and global warming. In fact, the programme was so successful that, since 2005, the US has overtaken Brazil as the world's largest producer of ethanol. This diversion of arable land to the production of biofuel has meant a concomitant reduction in the amount of land devoted to food production. According to the Food and Agriculture Organisation, 41% of the additional 32 million tons of major crops demanded last year was for the production

<sup>1/</sup> Biofuel is a type of fuel consisting of, or derived from, biomass. Biomass is made from living organisms, including plants, animals and their by-products. It is a renewable energy source, unlike other natural resources such as petroleum and coal. Some agricultural products are specifically grown for biofuel production, such as corn, soybeans, rapeseed, wheat, sugar beet, sugar cane and palm oil.

<sup>2/</sup> The federal subsidy ranges from US\$0.40 to US\$0.60 per gallon of ethanol, and is currently US\$0.51 per gallon or about US\$1.30 per bushel of corn. One bushel of corn is estimated to yield 2.5 gallons of ethanol.

of biofuel. Such policies – while helping to conserve scarce fossil fuels – have clearly aggravated the supply shortages and increased pressure on a variety of food and animal feed prices.

Research into the impact of increased biofuel production remains at an early stage and there are still considerable knowledge gaps and divergences in views among policymakers on some of the key issues, including the practicality of supplementing fossil fuels with biofuels. This is due to the difficulty of measuring the payoffs with respect to investments in biofuel production. Gardner (2007), for example, found that such subsidies were unlikely to generate net social gains for the US economy. Using a fully-specified model of demand and supply relationships in the relevant markets, the study showed that the producer surplus of ethanol manufacturers would increase with the introduction of ethanol subsidies. On the demand side, while consumers of ethanol and its by-products benefit from cheaper ethanol prices, buyers of corn for animal feed or for export would lose out. Summing up all the gains and losses and weighing these against the cost to the government of US\$2.6 billion, the estimates showed that over a one-year short-run scenario, the net welfare loss would come to approximately US\$91 million annually. Such estimates, of course, are by no means conclusive, but are indicative of findings in a number of other studies that suggest little positive gains overall from the biofuel initiative.

(iv) Increase in the prices of inputs and ancillary services

The surge in the price of oil has not only led to higher energy and transport costs but has also raised the cost of producing intermediate inputs, such as fertilizers, all of which add to the cost of farming. As mentioned previously, cost increases in intermediate processes like packaging, advertising, transportation and refrigeration also contribute significantly to the final prices of consumer food items.

(v) Investment interest in commodity products

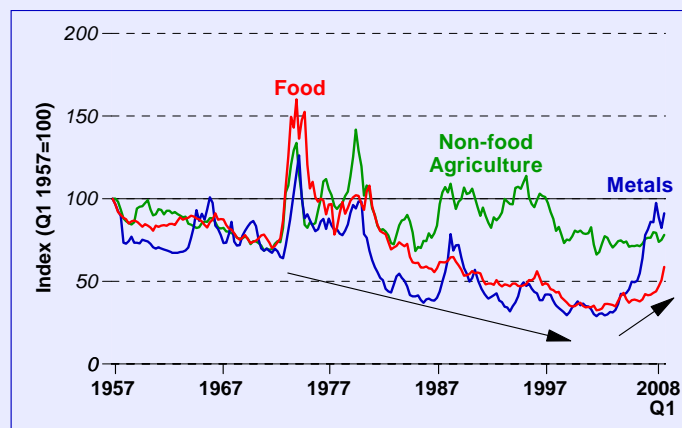
The emergence of competing demands for primary commodities and the concomitant disruption in output have attracted investors' interest in commodities as an asset class. Moreover, the continued turbulence in global equity and property markets has increased risk aversion in traditional investment assets and may have raised interest in alternative instruments with exposure to the commodities market, such as Exchange Traded Funds and derivatives contracts. Low global interest rates also reduce the carry cost of these alternative investment assets. Thus, primary commodity prices have generally continued to rise despite the recent slowdown in the global economy.

**(2) Longer-term Trends**

To assess the significance of recent commodity price increases, it is useful to take a step back and consider them in the context of longer-term movements in commodity prices and, in particular, real commodity prices. Chart B3 shows real commodity prices deflated by the US GDP deflator<sup>3/</sup> for metals, food, and non-food agricultural products over the past 50 years. Two observations can be made: (i) real commodity prices have exhibited a general trend decline, and (ii) prices can be very volatile in the short term along that declining trend.

<sup>3/</sup> Real commodity prices can also be defined as a relative price between commodities and manufactured goods.

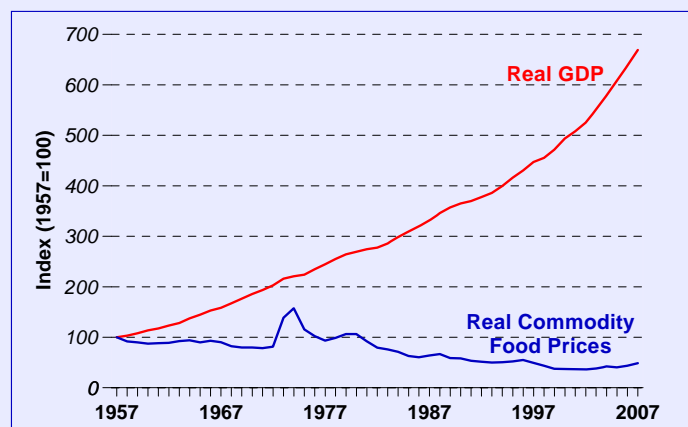
**Chart B3**  
**Real Commodity Prices**



Source: IMF, IFS

Indeed, real food prices over the longer term appear rather benign: even after the recent steep run-up, real food prices today remain lower than they were for much of the past 50 years. Moreover, real commodity food prices have trended down even as real global GDP has increased over time. (Chart B4)

**Chart B4**  
**Global Real GDP and Real Food Prices**



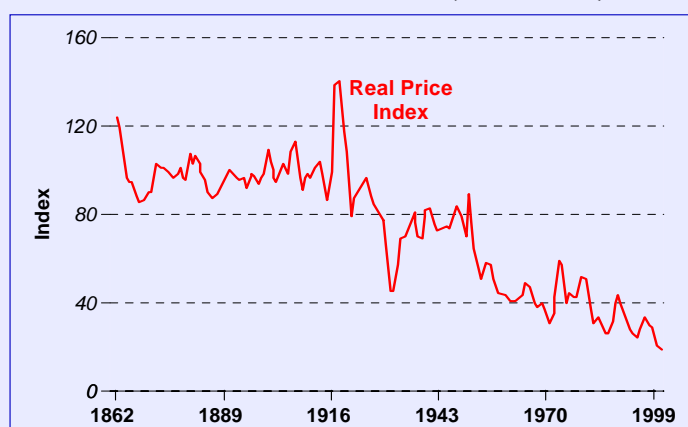
Source: Angus Maddison and IMF

In well-known studies, Prebisch (1950) and Singer (1950) found that the relative price of commodities in terms of manufactures exhibited a downward trend. More recently, in a comprehensive study covering 24 internationally traded non-fuel commodities between 1900 and 1986, Grilli and Yang (1988) observed a similar decline in the prices of non-fuel primary commodities relative to those of manufactures.<sup>4/</sup> Likewise, using the longest dataset publicly available, Cashin and McDermott (2002) found that there has been a downward trend in real commodity prices of about 1% per year on average over the past 140 years (up to 1999). (Chart B5) Commodity prices were also found to have become more volatile after the 1970s.

<sup>4/</sup>

The non-fuel group includes eleven food commodities: bananas, beef, cocoa, coffee, lamb, maize, palm oil, rice, sugar, tea, and wheat; seven non-food agricultural commodities: cotton, hides, jute, rubber, timber, tobacco and wool; and six metals: aluminium, copper, lead, silver, tin and zinc.

**Chart B5**  
**Real Price of Commodities (1862-1999)**



Source: Cashin and McDermott (2002)

What then accounts for the observed long-term trend decline in real commodity prices? Both Prebisch and Singer attributed it to the low income elasticity of demand for commodities, implying that secular income growth tends to reduce the relative demand for, and hence the relative price of, primary commodities. In the US, for example, real income has increased to such an extent that the share of food in the typical household's expenditure basket has fallen to a mere 13.8%. This compares with some 40% or more for developing countries. Moreover, on the supply side, productivity gains in agriculture tend to be higher than for manufactures. In a World Bank study by Martin and Mitra (1999) covering a large sample of countries at different stages of development from 1967 to 1992, the average total factor productivity (TFP) growth rate for agriculture was found to be some 62% higher than that of manufactures. (Table B1) This suggests that there has indeed been significant improvement in agricultural productivity owing, in part, to improved irrigation and economies of scale from large-scale farming, as well as the development of higher yielding crop varieties.

**Table B1**  
**Total Factor Productivity Growth (% per annum)**

Countries	Translog <sup>1</sup>		Cobb-Douglas <sup>2</sup>		Shares <sup>3</sup>		Average	
	Mfg	Agri	Mfg	Agri	Mfg	Agri	Mfg	Agri
<b>Developing Country Average</b>	0.92	1.79	0.62	1.76	0.90	2.62	0.81	2.06
<b>Developed Country Average</b>	3.29	3.38	1.91	3.35	2.80	3.46	2.67	3.40
<b>Overall Average</b>	1.86	2.34	1.13	2.31	1.65	2.91	1.55	2.52

Source: Martin and Mitra (1999)

1/ TL-CRS: Estimates using Translog production function with constant returns to scale imposed.

2/ CD-CRS: Estimates using Cobb-Douglas production function with constant returns to scale imposed.

3/ Shares: Estimates using actual factor shares.

At this juncture, a key question is whether the current increase in commodity food prices is a short-term spike that will soon unwind, as the long-term trend suggests, or whether it is different this time in view of significant structural changes in the world economy, such as the dramatic rise of China, India and other emerging market economies. The apparent inverse relationship between commodity prices (most of which are denominated in US dollars) and the fall in the dollar is another factor that could potentially introduce greater volatility into commodity prices. Nonetheless, the well-documented high volatility of real commodity prices around a declining trend suggests that it would not be correct to base expectations of future commodity prices on a simple extrapolation of current price trends. Although prices may increase for a little while longer, the rate at which they are rising should slow as producers and consumers adjust to the higher prices.

**Sum Up**

Food prices have risen sharply in the last two years, driven by a confluence of both demand and supply factors. The impact of higher commodity food prices on CPI inflation is stronger for developing economies than for developed countries, given the higher proportion of household expenditure on food in the former. As such, a moderation in global growth should, in the periods ahead, provide some relief to the upward momentum in commodity food price inflation as longer-term trends suggest that the current spike in global food prices is unsustainable. Empirical studies have suggested that real commodity prices exhibit a downward trend although short-term fluctuations can be significant and can persist for a number of years.

**References**

Cashin, P and McDermott, C J (2002), "The Long-Run Behaviour of Commodity Prices: Small Trends and Big Variability", *IMF Staff Papers*, Vol. 49, No. 2: pp 175-199.

Gardner, B (2007), "Fuel Ethanol Subsidies and Farm Price Support", Special Issue: Explorations in Biofuels Economics, Policy, and History, *Journal of Agricultural & Food Industrial Organisation*, Vol. 5, Article 4: pp 1-20.

Grilli, E R and Yang, M C (1988), "Primary Commodity Prices, Manufactured Goods Prices, and the Terms of Trade of Developing Countries: What the Long Run Shows", *The World Bank Economic Review*, Vol. 2, No 1: pp 1-47.

Martin, W and Mitra, D (1999), "Productivity Growth and Convergence in Agriculture and Manufacturing", The World Bank Trade Development Research Group, *The Policy Research Working Paper Series 2171*.

Prebisch, R (1950), *The Economic Development of Latin America and Its Principal Problems*, United Nations.

Singer, H (1950), "The Distribution of Gains between Investing and Borrowing Countries", *American Economic Review, Papers and Proceedings*, Vol. 40, No. 2 (May): pp 473-85.

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## 3.6 Assessing the Macroeconomic Policy Mix

### Monetary Policy

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**The latest monetary policy decision will alleviate inflation pressures, as the economy slows to its sustainable output path.**

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MAS announced on 10 Apr 2008 that it would re-centre the exchange rate policy band at the prevailing level of the S\$NEER, with no change in its slope or width. Since the last policy review in October 2007, the S\$NEER has been fluctuating in the upper half of the policy band, partly reflecting the accelerated broad-based decline in the US\$ due to the fallout from the subprime crisis. The strength of the S\$NEER was further supported by growth in domestic economic activity.

The April monetary policy decision provides affirmation that the exchange rate path is consistent with the prevailing macroeconomic conditions in the economy. Amidst sustained above-trend growth, the Singapore economy has also been experiencing supply-side constraints. Strong cost pressures have come to the fore, as evident in the sharp increases in wages and the rents for commercial space. External price pressures have also surprised on the upside, in line with a sharp escalation in a broad range of food and oil-related commodity prices. These factors, coupled with the 2% point GST hike in July 2007 and an adjustment in imputed rents for residential properties, caused CPI inflation to spike upwards to 3.4% in H2 2007 from 0.8% in H1 2007. So far in 2008, domestic prices have strengthened further, with CPI inflation rising steeply to 6.6% in Jan-Feb 2008.

In the quarters ahead, Singapore's GDP growth is likely to ease on account of a mark-down in growth prospects for the developed economies, especially the US. Global IT demand is anticipated to remain sluggish in line with softening global economic conditions, with knock-on effects on the domestic electronics sector. Economic activity in Asia will slow somewhat, but the pace of growth should remain fairly firm in the near term, given strong domestic demand and regional trade flows.

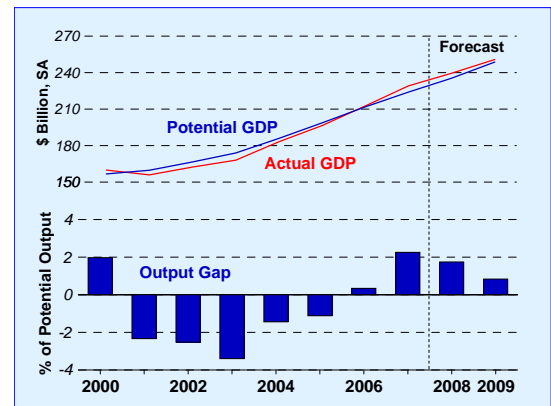
Singapore's GDP growth is projected to moderate to a more sustainable pace of around 4-6% in 2008, after four years of robust growth above 7% over the period 2004 to 2007. The economy will be supported by a

number of industries including marine engineering, construction, tourism, and certain segments of the services sector such as bank intermediation. The slower rate of expansion will bring the economy closer to its potential output path, with the output gap narrowing markedly by 2009. (Chart 3.36)

Meanwhile, global oil and food prices are projected to remain elevated, following supply shortages amidst continued firm demand. Indeed, while the downside risks to the global outlook have risen, external price pressures are likely to remain strong. On the home front, owing to short-term capacity constraints, cost pressures will persist, notwithstanding the moderation in GDP growth. In sequential terms, however, cost increases are expected to slow over the course of 2008. Overall CPI inflation is forecast to come in at the upper half of the 4.5-5.5% range under the current monetary policy stance. Labour market conditions will remain tight, with the unemployment rate estimated to stay below 2%.

The re-centring of the policy band, with its slope and width unchanged, will help to alleviate inflation pressures and provide support to the economy as it eases to a more sustainable growth rate. It is recognised that downside risks to external demand have increased as a result of continuing uncertainty in the US economy and international financial markets. MAS' monetary policy remains focused on ensuring medium-term price stability in the economy as the basis for sustainable economic growth. (See Box C for more details on the price transmission mechanism in the Singapore economy.)

**Chart 3.36**  
**Real GDP and Output Gap**



**Box C****A Stylised Representation of the Price Transmission Mechanism in Singapore*****Introduction***

Given Singapore's small and open economy, a large part of domestically consumed products is produced abroad, and the bulk of its final demand is driven by overseas markets. These characteristics have important implications for domestic price determination and inflation. In this box, we offer a stylised description of the price transmission mechanism in Singapore.

***Underlying Sources of Inflation***

Consumer price inflation in Singapore can be attributed to two underlying sources: (i) the prices of imported consumer goods, which follows from the fact that Singapore is highly dependent on imports for its consumption needs; and (ii) cost pressures arising from external demand – which accounts for 75% of total demand in the economy – resulting in attendant income spillover effects on the non-tradable sectors.

***Using the Exchange Rate to Maintain Price Stability in Singapore***

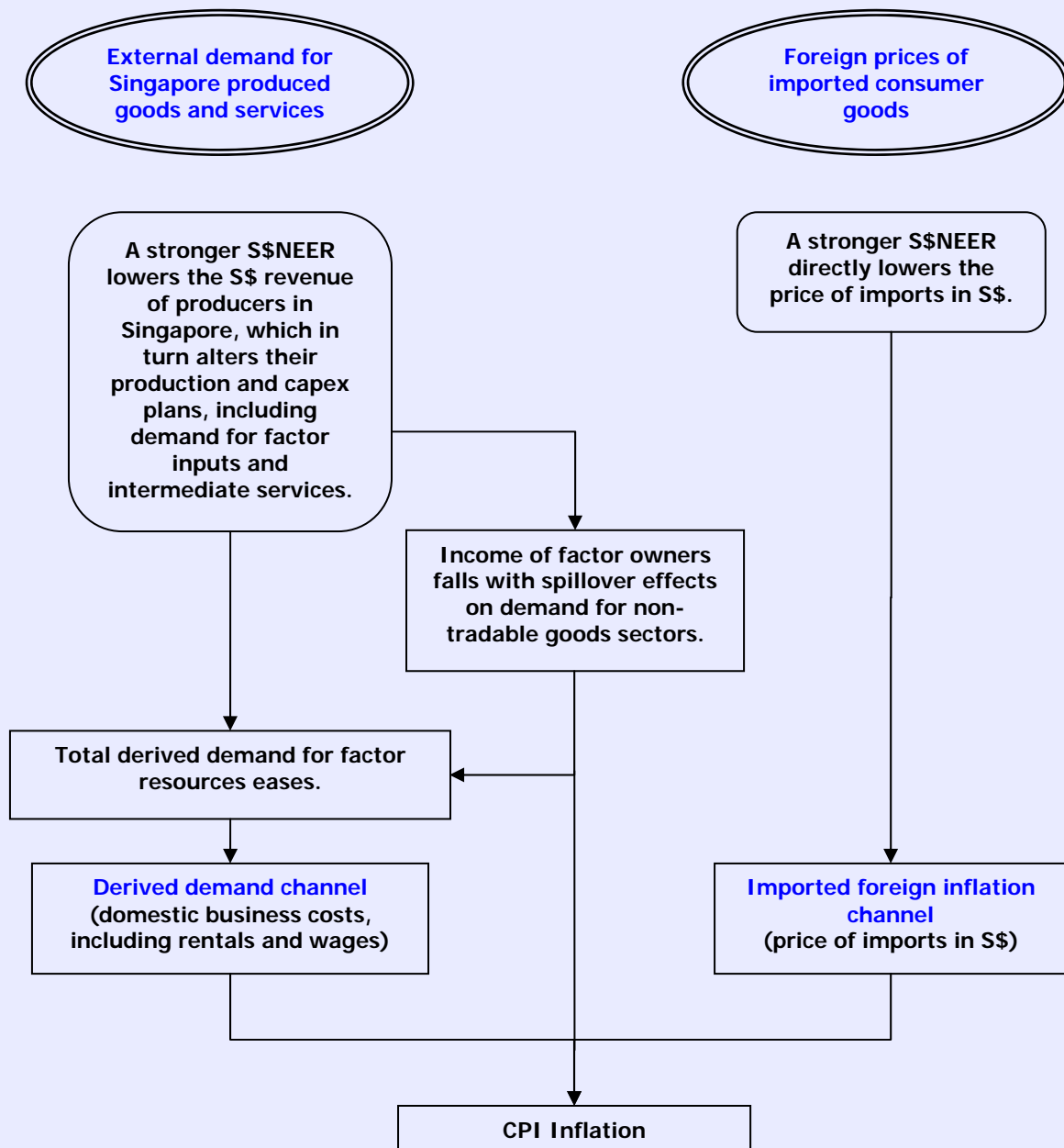
In the context of the small and open nature of the Singapore economy, the exchange rate, rather than interest rates, is used to influence price conditions. To this end, the S\$NEER serves as an intermediate target to achieve medium-term price stability in Singapore. The policy requires the setting of operating targets for the S\$NEER, expressed in the form of the level, slope and width of the policy band.

The impact of exchange rate policy is propagated through changes in the prices of imports and exports in domestic currency terms. A stronger exchange rate, for example, will act directly to filter the higher cost of imported consumer goods, thus lowering CPI inflation.

In comparison, the second channel affects inflation indirectly through cost pressures arising from external demand. Given that Singapore is a price taker in world markets, our export prices in terms of foreign currency are determined by global demand and supply. Therefore, an appreciation in the S\$ exchange rate will necessarily reduce the revenues of Singapore-based exporters in domestic currency terms, although the effect on profit margins will be mitigated somewhat by the lower cost of imported intermediate inputs. Exporters will naturally re-optimize their production plans and capital expenditure budgets, and reduce their utilisation of factor resources and intermediate services, such as industrial space and labour. This lowers the demand and income of owners of factors of production, such as wages and rentals, which in turn reduces the domestic demand for non-tradable goods and services. Total derived demand for factor resources in the economy thus eases, thereby moderating inflationary pressures in the economy.

Figure C1 provides a broad schematic framework of the price transmission mechanism. Extensive empirical work by EPD has validated the significant leverage effects of the S\$NEER on these two channels of influence and impact points in the economy.

Figure C1  
Schematic Representation of the Price Transmission Channels



### Sum Up

This box highlights the importance of both the import price channel and derived demand channel as underlying sources of CPI inflation in Singapore. Given the trade-dependent nature of the economy, these sources are necessarily underpinned by external macroeconomic conditions, even as some of the price pressures will emanate from domestic supply-side constraints. Monetary policy formulation at the MAS takes into account these various channels in determining the impact of the S\$NEER on the overall inflationary pressures in the economy.

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## Fiscal Policy

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### **The FY2008 Budget continues to focus on the medium- to longer-term challenges ...**

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The FY2008 Budget, which was announced on 15 Feb 2008, focused on facilitating ongoing structural changes to meet the medium- to longer-term challenges facing the Singapore economy.

The key thrusts of this year's Budget were on enhancing education and training opportunities, fostering innovation, and maintaining competitiveness by supporting the growth of small- and medium-sized enterprises and strengthening our role as a financial and business hub. To deal with the demographic challenges of falling fertility rates and rising life expectancy, there were also measures to cope with the demands of a rapidly ageing population, including encouraging and helping Singaporeans to prepare financially for retirement and healthcare needs.

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### **... and to foster a competitive tax environment for businesses and individuals.**

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The government re-affirmed its commitment to foster a conducive and competitive tax environment for businesses to grow. In this Budget, various corporate tax incentives were introduced to encourage new start-ups and innovation in companies, and to help SMEs upgrade their premises. These targeted tax incentives were in addition to the broader measures announced in last year's Budget, namely, the reduction in the headline corporate income tax rate to 18% with effect from YA2008, and enhancements made to the partial tax exemption scheme which would effectively lower the tax rate to less than 10% for the majority of taxable companies in Singapore. Tax incentives were also augmented to promote financial activities such as Islamic finance, insurance and wealth management, as well as to develop our maritime hub.

There were two key announcements in this Budget on individual taxes. First, there was the immediate removal of estate duty for deaths occurring on or after 15 Feb 2008. Property tax will now be the only form of asset tax going forward. The takings from estate duty had averaged around \$75 million per year, accounting for only 4% of asset taxes and less than 0.5% of total operating revenue. The second measure pertained to personal income tax. While the prevailing tax rate of

20% was maintained, the government will now provide a one-off income tax rebate of 20% for all resident taxpayers for YA2008 subject to a cap of \$2,000, in view of the strong fiscal surplus recorded in the previous year. This will mean a \$380 million loss in revenue.

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**The government's operating revenue has experienced a structural decline over the years.**

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Over the years, the government has made a deliberate attempt to cut taxes, fees and charges, with a view to enhancing the economy's competitiveness. (Table 3.7) These largely consist of reductions in both corporate and personal income tax rates. (Chart 3.37) As a result, there has been a structural decline in operating revenue since FY2002. Over the last six years from FY2002-07, operating revenue averaged 15% of GDP, compared to around 20% from FY1995 to FY2001. (Chart 3.38) This was despite the gradual hike in the GST rate over this period from 3% to 4% in 2003, then to 5% in the subsequent year, and further to 7% in 2007. In order to boost its revenue sources to meet increased expenditure needs in the longer term, the government is in the process of reviewing the framework for drawing investment income from reserves to fund its current expenditure.<sup>8</sup>

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**Government expenditure has also fallen in recent years ...**

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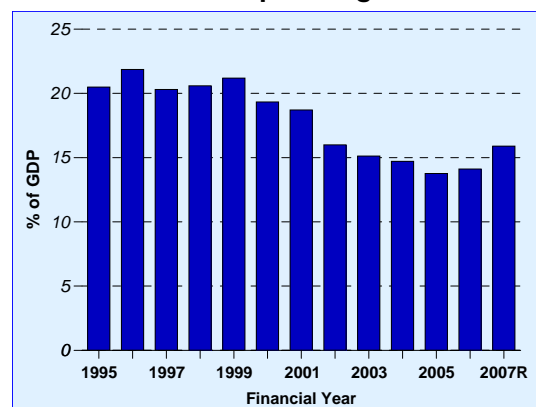
On the expenditure side, there has also been a discernible fall in total government spending – including special transfers – since FY2002. (Chart 3.39) Government expenditure as a proportion of GDP trended downwards from 23% in FY2001 to 15% in FY2007, and has remained amongst the lowest in the world. This is a manifestation of the longstanding fiscal prudence and discipline of the government, guided by the philosophy of living within its means and allocating resources efficiently and effectively while improving the country's standard of living and achieving fiscal stability.

For example, under the Block Budget Framework, ministries' budgets are capped at a fixed percentage of a seven-year smoothed nominal GDP, thus ensuring that government spending is tied to its expected revenue receipts on a sustained basis. To maintain the discipline for ministries to economise and raise productivity, the government also permanently reduced

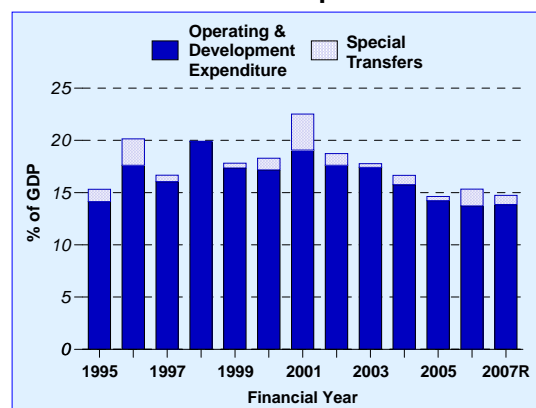
**Chart 3.37**  
Corporate and Personal Income Tax Rates



**Chart 3.38**  
Government Operating Revenue



**Chart 3.39**  
Government Expenditure



Note: For comparability across periods, land-related expenditure – which has been charged to past reserves since FY2001 – are added back to government expenditure for FY2001 to FY2007.

<sup>8</sup> The current constitution allows up to 50% of net investment income to be included in the budget each year for the current spending needs of the government, with the rest being locked up as reserves.

**Table 3.7**  
**Major Structural Tax Changes**

<b>Corporate Income Tax</b>	
YA2002-YA2008	- Reduction in corporate tax rate from 25.5% to 18%
YA2002	- Partial tax exemption for corporations
YA2008	- Increase in partial tax exemption threshold from \$100,000 to \$300,000
YA2003	- Introduction of group relief allowing companies to transfer losses, unutilised capital allowances and donation expenditure to other group companies
16 Feb 2008	- Tax incentive for fixtures/fittings
YA2008	- Income tax deduction for borrowing costs
YA2009	- R&D tax incentives
<b>Personal Income Tax</b>	
YA2003-YA2007	- Reduction in personal income tax rate from 26% to 20%
YA2005	- Exemption of all foreign-sourced income derived by individuals remitted to Singapore and all Singapore-sourced investment income derived directly by individuals from qualifying financial instruments.
<b>Asset Taxes</b>	
Jul 2001	- Reduction in property tax rate from 12% to 10%
15 Feb 2008	- Removal of estate duty
<b>Other Major Tax Changes</b>	
1 Jan 2005	- Reduction in withholding tax rate on royalties from 15% to 10%
FY2005	- Reduction in foreign domestic worker levy (FDWL) by \$50
FY2007	- Reduction in foreign domestic worker levy (FDWL) and extension of concessionary FDWL to families with disabled members
1 Sep 2007	- Reduction in road tax by 8% for passenger cars and motorcycles
1 Jul 2008	- Reduction in road tax by 15%
Mar 2008	- Reduction in Additional Registration Fees (ARF) from 110% to 100% of Open Market Value (OMV)

Source: Various issues of MOF's *Budget Highlights*

their allocated budgets (with the exception of the Ministry of Defence) by 2% of GDP in FY2004 and a further 3% in FY2005. In addition, a civil service-wide Economy Drive was launched to encourage efficiency gains, minimise waste, find more cost-effective ways to deliver services, and benchmark against the best private sector practices. Each year, MOF also extracts a portion of each ministry's budget and pools these funds into the central Reinvestment Fund (RF) for re-allocation of resources into areas of strategic priority for the future.

In the longer term, government expenditure is expected to increase. An aging population, rising healthcare costs, and the uncertain security environment will continue to demand higher public and social spending.

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**... although it is projected to rise in FY2008, as last year's budget surplus is shared with Singaporeans.**

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In the FY2008 Budget, government expenditure including special transfers is projected to rise to

\$43 billion, up from the estimated \$36 billion in FY2007. This arose from increases across the board, from social development to security & external relations and economic development. At the same time, special transfers also went up by \$3.2 billion, of which \$1.4 billion was part of the surplus sharing package arising from the better-than-expected budget surplus in FY2007. The bulk of the surplus sharing package comprised direct cash handouts in the form of Growth Dividends (\$0.9 billion), with the rest largely ear-marked for top-ups in education and healthcare. Most of these measures were aimed at easing the burden of lower- and middle-income households in the current climate of rising prices.

In addition, the government continued to inject money (\$2.2 billion) into various endowment funds to ensure a continuous stream of income to finance specific programmes that cater to the current and future needs of Singaporeans. The rest of the special transfers in FY2008 consisted of a top-up to the National Research Fund (\$0.8 billion) and the portion of the GST Offset Package announced last year, which would be disbursed in FY2008.

### The government expects to run a small budget deficit in this fiscal year.

Taking into account all the budgetary measures, the government expects to run a small deficit of \$0.8 billion (0.3% of GDP) in FY2008, compared to the \$6.4 billion (2.6% of GDP) surplus in FY2007. (Chart 3.40 & Table 3.8)

Chart 3.40  
Components of the Budget

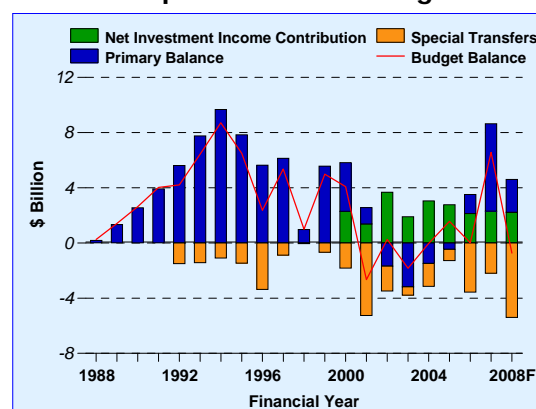


Table 3.8  
Summary of the Budget

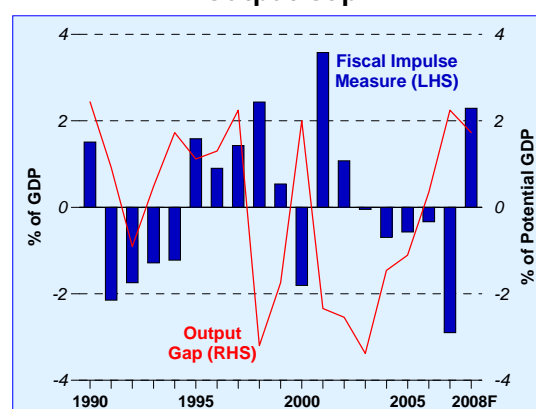
	FY2007 Revised		FY2008 Budgeted	
	\$ billion	% of GDP	\$ billion	% of GDP
Operating Revenue	39.6	15.9	39.8	14.6
Total Expenditure	33.3	13.3	37.5	13.7
Operating Expenditure	26.2	10.5	29.0	10.6
Development Expenditure	7.1	2.8	8.5	3.1
Primary Surplus/Deficit (-)	<b>6.3</b>	<b>2.5</b>	<b>2.4</b>	<b>0.9</b>
Add: Net Investment Income Contribution	2.3	0.9	2.2	0.8
Less: Special Transfers	2.2	0.9	5.4	2.0
Budget Surplus/Deficit (-)	<b>6.4</b>	<b>2.6</b>	<b>-0.8</b>	<b>-0.3</b>

Note: Figures may not tally due to rounding.

### The fiscal policy stance will be largely neutral in 2008.

To determine the magnitude of the initial stimulus to aggregate demand arising from the net effects of fiscal policy, the fiscal impulse (FI) measure is used. The FI measure indicates the direction of the change in budgetary stance – whether it has stayed neutral, or become more expansionary or contractionary compared to the previous year. In CY2008, it is estimated to switch to a positive value of around 2.3% of GDP, indicating a more expansionary stance compared to CY2007.<sup>9</sup> (Chart 3.41) However, this could be somewhat exaggerated, as the budget surplus was larger than expected last year, boosted by property-related taxes and the hike in the GST rate.<sup>10</sup>

Chart 3.41  
Fiscal Impulse Measure and the Output Gap



<sup>9</sup> Note that this is on a CY basis, while the FI measure in MOF's *Budget Highlights* is on a FY basis.

<sup>10</sup> Indeed, if we were to use a fixed base year rather than a rolling base year to compute the FI measure, the result would have been different for CY2008. Using 2006 as the base year when actual output was very close its potential, the estimated FI measure would be negative in CY2008, suggesting a contractionary fiscal policy stance. Please refer to the January 2002 issue of the Review on the methodology for calculating the FI measure.

It is important to note that the FI measure is designed to determine the direction of the change in budgetary stance, rather than to assess its effect on the economy. The latter would require simulations to capture the multiplier effects of detailed expenditure and revenue items using a macroeconomic model.

Based on simulations using the MAS Monetary Model of Singapore (MMS), it is estimated that the impact of the FY2008 Budget on overall GDP will be fairly small in 2008 and 2009, confirming its broad neutrality as far as the macro economy is concerned. (Table 3.9) Nonetheless, there are some effects on particular expenditure categories.

Private consumption will be lifted by 0.2% point in 2008 and 0.1% point in 2009 by the Growth Dividends and personal income tax rebates. This does not include the impact of the measures announced in the FY2007 Budget, which have already contributed 0.2% point to private consumption growth in the baseline. At the same time, government consumption will also be boosted by higher expenditure on social and healthcare services. While overall investment in the longer term will be boosted by measures to incentivise innovation and enterprise, it will be dampened by the short-term deferment of government projects worth nearly \$3 billion to ease the pressure on construction costs. This is anticipated to shave 0.7% point off from investment growth in 2008.

On the inflation front, the FY2008 Budget will also have a rather muted impact. First, this Budget is not an expansionary one by design in terms of its injections into the economy. Second, any potential upside to inflation from the boost to consumption is expected to be partially offset by the cut in government investment which will help to dampen business costs.

**Table 3.9**  
**Impact of FY2008 Budget on Key**  
**Macroeconomic Variables**

(% Point Deviation from Baseline)

	2008	2009
GDP Growth	0.1	0.0
Private Consumption Growth	0.2	0.1
Investment Growth	-0.7	0.4
CPI Inflation	0.0	0.1



# **SPECIAL FEATURES**

## Special Feature A

# The Fall in the US Dollar and its Status as a Reserve Currency

## Introduction

Since its most recent peak in early 2002, the US\$ has weakened significantly against the major currencies, including the euro, Swiss franc and the Canadian dollar. Together with the sizeable US current account deficit, this has raised issues concerning the continued role of the greenback as the world's leading reserve currency and the stability of the global monetary system. Key parallel structural developments that have occurred in the global economy have also had an impact on the international monetary system in recent years. These include persistent saving-investment imbalances, the creation of the euro, and the rise of large emerging market economies, such as China and India. The views and research on all these important developments are reviewed in this Special Feature.

There are signs of a gradual transition of the global monetary system towards generalised floating exchange rates, which suggest that the somewhat popular "Bretton Woods II" label currently being applied to the international monetary system may now be a little out of date. As countries develop and experience the benefits of fewer capital controls and more flexible exchange rates, and as financial markets mature in terms of depth and liquidity, other currencies may gain acceptance as reserve currencies. If this happens, then we might indeed witness a gradual decline in the importance of the dollar as a reserve currency. That said, given the extensive network externalities and the entrenched position of the US as default banker to the world, the greenback's position as a leading reserve currency and as a "vehicle" currency for global transactions is unlikely to be dislodged anytime soon.

## The US Dollar Adjustment Process

### Broad-based, Gradual Depreciation

Since the beginning of 2002, the dollar has depreciated significantly, particularly against the major currencies such as the euro, Australian dollar and Canadian dollar. Moreover, Asian currencies have also started to appreciate against the US\$ at a faster pace in the last few years. (Chart 1)

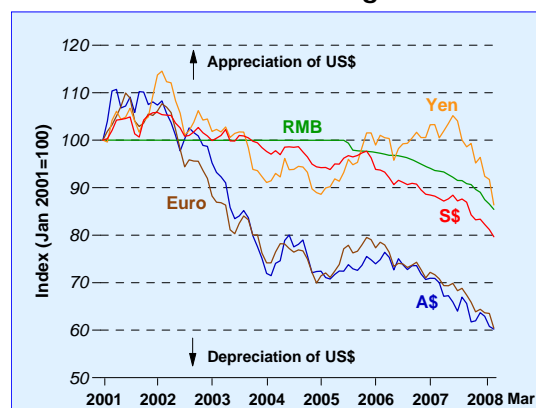
On a trade-weighted basis, the nominal US\$ is now at a level which prevailed thirteen years ago, according to Federal Reserve computations and, as at end-March 2008, has declined by 26% relative to its peak in February 2002. Against the major currencies, the dollar has declined even further, by 37%, over the same period, and is now at its lowest level since the start of its free-float in 1973. (Chart 2)

In real terms, i.e. adjusted for differences in inflation rates across countries, the US\$ has fallen to near historic lows of the post-Bretton Woods period. (Chart 3) A key difference in the current adjustment phase, however, is that the decline in the dollar has occurred over a much longer time span. At the time of the Plaza Accord in the mid-1980s, the real trade-weighted US\$ exchange rate fell by 29% over a three year period between March 1985 and April 1988, or about 9% per year. By contrast, it fell by only 25% over a much longer six-year period between February 2002 and March 2008, or 3-4% per year.

Table 1 shows that, since its peak in February 2002, the US\$ has depreciated most against the Australian dollar, followed by the euro and the Canadian dollar.

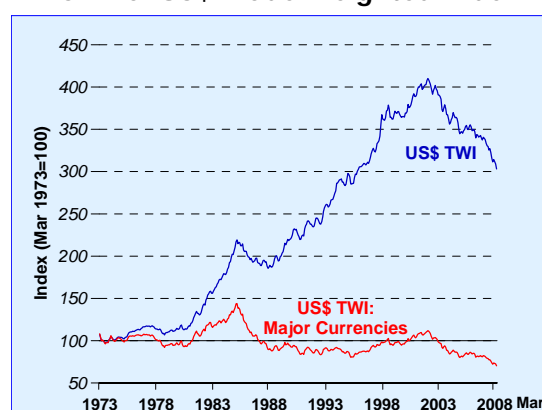
Figure 1 documents the key developments over the decades that have had an influence on the value of the US\$ (taking the Yen/US\$ exchange rate as a proxy).

**Chart 1**  
Selected US\$ Exchange Rates



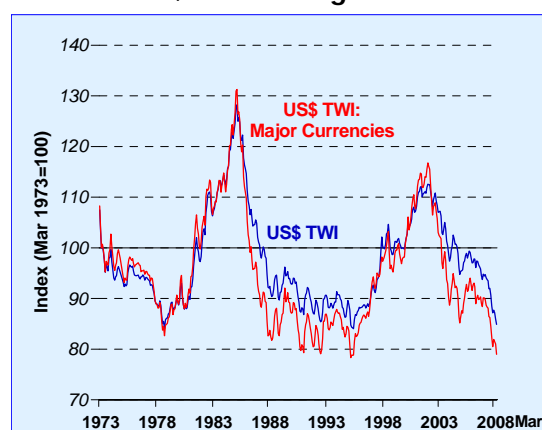
Source: CEIC

**Chart 2**  
Nominal US\$ Trade-weighted Index



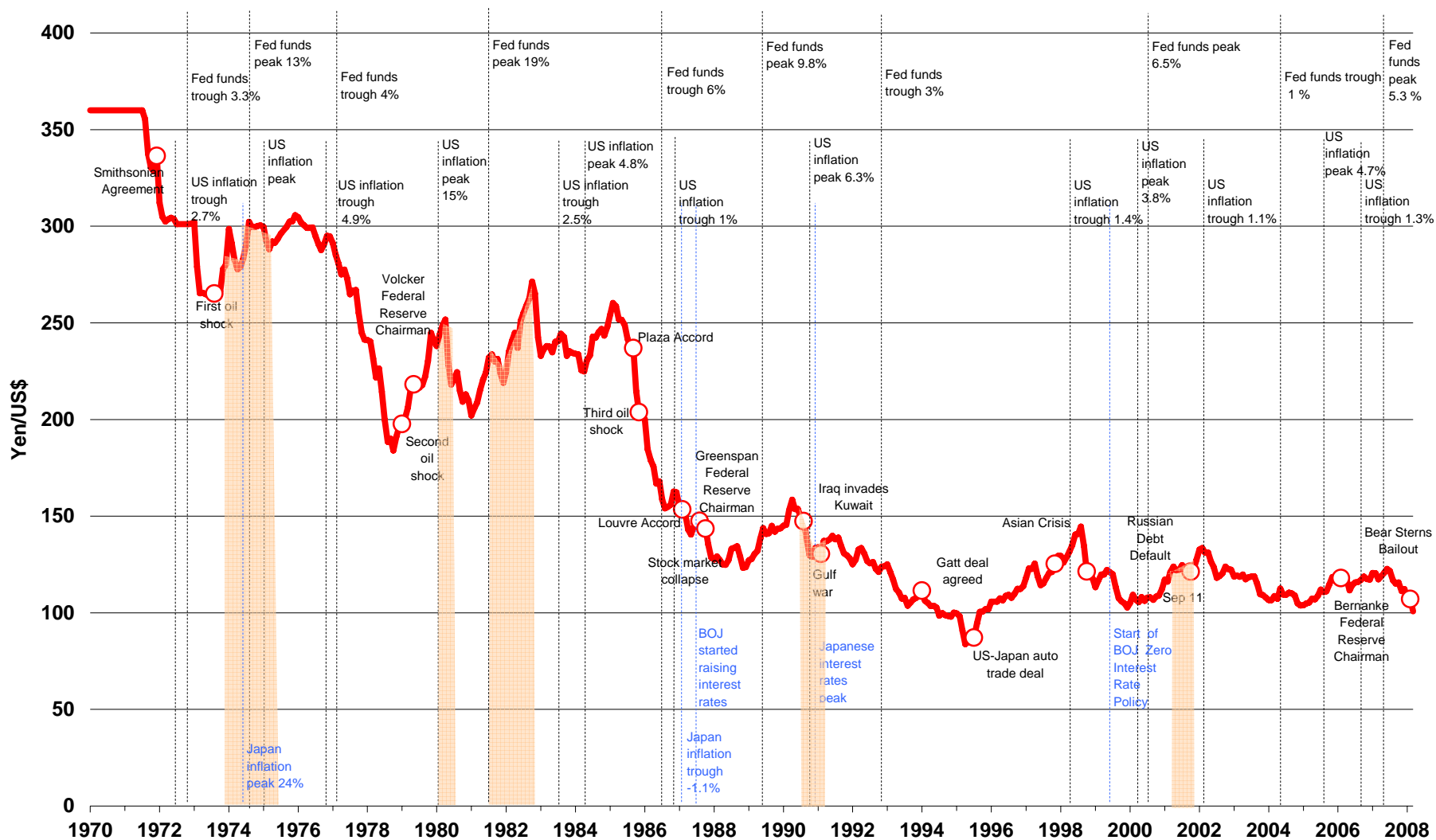
Source: CEIC

**Chart 3**  
Real US\$ Trade-weighted Index



Source: CEIC

Figure 1: Yen/US\$ Exchange Rate (1970-2008)



Note: Shaded area indicates US recession

**Table 1**  
**Exchange Rate Movements against the US\$**

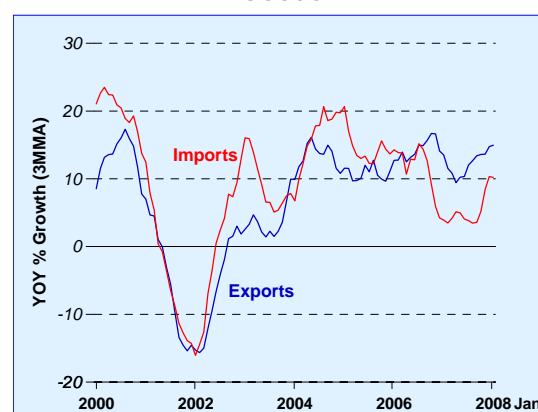
	% Appreciation against the US\$ (as at end-March 2008)	
	Since Jan 2005	Since Feb 2002
<b>Euro</b>	18.3	78.3
<b>Sterling pound</b>	6.5	40.7
<b>Japanese yen</b>	2.6	32.6
<b>Canadian dollar</b>	22.1	59.2
<b>Australian dollar</b>	20.2	79.8
<b>Chinese renminbi</b>	17.0	17.0
<b>Korean won</b>	5.7	34.5
<b>Indonesian rupiah</b>	-0.6	10.5
<b>Malaysian ringgit</b>	19.3	19.3
<b>Philippine peso</b>	31.6	22.7
<b>Thai baht</b>	23.4	39.6
<b>Singapore dollar</b>	18.3	32.3
<b>Nominal US\$ TWI: Broad</b>	-12.5	-26.1
<b>Nominal US\$ TWI: Major Currencies</b>	-13.2	-37.2

Source: CEIC

The fall in the US\$, together with a concurrent decline in the US current account deficit more recently, has eased tensions over what the IMF calls “global imbalances”. From a record high of US\$217 billion in Q3 2006 (or 6.5% of GDP), the seasonally-adjusted deficit has narrowed to US\$173 billion in Q4 2007 (4.9%). US real exports of goods and services, which rose by 6.5% q-o-q SAAR in Q4 2007, expanded at a faster pace than imports, which contracted by 1.4%. (See Chart 4 for longer-term trends in y-o-y terms.)

The orderly adjustment of the US\$ has lessened the sense of impending crisis in the global economy and has permitted economic agents to adapt to the changes without major or abrupt disruption of normal activities. Indeed, Simon Johnson, chief economist at the IMF, has recently characterised the dollar decline as “reassuring” and “not disorderly” because it has not led to a widespread loss of confidence in the dollar as a reserve currency, nor has it required a rise in US interest rates.

**Chart 4**  
**Growth in US Exports and Imports of Goods**



Source: CEIC

## The Contemporary International Monetary “Non-System”

This section reviews some of the salient features of the post-Bretton Woods monetary system in the light of recent developments, including the adoption of inflation targeting regimes by many central banks around the world.

The present adjustment to the value of the dollar and global imbalances is best viewed in the context of the gradual evolution of the international monetary system. Under the original Bretton Woods system, the US\$ performed the role of a nominal anchor for the international monetary system, with its value fixed at US\$35 per troy ounce of gold. Other currencies were pegged to the dollar, and thus to the base price of gold.<sup>1</sup>

Although official exchange rates were fixed under Bretton Woods, the reality was somewhat different, according to a seminal study by Reinhart and Rogoff (2002). Taking into account the incidence of dual or parallel markets (legal or otherwise) and multiple exchange rate practices in the post-war period, the authors found that more than 50% of the cases of pegged exchange rate regimes had in fact two or more exchange rates. The existence of these parallel and more market-based exchange rates – on which a significant amount of transactions were based – suggests that Bretton Woods was not entirely a pure, fixed exchange rate system. Thus, on a de facto basis, the number of pegged exchange rate regimes under Bretton Woods was significantly less than reported to the IMF.

Further, the authors found that the number of de facto managed floating and freely floating exchange rates post-Bretton Woods was also fewer than what was reported on a de jure basis. These findings have significantly narrowed the actual differences between the system of exchange rates during Bretton Woods and the post-Bretton Woods environment.

Notwithstanding these caveats, when the dollar was unpegged to gold and floated in March 1973, it marked the beginning of the “generalised floating era” for major currencies. Theoretically, if all currencies are freely floating, there would be little need for currency intervention and no need for countries to maintain substantial foreign exchange reserves. Balance of payments disequilibria would be corrected automatically by movements in the nominal exchange rate, which, in turn, would function as a “shock absorber” for the domestic economy. However, many developing countries have continued to peg their currencies, de facto, to “hard” currencies, especially the dollar, on the grounds that their financial systems are insufficiently mature to deal with large currency fluctuations.

Borrowing from the Bretton Woods framework, some economists have characterised the present monetary system as a “Bretton Woods II” arrangement,<sup>2</sup> or simply as an extension of the Bretton Woods fixed exchange rate system. According to this hypothesis, the core of the arrangement comprises the major G3 economies (the US, Europe and Japan), where exchange rates are largely determined by market forces. By contrast, the periphery consists of the large and rapidly growing Asian region (excluding Japan) and the Middle East, where currencies remain closely tied to the US\$. Thus, Bretton Woods II is a “shared development” model that provides an incentive for peripheral countries to keep their exchange rates stable against the US\$. This attempt to keep exchange rates relatively stable has been termed “fear of floating” by Calvo and Reinhart (2002).

Given that the present international monetary system comprises a mixed bag of freely floating currencies, managed floats and more tightly pegged exchange rates, a number of

<sup>1</sup> Or pegged to a major currency such as the pound sterling, which was itself pegged to the US\$.

<sup>2</sup> The idea of Bretton Woods II was initiated and popularised by a group of economists at Deutsche Bank.

commentators have pointed out that this represents a major “fault-line” in the system. Recognising in part the wide divergences in countries’ exchange rate regimes and practices, Williamson (1977), for example, famously characterised post-Bretton Woods as a “non-system”. Corden (1994) also observed that the essential feature of the system is that it is “unplanned and uncoordinated”.

Referring more specifically to the Bretton Woods II characterisation, Eichengreen (2007) pointed to the fact that under the original Bretton Woods system there were formal arrangements, such as the Gold Pool<sup>3</sup>, that provided incentives for countries to play by the rules. By contrast, no such binding arrangements hold Bretton Woods II together. Apart from the shared (export-driven) development model, there is also an absence of an effective surveillance and enforcement mechanism that prevents Bretton Woods II countries from curtailing their accumulation of dollars and diversifying their reserves. The ultimate collapse of the Gold Pool thus serves as a useful reminder that “when institutional support is weak, when information is imperfect, when a fringe of non-participating countries exists, then it would be difficult to achieve sustainable cooperation.”

### **Towards a More Flexible International Monetary System?**

Indeed, recent developments have given greater credence to some of these concerns. As developing countries have grown in importance in the world economy, and financial globalisation has become more entrenched, global imbalances appear more protracted and difficult to resolve. In addition, the substantial increase in private cross-

border financial flows has allowed some countries to sustain external disequilibria for extended periods of time.

As long as the key countries involved, especially the US, run reasonably balanced external positions, the global system can function smoothly – deficit countries merely need to devalue against the dollar. Other things being equal, devaluation would be tantamount to a depreciation against all currencies, and this would help to promote the necessary shifts in expenditures away from tradeables (imports) while encouraging increased domestic production and exports.

However, when the anchor country, in this case the US, runs persistent and sizeable current account deficits, then the problem becomes one of identifying those countries which will bear most of the burden of adjustment. Clearly, no single country would want to be the primary counterparty to a weak dollar.

As it turned out, the persistence of the US current account deficit since the early 1990s (and its large size) has led to some fairly significant changes to the asymmetry in global exchange rate arrangements, particularly in Asia. There has been considerable pressure on Asian currencies to rise relative to the dollar. Contemporary developments in the global economy suggest that Bretton Woods II may be no more than a transitional phase. The loosening of the peg between the renminbi and the US\$ since July 2005 has removed a key pillar of the Bretton Woods II argument. Subsequently, as the renminbi appreciated, most other Asian currencies followed suit, further de-coupling these currencies from the dollar.<sup>4</sup> In the Middle East, Kuwait recently became the first Gulf country to delink its currency from the US\$.

<sup>3</sup> The Gold Pool was an American initiative in 1961 to stabilise the market price of gold by pooling the gold reserves of the US and the major European countries. This collective effort reduced the burden on the US to singlehandedly maintain the market price of gold at US\$35 a troy ounce.

<sup>4</sup> Acknowledging the significant appreciation of Asian and other emerging market currencies against the US\$, Peter Hooper of Deutsche Bank recently conceded that there have been “some signs of a loosening of the dollar peg in several emerging market economies” which represented a gradual “unwinding” of the Bretton Woods II arrangement and is similar to the unwinding process that took place under the original Bretton Woods system.

Based on the IMF's classification of de facto exchange rate regimes, there appears to be an increase in the number of emerging market countries that have moved towards a floating arrangement over the past 10-15 years.<sup>5</sup> Indeed, about half of the emerging market economies are classified to have such a regime in 2006. (Chart 5)

Some of the broad shifts in de facto exchange rate regimes are highlighted below:

### Greater Asian Currency Flexibility

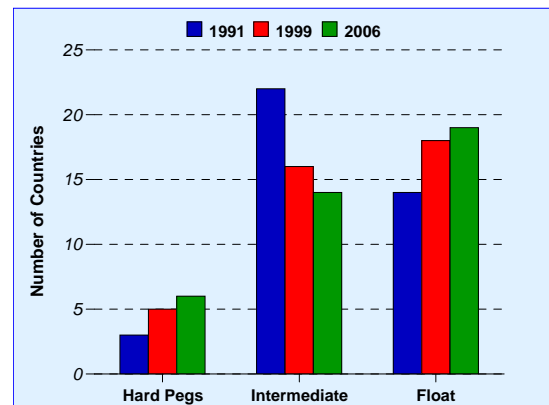
In the aftermath of the Asian Crisis, many commentators called for greater exchange rate flexibility in Asia. Following the loosening of the renminbi peg in 2005, it is generally recognised that Asian currencies have indeed become more flexible vis-à-vis the US\$. Many have appreciated significantly against the greenback, particularly in the past few years. A number of central banks have also adopted an inflation targeting framework.

Thus far, the Asian currency adjustment process has proceeded in an uncoordinated manner. Regional central banks have intervened where necessary to prevent their exchange rates from rising too sharply and most have also been sterilising their interventions so as to mitigate the liquidity impact on the domestic economy. Over the last few years, there has been a tendency for Asian currencies to rise in tandem. Between January 2005 and March 2008, for instance, the renminbi, Malaysian ringgit and Thai baht rose by 17%, 19% and 23% respectively, against the US\$.

### Pressure on Middle East Currency Pegs

With the fall of the US\$, there has been increased speculation as to whether Middle Eastern countries will abandon their dollar pegs. The debate has intensified since May 2007 when Kuwait became the first Gulf State to drop its rigid exchange rate peg to the US\$ in favour of a more flexible peg to a basket of currencies. By shifting to a basket peg, the Kuwaiti monetary authorities have gained a measure of domestic monetary policy independence, which allows them to pursue a

**Chart 5**  
**Emerging Market Economies: Shifts in de facto Exchange Rate Regimes**



Source: Fischer (2007)

<sup>5</sup> This is based on Fischer (2007) and the IMF's annual reports on Exchange Arrangements and Exchange Restrictions. Fischer re-grouped the IMF's exchange rate classifications into three categories, namely: a hard peg, which consists of currency boards and countries with no separate legal tender; an intermediate regime that comprises currencies pegged in a horizontal band, crawling pegs, rates within crawling bands and other fixed pegs; and a floating exchange rate arrangement that comprises managed floats and independent floats.

different (tighter) monetary policy stance to that of the US. While a more flexible basket peg arrangement might be a useful idea, some have argued that the Gulf States are not quite prepared, in terms of financial infrastructure, to cope with greater exchange rate volatility.

### Inflation Targeting and Currency Flexibility in Latin America

Many Latin American countries have adopted an inflation targeting framework,<sup>6</sup> which has been credited with helping to bring inflation down, and anchoring it at low levels. Moreover, macroeconomic stability in the region has allowed the monetary authorities to adopt a more “benign neglect” attitude towards exchange rate movements.

As Federal Reserve Chairman (at that time Governor) Bernanke (2005) said: “Inflation targeting and flexible exchange rates together serve to reduce the conflict between domestic economic stability and the free movement of capital across borders that is inherent in some other arrangements, most obviously the fixed exchange rate regimes favoured by these countries in the past.” Bernanke also cites reforms in fiscal policy and banking regulation, and central bank independence as key changes in the policy environment that have contributed to the success in containing inflation in Latin America. As inflation expectations become entrenched at moderate levels, monetary authorities are likely to become more comfortable with greater exchange rate flexibility.

## Challenges to the Dollar’s Pre-eminent Global Position

The fall in the US\$ over the last six years has renewed speculation about its longer-term status as a leading reserve currency. The dollar, like any other domestic or international currency, can be characterised by its primary functions: a medium of exchange, a unit of account and a store of value. In an international context, as a medium of exchange the dollar is widely used in cross-border trade and financial transactions, even in transactions that do not involve the US directly. As a unit of account, the dollar is commonly used as an invoicing currency for a wide variety of commodities, high-tech products and services. As a store of value, the dollar has generally held up well against most other currencies over the longer term. At the official level, the dollar also functions as a reserve and intervention medium and as a peg for exchange rates.

Clearly, the widespread use and acceptance of the dollar all over the world is tied to the status of the United States as the world’s dominant superpower with the most advanced economy. More specifically, the continued dominance of the dollar

will depend on a number of factors, including its strong incumbent position dating back to the Bretton Woods system, the size of the US economy and trade and capital movements, the depth of US financial markets and the credibility enjoyed by the Federal Reserve.<sup>7</sup> Lastly, economies of scale suggest that it would be very difficult for another currency to quickly replace the dollar as the major reserve currency. Thus, although the dollar has no special status post-Bretton Woods, it continues to occupy a central position in the global financial system.

Cohen (1998) notes that the key to the widespread acceptance of a currency – particularly when it is used outside of its own territorial domain – is simply *trust*. He adds that “money has no meaning at all except with reference to the mutual confidence that makes its use possible.” Hence, the dollar’s leading position reflects the fact that people all over the world believe and trust that it will continue to be accepted as a medium of exchange and that it will retain its real purchasing power.

<sup>6</sup> These include Brazil, Mexico, Chile, Colombia and Peru. Argentina has also expressed an interest in moving towards such a regime.

<sup>7</sup> In the words of Former Federal Reserve Chairman Paul Volcker (2008): “As custodian of the nation’s money, the Federal Reserve has the basic responsibility to protect its value and resist chronic pressures toward inflation.”

Two factors, in particular, will be important in the ongoing debate about the fall in the dollar and its continued role as a leading reserve currency.

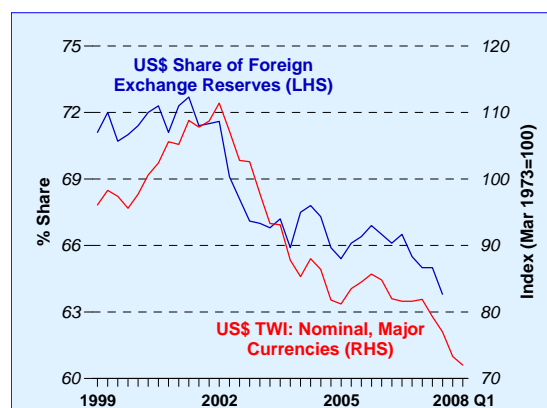
### **(i) Portfolio Adjustment by Central Banks**

First, is a major sell-off of the US\$ by foreign central banks likely? On the assumption that some central banks have recently become “buyers of last resort” of the US\$, some analysts have expressed concern that should central banks stop their dollar purchases, for whatever reason, the greenback would fall sharply.

In his book *The Age of Turbulence*, former Federal Reserve Chairman Alan Greenspan (2007) has played down this possibility. He suggests that the world’s financial markets are sufficiently deep to cope with official selling pressures or reduced demand. However, noting that China and Japan have accumulated some US\$2.5 trillion of reserves between them (of which, four-fifths appear to be dollar claims), Greenspan agrees that there will be some modest downward pressure on the dollar and upward pressure on US long-term interest rates if central banks sell dollar reserves. Nonetheless, he notes that the “foreign exchange markets for the major currencies have become so liquid that the currency transactions required to implement large international transfers of US\$ deposits can be accomplished with only modest disturbance to markets. As for interest rates, the extent of a rise is likely to be less than many analysts fear, certainly less than a percentage point and conceivably much less.” He reasons that liquidation of US Treasury securities by central banks (or any other market participant) is merely an asset swap which affects the spread between two securities but need not affect the overall level of interest rates.

Recent data from the IMF indicate that global official foreign exchange reserves (OFR) rose to US\$6.39 trillion in December 2007, the highest on record, and an almost four-fold increase over the past ten years. The IMF’s Currency Composition of Official Foreign Exchange Reserves (COFER) data suggests that the dollar may have lost ground as the currency of choice for foreign exchange reserves. The dollar’s share of countries’ official reserve assets slipped to 63.9% as at end-2007, compared with 65.5% in 2006, and 66.9% in 2005.<sup>8</sup> (Chart 6) Thus, it appears that official asset

**Chart 6**  
**US\$ Share of Official Foreign Exchange Reserves and the US\$ TWI**



Source: IMF COFER database and CEIC

<sup>8</sup> These figures are based on data pertaining to “allocated reserves”, in which the currency composition can be identified (or reported to the IMF). Unallocated reserves (in which there is no information on the currency composition of the reserves) amounted to a significant US\$2.33 trillion in December 2007 (or equivalent to 36% of total global OFR).

allocation has begun to favour non-dollar instruments in order to reduce foreign exchange losses in the event of a continued dollar correction.

However, it is also plausible that the decline in the US\$ share of OFR simply reflects the fall in the value of the US\$ against other major currencies and translation losses as the currency reserves are marked to market, i.e. valued at the latest exchange rates. Assets held in euros, for instance, will have gained in value with the fall in the dollar. Since OFR statistics are denominated in US\$ and the US\$ has fallen by some 37% against the major currencies, it would be reasonable to expect a reduction in the share of US\$-denominated assets in countries' OFR. Indeed, Chart 6 suggests that there is a fairly strong correlation between the dollar share of OFR and movements in the US\$ exchange rate.

Furthermore, in a recent IMF working paper Lim (2007) found some evidence of "portfolio rebalancing" behaviour among reserve asset managers over the period 1999 to 2007. A portfolio rebalancing strategy involves purchasing a currency when it depreciates, and selling a currency when it appreciates – a sort of "contrarian" asset management strategy. Such a strategy tends to offset the direction of movement of a currency. For example, when the US\$ falls, the value of dollar assets in a portfolio will decline, causing its share to shrink relative to other currency assets in the portfolio. In order to "rebalance" or maintain a certain desired share of the dollar in the portfolio, this calls for the purchase of more dollar assets in order to boost its relative share. Lim concludes that "portfolio rebalancing is likely the dominant dynamic allocation strategy in the management of reserves." This implies that the fear of central banks selling dollars as a source of instability in the foreign exchange markets has been somewhat exaggerated.

### **(ii) Declining Use of the US\$ as an Invoice Currency**

The second factor pertains to the continued role of the dollar as a vehicle currency for international trade and finance. According to a recent paper by

Goldberg (2008) from the Federal Reserve, the use of the US\$ as an invoice currency for both exports and imports remains very popular among "dollar bloc" countries in Asia. For countries such as Korea and Thailand, some 80% of their trade is reportedly invoiced in dollars even though direct trade with the US accounts for only 10-20% of their total trade. The use of the US\$ has fallen for other more developed countries in the region. Official Japanese data, for example, show that the proportion of exports invoiced in yen has risen from near zero in 1970 to some 40% since the early 1980s. Slightly more than half of Japanese exports to Asia are now denominated in yen.

Further, following the advent of the euro and the growing number of countries lining up to join the EU (and perhaps eventually the eurozone), the use of the euro has also expanded significantly. Slightly more than half of all exports from France, Germany, Italy and Spain are now invoiced in euros. For many of the EU-accession countries, the proportion of exports invoiced in euros is considerably higher, at some 50-85%, as these countries trade predominantly with EU countries. So the expansion of the EU is likely to lead to an increased role for the euro over time.

Thus, while there is still considerable inertia in the use of other major currencies in international transactions, these trends, together with the rise of large emerging market economies, such as China and India, suggest that the use of the US\$ as an invoice currency is likely to decline gradually over time.

It is worth remembering that seven hundred years ago, China led the world in terms of technology and per capita income. It then fell into relative decline before embarking on a rapid catch-up phase at the end of the 1970s. According to long term projections by Maddison (2007), China's economy should grow at twice the rate of the US (5% versus 2.5%) between 2003 and 2030, and will probably overtake the US as the world's biggest economy by 2030 in Purchasing Power Parity (PPP) terms. By then, the combined GDP of China and India is projected to approach that of the group of rich countries comprising Western Europe, the US and Japan. (Table 2)

In addition, technology and highly liquid foreign exchange markets make it much easier to convert from one currency to another. As Eichengreen (2007) explains, “financial innovation will continue to reduce the costs of converting currencies, further weakening the incentive to hold reserves in

the same form that other countries hold reserves simply to minimise transaction costs”. This argument holds for both private and public sector holdings of dollars. Reduced transaction costs could lead to reduced demand to hold US\$ balances solely for settlement purposes.

**Table 2**  
**Global GDP, 1950-2030**

	Levels in Billions of 1990 PPP Dollars					Average Annual Rate of Change (%)	
	1950	1973	1990	2003	2030	1990- 2003	2003- 2030
W. Europe	1,396	4,097	6,033	7,857	12,556	2.05	1.75
USA	1,456	3,537	5,803	8,431	16,662	2.91	2.56
Japan	161	1,243	2,321	2,699	3,488	1.17	0.95
Other Industrial	180	522	862	1,277	2,414	3.07	2.39
<b>Industrial Countries</b>	<b>3,193</b>	<b>9,398</b>	<b>15,020</b>	<b>20,265</b>	<b>35,120</b>	<b>2.33</b>	<b>2.06</b>
E. Europe	185	551	663	786	1,269	1.33	1.79
Russia	315	872	1,151	914	2,017	-1.76	2.98
Other Former USSR	199	641	837	638	1,222	-2.17	2.43
Latin America	416	1,389	2,240	3,132	6,074	2.61	2.48
China	245	739	2,124	6,188	22,983	8.56	4.98
India	222	495	1,098	2,267	10,074	5.73	5.68
Other Asia	363	1,387	3,099	5,401	14,884	4.36	3.83
Africa	203	550	905	1,322	2,937	2.96	3.00
<b>Rest of the World</b>	<b>2,144</b>	<b>6,625</b>	<b>12,117</b>	<b>20,649</b>	<b>61,460</b>	<b>4.19</b>	<b>4.12</b>
<b>World</b>	<b>5,337</b>	<b>16,022</b>	<b>27,136</b>	<b>40,913</b>	<b>96,580</b>	<b>3.21</b>	<b>3.23</b>

Source: Maddison (2007)

## Sum Up

After the collapse of the Bretton Woods fixed exchange rate system in the early 1970s, world trade and payments relied on an unplanned and uncoordinated monetary “system” that included a wide variety of fixed and flexible exchange rate regimes. This arrangement, though imperfect, proved manageable provided the core country (the US) was largely in balance – from a balance of payments perspective. However, strains began to emerge in the early 1990s following the rise in the US current account deficit.

Up until recently, the “Bretton Woods II” hypothesis was a popular characterisation of the post-Bretton Woods arrangement. However, following the un-pegging of the renminbi and

increased currency flexibility in emerging market economies, Bretton Woods II may prove to be a transitional phase in the evolution of the global monetary system.

The current environment in which the anchor currency (US\$) experiences increased volatility could pose a risk to the health of the global economy and financial system. That said, the relative ease with which the US trade deficits have thus far been financed suggests that there is no shortage of international lenders to the US (or demand for US assets) – otherwise, US interest rates would have been somewhat higher. Clearly, the credibility enjoyed by the Federal Reserve in maintaining low inflation is fundamental to

preserving investors' confidence in the dollar. However, as the Federal Reserve lowers interest rates to deal with the fallout from the subprime crisis, there is the obvious risk that inflation expectations could rise, which could undermine confidence in the currency.

From a portfolio perspective, an important long-term risk to the dollar emanates from the continued build-up of the US' net international liabilities. The US presently needs to borrow some US\$700-800 billion a year from abroad to meet its domestic savings shortfall. Kenneth Rogoff, former chief economist at the IMF, has recently stated that Americans will find global hegemony a lot more expensive if the dollar falls off its perch.

More recently, the persistent fall in the dollar, the rise in global commodity prices, growing inflationary pressures and wealth accumulation outside of the US may well be signs of a world in which the dollar plays a less strategic role and the US shares more of its economic power with the rest of the world.

At this juncture, there is considerable uncertainty with regard to the trajectory of the US economy and the dollar. Nonetheless, it seems safe to say, given the significant structural changes in the global economy in recent years – the successful creation of the euro, the rise of China and India, the adoption of more flexible exchange rate regimes – that the dollar is likely to share its reserve currency status with some other currencies over the longer term which, in itself, need not be an undesirable outcome. To some extent, it reflects a natural by-product of a more broad-based global economy with reduced dependence on the US as a primary engine of growth.

The stability of the global monetary system should also be enhanced by the increased flexibility of exchange rates in many parts of the world, including the "dollar bloc" countries in the Asia-Pacific region. To fully benefit from increased currency flexibility and at the same time be shielded from some of the adverse effects of more volatile exchange rates, emerging market economies should therefore strengthen their financial infrastructure and supporting institutions.

## References

Bernanke, B (2005) "Inflation in Latin America: A New Era?" Remarks at the Stanford Institute for Economic Policy Research Economic Summit, Stanford, California, 11 February; available at <http://www.federalreserve.gov/newsevents/speech/2005speech.htm>

Calvo, G, and Reinhart, C (2002), "Fear of Floating", *Quarterly Journal of Economics*, Vol. 117, No. 2, pages 379-408, May.

Cohen, B J (1988), *The Geography of Money*, Cornell University Press.

Corden, W M (1994), *Economic Policy, Exchange Rates and the International System*, Oxford University Press.

Eichengreen, B (2007), *Global Imbalances and the Lessons of Bretton Woods*, MIT Press.

Fischer, S (2007), Mundell-Fleming Lecture: "Exchange Rate Systems, Surveillance, and Advice," 8<sup>th</sup> Jacques Polak Annual Research Conference, IMF, 15-16 November.

Goldberg, L S, and Tille, C (2008), "Macroeconomic Interdependence and the International Role of the Dollar", *NBER Working Paper No. 13820*.

Greenspan, A (2007), *The Age of Turbulence*, Penguin Press.

Lim, E (2007), "Do Reserve Portfolios Respond to Exchange Rate Changes Using a Portfolio Re-balancing Strategy? An Econometric Study Using COFER Data", *IMF Working Paper WP/07/293*.

Maddison, A (2007), *Contours of the World Economy, 1-2030 AD*, Oxford University Press.

Reinhart, C and Rogoff, K (2002), "The Modern History of Exchange Rate Arrangements: A Reinterpretation", *NBER Working Paper 8963*.

Volcker, P (2008), speech to The Economic Club of New York, New York City, 8 April; available at <http://www.econclubny.com/>

Williamson, J (1977), *The Failure of World Monetary Reform, 1971-1974*, Sunbury-on-Thames: Thomas Nelson Press.

## Special Feature B

# Rivalry and Prosperity

by Paul Romer<sup>1</sup>

Picture your worst nightmare as a parent. Both your child and someone else's child are deathly ill. There is a bottle with enough medicine to save the life of just one child. You have worked all your adult life as a teacher. The other family made a fortune speculating in real estate. Because they are wealthier, they outbid you for the medicine and use it to treat their child. Before reading on, pause and think about the emotions you would feel as you looked at your sick child.

Now, change the story. Suppose that the other family finds on the bottle of medicine the formula for making more: add water, salt, a bit of crushed banana, and some sugar. They call you and give you the formula so you can make more medicine and save the life of your child, too. Now, think about how differently you would feel in this case.

The medicine in the bottle is what economists call a rival good. You and someone else are rivals for the use of this good – rivals in the sense that if the other family uses the medicine to save the life of its child, you cannot use it to save yours. In contrast, the formula for making more of the medicine is a non-rival good. You can use the formula to make medicine for your child without in any way depriving the other family, or any other family, of the ability to use it as well.

The non-rival good described here is real. The formula is the basis for oral rehydration therapy (ORT), the standard of care for children with diarrhoea who might die of dehydration if they are not treated. Doctors estimate that this formula saves millions of lives each year.

The formula for ORT illustrates a deep result about economic activity. When statisticians tell us that a firm or an economy has produced so many dollars

of value, what precisely does that mean? If you think about the world the way a physicist or chemist would, you realise that people do not actually produce anything. All the physical objects that we have to work with have been here on earth since the planet was formed. All we have ever done and all we can do is rearrange them in ways that give us more value. It turns out that some mixtures or arrangements are worth vastly more than others. On the shelf and in the sink, water, sugar, salt, and a few minerals like the potassium you can get from a banana are worth pennies. Mixed in just the right proportions, they can save a life.

This is what production is all about: rearranging low value physical objects to put them in a form that is more valuable or pleasing to us. In most cases, the raw materials like water, salt, and sugar are relatively abundant. It is the formulas that are scarce. Every year, people working all over the world use a vast array of formulas, instructions, blueprints, designs, recipes, and processes to rearrange physical objects. The GDP that we measure is our estimate of the total value created by all this rearranging. A smaller group of people find new formulas.

Throughout human history, some of these new formulas were so important and novel that they defined entire epochs: "Mix tin with copper to make bronze." "Combine these semiconductors and metals in just the right pattern to create a transistor." Most are small refinements on productive ideas that already exist. "Use aluminium instead of steel to make this car part just a little bit lighter." Economic output in any year depends on the visible transformations that we undertake with existing formulas. However, it is the discovery of new formulas that really

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matters. Economic growth, true improvement in the quality of life, is possible because we keep making these discoveries.

A deceptively simple exercise should persuade you that the number of possible formulas that remain to be examined is so vast that humans will never run out of new things to discover. Picture a chemist's workbench with 100 jars, each containing a different basic element from the periodic table. Ask yourself how many different mixtures you could make from those elements. Do not worry about the proportions in the mixture or the conditions we use to do mixing. Just keep track of the elements that are being used. We know about some of these. Bronze made from tin and copper is one mixture. Steel made from iron and carbon is another. Water made from hydrogen and oxygen is one that we could find naturally. So is salt, made from sodium and chloride. How many total mixtures might there be? The answer is  $100 \times 99 \times 98 \times \dots \times 3 \times 2 \times 1$ . This number turns out to be far larger than the total number of seconds since the Big Bang created the universe plus the seconds left until the sun explodes in 5 or 10 billion years and incinerates the earth.

A remarkable result follows from these facts: the formulas we use to create value are non-rival and there is a virtually unlimited scope for discovery of valuable new formulas. We benefit enormously from interacting with the billions of other people like us here on earth. Suppose that among every 10,000 persons, just one discovers a truly valuable new formula (perhaps a new pharmaceutical) each year. If there were only 10,000 of us on earth, we could share the one idea produced each year, which would mean that we would each have one new idea to use. If there were 20,000 people, we would each have two new ideas each year. Generalising, when there are more people, each of us can make use of more new ideas each year.

In a world where all nations can trade and communicate with each other, ideas discovered anywhere can raise standards of living anywhere else. People in China make use of transistors invented in the US. People in the US now will drive more energy-efficient cars because of hybrid electric drive systems developed by Japanese auto firms. Children throughout the world survive because of non-intuitive improvement to the

formula for ORT discovered by a doctor in Bangladesh – adding sugar. The medical challenge is to replenish a child's normal balance of water, salt, and minerals. The sugar turns out to be important because it speeds up absorption of the water and minerals. These benefits from sharing valuable non-rival goods are the deep force behind the wave of globalisation that is touching all of our lives.

There are, to be sure, some important rival goods that are scarce. As the worldwide population grows, more of us will compete for these. Over the course of human history, land remained fixed as the worldwide population grew immensely. For centuries, people have predicted that more people trying to live off a fixed quantity of land would soon lead to disastrous food shortages. In fact, the benefits we derived from having more people discovering more new ideas about better methods for raising food have far outstripped population growth.

At some point, a population that grew too large would overstress the world's natural resources, but the world's population will stabilise in this century, almost surely at a level that will allow a remarkably high standard of living for all. There will be a few scarce rival goods (beautiful diamonds or lovely spots on the beach) that we compete for. As the world's population gets richer, the prices of these goods will increase. Less trivially, a critical one will turn out to be the atmosphere's capacity to absorb more greenhouse gases. We will have to learn to live under social and economic systems that limit the total amount of fossil fuel that we burn each year, just as we had to live for centuries with a fixed amount of land. (Ironically, the problem for humans may turn out to be that we have too much oil and coal, not too little.) Discoveries that we will end up sharing will let us derive more satisfaction and value from less fossil fuel burned per person, just as we now enjoy far more and far better food from less land per person. Land is a far more important input into agricultural output than energy is for non-agricultural output. Especially given the fact that we have many alternative sources of carbon free energy like solar power, dealing with limited amounts of fossil fuel per person is a simpler technical challenge than the one we have already solved of getting more food from less land per person.

Therefore, our prospects for improving standards of living are remarkably bright. We will also have the chance to bring out the best in ourselves. The potential for discovering new non-rival goods means that we can all live lives that get better from year to year and generation to generation. Even more important, we can develop the best side of human nature, the emotional side that you could feel when you thought of the family that shared the formula with you, not the ugly side you could sense when you thought about the unfairness of a world in which there was not enough medicine for both children.

Economists are professional worriers. In a physical world that gives us such remarkable opportunities, what could go wrong? The problems will arise on the social side, not from limits imposed by nature. To get the full benefit from working with so many others, humans need institutions that structure our interactions. One of the most important is the collection of legal institutions that keep us safe and define the property that we own and exchange with others. Some countries remain very poor, unable to share in the world's stock of existing ideas because they have not yet developed legal systems that can provide these prerequisites. Until they do, they will lag behind as growth takes off everywhere else. In the rich countries, we can and should help these countries put this kind of system in place.

For the world as a whole, we will also have to come up with some system of property rights to burn fossil fuel, or some equivalent system that limits total annual consumption of fossil fuels. The challenge here lies in finding a way to adopt these rules simultaneously in all the major countries of the world. This will take some negotiation and compromise, but if we can remember that we are not rivals, we should be able to rise to the challenge.

# Statistical Appendix

**Table 1:** Real GDP Growth by Sector

**Table 2:** Real GDP Growth by Expenditure

**Table 3:** Consumer Price Index

**Table 4:** Labour Market (I)

**Table 5:** Labour Market (II)

**Table 6:** External Trade

**Table 7:** Non-oil Domestic Exports by Selected Countries

**Table 8:** Electronics Leading Index

**Table 9:** Balance of Payments – Current Account

**Table 10:** Balance of Payments – Capital & Financial Accounts

**Table 11:** Exchange Rates

**Table 12:** Singapore Dollar Nominal Effective Exchange Rate Index

**Table 13:** Domestic Liquidity Indicator

**Table 14:** Monetary

**Table 15:** Fiscal

**TABLE 1: REAL GDP GROWTH by sector**

Period	Total	Manu- facturing	Financial Services	Business Services	Con- struction	Wholesale & Retail Trade	Hotels & Rest- aurants	Transport & Storage	Informa- tion & Comms	Total	Manu- facturing	Financial Services	Business Services	Con- struction	Wholesale & Retail Trade	Hotels & Rest- aurants	Transport & Storage	Informa- tion & Comms	
	Year-on-Year % Change									Seasonally-adjusted Quarter-on-Quarter Annualised % Change									
2006	8.2	11.9	10.6	6.9	3.6	10.4	4.8	4.7	4.6										
2007	7.7	5.8	16.9	7.8	20.3	7.3	4.4	5.1	6.3										
2006 Q1	10.4	18.5	9.9	7.1	-0.7	14.7	5.6	6.2	4.9	9.0	11.9	29.9	1.5	-1.2	16.8	6.4	6.5	-0.6	
Q2	8.2	11.9	11.4	7.6	1.2	9.8	3.0	4.8	3.5	5.1	-2.4	18.2	15.3	-6.0	4.4	4.0	1.3	6.8	
Q3	7.4	10.2	7.9	6.4	7.7	10.4	4.6	3.9	4.0	4.3	10.9	-16.4	4.8	22.1	10.0	4.4	2.0	8.4	
Q4	7.0	8.4	13.0	6.4	6.0	7.1	5.9	4.0	6.0	9.7	12.1	27.1	4.4	11.5	1.0	9.2	6.0	9.1	
2007 Q1	7.0	3.9	14.5	7.4	14.4	8.0	4.8	4.4	5.9	9.2	-1.6	36.8	5.3	32.5	15.9	1.8	8.3	0.6	
Q2	9.1	8.6	17.0	7.6	22.4	8.5	5.6	5.5	6.5	13.4	14.0	29.1	16.4	24.7	8.1	6.5	5.6	8.2	
Q3	9.5	11.0	20.1	7.5	20.1	6.8	4.9	5.0	6.6	5.1	19.1	-7.3	4.5	13.3	1.9	2.6	0.3	8.6	
Q4	5.4	0.2	15.9	8.7	24.3	6.0	2.5	5.4	6.1	-4.8	-24.9	10.3	8.8	27.3	0.4	-0.5	7.3	6.7	

Source: Singapore Department of Statistics

**TABLE 2: REAL GDP GROWTH by expenditure**

Period	Total Demand	Domestic Demand									Exports of Goods & Services		Imports of Goods & Services	
		Total	Consumption			Gross Fixed Capital Formation			Exports of Goods & Services	Imports of Goods & Services				
			Total	Private	Public	Total	Private	Public						
2006	10.3	7.7	4.8	3.3	10.7	13.5	18.6	-10.9	11.0	11.4				
2007	7.2	9.2	4.1	4.6	2.3	20.2	23.7	-2.2	6.6	6.8				
2006 Q1	14.1	4.5	5.1	3.1	11.0	9.8	18.0	-15.1	17.2	15.9				
Q2	12.4	7.4	4.0	3.1	8.8	9.6	13.1	-11.2	13.9	14.3				
Q3	10.5	10.8	6.1	3.4	19.0	10.7	13.4	-5.4	10.5	12.2				
Q4	5.0	8.3	4.0	3.8	5.0	22.8	28.4	-9.7	4.1	4.4				
2007 Q1	7.2	8.2	1.8	2.4	0.3	21.4	27.2	-3.2	7.0	7.3				
Q2	6.6	10.8	5.1	5.3	3.9	27.6	31.4	-0.9	5.4	5.5				
Q3	6.8	4.5	4.7	5.6	0.7	17.0	20.0	-3.6	7.4	5.4				
Q4	8.0	13.2	5.1	5.1	5.1	16.5	18.6	-0.6	6.6	8.8				

Source: Singapore Department of Statistics

**TABLE 3: CONSUMER PRICE INDEX**

Period	All Items	Food	Housing	Clothing & Footwear	Transport & Comms	Education & Stationery	Health Care	Recreation & Others	All Items	Food	Housing	Clothing & Footwear	Transport & Comms	Education & Stationery	Health Care	Recreation & Others
	2004 = 100									Year-on-Year % Change						
2006	101.4	102.8	103.5	100.6	96.4	104.0	101.3	102.4	1.0	1.6	2.7	0.7	-1.5	1.9	0.9	0.7
2007	103.5	105.9	103.9	101.3	98.3	105.3	105.5	105.6	2.1	2.9	0.4	0.6	2.0	1.3	4.1	3.2
2006 Q1	101.1	102.3	102.6	100.6	96.2	103.7	100.9	102.7	1.4	1.2	3.7	0.3	-1.4	2.3	0.8	2.1
Q2	101.2	102.7	103.2	100.1	96.4	103.6	101.3	101.8	1.2	1.6	3.7	0.5	-1.2	2.1	1.0	0.1
Q3	101.5	103.0	103.9	100.8	96.6	104.1	101.4	101.5	0.7	1.8	2.1	2.3	-1.7	1.6	0.9	-0.1
Q4	101.9	103.3	104.3	101.0	96.2	104.4	101.7	103.5	0.6	1.6	1.3	-0.2	-1.6	1.5	0.9	0.6
2007 Q1	101.6	104.4	102.3	100.9	95.0	104.9	102.4	103.9	0.5	2.0	-0.3	0.2	-1.3	1.1	1.4	1.2
Q2	102.2	104.1	101.7	100.3	97.5	103.9	104.3	104.9	1.0	1.4	-1.4	0.2	1.1	0.2	3.0	3.1
Q3	104.3	106.4	104.6	101.7	99.4	106.0	107.3	105.9	2.7	3.3	0.7	1.0	2.9	1.8	5.9	4.4
Q4	106.1	108.5	107.1	102.1	101.4	106.3	108.0	107.8	4.1	5.0	2.7	1.1	5.4	1.8	6.2	4.1

Source: Singapore Department of Statistics

**TABLE 4: LABOUR MARKET (I)**

Period	Average Monthly Earnings	Labour Productivity									Year-on-Year % Change Unit Labour Cost	
		All Sectors	Manufacturing	Construction	Wholesale & Retail Trade	Hotels & Restaurants	Transport & Storage	Information & Communications	Financial Services	Business Services	Overall Economy	Manufacturing
2006	3.2	1.5	3.9	-2.6	5.7	-2.1	1.1	-3.7	2.2	-3.2	0.5	-3.5
2007	6.2	-0.9	-3.2	7.5	1.4	-6.4	2.5	-3.2	2.1	-5.0	3.8	2.6
2006 Q1	3.0	4.3	10.6	-5.3	10.4	0.3	2.8	-2.5	2.9	-1.7	-2.5	-8.3
Q2	3.8	1.7	4.2	-4.2	5.4	-3.5	1.1	-4.6	3.4	-2.9	0.5	-3.0
Q3	2.8	0.5	2.2	0.9	5.7	-2.5	0.3	-4.3	-0.8	-3.8	2.0	-1.2
Q4	3.1	-0.4	-0.1	-2.1	1.9	-2.6	0.4	-3.2	3.3	-4.2	2.4	-0.4
2007 Q1	5.5	-0.8	-4.4	5.0	2.0	-4.7	1.5	-3.5	2.6	-5.1	3.0	3.6
Q2	8.5	0.7	-0.7	10.7	2.6	-5.2	2.5	-2.9	4.1	-4.6	3.4	0.3
Q3	6.9	0.4	1.2	6.7	0.8	-7.0	2.9	-3.4	3.5	-5.2	2.9	-0.7
Q4	4.3	-3.7	-8.7	7.8	0.4	-8.5	3.0	-3.0	-1.4	-4.9	6.1	7.8

Note: Labour productivity figures are based on SSIC 2005 classification.

Source: Singapore Department of Statistics/Central Provident Fund Board

**TABLE 5: LABOUR MARKET (II)**

Thousand

Period	Changes in Employment										
	All Sectors	Manufacturing	Construction	Wholesale & Retail Trade	Hotels & Restaurants	Transport & Storage	Information & Communications	Financial Services	Business Services	Other Services	Others
2006	176.0	41.6	20.5	18.5	12.6	6.0	6.5	11.3	34.1	23.7	1.1
2007	234.9	49.3	40.4	19.9	16.3	5.0	6.3	21.9	41.7	32.1	2.1
2006 Q1	45.0	11.1	5.6	3.5	1.1	1.7	1.2	2.1	10.1	8.3	0.4
Q2	36.4	8.4	3.5	3.0	1.5	1.6	1.8	3.3	8.4	4.7	0.1
Q3	43.0	11.3	5.6	4.5	1.2	1.2	1.2	3.3	8.4	6.1	0.2
Q4	51.5	10.9	5.8	7.5	8.7	1.6	2.3	2.6	7.0	4.6	0.5
2007 Q1	49.4	10.1	5.4	4.9	1.8	-0.3	1.2	5.1	10.1	10.9	0.3
Q2	64.4	15.9	10.9	3.9	4.6	3.0	2.1	4.4	11.8	7.2	0.7
Q3	58.6	12.4	11.3	4.6	2.5	-2.1	2.0	9.7	10.0	7.4	0.7
Q4	62.5	10.9	12.7	6.5	7.4	4.4	0.9	2.7	9.9	6.7	0.4

Note: Changes in employment numbers are based on SSIC 2005 classification.

Source: Ministry of Manpower

**TABLE 6: EXTERNAL TRADE**

Year-on-Year % Change

Period	Total Trade	Exports	Domestic Exports					Re-exports	Imports	Exports	Domestic Exports			Re-exports	Imports
			Total	Oil	Non-oil		Total				Oil	Non-oil			
					Total	Electronics							Non-electronics		
At Current Prices										At 2006 Prices					
2006	13.2	12.8	9.6	12.9	8.5	4.3	12.4	16.6	13.7	11.4	6.4	-2.8	10.1	17.4	11.0
2007	4.5	4.4	3.3	6.1	2.3	-9.2	12.4	5.6	4.5	7.4	5.2	-1.2	7.5	9.8	6.5
2006 Q1	20.9	22.4	22.5	42.0	16.8	18.1	15.7	22.3	19.1	16.3	12.7	7.5	14.8	20.8	10.6
Q2	17.8	17.3	18.0	26.2	14.9	11.1	18.5	16.4	18.4	13.3	11.0	-1.1	16.6	16.2	13.3
Q3	13.4	12.2	6.9	8.5	6.3	3.0	9.6	18.5	14.8	11.6	5.2	-3.3	8.6	19.2	13.1
Q4	3.0	2.0	-4.9	-15.7	-1.4	-10.2	7.2	10.5	4.2	5.4	-1.6	-13.5	2.6	14.0	7.3
2007 Q1	2.9	3.4	-1.4	-11.6	2.1	-10.9	13.9	9.1	2.3	8.7	4.0	-7.8	8.4	14.3	7.3
Q2	2.6	2.9	0.0	-3.7	1.5	-12.0	13.4	6.2	2.4	7.0	3.7	-2.0	6.0	10.7	6.1
Q3	2.5	4.2	4.7	1.1	6.1	-5.7	16.9	3.6	0.6	7.8	7.6	-1.7	10.9	7.9	3.1
Q4	9.8	7.1	10.0	47.8	-0.4	-8.3	6.0	4.1	12.8	6.2	5.5	7.7	4.8	7.1	9.7

Source: International Enterprise Singapore

**TABLE 7: NON-OIL DOMESTIC EXPORTS by selected countries**

Period	All Countries	ASEAN				NIEs				China	EU	Japan	US
		Total	of which			Total	Hong Kong	S. Korea	Taiwan				
			Indonesia	Malaysia	Thailand								
Year-on-Year % Change													
2006	8.5	7.7	-3.2	13.0	16.7	6.3	14.1	1.1	-0.8	7.5	3.5	2.1	14.4
2007	2.3	4.6	-4.0	4.4	3.3	-1.6	-3.4	13.9	-9.4	0.7	-1.0	-0.4	2.7
2006 Q1	16.8	15.9	8.3	15.4	35.1	21.9	22.2	17.8	24.5	18.7	20.4	14.2	4.0
Q2	14.9	7.9	-5.1	16.5	22.0	22.3	31.6	8.3	18.8	17.1	5.3	7.6	26.4
Q3	6.3	9.7	-0.6	16.5	12.1	-2.3	5.8	-11.7	-7.3	2.4	-9.3	-8.6	22.4
Q4	-1.4	-0.8	-13.1	5.5	2.5	-9.9	1.0	-5.5	-26.7	-3.8	-0.4	-3.2	6.8
2007 Q1	2.1	3.7	-5.6	10.1	-2.6	-11.5	-12.4	-0.4	-17.6	1.8	-0.6	-7.5	14.3
Q2	1.5	5.6	0.8	6.3	-1.2	-9.5	-10.9	11.6	-20.6	-3.6	4.3	7.4	1.0
Q3	6.1	3.8	-5.0	1.8	6.0	6.9	5.2	28.1	-4.2	2.9	24.7	7.1	-3.9
Q4	-0.4	5.3	-5.8	0.4	10.9	8.6	5.0	17.0	7.9	1.9	-23.0	-6.6	0.4
% Share of All Countries													
2006	100.0	23.6	6.9	9.1	4.8	14.7	7.2	3.1	4.5	9.6	17.9	6.3	15.2
2007	100.0	24.2	6.4	9.3	4.8	14.2	6.8	3.5	4.0	9.5	17.4	6.2	15.2

Source: International Enterprise Singapore

**TABLE 8: ELECTRONICS LEADING INDEX**

Period	Original			Smoothed		
	1999 = 100	Year-on-Year % Change	Quarter-on-Quarter % Change	1999 = 100	Year-on-Year % Change	Quarter-on-Quarter % Change
2006	78.0	-1.6		78.1	-1.4	
2007	69.4	-11.0		70.1	-10.2	
2006 Q1	78.8	0.5	0.3	78.5	0.0	-1.0
Q2	79.1	0.3	0.5	79.1	0.7	0.7
Q3	77.8	-4.0	-1.7	78.4	-2.7	-0.9
Q4	76.1	-3.1	-2.1	76.5	-3.5	-2.3
2007 Q1	72.1	-8.4	-5.3	73.6	-6.2	-3.8
Q2	70.2	-11.3	-2.7	70.7	-10.6	-3.9
Q3	68.4	-12.1	-2.6	68.9	-12.0	-2.5
Q4	66.8	-12.2	-2.2	67.2	-12.2	-2.5

Source: Monetary Authority of Singapore

**TABLE 9: BALANCE OF PAYMENTS – Current Account**

	Current Account Balance		Goods Account			Services Balance						Income Balance	Current Transfers (Net)
	S\$ Million	% of GNI	Exports	Imports	Balance	Total	Transportation	Travel	Insurance	Government	Other		
2006	47,295	23.4	437,123	368,169	68,953	-4,199	-1,736	-6,011	-2,048	-117	5,713	-15,223	-2,237
2007	59,014	25.2	456,379	382,282	74,097	-3,929	-2,619	-4,762	-1,936	-132	5,520	-8,603	-2,552
2006 Q1	11,549	n.a.	104,067	87,371	16,696	-829	-219	-1,492	-465	-45	1,393	-3,746	-573
Q2	11,394	n.a.	108,575	92,216	16,359	-1,408	-774	-1,546	-492	-49	1,453	-3,028	-529
Q3	11,709	n.a.	113,621	96,416	17,205	-1,118	-564	-1,374	-557	-10	1,388	-3,825	-554
Q4	12,643	n.a.	110,860	92,167	18,693	-844	-178	-1,598	-534	-13	1,480	-4,625	-582
2007 Q1	14,902	n.a.	107,497	88,466	19,031	-1,631	-879	-1,183	-411	-48	890	-1,894	-603
Q2	14,955	n.a.	111,608	94,003	17,606	-1,271	-963	-1,280	-494	-24	1,489	-778	-601
Q3	18,265	n.a.	118,433	96,479	21,954	-500	-425	-998	-500	-29	1,452	-2,534	-656
Q4	10,892	n.a.	118,841	103,335	15,506	-526	-353	-1,301	-531	-32	1,689	-3,397	-691

Source: Singapore Department of Statistics

**TABLE 10: BALANCE OF PAYMENTS – Capital & Financial Accounts**

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			
2006	-22,779	-367	-22,412	19,865	-14,207	-28,069	-8,731	-19,338	2,480	26,996	208,992
2007	-28,104	-391	-27,713	17,840	-25,008	-20,545	17,804	-38,349	-1,613	29,298	234,546
2006 Q1	-2,745	-86	-2,659	6,984	-944	-8,700	-7,506	-1,194	-416	8,388	196,584
Q2	-6,867	-97	-6,770	7,494	-7,675	-6,589	2,323	-8,913	588	5,116	202,390
Q3	-9,708	-98	-9,610	856	-1,661	-8,805	-6,492	-2,314	2,005	4,006	205,096
Q4	-3,459	-87	-3,372	4,531	-3,927	-3,975	2,943	-6,918	303	9,487	208,992
2007 Q1	-13,212	-93	-13,119	10,691	1,638	-25,447	-13,899	-11,548	-175	1,515	208,876
Q2	-3,830	-97	-3,733	3,970	-1,282	-6,421	14,717	-21,137	-1,990	9,136	220,504
Q3	-11,206	-109	-11,097	3,135	-3,330	-10,902	4,776	-15,679	-1,027	6,031	226,290
Q4	144	-92	236	44	-22,033	22,225	12,210	10,015	1,579	12,615	234,546

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
2006	1.5336	3.0102	2.0176	125.56	1.2887	0.4343	0.1973	4.7071	0.1649	1.2132
2007	1.4412	2.8798	2.1252	128.32	1.2871	0.4359	0.1847	4.4404	0.1540	1.2707
2006 Q1	1.6183	2.8247	1.9683	124.71	1.3783	0.4390	0.2085	4.9877	0.1660	1.1592
Q2	1.5894	2.9132	2.0198	128.88	1.3818	0.4325	0.2046	4.9039	0.1667	1.1776
Q3	1.5869	2.9792	2.0168	127.32	1.3469	0.4307	0.2037	4.8016	0.1680	1.1862
Q4	1.5336	3.0102	2.0176	125.56	1.2887	0.4343	0.1973	4.7071	0.1649	1.2132
2007 Q1	1.5172	2.9780	2.0241	124.75	1.2880	0.4390	0.1942	4.5869	0.1613	1.2251
Q2	1.5326	3.0684	2.0595	124.32	1.2421	0.4437	0.1961	4.6654	0.1656	1.2998
Q3	1.4909	3.0180	2.1123	127.34	1.2936	0.4363	0.1921	4.5538	0.1625	1.3157
Q4	1.4412	2.8798	2.1252	128.32	1.2871	0.4359	0.1847	4.4404	0.1540	1.2707
2008 Q1	1.3799	2.7529	2.1807	138.43	1.3814	0.4326	0.1773	4.5375	0.1390	1.2658

Source: Monetary Authority of Singapore

**TABLE 12: SINGAPORE DOLLAR NOMINAL EFFECTIVE EXCHANGE RATE INDEX**

Index (6 Oct 2006=100)

As at Week Ending	Index	As at Week Ending	Index	As at Week Ending	Index	As at Week Ending	Index	As at Week Ending	Index	As at Week Ending	Index
2006 Oct 6	100.00	2007 Jan 5	101.09	2007 Apr 5	101.60	2007 Jul 6	100.52	2007 Oct 5	102.15	2008 Jan 4	103.47
13	100.20	12	100.98	13	101.17	13	100.46	12	102.61	11	103.31
20	100.71	19	101.29	20	101.32	20	100.53	19	102.48	18	103.07
27	100.74	26	101.31	27	100.95	27	100.72	26	102.76	25	103.71
Nov 3	100.63	Feb 2	101.25	May 4	100.91	Aug 3	100.47	Nov 2	102.98	Feb 1	103.70
10	100.70	9	101.45	11	100.67	10	100.48	9	102.88	6	103.69
17	100.87	16	101.06	18	100.31	17	100.23	16	102.79	15	103.83
24	100.65	23	101.27	25	100.04	24	100.60	23	103.20	22	103.97
Dec 1	100.46	Mar 2	101.51	Jun 1	99.96	31	100.63	30	103.00	29	103.90
8	100.40	9	101.62	8	99.83	Sep 7	100.34	Dec 7	103.14	Mar 7	103.98
15	100.70	16	101.24	15	99.80	14	100.83	14	103.21	14	104.18
22	100.85	23	101.56	22	99.79	21	100.58	21	102.91	20	103.95
29	101.23	30	101.63	29	100.11	28	101.36	28	103.14	28	104.32
										Apr 4	104.25

Source: Monetary Authority of Singapore

**TABLE 13: DOMESTIC LIQUIDITY INDICATOR**

Period	Change from 3 Months Ago											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005	0.312	0.254	0.366	0.064	0.071	-0.222	-0.105	0.044	0.021	0.055	0.076	0.544
2006	0.934	0.757	0.502	0.211	0.290	0.304	0.269	0.194	0.057	0.064	0.167	0.172
2007	0.172	0.038	0.047	-0.165	-0.515	-0.634	-0.290	0.182	0.371	0.554	0.622	0.602
2008	0.050	-0.120	-0.084									

Source: Monetary Authority of Singapore

Note: The DLI is a measure of overall monetary conditions, reflecting changes in the S\$NEER and domestic 3-month interbank rate. A positive (negative) number indicates a tightening (easing) monetary policy stance from the previous quarter. Please refer to the June 2001 issue of MAS ED *Quarterly Bulletin* for more information.

**TABLE 14: 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)				
2006	52.2	262.4	268.7	25.8	13.4	19.4	19.1	10.1	5.33	3.44	5.36	0.25	0.88
2007	63.9	297.6	306.8	28.1	22.4	13.4	14.1	8.9	5.33	2.38	4.73	0.25	0.83
2006 Q1	48.3	227.5	233.6	23.3	7.3	8.1	8.3	5.6	5.30	3.44	5.01	0.26	0.88
Q2	48.8	237.5	243.7	24.0	6.6	11.1	11.2	7.4	5.30	3.56	5.48	0.26	0.89
Q3	49.2	245.1	251.4	24.0	7.6	12.8	12.7	7.6	5.33	3.44	5.37	0.25	0.89
Q4	52.2	262.4	268.7	25.8	13.4	19.4	19.1	10.1	5.33	3.44	5.36	0.25	0.88
2007 Q1	55.4	279.8	286.8	25.5	14.8	23.0	22.8	9.7	5.33	2.94	5.35	0.25	0.87
Q2	59.8	293.6	301.3	26.6	22.5	23.6	23.6	10.7	5.33	2.50	5.36	0.25	0.83
Q3	60.9	294.1	302.7	26.9	23.9	20.0	20.4	12.3	5.33	2.63	5.23	0.25	0.85
Q4	63.9	297.6	306.8	28.1	22.4	13.4	14.1	8.9	5.33	2.38	4.73	0.25	0.83

Source: Monetary Authority of Singapore

**TABLE 15: FISCAL**

Period	Operating Revenue							Expenditure			Primary Surplus (+)/ Deficit (-)	Less: Special Transfers	Add: Net Investment Income Contribution	Budget Surplus (+)/ Deficit (-)	
	Total	Tax Revenue						Non-tax Revenue	Total	Operating					Development
		Total	of which												
			Income Tax	Asset Taxes	Stamp Duty	GST									
	S\$ Million														
FY2005	28,171	25,687	12,912	1,910	967	3,815	2,484	28,634	21,445	7,189	-463	829	2,777	1,486	
FY2006	31,289	28,827	14,135	2,112	2,015	3,978	2,462	29,905	23,925	5,980	1,384	3,570	2,131	-55	
FY2007 (Revised)	39,650	36,028	16,229	2,566	3,800	6,000	3,621	33,304	26,218	7,086	6,345	2,196	2,300	6,449	
FY2008 (Estimated)	39,836	35,793	17,121	2,490	2,400	6,190	4,043	37,455	29,001	8,454	2,381	5,402	2,222	-799	
	% of Nominal GDP														
FY2005	13.8	12.6	6.3	0.9	0.5	1.9	1.2	14.0	10.5	3.5	-0.2	0.4	1.4	0.7	
FY2006	14.1	13.0	6.4	1.0	0.9	1.8	1.1	13.5	10.8	2.7	0.6	1.6	1.0	0.0	
FY2007 (Revised)	15.9	14.4	6.5	1.0	1.5	2.4	1.5	13.3	10.5	2.8	2.5	0.9	0.9	2.6	
FY2008 (Estimated)	14.6	13.1	6.3	0.9	0.9	2.3	1.5	13.7	10.6	3.1	0.9	2.0	0.8	-0.3	

Source: Ministry of Finance

# List of Selected Publications

Title	Frequency	Online Links
<b>Inflation Monthly</b>	Monthly	<a href="http://www.mas.gov.sg/eco_research/eco_dev_ana/Inflation_Monthly.html">http://www.mas.gov.sg/eco_research/eco_dev_ana/Inflation_Monthly.html</a>
<b>Monthly Statistical Bulletin</b>	Monthly	<a href="http://www.mas.gov.sg/data_room/msb/Monthly_Statistical_Bulletin.html">http://www.mas.gov.sg/data_room/msb/Monthly_Statistical_Bulletin.html</a>
<b>Recent Economic Developments</b>	Quarterly	<a href="http://www.mas.gov.sg/eco_research/eco_dev_ana/Recent_Economic_Developments.html">http://www.mas.gov.sg/eco_research/eco_dev_ana/Recent_Economic_Developments.html</a>
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