

Inflation Report

July 2007

The *Inflation Report* is prepared quarterly by staff of the Bank of Thailand with the approval of the Monetary Policy Committee (MPC). It serves two purposes: (1) to provide a clear forward-looking framework for economic and inflation forecasting to assist the MPC in making monetary policy decisions and (2) to give the MPC an opportunity to present the explanation for their decisions on various policy issues to the public.

Although individual MPC members may have differing opinions regarding the assumptions on which the forecasts are based, as a group they are in agreement with the forecasts on the outlook for inflation and output as well as the risk factors involved as illustrated in the fan charts.

The Monetary Policy Committee:

Mrs. Tarisa	Watanagase	Chairman
Mrs. Atchana	Waiquamdee	Vice Chairman
Mr. Bandid	Nijathaworn	Member
Mr. Aran	Thammano	Member
Mr. Chakramon	Phasukavanich	Member
Mr. Ampon	Kittiampon	Member
Mr. Karun	Kittisataporn	Member

Thailand Monetary Policy Strategy

Monetary Policy Formulation

- The Monetary Policy Committee (MPC) sets monetary policy in order to attain price stability conducive to sustainable economic growth. The MPC also monitors factors contributing to external stability and financial imbalances.

The Monetary Policy Instrument

- The MPC utilizes the 1-day repurchase rate as the key policy rate to signal the monetary policy stance.

The Target

- The MPC uses core inflation (excluding raw food and energy) as its policy target with the range of 0-3.5 per cent (quarterly average). In the event that the target is missed, the MPC is required to explain the reasons thereof to the public.

Forecasting Tools

- To assist the MPC in making monetary policy decisions, the Bank of Thailand has developed a macroeconomic model to forecast economic conditions and inflation outlook. The model is also employed to evaluate the impact of various factors on the economy and to offer guidelines for appropriate monetary policy responses.

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1. Overview

The Thai economy in 2007 Q1 softened in continuation from the end of 2006. While overall economic growth as measured by the National Economic and Social Development Board (NESDB) registered at 4.3 per cent, similar to the Monetary Policy Committee's expectation in the previous *Report*, there were differences in the components of growth. Notably, while exports grew more than was expected, domestic demand, particularly private consumption, decelerated by more than had been expected. Private consumption grew at a very low rate and had the lowest contribution to GDP growth in 6 years. Private investment growth turned negative as a result of fragile consumer and investor confidence and uncertain political climate that resulted in policy uncertainty. Many consumers and investors therefore delayed their consumption of durable goods as well as their investment decisions. Public spending, however, began to accelerate following the enactment of the B.E. 2550 (2007) Budget Act in January of this year, resulting in a greater role of fiscal policy in helping to support the economy.

Table 1.1 GDP at 1988 prices

Unit: % Δ yoy	2006	2006				2007
		Q1	Q2	Q3	Q4	Q1
Domestic demand ^{1/}	3.4	5.0	3.8	3.1	1.8	1.6
Private consumption	3.1	3.9	3.3	2.8	2.5	1.3
Private investment	3.9	7.0	3.3	2.9	2.3	-2.4
Public expenditure	3.4	7.4	5.7	4.3	-4.2	11.2
Net exports of goods and services	46.9	120.5	147.0	3.1	30.4	32.9
Exports of goods and services	8.6	14.4	9.0	4.7	7.0	6.5
Imports of goods and services	1.6	1.9	-1.7	5.2	1.0	-0.3
Gross domestic product	5.0	6.0	5.0	4.7	4.3	4.3

Remark: % Δ yoy = percentage change from the previous year

^{1/}Domestic demand excludes changes in stocks

Source: National Economic and Social Development Board

Despite a lower than expected contribution from the private sector in driving economic growth in the first quarter of the year, latest indicators began to show signs of a renewed expansion. Namely, indices for both private consumption and private investment in the first two months of 2007 Q2 increased from 2007 Q1. This improvement in private spending was driven by reduced political uncertainty, accelerated public spending that supported economic activities in the private sector, subdued inflation that helped to maintain consumers' purchasing power, and increasingly accommodative monetary policy. Moreover, difficulties faced by exporters from the strengthening of the baht were alleviated by a number of factors, which included the continued expansion of external demand in line with better than expected growth of the global economy, coupled with exporters' ability in finding new markets. The MPC therefore assessed that the economy as a whole would recover in the second half of 2007, albeit at a gradual pace. The recovery would become more apparent in early 2008, following the planned elections later this year and increased political certainty.

The recent economic slowdown did not have a significant impact on the financial position of businesses and households. However, the ability of businesses to make profits decreased slightly; household delinquency rates began to show signs of an increase; and the number of loans classified as "special mention" accelerated in low-income households relative to higher-income households. In other words, financial stability of low-income households exhibited greater fragility when compared to other groups, although looking at the overall picture, this was not yet too much of a concern. The economic slowdown since 2006, coupled with the uncertain political environment, led to a protracted slowdown in the extension of credits by the banking system, particularly in credits to the corporate sector, which accounted for 78 per cent of total credits in the system. However, the moderation of credit extension did not affect the ability of commercial banks to make profits in 2007 Q1, as the ability of corporate to service their debts remained at a satisfactory level. The rising trend of NPLs, however, would need to be monitored closely going forward.

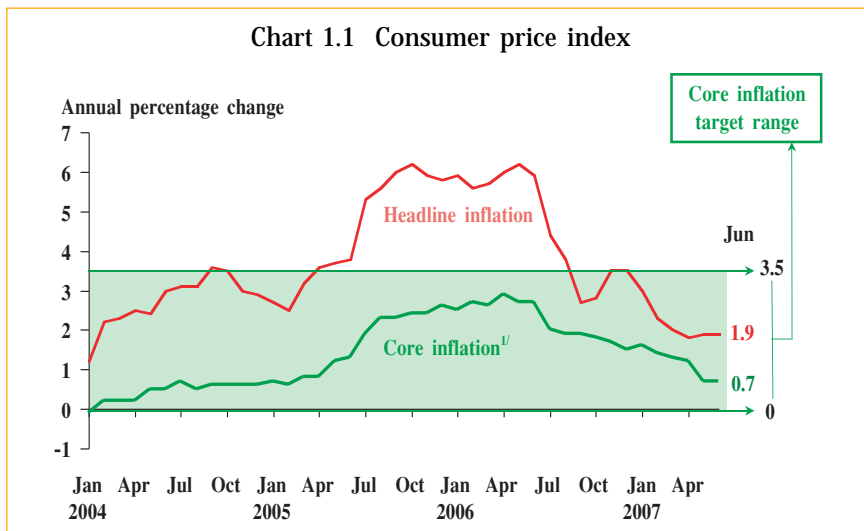
Given the assessment of economic conditions and trends, the MPC revised the economic forecasts for 2007 and 2008 upwards slightly from the previous *Report* to reflect recent signals of a gradual

improvement in domestic demand, particularly in private sector spending. In addition, the MPC assessed that upside risks increased, particularly improvements in consumer and investor confidence, given lessening political tensions, positive signals from the stock market - the timeliest measure of increased confidence, as well as support from the more accommodative stance of monetary policy.

The fan chart for output growth is thus skewed slightly upwards, with a central tendency of 4-5 per cent in 2007 and 4.5-6 per cent in 2008, respectively.

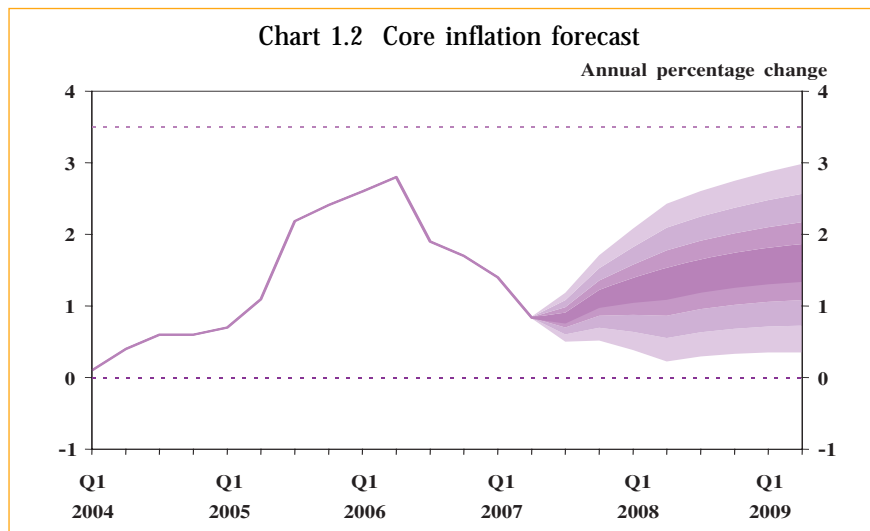
Inflationary outlook and monetary policy

Inflation recently continued on a downward trend as expected by the MPC. In 2007 Q2, however, inflation moderated by more than the MPC expected as a result of weaker than expected domestic demand. This resulted in limited room for any upward price adjustment in 2007 Q2 as anticipated earlier, despite the lifting of the 8th Statement of the Administrative Reform Council under the Democratic System (ARC) on 6 April 2007.



Remark: ^{1/}Consumer price index excluding raw food and energy items
 Source: Trade and Economic Index Bureau, Ministry of Commerce

Going forward, supply-side inflationary pressures should increase, particularly from oil prices. The transmission to the prices of other goods, however, was expected to remain limited for the rest of this year, given that domestic spending had yet to fully recover. In addition, the strengthening of the baht would help partly offset the impact of higher world oil prices in US dollar terms, which have also risen. In 2008, domestic spending was expected to show a more apparent recovery, leading to an increased pass-through of costs to the prices of final goods. In particular, for producers that shouldered the burden of higher costs for a prolonged period, a recovery in domestic demand would give them greater room to increase prices. This would result in a gradual acceleration in inflation in the upcoming period. However, given that inflation in the previous period was lower than expected, the MPC judged that inflation in 2007 and 2008 would not exceed the levels forecasted in the previous *Report*. The overall risks to inflation, both on the positive and negative sides, were quite balanced in 2007, before positive risks would outweigh the negative risks in 2008, in line with the risks of economic growth in that year. The fan chart for both headline and core inflation are thus skewed upwards towards the end of the forecast period. Headline inflation in 2007 was projected to average between 1.5-2.5 per cent in 2007, and 1-2.5 per cent in 2008, similar to the forecast in the previous *Report*. Core inflation in 2007 was projected to average between



Remark: The fan chart covers 90 per cent of the probability distribution

0.8-1.5 per cent, lower than the projection in the previous *Report* at 1-2 percent, while the projection for 2008 was unchanged at between 1-2 per cent.

Compared to early 2007, the risks to economic growth decreased, while the risks to inflation remained at a low level, despite a slight increase. However, the MPC judged that the risks to growth outweighed the risks to inflation. Monetary policy could therefore continue on an accommodative trend to help support the economic recovery, without significant repercussions on economic stability. The MPC thus decided to reduce the policy rate at its meeting on 23 May 2007 by 0.50 per cent and on 18 July 2007 by a further 0.25 per cent.

This cumulative reduction in the policy rate by 0.75 per cent since the publication of the previous *Report* in April 2007 resulted in a continued relaxation in the overall monetary conditions, in spite of the appreciation of the baht, both from the current account surplus and capital inflows for investment in the Stock Exchange of Thailand.

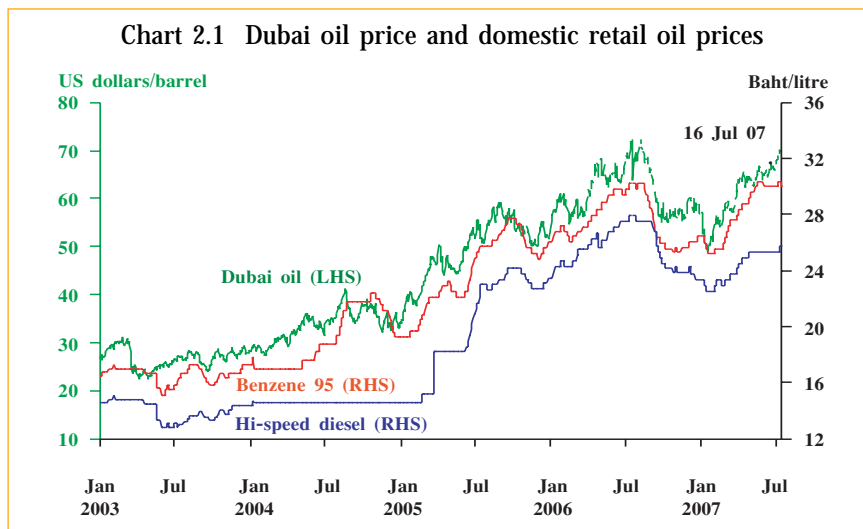
In any case, the decreases in the policy rate resulted in a downward trend for money market and commercial bank interest rates. And while lending rates have begun to decline, this has yet to bring an increase in the demand for credits. But as confidence improves, the lower interest rates should help support a recovery in private investment, going forward.

2. Recent Developments in Inflation and Economic Conditions

Inflation trends

In 2007 Q2, world oil prices edged higher from 2007 Q1 owing importantly to supply-side factors. These factors included maintenance shutdowns of a number of US oil refineries, which held down US oil reserves, and production uncertainty following strikes undertaken by labour unions in Nigeria, a major oil producer. The average price of Dubai crude oil thus surged to 64.76 US dollars per barrel in 2007 Q2, up from 55.45 US dollars per barrel in the previous quarter. Domestic retail oil prices also increased in line with Singapore petroleum product prices.

Inflation continued on a downward trend.



Source: PTT Public Company Limited

Despite the elevated readings over the previous quarter, the average price of oil in 2007 Q2 was still lower than its year-earlier level, resulting in subdued effects on inflation. Energy prices in the Consumer Price Index (CPI) fell by 0.3 per cent year-on-year compared with the 1.0 per cent decline in 2007 Q1. Moreover, raw food prices continued to slow down and proved to be a major factor causing headline inflation in 2007 Q2 to fall to 1.9 per cent from 2.4 per cent in 2007 Q1.

The slowdown in inflation was slightly more than the MPC anticipated.

Core inflation in 2007 Q2 also edged lower from the previous quarter, down to 0.8 per cent from 1.4 per cent. This moderation owed importantly to the index for transportation and communication which was lower than its level during the same period last year, when the increase in energy costs passed through to transport prices. In addition, prices in certain categories, such as tuition, did not increase by much, when compared with the year-earlier pace. Prices of consumer products also posted a modest increase in line with the softening in domestic demand.

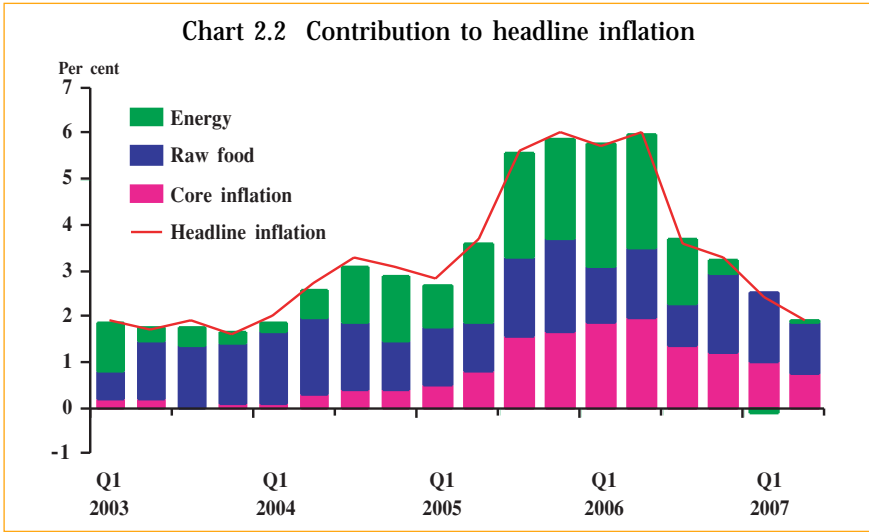
Overall, inflation was slightly lower than what the MPC had anticipated in the previous *Inflation Report*.

Unit: Per cent	2006	2006				2007	
		Q1	Q2	Q3	Q4	Q1	Q2
Percentage change from the previous year (% Δ yoy)							
- Headline consumer price index	4.7	5.7	6.0	3.6	3.3	2.4	1.9
• Core consumer price index	2.3	2.6	2.8	1.9	1.7	1.4	0.8
• Raw food	7.5	6.8	8.6	4.8	10.0	8.9	7.2
• Energy	15.0	26.1	23.0	11.4	2.4	-1.0	-0.3
- Producer price index	7.0	8.7	10.3	6.2	3.4	2.6	1.8
Percentage change from the previous quarter (% Δ qoq)							
- Headline consumer price index	-	0.4	2.3	0.3	0.1	-0.4	1.8
• Core consumer price index	-	0.4	0.9	0.4	0.1	0.1	0.3
• Raw food	-	-1.6	5.7	-0.2	5.9	-2.5	7.1
• Energy	-	3.3	6.3	0.9	-7.5	-0.2	4.0
- Producer price index	-	1.3	5.1	-0.7	-1.4	0.5	4.4

Source: Trade and Economic Index Bureau, Ministry of Commerce

The Producer Price Index inflation for 2007 Q2 was 1.8 per cent, down from a 2.6 per cent in 2007 Q1, on account of the decline in the index of oil and petroleum product prices from its level in the previous year. Prices of mining and manufacturing products, such as metal ores, electrical appliances, and electronic equipment, also fell following increases in global competition. In addition, the appreciation of the baht also helped offset import prices in domestic currency terms.

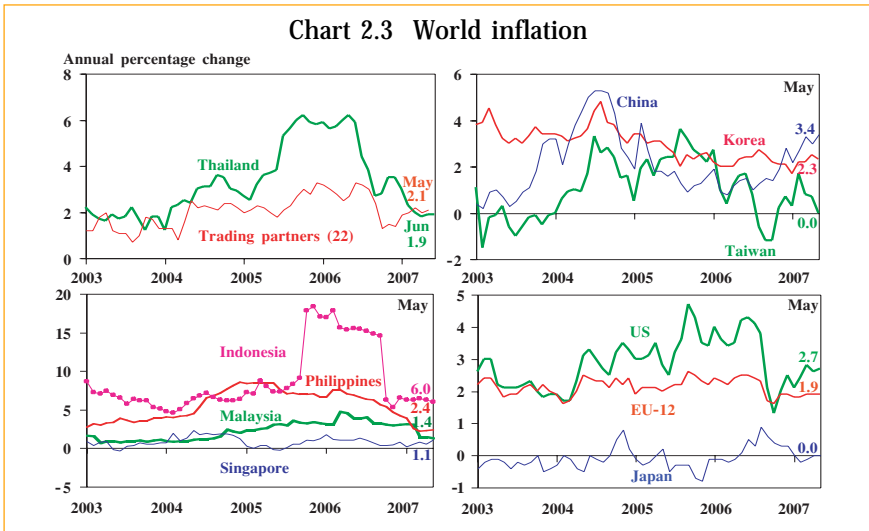
The slowdown in inflation was consistent with the easing of price pressures in a number of regional economies, such as the Philippines, Indonesia, Malaysia, and Taiwan. Nevertheless, inflation



Source: Trade and Economic Index Bureau, Ministry of Commerce

continued to pick up in China, as food prices - in particular the price of pork - surged, following an outbreak of a disease in swine.

Price pressures sustained in industrialized countries, despite an easing from the same period last year. In May, overall inflation in the United States registered at 2.7 per cent, close to that in April, while core inflation remained on a downward trend since the beginning of 2007. Meanwhile, the euro area HICP remained unchanged at 1.9 per cent in May. In Japan, inflation reverted to 0.0 per cent in April and May, after turning negative for two consecutive months.

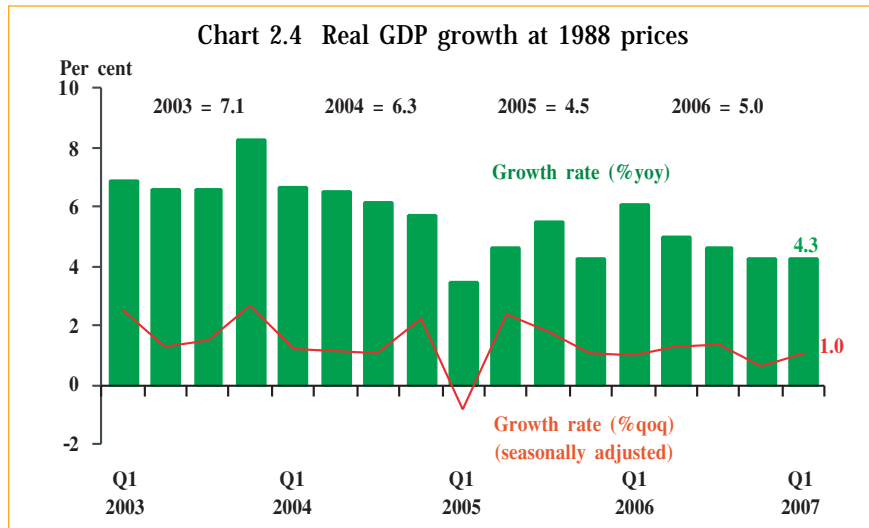


Source: Various official sources and Bloomberg

Aggregate demand in 2007 Q1^{1/}

In 2007 Q1 the economy grew at a rate close to that anticipated by the MPC.

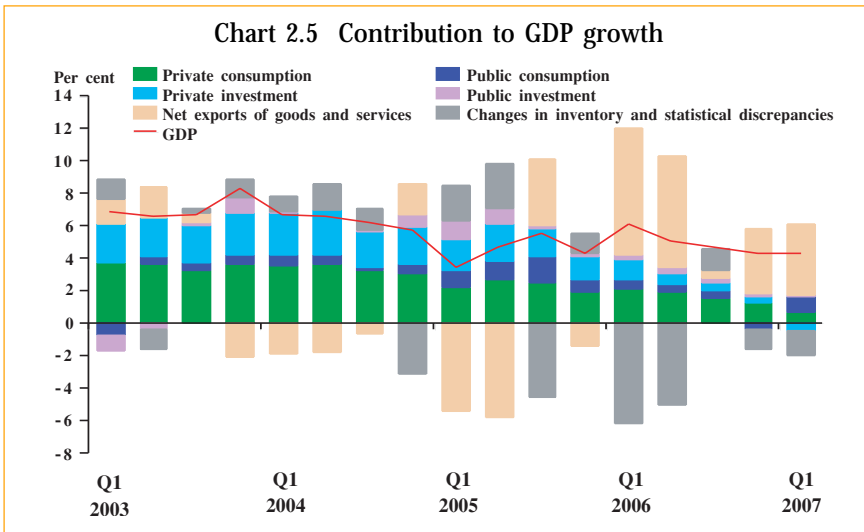
The Thai economy in 2007 Q1 grew at a rate of 4.3 per cent year-on-year, similar to that in 2006 Q4. Although overall growth was close to the MPC's projections, the growth of the various GDP components grew at a rate different from what had been expected. Notably, private consumption expenditure was softer than the MPC had previously estimated. Meanwhile, exports firmed up by more than expected, and together with the acceleration in public consumption, became the major driver of economic activity. The contribution to aggregate demand growth from net exports was 4.4 per cent, while consumption expenditure contributed only 1.6 per cent to GDP and domestic investment -0.4 per cent to GDP, respectively.



Source: National Economic and Social Development Board

On a seasonally adjusted basis the Thai economy in 2007 Q1 grew 1.0 per cent quarter-on-quarter, which was relatively weak. Although this growth rate was stronger than in 2006 Q4, it was still below the average quarterly growth rate since 2003 of 1.5 per cent, excluding the periods immediately following the tsunami.

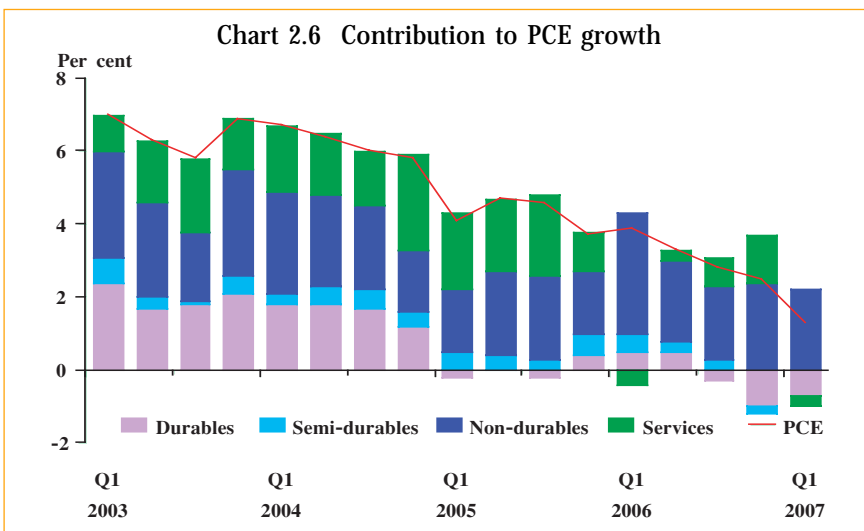
^{1/} Data used to analyse aggregate demand in 2007 Q1 was obtained from the NESDB. Economic indicators used for analysing 2007 Q1 and the outlook for 2007 Q2 were obtained from the BOT, except for the Consumer Confidence Index, which was produced by the University of the Thai Chamber of Commerce, and data on government expenditure, which originated from the Comptroller General's Department and was compiled by the Fiscal Policy Office.



Source: National Economic and Social Development Board

On closer inspection of the components of aggregate demand, private consumption expanded by only 1.3 per cent in 2007 Q1 and continued to slow down from the second half of 2006. This slowdown was due to the contraction of consumption of durable goods - particularly vehicles, electronics, and electrical appliances - which were sensitive to anticipated future income as well as economic and political uncertainties. At the same time, consumption of semi-durable goods increased only moderately, and consumption of services declined slightly owing to a fall in tourist expenditure abroad. Consequently, consumption of non-durable goods, such as food items, became the main driver of

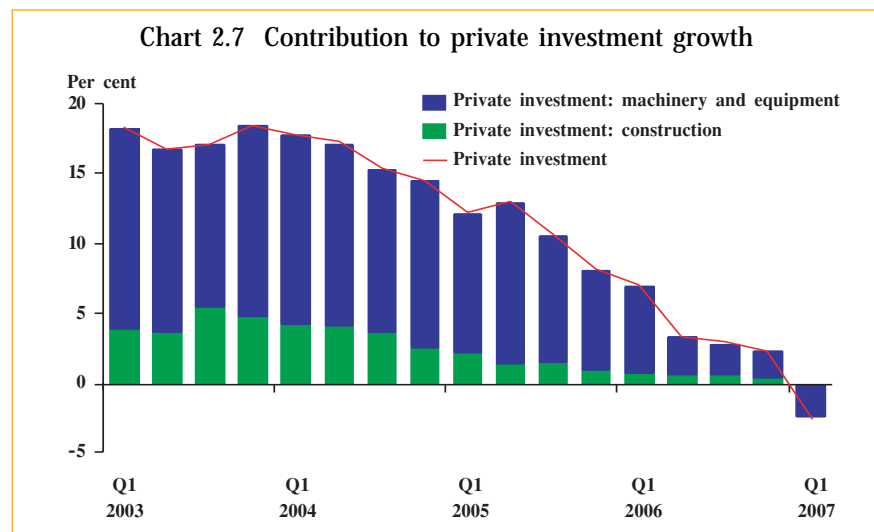
In 2007 Q1 private consumption continued to slow down, while private investment dropped from its year-earlier level.



Source: National Economic and Social Development Board

private consumption in this quarter. This seemed to indicate that consumers remained cautious about their spending, given that confidence over the economy's prospects remain subdued, as reflected in the decline in the Consumer Confidence Index to 79.1 in 2007 Q1 from 83 in the previous quarter. As a result, the contribution of consumption to overall GDP growth fell from 1.3 per cent in the previous quarter to only 0.7 per cent, the lowest in 6 years.

In 2007 Q1, private investment shrank by 2.4 per cent year-on-year, the first contraction since 2001. The fall in private investment expenditure, seen both in outlays for construction as well as for machinery and equipment, lowered the demand for capital goods imports. This development was consistent with the decline in the Business Sentiment Index (BSI) to 43.5 in 2007 Q1 from 45.1 in the previous quarter, reflecting the concerns of the business sector over the current situation, including the softening in domestic demand, the baht appreciation that strained certain business sectors' ability to adjust, and political uncertainty.



Source: National Economic and Social Development Board

Acceleration in public expenditure after the Budget Act took effect helped boost economic activity in 2007 Q1.

As for the role of public expenditure in stimulating aggregate demand, the delay of the fiscal budget for fiscal year 2007 following the political situation was a constraint in 2006 Q4. Nevertheless, after the Budget Act took effect in January 2007, budget disbursement accelerated significantly and government consumption in 2007 Q1 expanded by 11.2 per cent year-on-year compared with a contraction of 4.2 per cent in 2006 Q4. Government consumption thus resumed its role in driving

economic activity, contributing approximately 1.0 per cent to GDP growth. However, the public investment budget could not be fully disbursed, resulting in a moderate expansion of 2.1 per cent in public investment.

While overall domestic demand continued to be subdued despite the fiscal stimulus, the economy was still buoyed by robust growth in exports. In 2007 Q1, net exports contributed 4.4 per cent to GDP growth. The acceleration in exports to major trading partners as well as to new markets made export volume grow by 13.2 per cent year-on-year, up from 6.8 per cent in the previous quarter. On the contrary, import volume expanded only modestly by 0.1 per cent due to the decline in imports of capital goods and energy, following softer domestic demand.

After seasonal accumulation in 2006 Q4, inventory declined significantly 2007 Q1, as export-oriented industries utilized the existing stock while other industries reduced imported goods and raw materials.

Net export of goods and services continued to be the main driver of growth.

Trend of aggregate demand in 2007 Q2

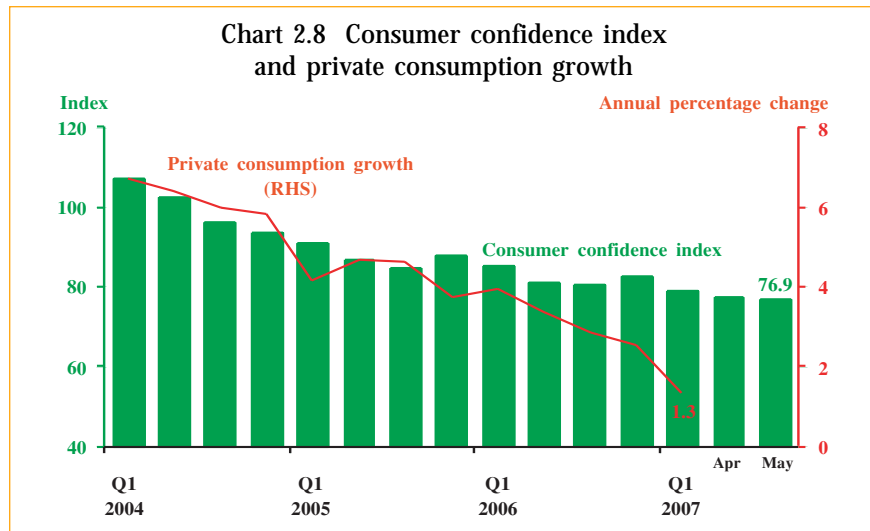
Domestic demand from both the private and public sectors showed improvement in 2007 Q2 while external demand showed signs of slight moderation. Nevertheless, exports continued to be the main growth engine, as in the previous quarter and in 2006.

The Bank of Thailand's indicators of private consumption and private investment pointed to a slight improvement in domestic expenditure from 2007 Q1. Private consumption expenditure showed signs of recovery, but remained fragile, as reflected in the Private Consumption Index (PCI) for April and May, which averaged at 119.6, up from the average of 119.0 in 2007 Q1. On a year-on-year basis the index fell by 0.4 per cent, but the decline was smaller than the decline of 0.5 per cent in the previous quarter. Consumption of durable goods continued to stagnate while imports of consumer products, particularly food and garments, grew by 9.3 per cent year-on-year, accelerating from 5.4 per cent in 2007 Q1.

The Private Consumption and Private Investment Indices edged higher.

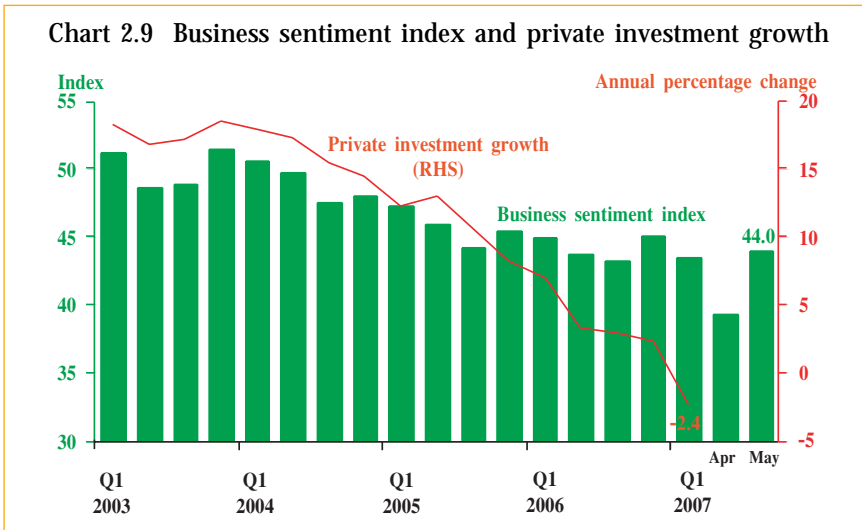
The sluggishness in consumption of durables suggested a pickup in consumer confidence could take time relative to a rebound of investor sentiment despite an increase in the overall spending. This observation

was in line with the Consumer Confidence Index (CCI), which fell to 77.1 in 2007 Q2 from 79.1 in the previous quarter. Consumers continued to express concern over general economic conditions, employment opportunities, and future income, which resulted in cautious behaviour by limiting consumption to essential items.



Source: University of the Thai Chamber of Commerce and National Economic and Social Development Board

Private investment in 2007 Q2 also trended upward from the previous quarter. In April and May 2007, the Private Investment Index (PII) increased to 168.1 and 169.8, respectively, after having declined since the latter half of 2006 Q3 and troughed at 166.1 in March 2007. Nevertheless, averaged over the two months, the index shrank by 2.7 per cent year-on-year, improving slightly from the 3.9 per cent contraction in 2007 Q1. The indicator that showed significant improvement was the import of capital goods, especially machinery. The MPC considered this development to be a positive signal, as well as the improvement in the Business Sentiment Index (BSI), which rose to 44.0 in May from 43.5 in the previous quarter and the lowest level of 39.5 in April. This pickup owed mainly to rise in the investment indicator that exceeded 50 for the first time since February 2007. However, the corporate sector was still concerned over political uncertainty, the appreciation of the baht, and the potential rise in oil prices. At this juncture, overall business sentiment was still fragile and had to be monitored closely.



Source: Bank of Thailand and National Economic and Social Development Board

On the fiscal side, government revenue collection during the fiscal year 2007 Q3 (calendar year 2007 Q2) contracted by 9.0 per cent year-on-year, following dampened revenue from value-added and corporate taxes that coincided with sluggish economic activities of the private sector. Furthermore, funds set aside for loan loss provision as required by the International Accounting Standard 39 (IAS 39) in effect reduced net profits of commercial banks, which in turn eroded the corporate tax base.

Government revenue collection slowed down in line with weak domestic demand, while government spending picked up from the previous quarter.

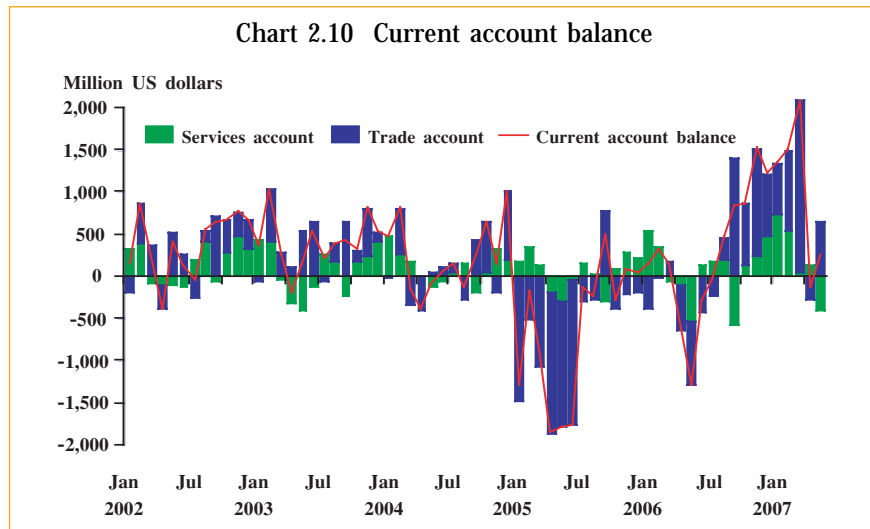
Average government expenditure over the first 2 months of 2007 Q2 rose significantly, expanding year-on-year at 34.0 per cent as a result of acceleration in fiscal budget disbursement for both current and capital expenditures, and thus helped the economy gain some traction over the previous quarter.

As for external outlook^{2/}, exports continued to expand well into 2007 Q2, with a year-on-year growth rate of 12.1 per cent in April and May compared with 13.2 per cent in 2007 Q1. Electronic products, electrical appliances, and rubber products continued to underlie the export momentum as a result of market expansion to China and

Exports were well maintained, while imports started to pick up, especially raw materials.

^{2/} From January 2007 onward, BOT no longer constructed its import and export prices indices but used the indices disseminated by the Bureau of Trade and Economic Indices. In effect, the volume of export and import would be different from the previous series.

the Middle East. Imports had a slightly upward trend with signs of an increase in imported capital goods and raw materials for export-oriented industries. As a result, import volume grew by 5.1 per cent, a significant surge from the growth of 0.1 per cent in the previous quarter.



Source: Bank of Thailand

With the acceleration of imports, the trade account surplus was expected to narrow, compared with 2007 Q1. Moreover, the service account displayed a seasonal deficit, given repatriation of interests and dividends. Thus, the current account surplus in 2007 Q2 was likely to be smaller than in the first quarter.

Production and supply in 2007 Q1^{3/}

In 2007 Q1, production growth was driven mainly by the manufacturing and service sectors. The agriculture sector also advanced from the previous quarter.

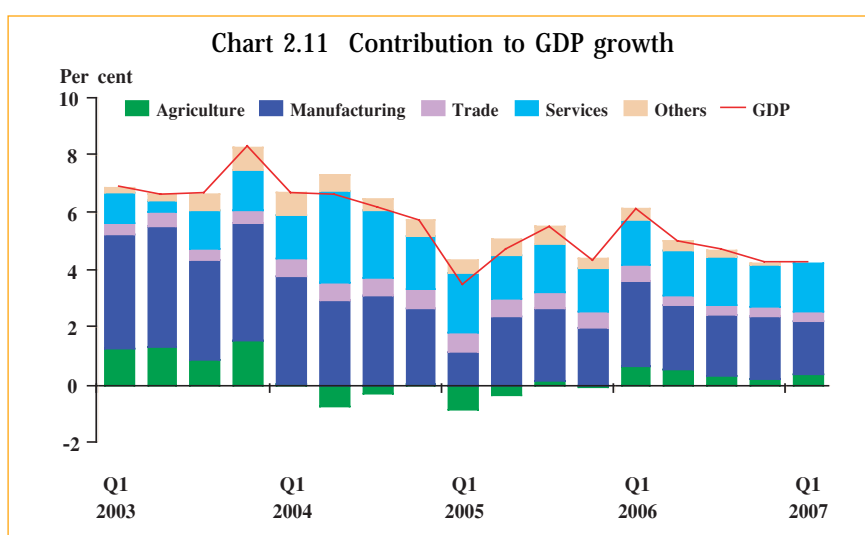
^{3/} Data used to analyse production and supply in 2007 Q1 were obtained mainly from the NESDB. Economic indicators used for analysing 2007 Q1 and the outlook for 2007 Q2 were obtained from the BOT, while data on the number of tourists and occupancy rate was in part compiled by the Tourism Authority of Thailand. Data on the labour market was obtained from the NSO.

Agricultural output in 2007 Q1 grew by 4.3 per cent, up from 1.9 per cent in 2006 Q4, given the waning of the effect from last year's floods. Moreover, the production of major crops, such as sugarcane and cassava, increased owing importantly to the expansion of farm areas and favourable weather conditions. On the other hand, livestock and fishery production slowed down somewhat, partly because of production restrictions to prevent oversupply.

Agricultural output picked up in 2007 Q1 as the effects of floods ebbed.

Manufacturing production in 2007 Q1 increased by 4.7 per cent year-on-year, down from 5.7 per cent in 2006 Q4. This softness resulted largely from industries that relied on domestic markets. Nevertheless, export-oriented industries continued to show healthy production growth. Overall, the manufacturing sector remained the main engine on the production side.

Manufacturing production slowed down somewhat in line with domestic demand.



Source: National Economic and Social Development Board

Growth in the service sector rose from 4.5 per cent in 2006 Q4 to 5.2 per cent in 2007 Q1, owing mainly to the disbursement of compensation to teacher's education that had been delayed from February 2006. However, hotels and restaurants slowed down partly due to the effects of the bombings during the New Year celebration and the unrest in the southern border provinces.

Employment expanded by 0.8 per cent year-on-year on the back of positive employment growth in the agricultural and service sectors. Meanwhile, employment in the manufacturing and trading sectors

Unemployment remained at a low level.

declined, most likely because of the slowdown in domestic-oriented production. The unemployment rate remained low at 1.6 per cent, and the number of unemployed persons decreased at every unemployment duration.^{4/}

Trend in production and supply in 2007 Q2

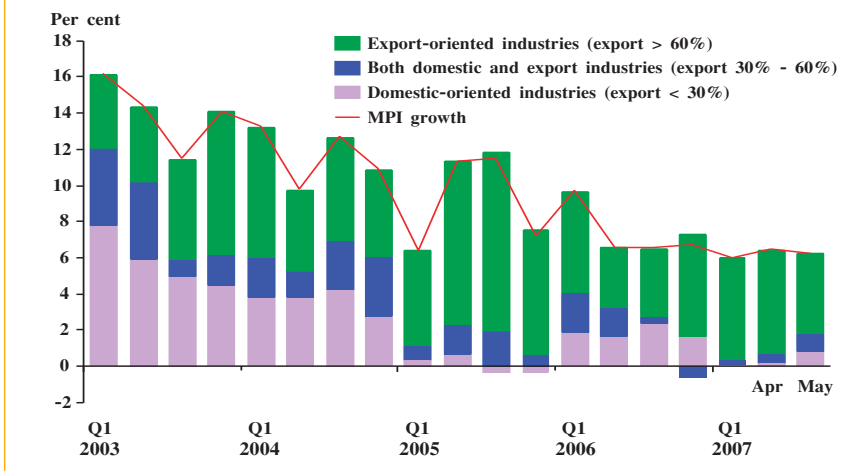
In 2007 Q2, crop production advanced from the previous quarter, while growth in manufacturing production was roughly similar to that in the previous quarter.

In April and May 2007, crop production grew by 12.4 per cent year-on-year, rising markedly from 5.9 per cent in 2007 Q1. This was due to the postponement of the second crop production because of floods from the end of last year to the beginning of 2007, resulting in a rise in rice production in this quarter. In addition, the production of other crops, including oil palm and cassava, rose given favourable weather conditions. Nonetheless, supply expansion caused crop prices to slow down from 2007 Q1. Hence, farm income from major crop sales did not rise much, growing 29.3 per cent in April and May, compared with 28.4 per cent in the previous quarter.

Growth in manufacturing production in 2007 Q2 was likely to remain in line with the pace over with the preceding quarter. The Manufacturing Production Index (MPI) for April and May 2007 grew by 6.3 per cent, compared with 6.0 per cent in 2007 Q1. Industries that showed signs of expansion included those that relied on domestic markets, especially sugar, textile and passenger vehicles, indicating improvements in domestic demand. On the other hand, export-oriented industries slightly slowed down from the previous quarter.

^{4/} Three unemployment durations are: (1) less than 90 days, (2) between 3 and 12 months, and (3) over 12 months from the survey date.

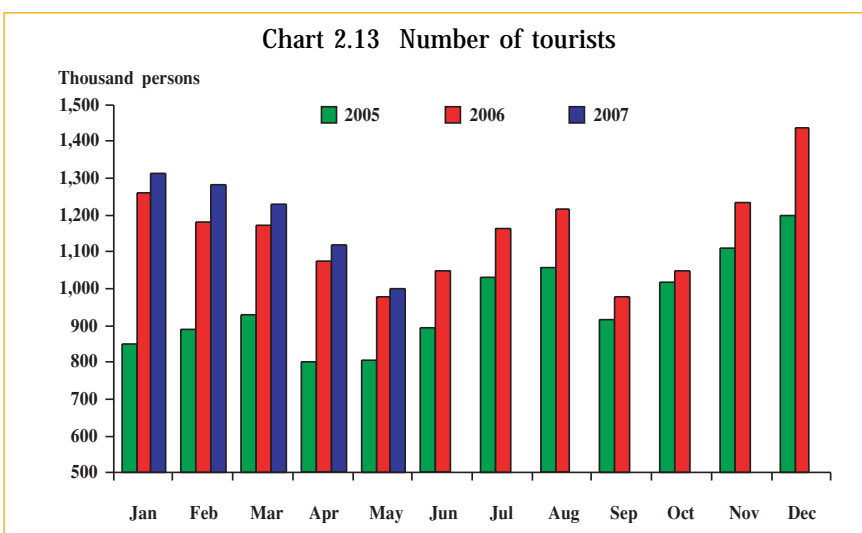
Chart 2.12 Contribution to manufacturing production index (MPI) growth



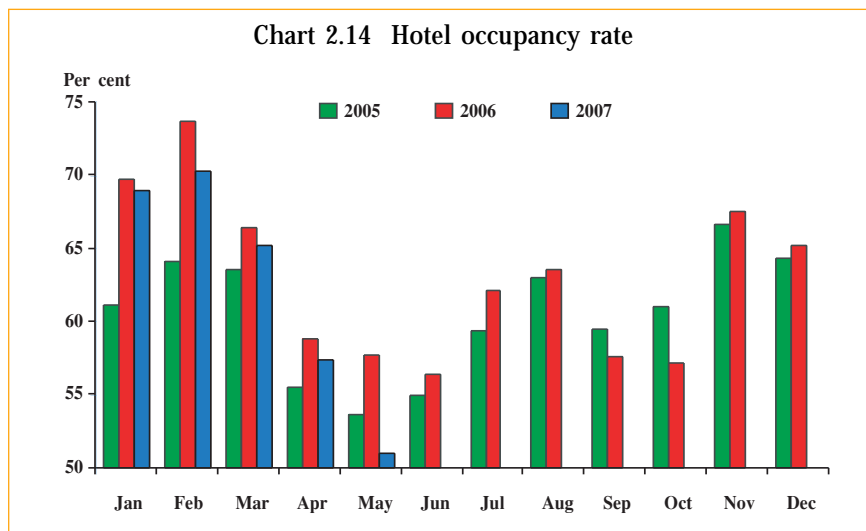
Source: Bank of Thailand

Tourism in 2007 Q2 continued to slow down from 2007 Q1 due to continued political uncertainty and unrest in the three southern provinces. As a result, foreign tourist numbers in April and May rose only by 3.2 per cent year-on-year, down from 5.8 per cent in the previous quarter. The average hotel occupancy rate was also lower than its level one year ago. However, the occupancy rate in the Andaman region continued to expand well.

Tourism in 2007 Q2 continued to slow down.

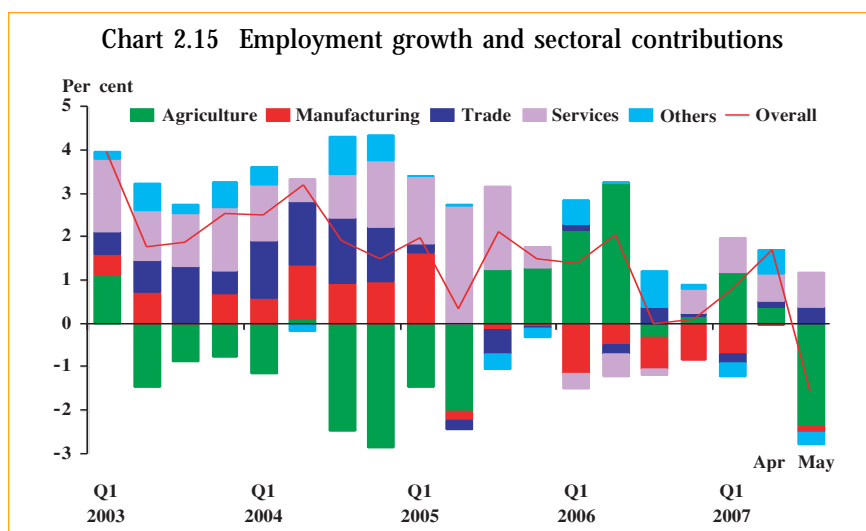


Source: Tourism Authority of Thailand and Bank of Thailand



Source: Tourism Authority of Thailand and Bank of Thailand

Labour market conditions remained healthy in the first 2 months of this quarter. Employment advanced from 0.8 per cent in 2007 Q1 to 1.7 per cent in April before contracting 1.6 per cent in May, as hiring in the agricultural sector dropped. Nevertheless, this contraction was not of predominant concern, as the unemployment rate continued to be low at 1.6 per cent.



Source: National Statistical Office

3. Monetary Conditions in the Last 3 Months

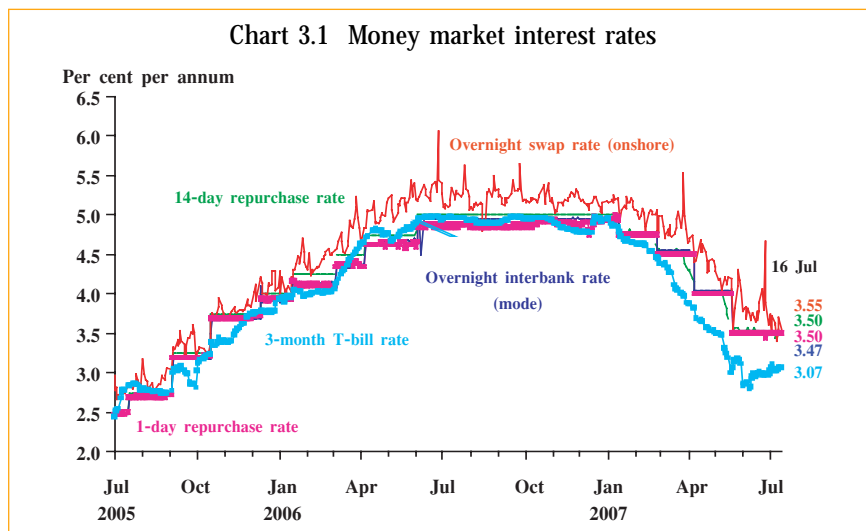
Following the release of the *Inflation Report* in April 2007, the MPC assessed in the meeting on 23 May 2007 that domestic demand declined continuously due to the slowdown in private expenditure and fragile confidence. Although the government accelerated its spending, government expenditure had yet to achieve target. Meanwhile, exports continued to expand favourably, in line with global economic conditions and the ability of exporters to adapt to the current environment. However, there remained a risk to export growth should the global economy slow down, going forward. Inflation decelerated as expected, despite the fact that global oil prices tended higher, while domestic price pressures remained minimal, given the continued slowdown in domestic demand. The MPC therefore decided to lower the policy rate from 4.00 per cent to 3.50 per cent per annum.

Subsequently, in the meeting on 18 July 2007, the MPC viewed that domestic demand in 2007 Q1 slowed down by more than the MPC expected. While private consumption and investment showed signs of a slight improvement in April and May, fragility remained, given that consumer confidence stayed at a low level. Despite higher global oil prices, inflation in the first half of the year was lower than expected, due to the appreciation of the baht and private spending that had yet to fully recover. The MPC thus lowered the 1-day repurchase rate by 0.25 per cent from 3.50 per cent to 3.25 per cent per annum.

Money market conditions

In 2007 Q2, short-term money market rates adjusted downwards from 2007 Q1 in line with the policy rate. The 1-day repurchase and overnight interbank rates for the quarter averaged at 3.84 and 3.88 per cent per annum, down from 4.69 and 4.73 per cent per annum in the previous quarter, respectively.

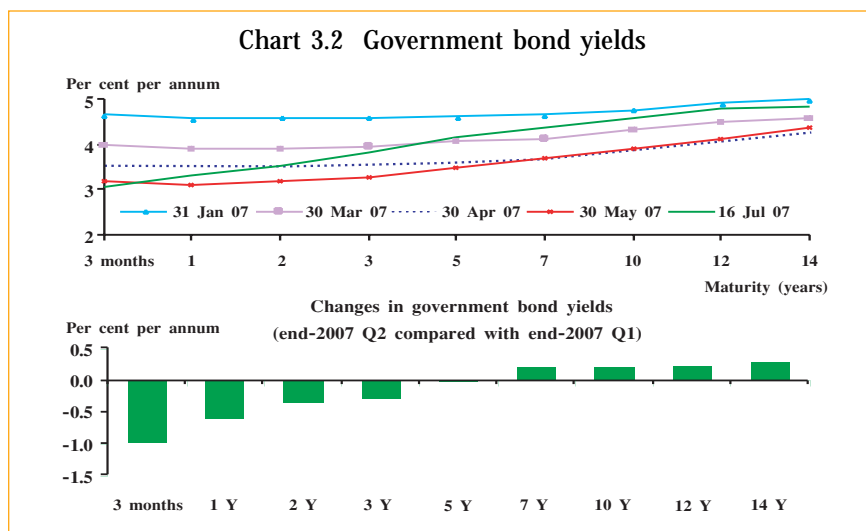
Short-term money market rates adjusted downwards, in line with the policy rate.



Source: Bank of Thailand

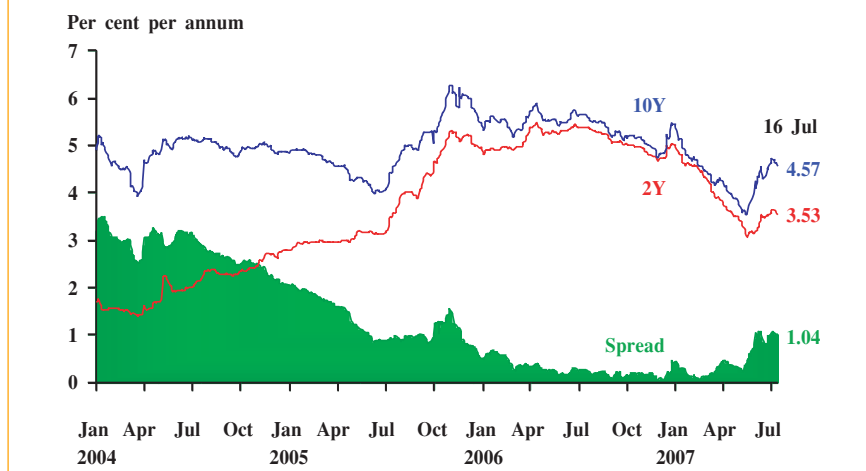
The government bond yield curve continued to adjust downwards before the meeting on 23 May but adjusted upwards and steepened after the meeting due to the change in market expectations on the policy rate.

Yields on treasury bills and government bonds continued to adjust downwards, from the period prior to the MPC meeting on 11 April 2007 until the MPC meeting on 23 May 2007. The government bond yield curve shifted downwards as the market expected that the policy rate would continue to be lowered. However, after the MPC meeting on 23 May 2007, the market viewed that the MPC was likely to slow down or end the reduction in the policy rate sooner than previously expected. Thus, bondholders sold the government bonds that they had acquired earlier, resulting in an increase in yields for all maturities.



Source: Bank of Thailand

Chart 3.3 Government bond yield spread between 10-year and 2-year



Source: Bank of Thailand

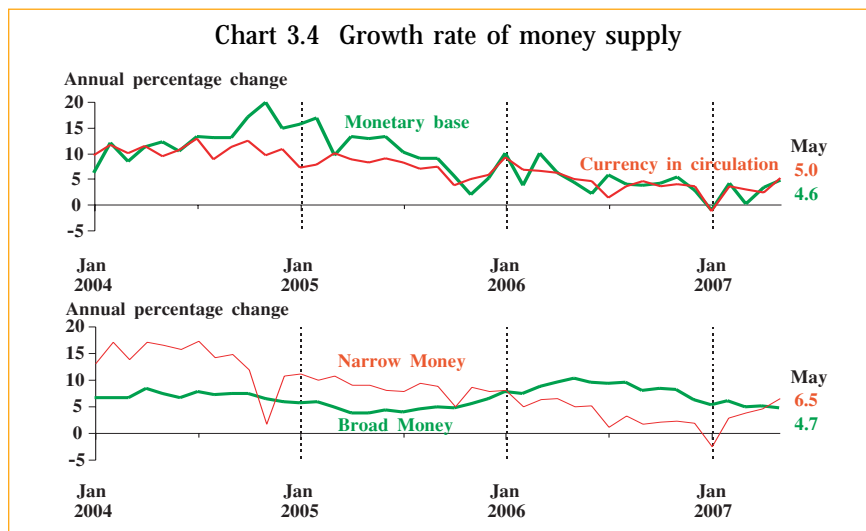
Moreover, the rise in yields was also supported by the increase in yields of US bonds in the beginning of June. However, the yields on government bonds adjusted downwards slightly in the second half of June, as the Ministry of Finance cancelled two long-term government bond auctions.

The spread of long-term over medium-term government bond yields widened compared to the previous quarter. The spread between 10-year and 2-year bonds widened to 0.99 per cent at the end of 2007 Q2, compared to 0.43 per cent at the end of 2007 Q1.

Monetary base and money supply

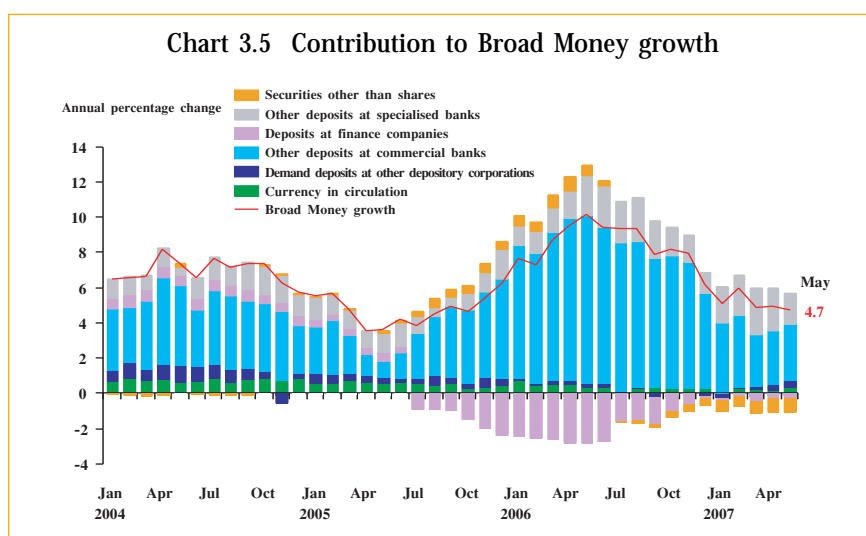
During the April-May period, the monetary base expanded on average by 4.0 per cent year-on-year, accelerating from 0.1 per cent in 2007 Q1. Yet, the growth rate was low when compared with the past 2-3 years, mainly due to the slower pace of currency in circulation in the hands of the private sector and domestic demand for consumption. However, a continued acceleration in the growth rate of currency in circulation in the hands of the private sector and that of the monetary base should signal a recovery in domestic demand.

The growth rate of the monetary base accelerated from the previous quarter, but slowed down from 2007 Q1.



Source: Bank of Thailand

In the April-May period, broad money^{1/} grew at an average of 4.8 per cent year-on-year. The slowdown was mainly a result of the decline in deposits since mid-2006, after commercial banks vigorously



Source: Bank of Thailand

^{1/} Broad Money refers to the monetary aggregate, which has a broader coverage than M3 in that it also includes deposits or deposit substitutes of other depository corporations (ODCs) apart from commercial banks, finance companies and specialised financial institutions (SFIs). The Bank of Thailand compiles Broad Money in accordance with the Monetary and Financial Statistics Manual (MFSM 2000) of the International Monetary Fund. From 2007 onwards, only Broad Money (and not other monetary aggregate series) will be published. For further information, please visit <http://www.bot.or.th>

competed for deposits in the first half of 2006. Other factors included the slowdown in domestic demand, as well as the reduction in commercial banks' deposit rates in 2007.

Adjustments of the banking system

In 2007 Q2, most commercial banks adjusted their reference interest rates downwards, in line with the policy rate. Particularly, deposit rates were lowered more rapidly than lending rates. The deposit rates for 3-12 month time deposits of the four largest Thai commercial banks declined by 1.0 per cent on average, from 3.25 per cent at the end of 2007 Q1 to 2.25 per cent at the end of 2007 Q2, in line with the MPC's policy rate reductions. In addition, long-term rates with maturities longer than 12 months, such as 24 month deposits, were adjusted downwards by more than the policy rate, reflecting the expectation of commercial banks that interest rates would continue to be lowered going forward.

Commercial banks adjusted reference rates downwards, both in terms of deposit and lending rates, following the reductions in the policy rate.

Unit: Per cent	2005	2006	2007**			
	Dec	Dec	Jan	Mar	Apr	May
Policy rate	4.00	5.00	4.75	4.50	4.00	3.50
Average reference retail rates of the 4 largest banks						
Savings	0.75	0.75	0.75	0.75	0.75	0.75
3-month	2.00	3.44	3.44	3.25	2.75	2.25
6-month	2.25	3.69	3.69	3.25	2.75	2.25
12-month	2.50	4.00	3.81	3.25	2.75	2.25
24-month	3.75	4.69	4.44	3.69	3.00	2.50
MLR	6.50	7.69	7.69	7.50	7.19	7.00

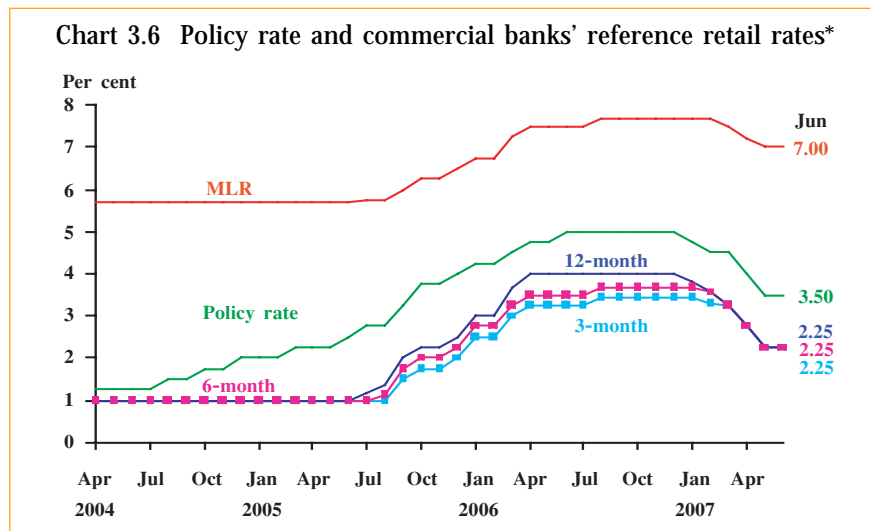
Note: *Rates at end-period

**Displaying only those with a significant change in rates

Source: Bank of Thailand

The downward adjustment of lending rates was slower than that of deposit rates. While commercial banks were able to adjust deposit rates down rapidly, their costs from paying interest on fixed-term deposits, which had yet to reach maturity, were unchanged as banks would still need to pay higher rates on those accounts until maturity. On the other hand, due to the reductions in lending rates, banks' interest income from loans would decline immediately. Given this limitation, banks adjusted lending rates downwards more slowly in order to maintain

their profit margins, particularly when liquidity in the banking system remained high. As of end-2007 Q2, the average MLR of the four largest commercial banks was lowered to 7.00 per cent, down from 7.50 per cent at the end of 2007 Q1.



Note: *Average rate of the 4 largest commercial banks at end-period
Source: Bank of Thailand

Depositors shifted their time deposit accounts from short-term to longer-term deposits as rates were expected to be on a downward trend.

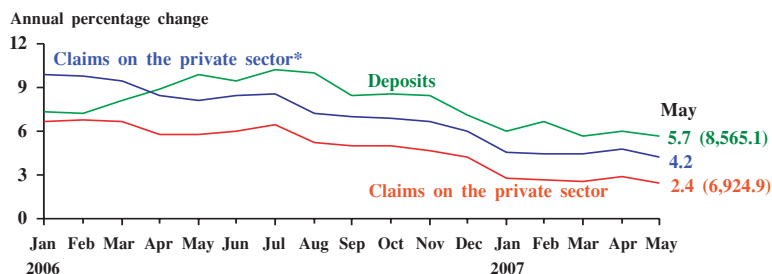
Although long-term deposit rates, such as the rate on 12 month fixed deposits, continued to decline to levels close to that of short-term deposits, depositors' expectations that interest rates would be lowered further resulted in a migration of deposits from short-term to longer-term deposits to lock in long-term interest rates. As a result, the proportion of deposits in time deposit accounts with maturities between 7-12 months and longer than 12 months increased from 15.6 per cent and 7.6 per cent at the end of 2007 Q1 to 16.4 per cent and 8.9 per cent at end-May, respectively. Moreover, the proportions of short-term 3-6 month deposits continued to decline.

Deposits of Other Depository Corporations^{2/} expanded at a stable rate after the continued slowdown since mid-2006 until 2007 Q1.

Deposits of Other Depository Corporations^{2/} expanded at a stable rate after the continued slowdown since mid-2006 until 2007 Q1. As of end-May 2007, deposits grew at the same rate as at the end of 2007 Q1

^{2/} Other Depository Corporations comprise domestically registered commercial banks, branches of foreign banks, international banking facilities, finance companies, Specialised Financial Institutions (including Government Savings Bank, Government Housing Banks, Bank for Agriculture and Agricultural Cooperatives, Export-Import Bank of Thailand, Small and Medium Enterprise Development Bank of Thailand, Islamic Bank of Thailand), saving cooperatives, and money market mutual funds.

Chart 3.7 Other depository corporations' deposits and claims on the private sector



Change from end of previous period (Billion baht)	2006	2006				2007		
		Q1	Q2	Q3	Q4	Q1	Apr	May
Deposits	545.0	327.1	81.1	144.5	-7.8	233.6	109.8	97.6
Claims on the private sector	279.1	107.0	6.2	95.9	70.1	2.7	5.7	35.1

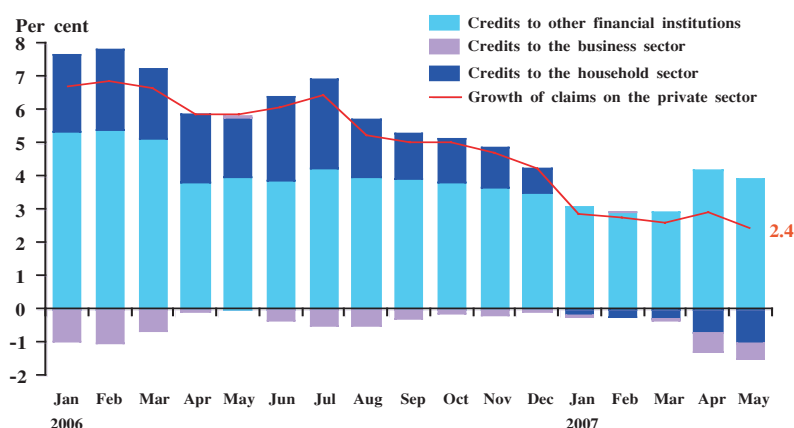
Note: *Excluding the effects of loan write-offs and transfers to AMCs
Source: Bank of Thailand

at 5.7 per cent year-on-year. Deposits of businesses and households continued to moderate, while government deposits accelerated during the past 2-3 months, due to speedier budget disbursement. This led to an increase in government's deposits at commercial banks, which had yet to be disbursed.

Other Depository Corporations' claims on the private sector continued on a decelerating trend. The growth of credits to the business sector contracted in this quarter, compared to the previous quarter,

Claims on the private sector slowed down in line with domestic demand, especially investment.

Chart 3.8 Contribution to growth of claims on the private sector of other depository corporations

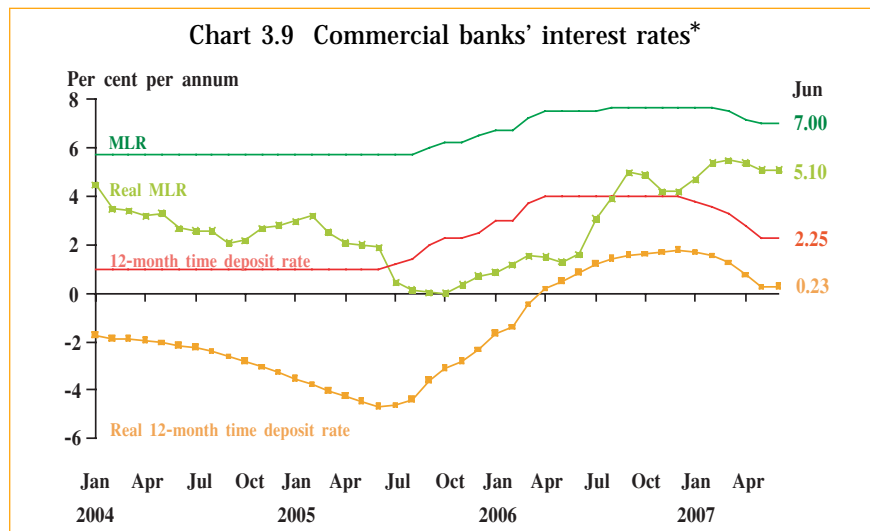


Source: Bank of Thailand

following the weakness in domestic investment. However, the growth in credits extended to the household sector drove down overall credit growth to the private sector to 2.4 per cent at end-May 2007, from 2.6 per cent in 2007 Q1. Excluding the effect of loan write-offs and transfers to AMCs, claims on the private sector expanded by 4.2 per cent, down from 4.4 per cent in the previous quarter.

Real deposit rates were adjusted downwards more rapidly than the MLR.

As commercial banks rapidly lowered their reference rates, real deposit rates also fell sharply, causing the real 12-month deposit rate^{3/} to decline to 0.23 per cent per annum at the end of 2007 Q2. However, the real MLR^{4/} declined to 5.10 per cent per annum, as the MLR declined at a faster pace than the decline in headline inflation in that period.



Note: *Average rate of the 4 largest commercial banks
Source: Bank of Thailand

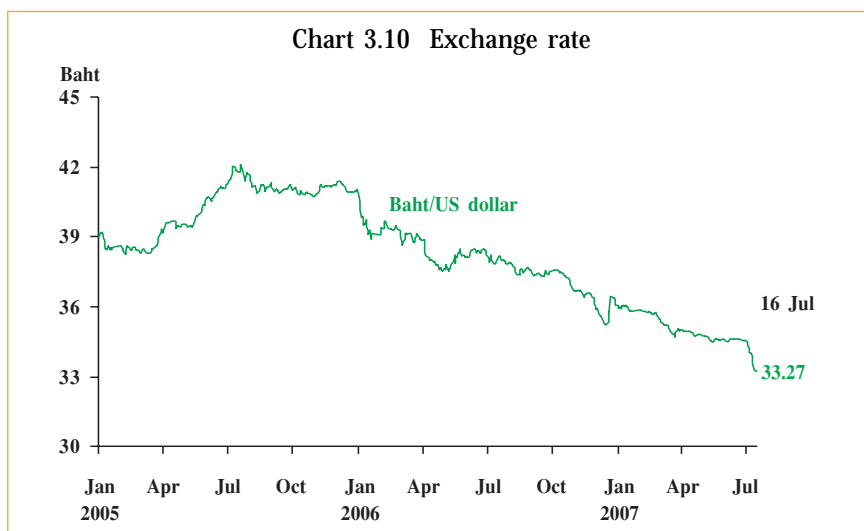
^{3/} Real deposit rate = 12-month deposit rate - average inflation forecast 12 months forward

^{4/} Real lending rate = MLR - contemporaneous headline inflation

Exchange rates and capital flows

In 2007 Q2, the baht averaged at 34.68 per US dollar, an appreciation of 2.6 per cent from the previous quarter. In April and May, the baht continued to appreciate, due both to the selling of US dollars by exporters and capital inflows into the stock market, as well as rumours that the BOT would lift the reserve requirement on short-term capital inflows. The appreciation of the baht during this period, however, was slower compared to the pace of appreciation in 2007 Q1. Later in June, while the selling of US dollars continued, there was a rise in demand for dollars from importers and oil companies, helping to stabilize the exchange rate for a short period prior to the rapid appreciation in the beginning of July.

In 2007 Q2, the baht continued to appreciate but at a decelerated pace.

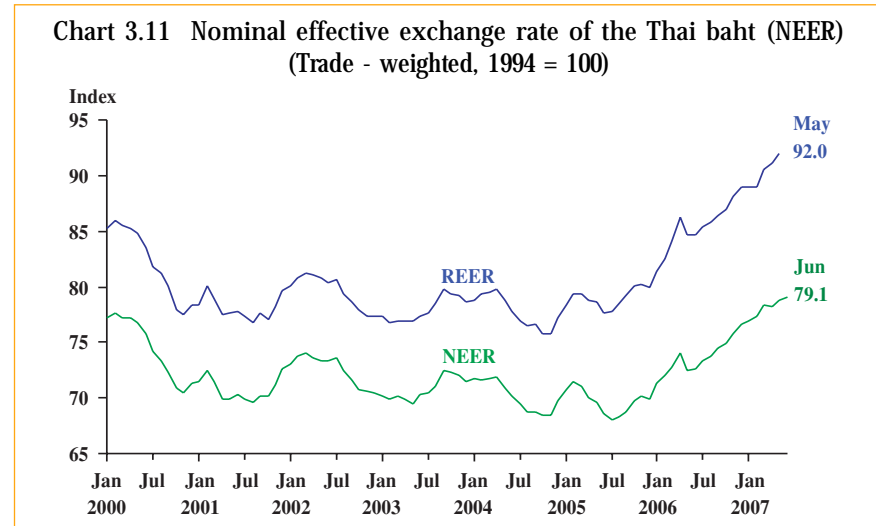


Source: Bank of Thailand

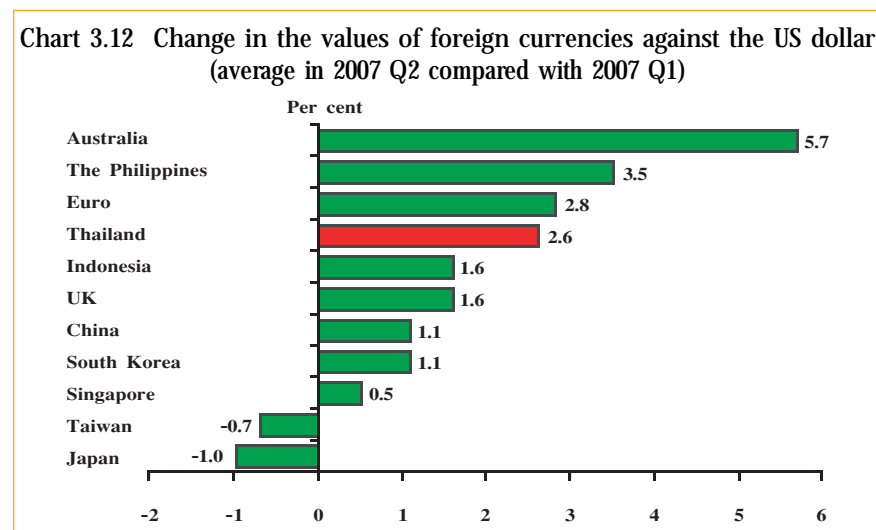
The nominal effective exchange rate (NEER), calculated as a weighted average of bilateral exchange rates between the baht and major trading partners' currencies to reflect the country's price competitiveness, increased by about 1.5 per cent in 2007 Q2 from the average in 2007 Q1. This appreciation came about from the baht's continued appreciation against the US dollar, the yen, and most of the regional currencies. Meanwhile, the real effective exchange rate (REER), deflated by inflation to reflect Thailand's price competitiveness, also continued to increase, with the average of the first 2 months of 2007 Q2 rising by 2.3 per cent, compared to the average in 2007 Q1. The increase

The nominal effective exchange rate appreciated slightly from 2007 Q1.

was due mainly to the appreciation in the NEER, and higher domestic inflation compared to inflation in trading partners.



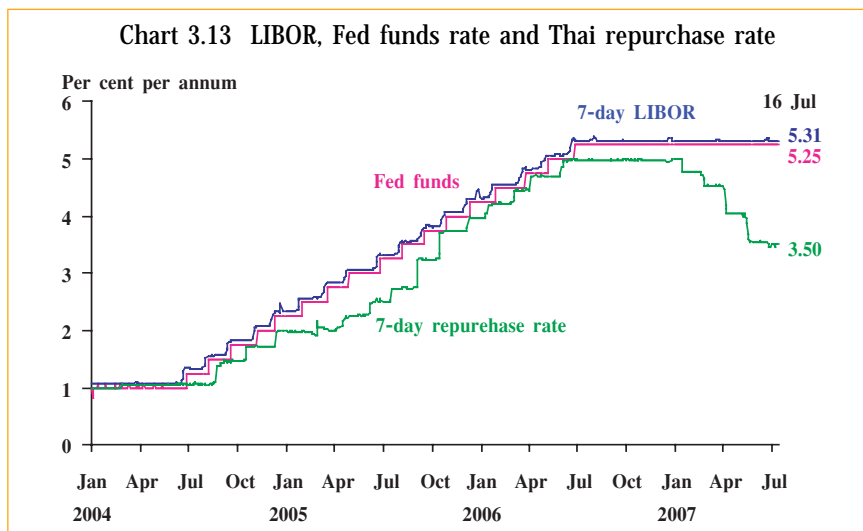
Source: Bank of Thailand



Source: Bank of Thailand

The interest rate differential between the Thai and US policy rates widened from the previous quarter.

The interest rate differential between the Thai and US policy rates was 1.75 per cent at end-2007 Q2, up from 0.75 per cent at end-2007 Q1. The wider differential came about as the FOMC maintained its policy rate throughout the quarter, while the MPC lowered the policy rate twice, totaling 1.00 per cent.



Source: Bank of Thailand

Factors which still pressured the baht to appreciate included the current account surplus, as well as capital inflows from foreign direct investment in the non-bank sector and for investment in the stock market. As a result, the overall balance of payments during April - May stood in surplus by 467.2 million US dollars.

The current account surplus and capital inflows were important factors which pressured the baht to appreciate further.

Table 3.2 Balance of payments

Unit: Billion US dollars	2005	2006	2006		2007 ^P		
			Q3	Q4	Q1	Apr	May
Current account balance*	-7.9	3.2	1.2	3.6	4.9	-0.1	0.2
Net capital flows*	12.6	7.9	2.5	-0.2	-3.5	-0.9	n.a.
Bank of Thailand	0.0	0.0	0.0	0.0	0.0	0.0	n.a.
Public	-0.9	-0.6	-0.2	-0.2	-1.1	-0.4	n.a.
Bank	0.3	-8.6	-0.8	-2.9	-4.9	-1.2	n.a.
Others	13.2	17.1	3.5	2.9	2.5	0.7	n.a.
Balance of payments	5.4	12.7	3.5	4.6	3.3	-0.2	0.7

Remark: * Reinvested earnings are recorded as part of direct investment in the financial account, and its contra entry recorded as 'investment income' in the current account

P = Preliminary

Source: Bank of Thailand

*International reserves
continued to increase.*

The sustained surplus in the balance of payments led to a continued accumulation of international reserves. As of end-2007 Q2, international reserves stood at 73.0 billion US dollars, up from 70.9 billion US dollars at end-2007 Q1. When combined with the BOT's net forward position, free reserves increased to 82.5 billion US dollars. External liquidity indicators maintained favourable, with the ratio of international reserves to short-term external debt registering at 3.8 as of end-April 2007.

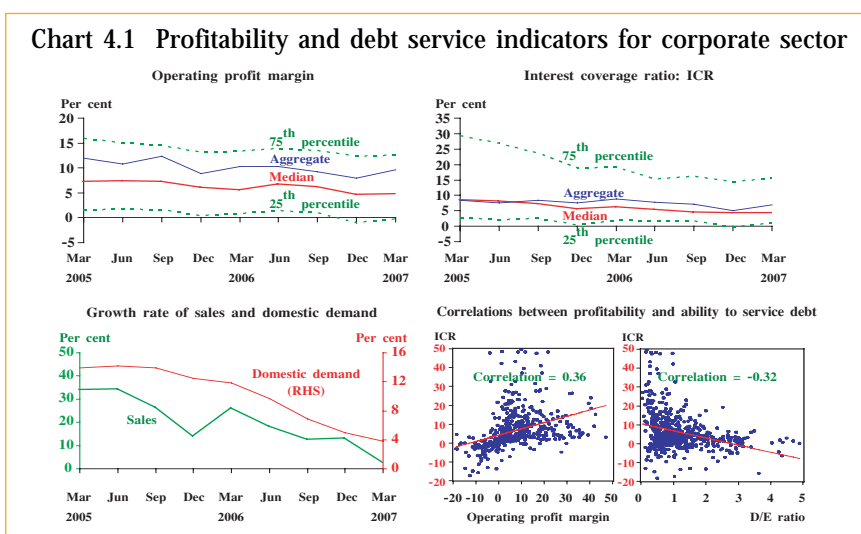
4. Financial Stability Conditions and Outlook

The financial health of corporate and household sectors in 2007 Q1 continued to be affected by the recent economic softening, as reflected by the decline in the profitability of the corporate sector and the ability of the household sector to service its debt. Nevertheless, the recent monetary easing helped in part to reduce corporate and household fragility. On the other hand, financial institutions remained strong, despite the loan loss provision requirement that needed to be in place by the end of 2007 in compliance with international standards. Upside risks to financial markets in 2007 Q2 increased as a result of volatility in financial markets abroad as well as domestic factors such as political uncertainty and changes in the monetary policy path.

Non-financial corporate sector

The recent economic slowdown was a major risk to the stability of the corporate sector in terms of profitability and debt service ability. Based on the 2007 Q1 data of companies listed on the Stock Exchange of Thailand (SET), the slight improvement of operating profit of most firms, as reflected from higher operating profit margins of the market aggregate and the median firm, was due importantly to a decline in operating costs, while sales of most firms in fact weakened in line with

The recent economic slowdown was a major risk to the stability of the corporate sector in terms of profitability and debt service ability.

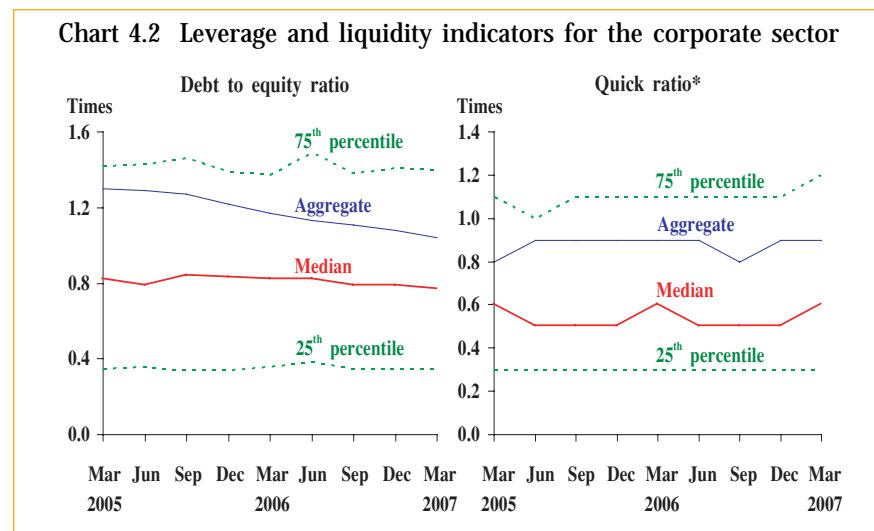


Source: Stock Exchange of Thailand, calculations by Bank of Thailand

the softening in domestic demand. Consequently, if this situation was prolonged, it could depress profitability and in turn affect debt service ability, particularly affecting underperforming firms.

Solid financial status reflected corporate sector's resiliency.

Nevertheless, the financial structure of the corporate sector remained strong, as reflected by a continued decline in the debt to equity ratio and ample liquidity, which in part helped increase resilience in the face of adverse financial risks. In addition, accommodative policy since the beginning of 2007 partly helped the corporate sector in reducing financial costs. At the same time, lower interest rates would provide stimulus to private spending and investment, which would reinforce the corporate sector's performance as well as foster a favourable environment for investment going forward (details in the Box).



Note: * Quick ratio = (Current asset - Inventories)/Current liability
 Source: Stock Exchange of Thailand, calculations by Bank of Thailand

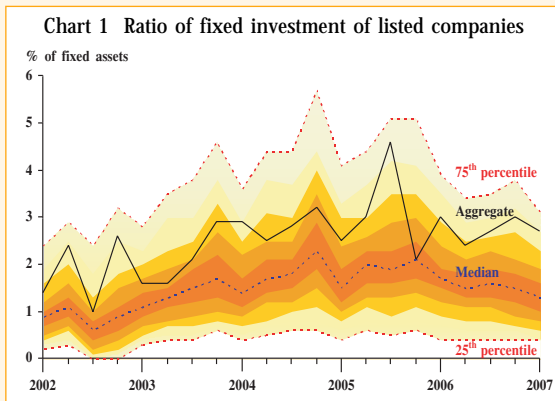
Household sector

The ratio of non-performing loans to total household loans started to rise, reflecting increased financial fragility in the household sector.

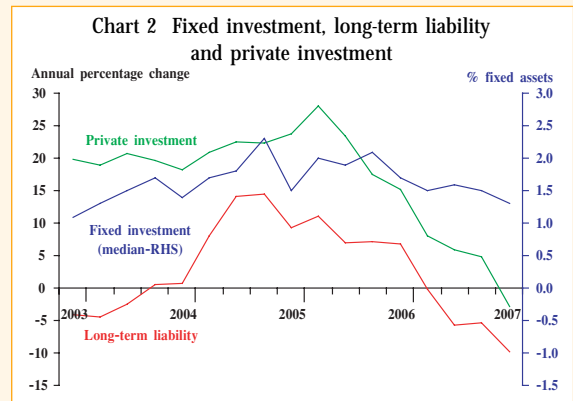
In 2007 Q1, consumer loans rose slightly in line with growth in housing loans. However, the ratio of non-performing loans (NPLs) to total household loans started to rise, reflecting increased financial fragility in the household sector.

Current conditions and outlooks for investment by companies listed on the SET

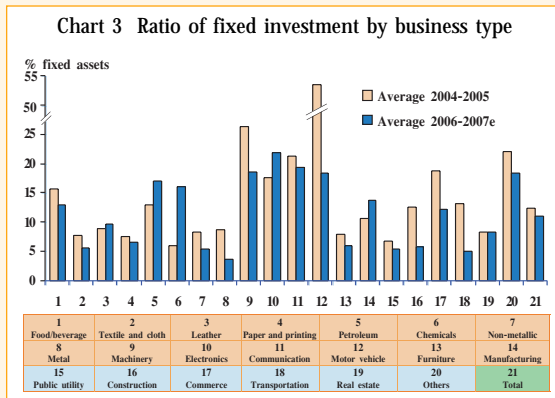
Although the overall ratio of fixed investment^{1/} by listed firms^{2/} remained relatively unchanged recently, this was in fact due to investment by certain large companies. Capital investment of the majority of listed firms, however, slowed down, as reflected by a continued decline in the ratio of fixed investment of the median firm since the beginning of 2006 (Chart 1) in line with the recent slowdown in private investment. On the financing side, which was the other side of the coin, external financing especially over the long term was also sluggish (Chart 2).



Source: Stock Exchange of Thailand, calculations by Bank of Thailand

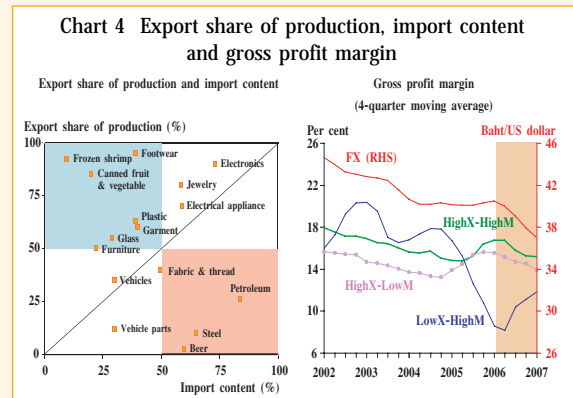


Sources: Stock Exchange of Thailand and National Economic and Social Development Board



Note: e = Estimated from the latest data of 2007 Q1.

Source: Stock Exchange of Thailand, calculations by Bank of Thailand



Note: HighX-HighM comprises Electronics, Electrical Appliance and Jewelry
HighX-LowM comprises Frozen and Canned Food, Footwear, Plastic, Garment, Glass and Furniture

LowX-HighM comprises Steel, Beverage and Petroleum

Sources: Ministry of Commerce, Ministry of Industry and Stock Exchange of Thailand, calculations by Bank of Thailand

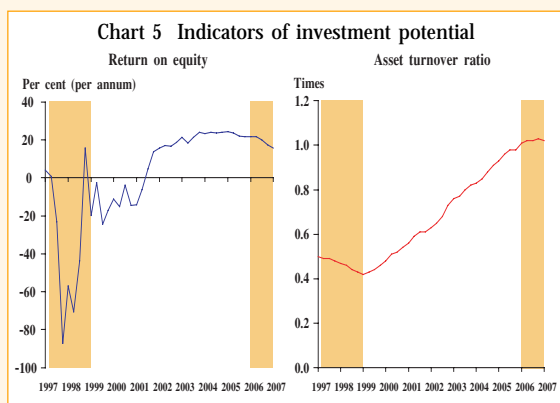
^{1/} Ratio of fixed investment = (Purchase of fixed assets at time t)/(Stock of fixed assets at time t-1) x 100

^{2/} Fixed investment by non-financial firms only, which accounted for a quarter of total private investment

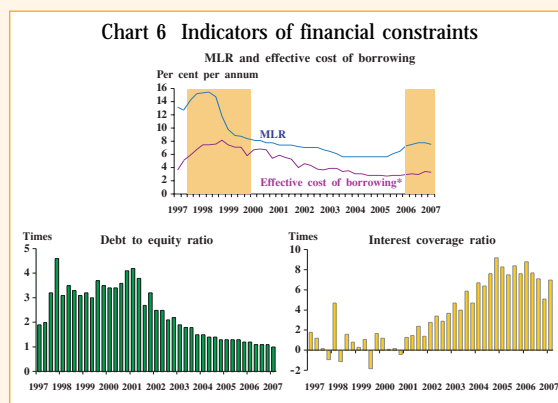
On a sector-by-sector basis, the ratio of fixed investment during 2006 and 2007 Q1 also declined relative to 2004-2005 in most sectors (Chart 3), especially in construction, commerce, transportation, and public utilities. Although the manufacturing sector exhibited an upward trend in fixed investment, that was due largely to long-term investment undertaken by the chemical and petroleum industries. The ratio of fixed assets in other industries, however, mostly declined.

The strengthening of the baht since the beginning of 2006 was one of the factors weakening the gross profit ratio in industries with strong export orientation and low import content (Chart 4). This directly affected the investment decision of such firms, in particular the textile and garment industries as well as the furniture industry. On the other hand, industries that are less export-oriented but with high import content, such as the petroleum industry, benefited from a strong baht and thus tended to increase their investment relatively more.

Nevertheless, overall investment fundamentals remained strong, both in terms of profitability as well as efficiency with which firms use their assets (Chart 5). Despite a slight decline in the return on equity (ROE) ratio recently, it stood well above the immediate post-crisis period when it was negative. The asset turnover ratio meanwhile edged higher, indicating a greater efficiency in asset utilization. Furthermore, current financial conditions were far from weighing on investment as in the post-crisis period (Chart 6), with costs of capital substantially lower and likely to fall further in line with monetary policy easing since the beginning of 2007. Also, a decrease in the debt to equity ratio and a high level of the interest coverage ratio reflected a healthy financial position of the corporate sector. All these factors constituted a favourable environment for capital spending.

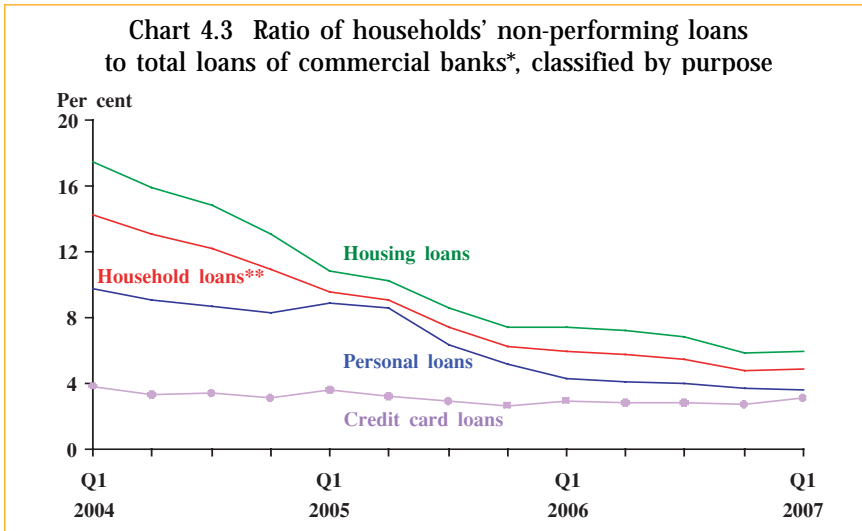


Source: Stock Exchange of Thailand, calculations by Bank of Thailand



Note: *Effective cost of borrowing = interest payment/total liability
Source: Stock Exchange of Thailand, calculations by Bank of Thailand

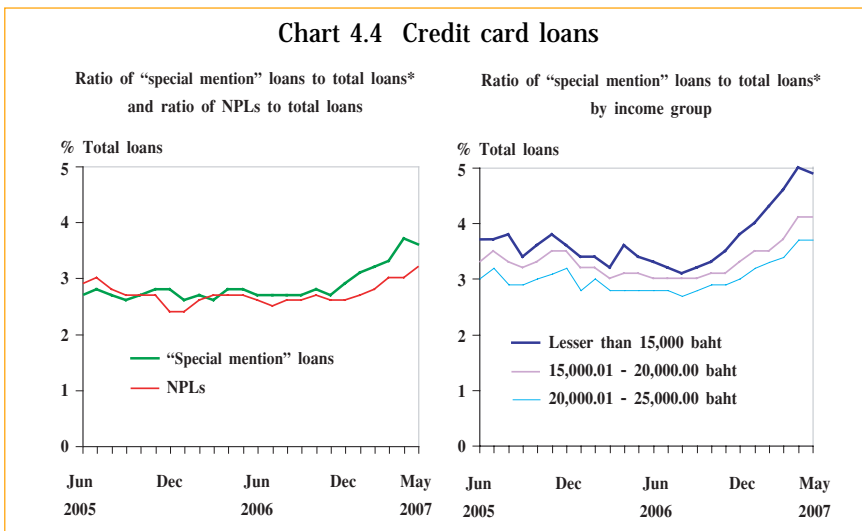
With investment fundamentals expected to be firming during the second half of 2007, investment was thus likely to resume a stronger pace of expansion going forward.



Note: * Commercial banks are Thai commercial banks and foreign bank branches.
 ** Household loans comprises housing loans, credit card loans, and personal loans.
 Source: Bank of Thailand

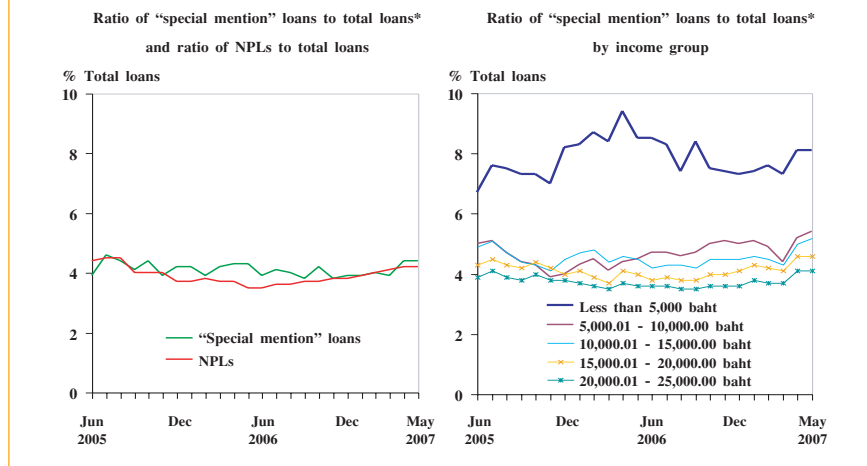
With respect to loans under the Bank of Thailand's supervision, the 2007 Q1 data and the preliminary data gathered in the second quarter showed that credit card loans outstanding which were classified as "special mention" (1-3 months past due) continued to rise. This increase in credit card delinquency stemmed from the recent economic slowdown, together with the revision of regulations on credit card providers by

Credit card loans classified as "special mention" (1-3 months past due) continued to rise since the end of 2006.



Note: * "Special mention" loans refer to loans of 1-3 months past due.
 Source: Bank of Thailand

Chart 4.5 Personal loans under supervision of the BOT



Note: * "Special mention" loans refer to loans of 1-3 months past due.
Source: Bank of Thailand

Low-income households exhibited greater financial fragility relative to other groups.

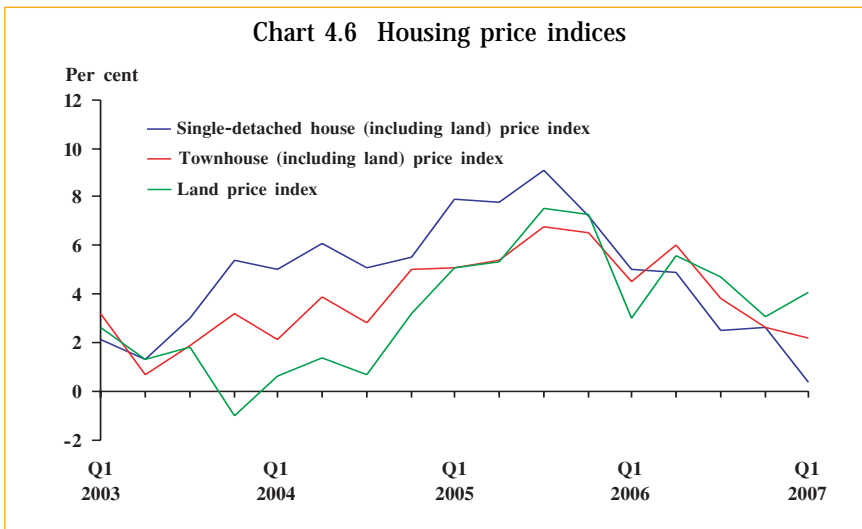
Bank of Thailand^{1/} that partly affected credit card payments. In addition, the number of "special mention" loans accelerated in low-income households relative to higher-income households. In other words, low-income households exhibited greater financial fragility relative to other groups, although looking at the overall picture, this was not too much of a concern.

Real estate sector

In 2007 Q1, property prices continued to moderate.

In 2007 Q1, property prices continued to moderate in line with the slowdown in the real estate sector. However, land prices slightly increased, possibly owing in part to the approval of the mass transit system in certain suburban areas, which increased demand for residential construction. Nevertheless, the likelihood of real estate bubbles remained low.

^{1/}The Bank of Thailand increased the ceiling of the interest rate charged by credit card providers from 18 to 20 per cent per annum, effective 1 December 2006. The minimum credit card payment as a fraction of the outstanding balance was also increased from 5 to 10 per cent, which the providers must comply by 30 June 2007.



Source: Bank of Thailand, computed using the Government Housing Bank appraisal database

Financial institutions

The Financial Soundness Indicators^{2/} in 2007 Q1 pointed to a strong position in the banking sector, with profitability and the ratio of regulatory capital to risk-weighted assets remaining high despite the recent economic slowdown. Nevertheless, the MPC deemed it important to closely monitor the quality of credit, especially that of the new NPLs which recently edged up.

The banking sector profitability remained satisfactory, with a slight increase in operating profit over the same period last year, despite the requirement on loan loss provision according to the International Accounting Standards (IAS 39) that needed to be met in full by the end of this year. In addition, the overall return on assets in the first quarter stood at 1.06.

^{2/} According to the Financial Soundness Indicators Compilation Guide (March 2006) prepared by the IMF, which included credit risks, liquidity risks, and market risks.

Table 4.1 Thailand's Financial Soundness Indicators (March 2007) ^{1/}				
Key indicators (%)	2004	2005	2006	2007
	Dec	Dec	Dec	Mar
1. Capital adequacy				
1.1 Regulatory capital to risk-weighted assets	11.94	13.22	13.59	13.85
1.2 Regulatory tier 1 capital to risk-weighted assets	8.71	9.95	10.70	11.03
2. Asset quality				
2.1 Non-performing loans to total loans	11.94	9.06	8.07	8.17
3. Earning and profitability				
3.1 Return on assets (ROA)	1.25	1.36	0.77	1.06
3.2 Interest margin ^{2/} to gross income ^{3/}	67.3	72.8	72.5	71.3
3.3 Non-interest expenses to gross income	53.9	52.7	56.8	56.0
4. Liquidity				
4.1 Liquid assets ^{4/} to total assets	25.0	24.3	26.2	27.8
4.2 Liquid assets to short-term liabilities ^{5/}	29.9	29.9	32.7	34.7
Number of banks	12	14	14	14

Note: ^{1/}Based on "Peer Group" data of Bank of Thailand

^{2/}Interest margin = Interest income and dividend - Interest expenses

^{3/}Gross income = Interest margin + Non-interest income

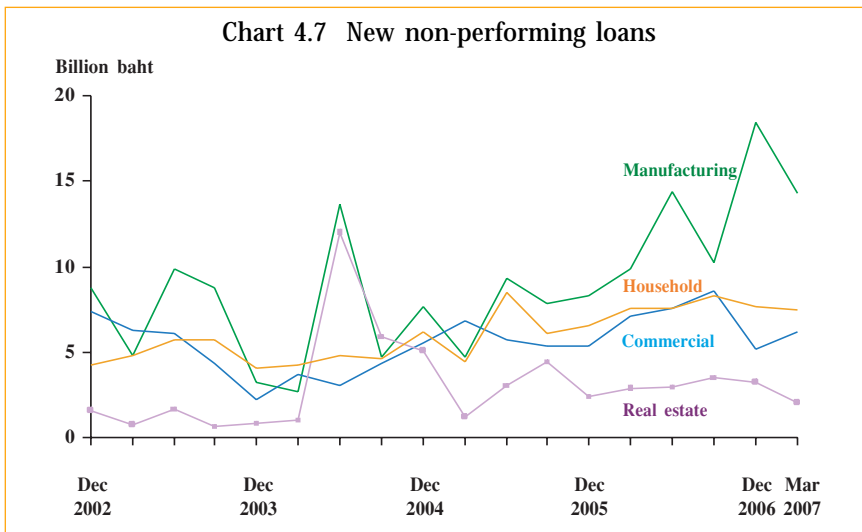
^{4/}Liquid assets = Cash and deposits + Securities purchased under resale agreements + Investment in securities (net)

^{5/}Short-term liabilities = Deposits (Liability side)

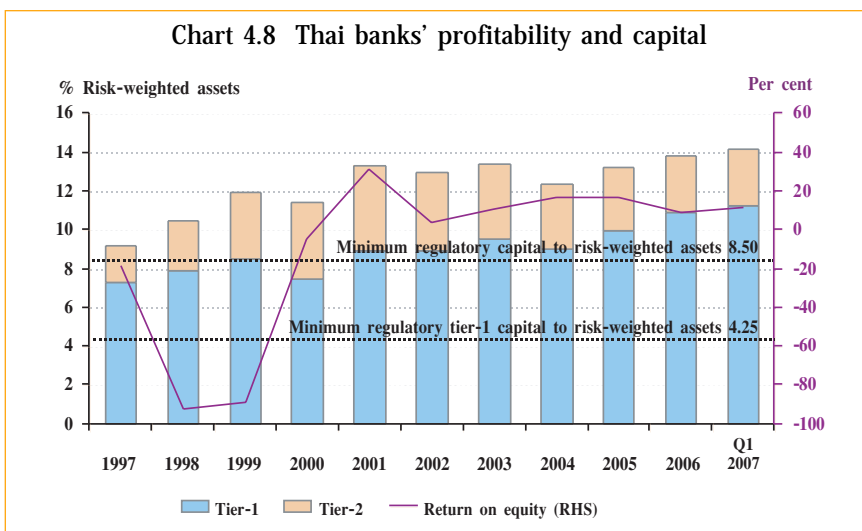
Source: Bank of Thailand

The economic softening since 2006 and the recent political uncertainty resulted in a continued slowdown in bank credit expansion. In particular, corporate loans, which accounted for 78 per cent of total loans in the banking sector, started to moderate in line with the pace in private investment and with the disintermediation in the banking sector, whereby large firms bypassed commercial banks and resorted to equity and debt financing.

The recent moderation of credit did not affect banking sector profitability in 2007 Q1 when firms remained well able to service debt, as reflected by a slight increase in operating profit of listed companies. However, a prolonged moderation in economic activity could result in a build-up in risks to commercial banks in terms of profitability and the quality of credit, especially in the case of rising new NPLs in the manufacturing and household sectors.



Source: Bank of Thailand



Source: Bank of Thailand

Nevertheless, an unbroken profits record since 2000 and a step-up in the ratio of regulatory capital to risk-weighted assets to 14.14 per cent in 2007 Q1, above the BIS standards of 8.5 per cent, would to some extent provide commercial banks with an extra cushion against credit risks.

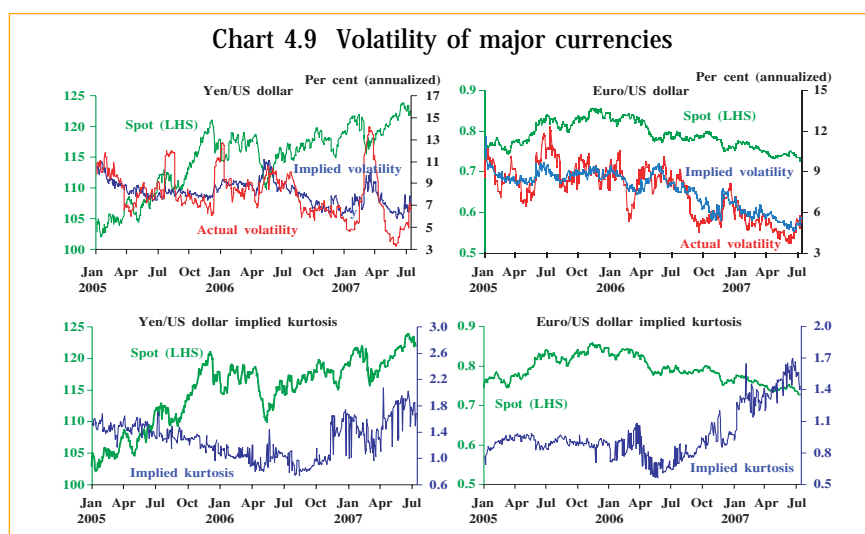
Financial markets

In 2007 Q2, volatility in the Thai financial markets remained high similar to the previous quarter owing to a number of factors, namely, political uncertainty, changes in market expectations of the policy interest rate, fluctuations in international financial markets, and changes in foreign investors' risk appetite.

Foreign exchange market

Overall, the US dollar continued to depreciate against the euro as well as Asian currencies, due mainly to difficulties in the subprime mortgage market in the US and the tightening interest rates in Europe. Meanwhile, the Japanese yen depreciated in part as a result of the ongoing carry trades, whereby investors borrowed cheaply in yen and use the funds to invest in high-yielding currencies. However, during the first half of June, the US dollar slightly rebounded as the market viewed that the Fed funds rate was unlikely to be cut in the near future.

The US dollar continued to depreciate, while the volatility of major currencies continued to decline. The likelihood of drastic movements remained high, however.



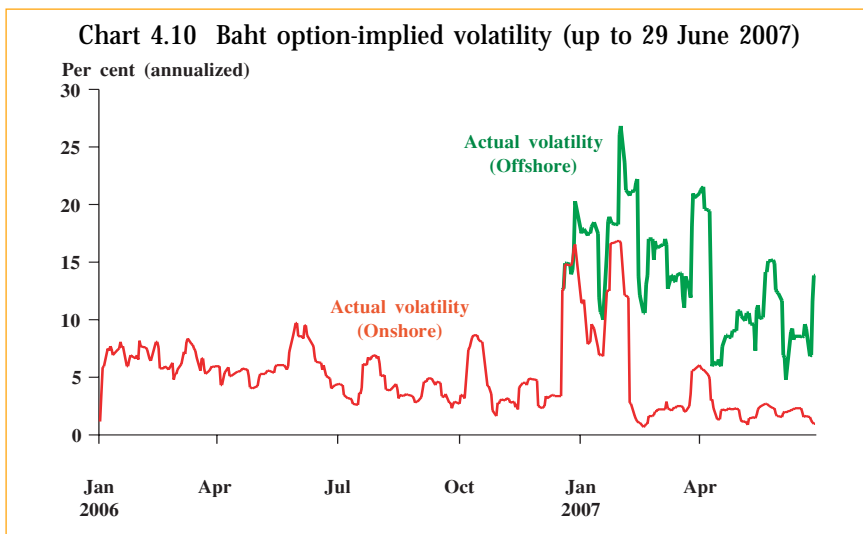
Source: Bloomberg

Despite the low volatility of the Japanese yen and the euro vis-à-vis the US dollar, as reflected by historical data and by market expectations, the probabilities of drastic movements of these two currencies as indicated by the implied kurtosis remained above their level observed recently. The increased likelihood was attributable to the expectations that the euro could further appreciate against the US dollar

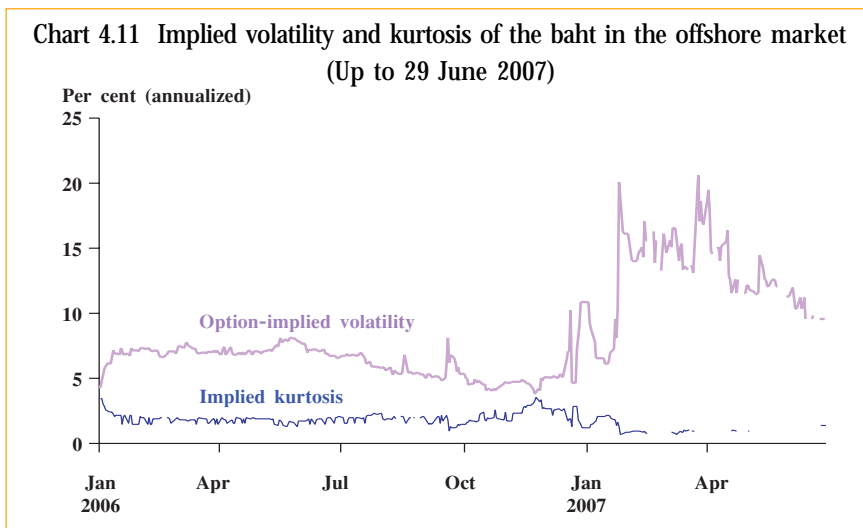
given the ongoing economic expansion. Meanwhile, the yen was expected to depreciate further on the back of the carry trade.

With regard to the Thai foreign exchange market, the Thai baht in the onshore market continued to appreciate while the spread between the onshore and offshore rates narrowed. Given various rumours and low liquidity, the baht still fluctuated in the offshore market, as reflected in the actual volatility which was calculated from historical data that remained at an elevated level.

The spread between the onshore and offshore baht narrowed.



Source: Bloomberg



Source: Bloomberg

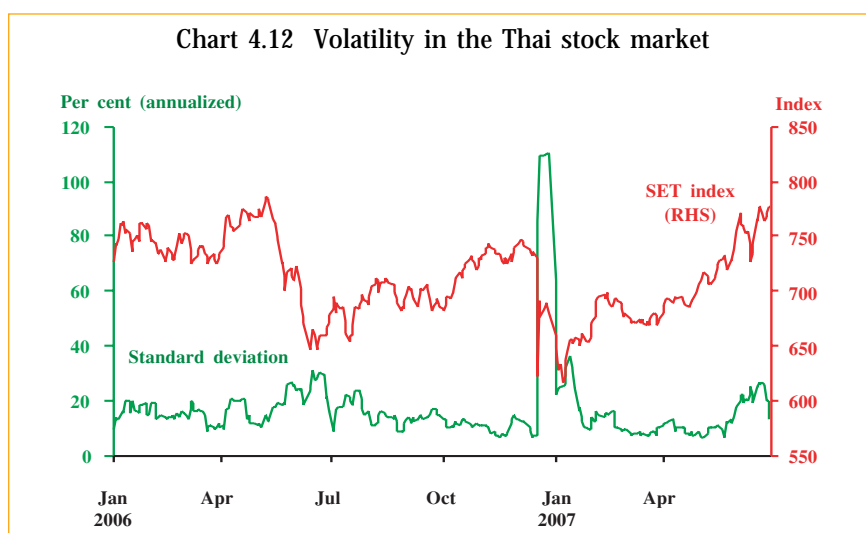
The offshore baht still fluctuated given low liquidity

The one-year-ahead Thai baht option-implied volatility started to fall given the expectations that the baht was likely to move in a narrow trading range. The thin market also discouraged investors from trading offshore.

Thai equity market

The SET index continued to be volatile given political uncertainty and changes in foreign investor behaviour.

In 2007 Q2, the SET index remained volatile as in the previous quarter given various adverse factors that eroded investor sentiment, such as political uncertainty and fluctuations in foreign equity markets. This was in part attributable to the behaviour of hedge funds which raised concerns among investors, and in effect led to an increase in short-term trading. During the beginning of the quarter, the run-up in equity markets abroad and the decline in the policy rate at home provided support to the Thai stock market. However, towards the end of the quarter, concerns over a slowdown in the real estate market and a softening in the US economy, together with a decline in the Chinese equity market, prompted foreign investors to unwind their positions in emerging markets and reinvested in lower-risk assets, such as US government bonds. Moreover, political pressures at home noticeably contributed to fluctuations in the Thai equity market towards the end of the quarter.

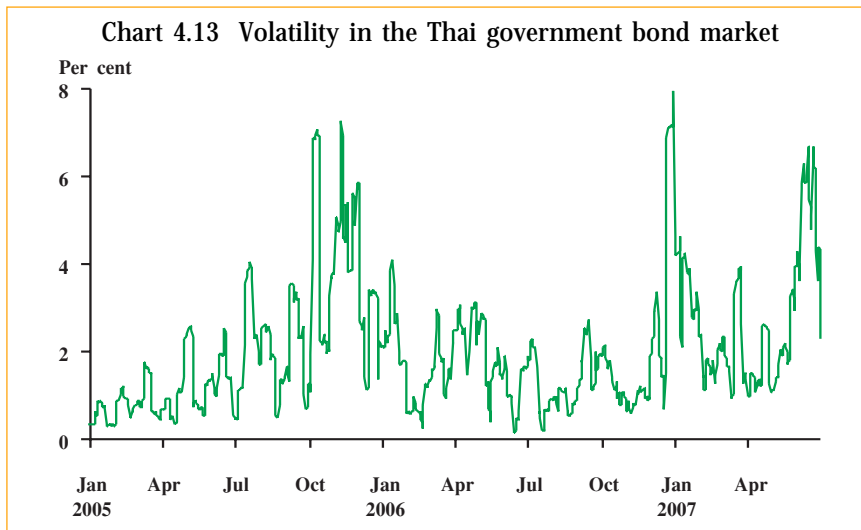


Source: Stock Exchange of Thailand, calculations by Bank of Thailand

Thai government bond market

The Thai government bond market in 2007 Q2 remained highly volatile because of changes in expectations of the monetary policy path, political uncertainty, and equity market volatility. Foreign investors reduced investment in Thai government bonds to some extent, following measures on short-term capital inflows which included the 30 per cent reserve requirement and an option to fully hedge loans and debt instruments. Nevertheless, over-the-counter trading in government bonds remained active owing to trading by local investors that accounted for more than 95 per cent of the total trading.

The Thai government bond market remained highly volatile.



Source: Thai Bond Market Association, calculations by Bank of Thailand

5. Inflation Outlook

Although domestic demand in 2007 Q1 slowed down by more than the MPC had anticipated, recent acceleration in public spending and preliminary economic indicators for 2007 Q2 began to reflect likely signs of recovering consumption and investment. The MPC therefore viewed that domestic demand would continue to recover more fully towards the end of this year to the beginning of next year, when sentiment was expected to improve in line with a more conducive economic climate, as a result of political clarity, continuation of economic policy and more accommodative monetary policy. This assessment was in line with that of the previous *Inflation Report* (April 2007).

Exports of goods and services were expected to grow at a slightly higher rate compared with the previous forecast as a result of higher-than-expected growth of trading partners' economies and the ability of exporters to adjust, especially in searching for new export markets which, to a certain extent, helped alleviate the impact of the baht which strengthened in line with regional currencies. Meanwhile, imports of goods and services were in line with the previous forecast. Thus, the current account in 2007 was expected to record a higher surplus compared with the previous forecast.

To some extent, inflation that remained low would help increase purchasing power and support domestic demand, especially once confidence was restored. Moreover, the role of public spending in stimulating economic activities should increase in line with the government's policy. Overall, the economy was expected to grow at a slightly higher rate than forecasted in the previous *Report*.

Price pressures continued to ease in 2007 Q2, and inflation came in at a lower rate than the MPC's projection. This was partly attributed to softer-than-expected domestic demand which limited price adjustments, and a stronger baht which helped cushion against the rise in import prices in baht terms from the previous quarter despite higher world prices, such as in the case of oil. Looking ahead, price pressures from the supply-side would be higher as a result of oil and raw food prices. Increases in the excise tax rates of cigarettes and alcohol would also pose a risk, and the acceleration of domestic demand would provide an opportunity for producers to pass on costs more than in previous periods.

Meanwhile, a stronger baht would help cushion against the impact of some of these factors. Thus, the MPC assessed that headline and core inflation forecasts would be similar to the previous forecasts.

In the economic and inflation projections for the upcoming periods, the MPC exercised caution in considering the assumptions used, especially those concerning political uncertainty and crude oil prices. The projections below are presented as fan charts, which are obtained from the macroeconomic model with the incorporation of the MPC's judgments. The fan charts reflect uncertainties surrounding a range of events and are under the assumption that the policy interest rate stays at the current level of 3.25 per cent per annum from 2007 Q3 to 2009 Q2, lower than the level assumed in the previous *Inflation Report*. The assumption is consistent with the decisions in the MPC meetings on 23 May and 18 July 2007 to lower the policy rate by 0.50 and 0.25 per cent, respectively.

Forecast assumptions

In forming economic and inflation forecasts for the next 8 quarters, the MPC needed to make the most plausible baseline assumptions on various factors including international economic and financial conditions, world commodity price trends, and fiscal conditions. These assumptions are summarised below.

International economic and financial conditions

Overall, the global economy continued to expand robustly, driven by strong growth in the euro area and the emerging market economies, particularly in China and India. Global inflation was expected to accelerate due to the continued increase in oil and commodity prices since the beginning of 2007.

The US economy slowed down significantly with the lower-than-expected growth rate of 1.9 per cent year-on-year in 2007 Q1. Even though US economic conditions were expected to improve in the second half of 2007, the downward trend of the US housing market would continue to pose a risk to economic expansion. The MPC thus projected a lower growth rate for the US economy than anticipated in the previous *Report*, throughout the projection period.

The US economy slowed down significantly but inflation declined more slowly than expected.

Given the increasing trend of energy and commodity prices, coupled with slower-than-anticipated moderation in core inflation in the previous period, the MPC thus assessed that upside risks to inflation had increased. Thus, the MPC viewed that the FOMC would refrain from reducing the Fed funds rate to support economic growth in 2007. This was different from the previous assumption, which anticipated a reduction in the Fed funds rate by 0.25 per cent and thereby bringing the rate down to 5.0 per cent per annum from 2007 Q3 onwards.

The euro area economy continued to expand robustly with a higher-than-expected growth rate of 3.0 per cent in 2007 Q1, due primarily to the strong momentum of exports and investment. On the other hand, inflation stayed at the same level as in the previous quarter. Looking forward, exports and domestic demand would continue to expand robustly. The MPC thus assumed higher economic growth than in the previous *Report* between 2007 Q3 and 2008 Q2, before reverting to the previous growth assumptions from 2008 Q3 onwards.

The euro area economy was expected to expand more robustly than anticipated in the previous Report.

The Japanese economy grew by more than previously expected at 2.6 per cent year-on-year in 2007 Q1, accelerating from 2.3 per cent in the previous quarter, due mainly to growth in exports and investment. Meanwhile, consumption showed some signs of growth. On the other hand, average inflation recorded -0.1 per cent, but was likely to edge up following the rising trend of oil prices. The MPC assessed that the Japanese economy would expand gradually with slightly higher than previously anticipated growth.

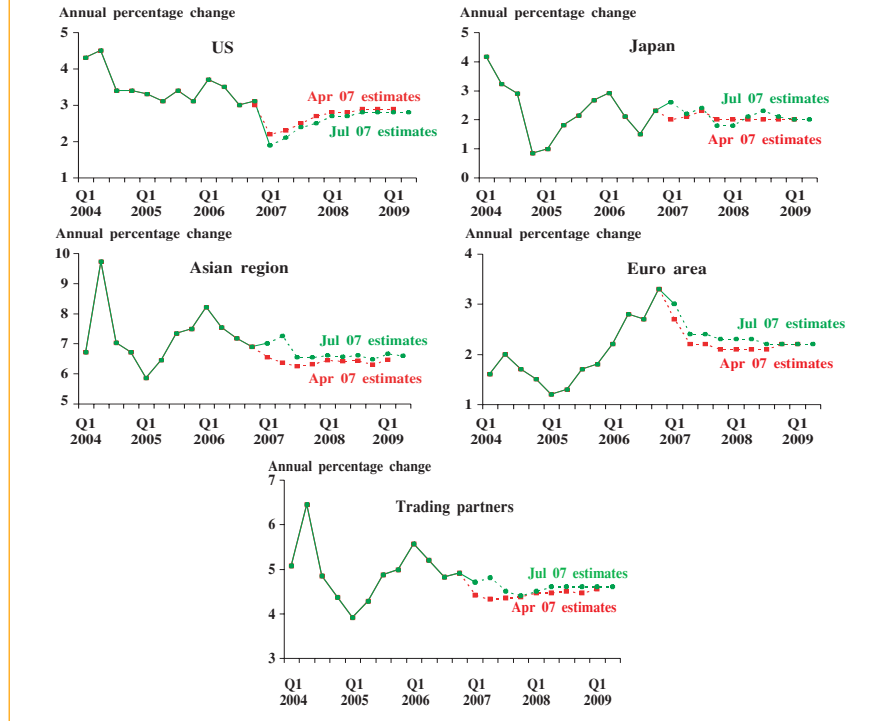
The MPC revised up slightly the assumption on Japanese economic growth in 2007 and 2008.

The Asian economies continued to expand robustly on account of strong growth of exports and domestic demand. The MPC viewed that going forward, economic growth in the Asian economies would be driven by the strong growth momentum of China. The MPC thus raised its projections for economic growth for the Asian economies throughout the projection period.

The Asian economies were likely to expand at higher rates than previously anticipated.

Overall, the MPC viewed that in 2007 and 2008, Thailand's trading partners would continue to expand at a slightly higher rate than anticipated in the previous *Report*. This was due to the strong growth momentum of the Asian economies and the euro area economy and which would help offset the effect of the US economic slowdown.

Chart 5.1 Assumptions on trading partners' growth



Source: Bank of Thailand estimates

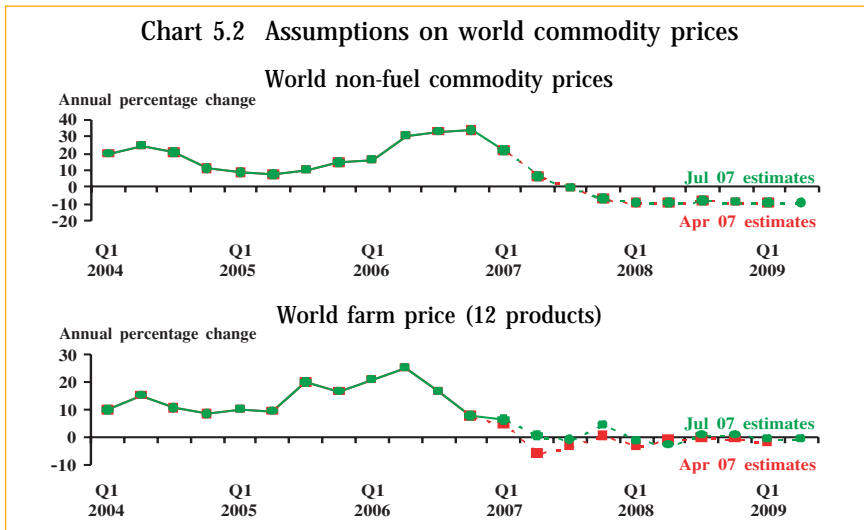
The regional currencies were likely to appreciate more than anticipated previously.

The majority of regional currencies appreciated against the US dollar, which continued to depreciate as a result of the US economic slowdown and the concern about the prolonged US current account deficit, coupled with the continued massive capital inflows into Asian stock markets. Under these circumstances, the MPC assessed that the regional currencies would be stronger than anticipated in the previous *Report* throughout the projection period.

World commodity prices

The MPC maintained the assumption on world non-fuel commodity prices.

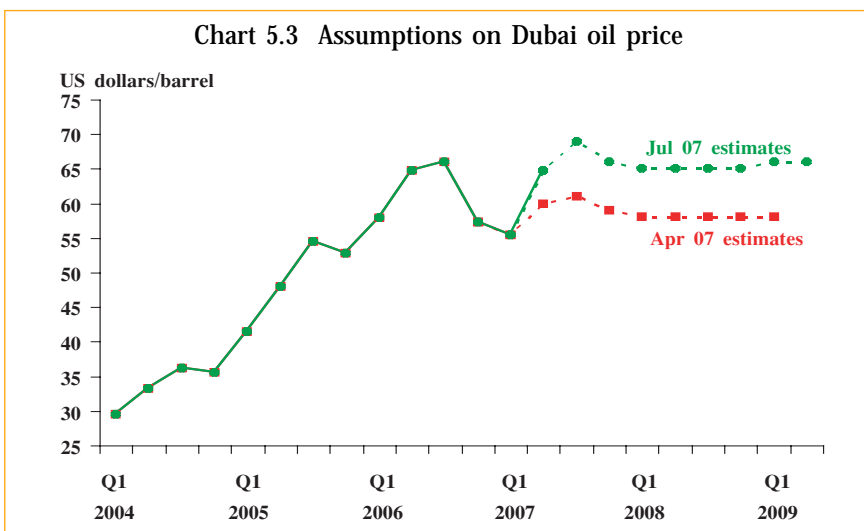
The prices of world non-fuel commodities remained at high levels as previously anticipated. Going forward, the increase in the supply of base metal due to previous production capacity expansion would result in slower growth of world non-fuel commodity prices as expected in the previous *Report*.



Source: Bank of Thailand estimates

The continued rise in oil prices led to higher demand for inputs for biofuels, as well as higher demand for rubber to substitute for petroleum-based products. The MPC thus assessed that the World Farm Price Index, consisting of 12 Thai major products such as maize, palm oil and cassava would be at a higher level than anticipated in the previous *Report* throughout the projection period, albeit with a decelerating trend from 2006.

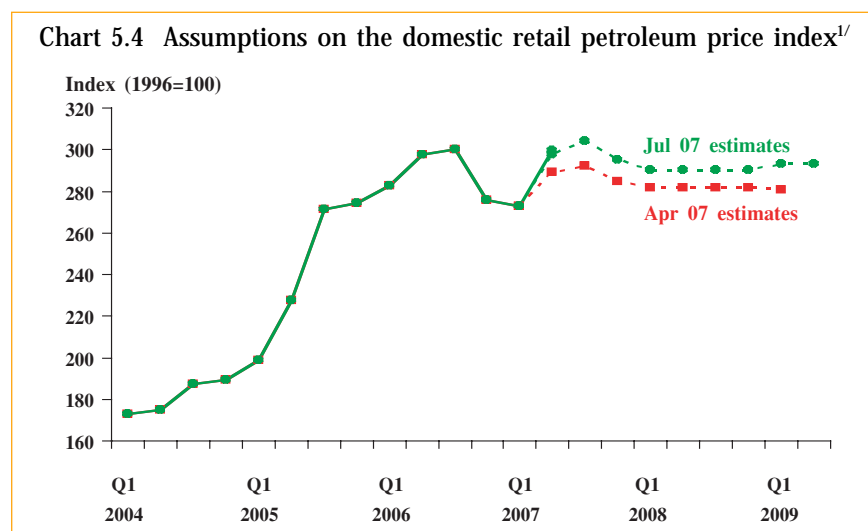
The MPC revised up the assumption on the World Farm Price Index consisting of 12 major Thai products to be in line with increasing demand for oil substitute inputs due to the increase in oil prices.



Source: Bank of Thailand estimates

The MPC revised up the assumption of crude oil prices and domestic retail oil prices.

With regards to world crude oil prices, the MPC raised the previous assumptions due to the recent increase in crude oil prices, as well as due to rising political tensions in the oil producing countries. The MPC also revised up the assumptions of retail prices of benzene 95 and diesel oil in line with the assumptions of crude oil prices, but at a slower pace due to the appreciation of the Thai baht.



Remark: ^{1/}The Retail Petroleum Price Index is calculated from the weighted average of benzene, diesel, LPG fuel, oil and kerosene prices. The weights used are 18, 43, 8, 24 and 0.2 per cent, respectively. Source: Bank of Thailand estimates

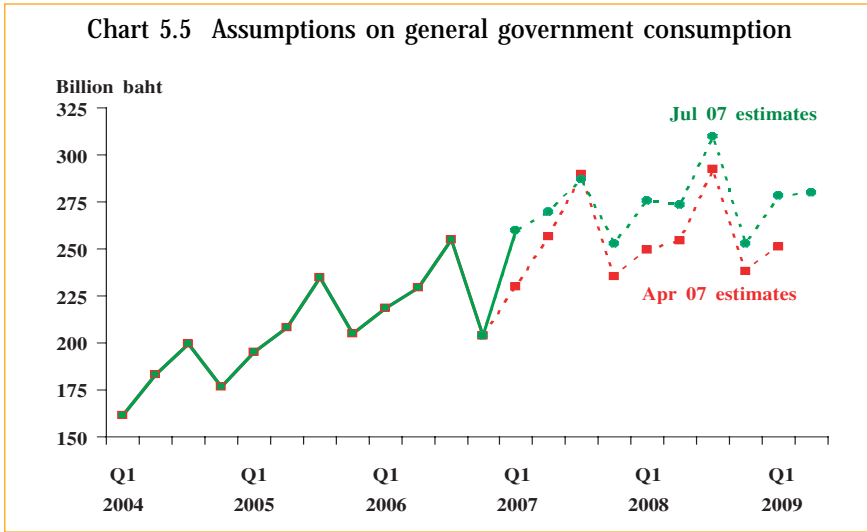
Fiscal conditions

The MPC assumed general government consumption for fiscal years 2007 and 2008 to be 1,019.8 and 1,111.0 billion baht, respectively.

The MPC assessed that in the 2007 and 2008 fiscal years, general government consumption would reach 1,019.8 and 1,111.0 billion baht respectively, higher than the previous assumption as a result of a revision of assumptions on the budget structure. In particular, the central government's current expenditure portion of the budget in fiscal year 2007 increased from 72.5 percent to 76.1 percent, an increase of 40.0 billion baht. As for fiscal year 2008, the portion increased from 70.6 percent to 76.3 percent, an increase of 79.8 billion baht.

The MPC expected public investment for fiscal years 2007 and 2008 to be 617.0 and 681.0 billion baht, respectively.

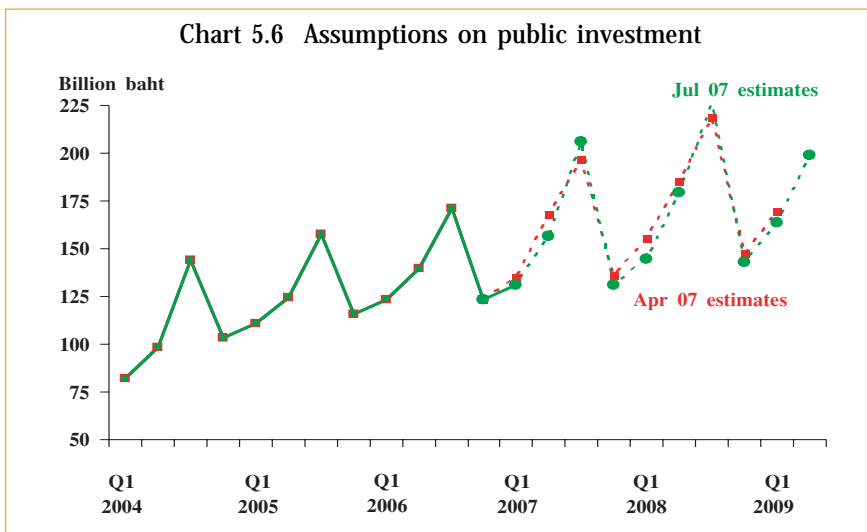
With regards to public investment, consisting of investments by the general government and state-owned enterprises, the MPC revised the assumptions on general government investment slightly downwards to 337.0 and 373.0 billion baht for fiscal years 2007 and 2008, respectively. The revision was due to the aforementioned revision of assumptions on the budget structure. Accordingly, the capital expenditure portion of the



Source: Bank of Thailand estimates

budget decreased by 6.0 billion baht and 14.2 billion baht in fiscal years 2007 and 2008, respectively.

As for investment by state-owned enterprises, the MPC maintained the previous assumptions of 280.0 and 308.0 billion baht for fiscal years 2007 and 2008, respectively. When added to general government investment above, overall public investment for fiscal year 2007 stood at 617.0 billion baht, compared with the previous assumption of 623.0 billion baht. Public investment for fiscal year 2008 stood at 681.0 billion baht, compared with the previous assumption of 695.3 billion baht.



Source: Bank of Thailand estimates

The MPC used an assumption on minimum wages that was consistent with the actual adjustment on 1 January 2007 for the entirety of the year. For 2008, a further increase of 2.1 per cent was assumed.

Assumptions on minimum wages

Assumptions on minimum wages were unchanged. The MPC assumed that from 2007 Q3 onwards, the minimum wage for Bangkok and its surrounding provinces would be 191 baht, consistent with the recent increase in minimum wages following the decision of the Central Wage Committee. As for 2008, the MPC assumed that the growth rate of minimum wages would be 2.1 per cent, in line with the previous *Report's* headline inflation forecast for 2007.

Assumptions on inventory accumulation

The MPC assumed that inventory accumulation during 2007 Q2 and 2007 Q3 would be consistent with a run-down in stock as in 2007 Q1, as businesses remained reluctant to accumulate stocks of manufactured goods, given soft domestic demand. However, from 2007 Q4 to the end of the forecast period, the MPC assumed that inventory accumulation would begin to reflect an economic recovery, resulting in a resumption of the pattern of inventory accumulation that occurred during 2000-2002, whereby stocks would increase in some quarters in line with the recovery in domestic demand.

Output and inflation projections

Output projection

Latest data from the NESDB showed that the Thai economy in 2007 Q1 grew by 4.3 per cent year-on-year, which was the same rate as the previous quarter and in line with the MPC's expectations. Nevertheless, GDP composition revealed that private consumption and investment slowed down by more than expected. Meanwhile, growth of exports was stronger than expected and helped to make up for the aforementioned slowdown in private spending.

Preliminary economic indicators for 2007 Q2 reflected a slight upward adjustment in domestic demand, with consumer spending increasing partly as a result of a low inflation environment which helped increase purchasing power, together with the reduction in commercial banks' interest rates, which resulted in lower borrowing costs. Private investment also showed signs of an improvement, owing partly to reduced concerns by investors over political uncertainty, and greater clarity in

government policies. Nevertheless, some businesses with large investment projects would continue to monitor the situation for greater clarity, particularly until after the general election at the end of the year. Thus, the prospects of a recovery of private domestic demand would become more solid towards the beginning of next year, rather than during the rest of this year. Nevertheless, public spending that started to accelerate coupled with the continued expansion of exports would provide support for the economy during the rest of this year, before private domestic demand takes a more prominent role in driving growth next year.

In this *Report*, the MPC assessed that the Thai economy would gradually improve during the rest of this year, but recovery would be more solid from the beginning of 2008, when private domestic demand was expected to rebound. This picture of growth was similar to that in the previous *Report*. However, latest data from the NESDB showed that some components were lower than previously expected, and thus led the MPC to revise forecasts of individual GDP components as follows.

Private consumption in 2007 was expected to be slightly lower than previously projected on account of the latest data revision. Nevertheless, greater political clarity and a stimulus to private spending from preparations for the general election in the second half of this year should shore up consumer confidence, going forward. This, coupled with a more accommodative monetary policy stance since the last projection, and low inflation would provide support for continued growth in private consumption.

Private investment was expected to be lower than previously projected in 2007 after latest economic data indicated a contraction in the first quarter of this year, which reflected a stronger-than-expected impact of fragile confidence on investment. However, unwinding political uncertainties would help propel the process of recovery of private investment, which should become more evident towards the end of 2007, after the general election. Public spending which was expected to accelerate from the previous year would also play a part in stimulating private investment. As for 2008, the Thai economic environment should become more conducive for investment, and private investment was expected to accelerate strongly after long delays for many projects.

Private consumption and investment in 2007 was expected to be lower than the previous projections but would return to the same trend in 2008.

Such acceleration would allow private investment to return to the previously projected trend (details in Box).

Exports of goods and services were expected to be slightly higher than the previous projection.

Exports of goods and services were projected to expand at a higher rate than previously projected, but would slow down when compared with 2006, in line with trading partners' economic growth. Despite a downward revision of the assumptions on US economic growth, upward revisions of growth in other important trading partners, coupled with the ability of exporters to explore new markets would help compensate for the slower-than-expected growth in the US economy and support export growth. Such factors would also cushion against the impact from higher farm prices and a stronger baht, compared to previous assumptions. Overall, it was expected that exports of goods would be higher than previously projected. Meanwhile, exports of services were still expected to expand reasonably well but at a slightly lower pace than the previous projections, as latest data indicated that tourists were still concerned over political uncertainties and unrest in the southern provinces. Overall, the MPC assessed that exports of goods and services would grow at a higher pace than previously projected in 2007 and at a similar pace in 2008 as previously projected.

Imports of goods and services were expected to grow at a slower pace than previously projected in 2007 but would accelerate in line with domestic demand in 2008.

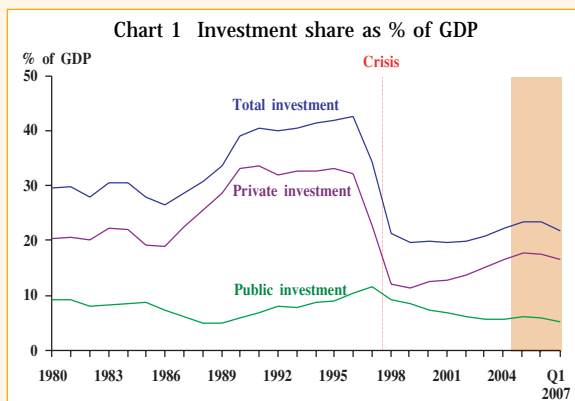
Imports of goods and services were expected to grow at a slower pace in the second half of 2007 than previously projected in line with a downward revision in the projection for domestic demand, particularly private investment, despite lower import prices that resulted from a stronger baht. Nevertheless, domestic demand was expected to grow at a higher rate in 2008, than previously projected and would result in an acceleration in imports of consumer goods as well as capital goods and raw materials to be used for domestic investment. This would allow imports to return to the previously projected trend in that year.

The current account balance in 2007 was expected to register a high surplus which would begin to decline in 2008 owing to an acceleration in imports in line with domestic demand, particularly private investment.

Given that exports would slow down by less than previously expected while imports would slow down by more than expected, the MPC assessed that the current account balance (including reinvested earnings) would register a higher surplus than previously projected. However, the aforementioned surplus was expected to decline in 2008 due to an acceleration in domestic demand.

Outlook for investment: a recovery remains on track

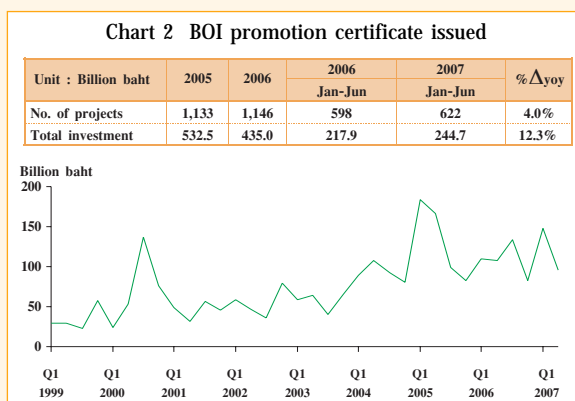
Investment, both private and public, started to moderate since the end of 2005. While total investment rose 11.1 per cent in 2005 and 4.0 per cent in 2006, on a year-on-year basis, it fell by 1.4 per cent in the first quarter of 2007, owing importantly to a contraction in private investment. As a result, the share of investment in GDP averaged at 23 per cent over 2004-2006 compared



Source: National Economic and Social Development Board

with 40 per cent over 1990-1996. This softness partly reflected a substantial amount of underutilized capacity after the 1997 economic crisis. With the ensuing economic recovery, the share of investment in GDP edged higher but reversed its course in 2006 and thereafter. In any case, key determinants of investment decisions include (1) economic fundamentals such as economic growth, interest rates, production costs, and profitability; and (2) investor confidence.

In 2007 Q2, rising costs of production and difficulties in adjusting prices continued to weigh on private investment, while political uncertainty weakened investor confidence. Nonetheless, public investment edged up from the previous quarter following accelerated disbursement of government budget.



Source: Board of Investment

Going forward, a pick-up in investment was likely to be supported by several factors. These included 1) low interest rates and ample liquidity, 2) elevated levels of capacity utilization in many industries, such as petrochemical and petroleum, paper, and electronics; and 3) a strong baht which should boost import-intensive investment.

Table 1 Outlook for investment

Sector	Total investment	Investment timeline	Remarks
1. Automobiles (Eco-car project)	10-20 billion baht per project	Start 2009	Investment outlays conditional on whether expanding production capacity or building new factories
2. Energy IPP: Phase 1	Approximately 112 billion baht	Start 2008-2012	National Energy Policy Committee to start bidding of 3200 out of 12600 mega-watt production plan (18 projects)
3. Petrochemical	Approximately 138 billion baht	Start 2007-2012	According to Phase 3 of Petrochemical Development Plan over 2005-2018 to create value added in domestic petroleum resources
4. Electronics (HDD)	35.85 billion baht	Start 2007-2014	Large producers using Thailand as production based for exporting

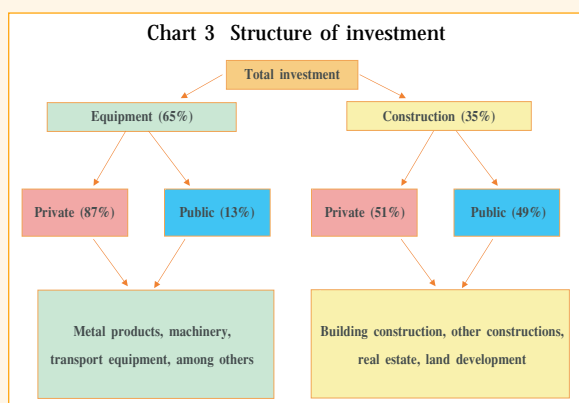
Source: Survey from the Economic/Business Information Exchange Program between the Bank of Thailand and the business sector (BLP)

According to data from the Board of Investment (BOI), which covered 30 per cent of total private investment, firms would begin construction, import machinery, and stand ready to operate within 3 years from the date of receiving promotion certificates. Firms tended to frontload project outlays usually within the first year. As such, with 622 projects receiving promotion certificates in the first half of 2007, amounting to 244,700 million baht in investment outlays, this was an increase of 12.3 per cent from the same period last year. Sectors that received most certificates were services and public utilities, followed by electronics and electrical appliances. It was thus expected that, going forward, private investment in these sectors would likely gain some traction.

The improved outlook for investment above was also in line with the findings of Bank of Thailand's Economic/Business Information Exchange Programme (BLP) in 2007 Q2. Most firms viewed that economic fundamentals remained strong, with a favourable environment as investor concerns were mitigated. Investment in heavy industries - such as automobiles and auto parts, petrochemical, electronic components, and energy - was likely to start within the next five years. Moreover, the real estate sector also showed signs of recovery. This was reflected in improved profits of firms located in industrial development areas and those conducting factory sales and leasing, as well as in the increased likelihood of the real estate sector in raising capital during the second half of 2007.

Regarding public investment during 2007-2008, fiscal policy was poised to play a greater role in providing economic stimulus and offset a moderation in private investment. Public investment, by both the government and state enterprises, was expected to expand by about 10 per cent on the back of the government's investment plans that became increasingly more concrete. Moreover, government budget outlays for investment for 2008 posted an increase of 8.0 per cent over the preceding year, especially those for investment in infrastructure such as the mass transit system in Bangkok and the metropolitan area as well as investment in the energy, electricity, and petrochemical industries.

In addition to the budget increase, the government established the Macro Economic Steering Committee and the Committee on Budget Payment to help the economy achieve sustainable growth. The government also passed several fiscal and tax measures such as tax deductions for home loans and a reduction of excise taxes for energy-saving automobiles (Eco-Cars). These measures were intended to stimulate private investment to satisfy future orders.



Source: National Economic and Social Development Board

The government and the private sector needed to effectively build up capabilities in resource management, logistics, and the labour force, in preparation for a stronger pace of expansion in investment - particularly, in the heavy industries such as electricity and infrastructure that would in turn support further investment in other industries.

Table 2 Outlook for investment by state own enterprises

Project/SOE	Investment* (Billion baht)	Timeline	Remarks
Dual rail track (Chachoengsao-Sriracha-Leam Chabang) State Railway of Thailand	5.3	2007-2010	Bidding expected to start in August; project expected to start end-2007
Red line (Bang Sue-Taling Chun) State Railway of Thailand	13.1	2007-2010	Bidding expected to start in 2007 Q4; project expected to start in 2008
Purple line (Bang Sue-Bang Yai) Mass Rapid Transit Authority of Thailand	45.7	2007-2012	Under revision; bidding expected to start in 2008
Energy and petrochemical projects PTT Public Company Limited	209.2	2007-2011	Some projects in progress; others awaiting clearance regarding environmental issues
Power Development Plan 2007 Electricity Generating Authority of Thailand	289.7	2007-2011	Bidding expected to be participated by large and small power producers (IPP and SPP)

Note: *Estimates

Source: Bank of Thailand

Details of investment in two broad categories of public and private investment were as follows. Outlays for machinery as a share of total investment accounted for about 65 per cent, of which 87 per cent was due to the private sector. Investment in this category appeared poised to expand given various supportive factors mentioned above. Outlays for construction also showed signs of improvement. This was in part attributable to the fact that over 60 per cent of public investment in mega-projects was in this category.

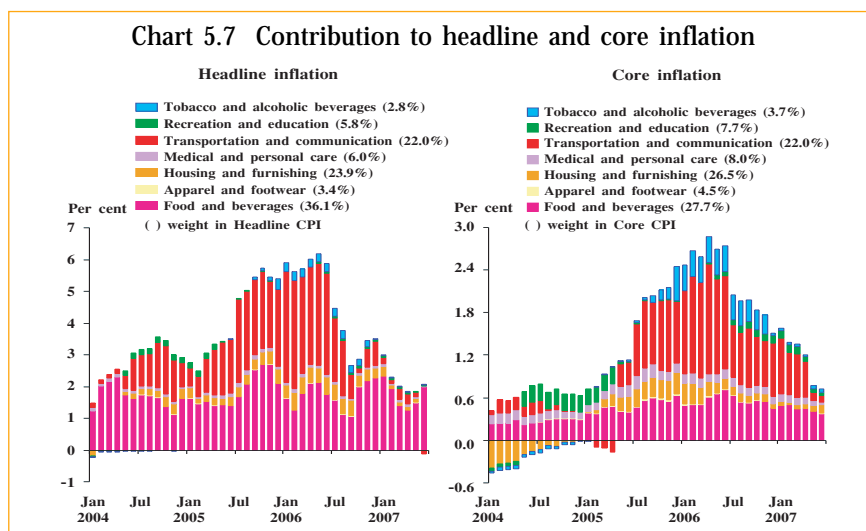
An improved environment for investment, including increased investor confidence and a clearer policy direction, should lead to a broad-based recovery. As a result, both the

Inflation projection

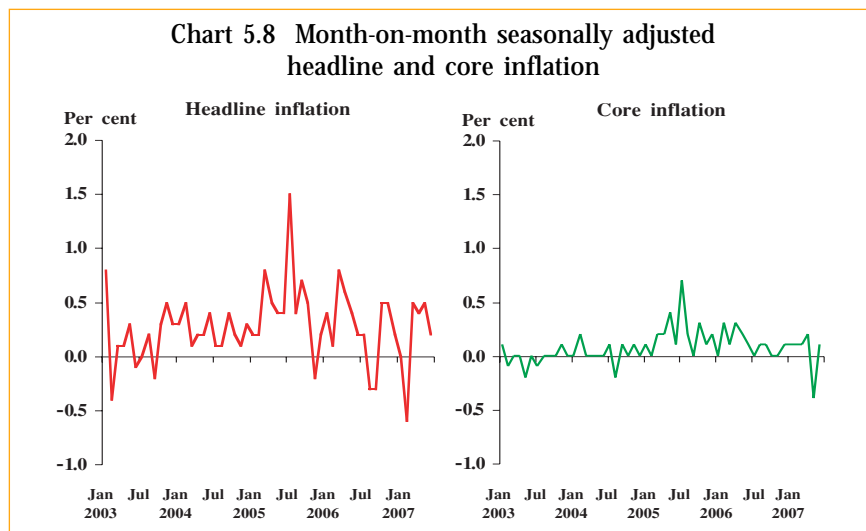
Headline and core inflation in 2007 Q2 averaged at 1.9 and 0.8 per cent, respectively, slowing down by more than the MPC's expectations in the previous *Report*, as a result of a softer-than-expected domestic demand. Such weak domestic demand limited previously expected price adjustments for this quarter, following the lifting of the 8th statement of the ARC on 6 April 2007, which prohibited the increase of prices for all goods and services.

However, inflationary pressures from the supply side increased, as reflected by slightly higher domestic retail oil prices compared with the previous quarter and accelerating raw food prices following limited supplies of vegetables and fruits. Moreover, prices of milk and milk products - items whose prices were under the administration of the Ministry of Commerce - were allowed to rise. Thus, the contribution of food and beverages to headline inflation increased. In addition, this quarter's average of month-on-month seasonally adjusted headline inflation was also higher than the previous quarter.

Meanwhile, month-on-month seasonally adjusted core inflation still remained close to zero, except in May 2007 when it decreased by 0.4 per cent, as a result of upward adjustments in the education and transportation subgroups of the CPI that were significantly less than historical averages. However, this was a temporary factor, as month-on-month seasonally adjusted core inflation returned to its normal rate once



Source: Trade and Economic Index Bureau, Ministry of Commerce, calculations by the Bank of Thailand



Source: Calculations by the Bank of Thailand

again in June. Also in June, some prices were adjusted upwards, including rent, and the prices for car tyres, cleaning products and seasonings and condiments. This could partly reflect the beginning of an increase in pass-through following the previous period of limited price adjustments due to various factors.

Going forward until the end of the projection period, upward pressures on inflation would arise mainly from supply-side factors. Meanwhile, the increase in civil servants' salaries in October 2007 was not expected to generate much pressures on inflation via spending. The psychological effect of the salary increase on subsequent increases of other employment groups should also be limited under current economic conditions. Downward pressures on inflation, on the other hand, were expected to arise from weak domestic demand that would improve only gradually, as well as the continued strengthening of the baht. Thus, the MPC assessed that the acceleration in world commodity prices, especially that of oil, would not have much of an effect on inflation this year. As for next year, a solid recovery of domestic demand was expected to result in a higher pass-through of costs to retail prices, particularly since producers had shouldered higher production costs for an extended period. Thus, a subsequent improvement in domestic demand would provide an opportunity for price increases. Nevertheless, there was also a chance that the Ministry of Commerce's price administration measures, which were recently relaxed somewhat, could become more stringent again.

Going forward, the MPC assessed that headline inflation would gradually increase to a level slightly higher than previously projected, mainly as a result of higher assumptions on domestic retail oil and farm prices and a projected recovery in domestic demand. As for core inflation in the second half of the year, the MPC expected a gradual acceleration as the pass-through to retail prices became more apparent. However, core inflation would be slightly lower than previously projected, given actual data for the first half of the year which was lower than expected. Nevertheless, the MPC assessed that core inflation would accelerate more rapidly in 2008, in line with demand-side pressures which would increase due to the economic recovery, but would remain at a level similar to the previous projection, overall.

Headline inflation was expected to increase to a level slightly higher than the previous projection while core inflation in 2007 would be lower than previously projected, before returning to the same trend in 2008.

Assessment of risks

The output and inflation projections given above were based on assumptions that the MPC considered most plausible. However, these assumptions were subject to domestic and external uncertainties. In the assessment of the economic outlook for the next 8 quarters, the MPC gave consideration to risk factors that could affect the projections under various scenarios.

Risk factors in the output projection

The MPC deemed it possible that uncertainty with regards to world oil prices could still lead to a different picture of economic growth than in the baseline projection. Although assumptions for Dubai oil prices at 63.8 and 65.0 US dollars per barrel in 2007 and 2008 respectively were deemed most probable, oil prices could rise beyond these levels as a result of various factors. Higher prices could result from the ongoing political tensions between Iran and western countries, heightening political unrest in Nigeria, a possible increase in demand for oil should the world economy slow down by less than previously anticipated and a downward revision in the production capacity of non-OPEC oil producing countries. Thus, the MPC revised its assumption on the Dubai oil price upwards by 1 standard deviation from the baseline assumption as the worse case scenario to an average of 68.5 and 82.3 US dollars per barrel, respectively in 2007 and 2008.

Nevertheless, the MPC also deemed it possible that demand for oil could be lower than expected should the slowdown in the world economy become deeper, particularly in the US. This would cause oil prices to be lower than the baseline projection. Thus, in the better case scenario, the MPC used the assumption that the Dubai oil price would average at 61.3 and 56.4 US dollars per barrel in 2007 and 2008, respectively, a decline from the level in the baseline scenario by 0.5 standard deviations. This was in contrast with the 1 standard deviation increase used in the worse case scenario, given that OPEC members were unlikely to allow prices to fall by too much. Overall, the MPC assessed that the downside risk from the worse case scenario would be more likely than the upside risk.

Another important risk factor considered was the possibility that the baht could appreciate faster than the baseline scenario, which assumed an appreciation in line with regional currencies. This would cause exports to be lower than the baseline projection, thus presenting a downside risk to growth.

In addition, the MPC also deemed it possible that the government would not be able to meet the targeted disbursement rate. In this case, budget disbursement would be below the baseline assumption and public expenditure would be less than the baseline scenario. Thus, there would be less stimulus on private consumption and investment, and would result in a slower-than-projected recovery of domestic demand. Such a view on the downside impact of the fiscal stimulus on growth was different from that reflected in the previous *Report* where fiscal stimulus was perceived as an upside risk on growth.

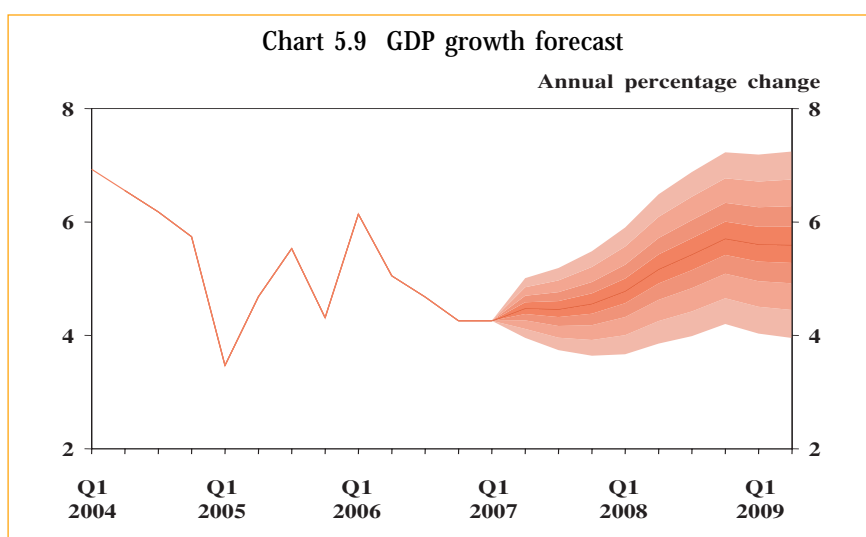
Nevertheless, the MPC viewed that consumer and investor confidence could rebound faster than assumed in the baseline scenario due to greater clarity of various measures to stimulate economic activities, reflected by latest economic indicators in 2007 Q2 that began to show signs of improvement. Moreover, political tensions also began to subside, as a number of milestones leading up to the general election were substantiated. As a result, latest indicators of investor confidence began to adjust higher. The above coupled with the increase in the SET index led to MPC to view that consumer confidence would subsequently improve. Thus, the MPC assessed that confidence would be an upside risk to growth, consistent with the view expressed in the previous *Report*.

The MPC also deemed that the consecutive policy rate decreases since the beginning of the year, totaling 1.75 per cent, did not generate a substantial impact on domestic demand, given other factors that affected consumption and investment decisions. But once these uncertainties declined, the low interest rate environment would rapidly propel consumption and investment decisions, going forward. This would be an upside risk to growth.

Another upside risk to growth considered was the possibility that the slowdown in external demand would not be as severe as the assumption used in the baseline projection, as reflected by the recent upward adjustment in the demand for oil. Moreover, the baseline assumption of the US economic growth was already revised downwards in this *Report*. Thus, the MPC deemed that trading partners' growth would present an upside risk to the Thai economy, going forward.

Overall, the MPC gave slightly more weight to the upside risk than the downside risk. As a result, the fan chart for output growth is skewed upwards throughout the entire forecast period.

The fan chart for GDP growth is skewed upwards throughout the forecast period.



Note: The fan chart covers 90 per cent of the probability distribution

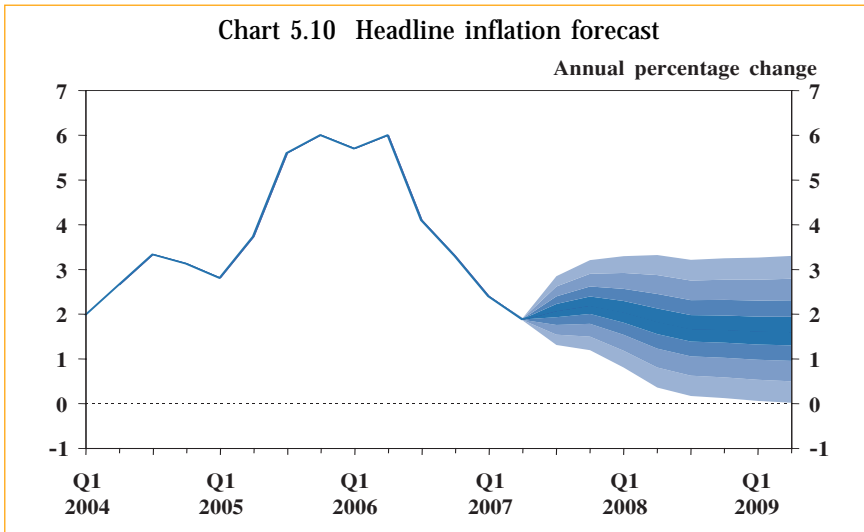
Risk factors in the inflation projection

The MPC considered that upside risks that would cause inflation to be higher than the baseline projection would mainly come from oil prices. In the worse case scenario assumption, oil prices would accelerate

sharply, and inflationary pressures would increase through higher costs of production and higher inflation expectations. Meanwhile, price adjustments following the aforementioned lifting of the ARC's statement would also be another upside risk to inflation, but the impact was expected to be limited this year given a softening in domestic demand. Nevertheless, pressures from this source would increase next year, as producers had previously absorbed higher production costs and would be looking for the right opportunity to pass them onto consumers. Thus, should domestic demand recover faster than expected or the psychological effect of the increase in civil servants' salaries be greater than expected, the possibility of price adjustments would be higher. In addition, there was also a possibility that farm prices would be higher than the baseline scenario should there be unexpected severe weather conditions, which would result in a supply shortage and exert an upside risk to inflation. Another important upside risk considered was the impact of excise tax increases for cigarettes and alcohol, following the government's campaign against alcohol consumption and cigarette smoking. Moreover, the MPC also considered the possibility that the government could revise the value added tax rate up from 7 per cent, the rate that had been in use in the past. Despite the clarity of details and sequencing of these tax increases, should they be implemented, the effect on inflation would be considerable.

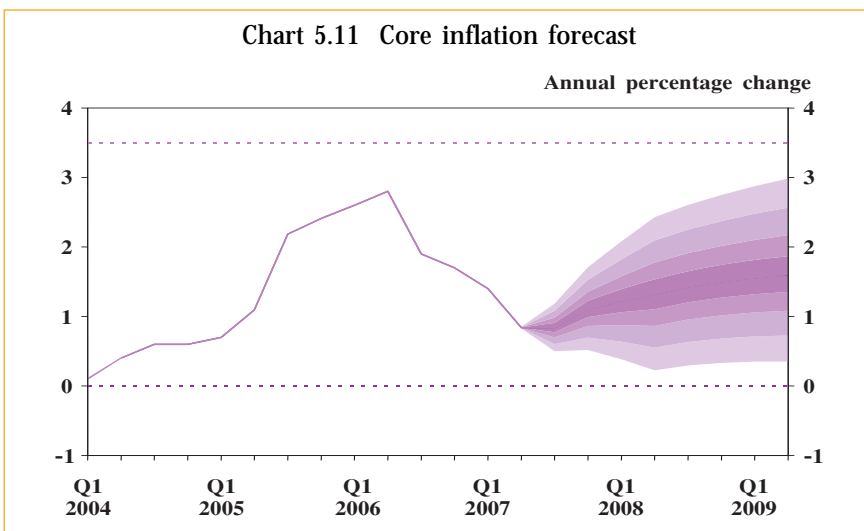
Meanwhile, downside risks that could lead to tamer than expected price pressures included softer-than-expected domestic demand and a stronger-than-expected baht, which would result in lower import prices, exerting pressure on domestic producers to keep prices low to maintain competitiveness. Moreover, it was also deemed possible that oil prices could be lower than assumed in the baseline projection, in line with the aforementioned better-case scenario. As a result, both the direct pressure on headline inflation, and the indirect pressure on core inflation through production cost adjustments would decline. Another downside risk to inflation would be the possibility that the Ministry of Commerce's price administration measures would become more stringent, particularly in the case where supply-side pressures followed the above upside risk scenarios.

Overall, the MPC deemed that in the short-term the upside and downside risks to both headline and core inflation were balanced.



Note: The fan chart covers 90 per cent of the probability distribution

The fan charts for headline and core inflation are balanced in the beginning of the forecast period and are skewed slightly upwards towards the end of the forecast period.



Note: The fan chart covers 90 per cent of the probability distribution

Nevertheless, the upside risk would increase in 2008. Thus, the fan charts for both headline and core inflation are skewed slightly upwards towards the end of the forecast period.

With regards to the forecast probability distribution, the output growth forecast for 2007 and 2008, obtained from averaging the darkest forecast range of each quarter, was projected to be in the ranges between 4-5 and 4.5-6 per cent, respectively, with a probability of approximately 98.7 and 92.2 per cent, respectively.

Output growth for 2007 and 2008 was projected to lie in the ranges of 4-5 and 4.5-6 per cent, respectively.

Unit: %	2007			2008				2009	
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
< 2	0	0	0	0	0	0	0	0	0
2.0 - 2.5	0	0	0	0	0	0	0	0	0
2.5 - 3.0	0	0	0	0	0	0	0	0	0
3.0 - 3.5	0	1	3	2	1	1	1	1	1
3.5 - 4.0	6	13	13	9	5	4	2	3	4
4.0 - 4.5	45	39	30	21	13	9	6	8	8
4.5 - 5.0	43	36	33	29	21	17	12	14	14
5.0 - 5.5	5	10	17	23	24	22	19	19	19
5.5 - 6.0	0	1	4	11	19	21	21	20	20
6.0 - 6.5	0	0	0	3	10	15	18	17	16
6.5 - 7.0	0	0	0	1	4	8	12	10	10
> 7	0	0	0	0	1	4	8	7	8

Headline inflation for 2007 and 2008 was projected to lie in the ranges of 1.5-2.5 and 1-2.5 per cent, respectively.

Headline inflation in 2007 was projected to average between 1.5-2.5 per cent with a probability of approximately 96.9 per cent. As for 2008, the MPC deemed it more appropriate to use a larger forecast range for headline inflation at 1-2.5 per cent with a probability of approximately 89.6 per cent to reflect the volatility of headline inflation, particularly from oil prices.

Unit: %	2007		2008				2009	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
< 0	0	0	0	2	3	4	4	5
0.0 - 0.5	0	0	2	5	6	7	7	7
0.5 - 1.0	1	2	6	11	13	13	13	13
1.0 - 1.5	10	10	15	18	19	19	19	18
1.5 - 2.0	32	24	24	22	21	21	20	20
2.0 - 2.5	38	32	25	20	18	17	17	16
2.5 - 3.0	16	22	17	13	11	11	11	11
3.0 - 3.5	2	8	8	7	5	6	6	6
3.5 - 4.0	0	2	2	2	2	2	2	2
> 4	0	0	0	1	1	1	1	1

Meanwhile, the MPC projected core inflation in 2007 to average in the range of 0.8-1.5 per cent, slightly lower than the previous projection with a probability of approximately 99.7. As for 2008, core inflation was expected to average in the range of 1-2 percent, similar to the previous projection with a probability of approximately 85.9 per cent.

Core inflation for 2007 and 2008 was projected to be in the range of 0.8-1.5 and 1-2 per cent, respectively

Table 5.3 Probability distribution of core inflation forecast

Unit: %	2007		2008				2009	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
< 0	0	0	1	2	2	2	2	2
0.0 - 0.5	5	4	7	8	7	6	6	5
0.5 - 1.0	73	33	25	21	17	16	14	13
1.0 - 1.5	23	48	37	29	27	25	23	22
1.5 - 2.0	0	14	23	24	25	25	25	24
2.0 - 2.5	0	1	6	12	15	17	18	18
2.5 - 3.0	0	0	1	3	5	7	9	10
3.0 - 3.5	0	0	0	1	1	2	3	4
> 3.5	0	0	0	0	0	0	1	1

Forecasts by research houses

Output growth projections for 2007 and 2008 from various research houses polled by Reuters (Thailand) averaged at 4.1 and 5.1 per cent, respectively. Most research houses maintained their 2007 projections as they deemed that domestic investment and consumption would remain soft while political uncertainties were still present. As for 2008, research houses were in agreement that the Thai economy would clearly expand from the previous year at a rate higher than previously projected, driven by both exports and recovery in domestic demand. Other supporting factors to growth included low interest rates and greater stability of the baht.

Meanwhile, headline inflation forecasts for 2007 and 2008 averaged at 2.3 and 2.8 per cent, respectively.

Table 5.4 GDP growth forecasts by various research houses				
	15 Mar 07		27 Jun 07	
	2007	2008	2007	2008
ING	n.a.	n.a.	4.5	5.0
DBS Bank	4.6	5.1	4.4	5.1
Kasikom Research	4.0	5.5	4.3	5.3
TISCO Securities	4.2	4.8	4.2	4.8
Capital Nomura	4.2	4.5	4.2	5.0
JP Morgan	n.a.	n.a.	4.2	5.1
Phatra Securities	3.7	4.6	3.7	4.6
Lehman Brothers	3.5	5.5	3.5	5.5
Goldman Sachs	4.0	4.5	n.a.	n.a.
Stanchart	4.4	5.4	n.a.	n.a.
Average	4.1	5.0	4.1	5.1
NESDB	4.0-5.0 ^{1/}	n.a.	4.0-4.5 ^{2/}	n.a.

^{1/} Estimated on 6 March 2007 when preliminary GDP figures for 2006 Q4 were released

^{2/} Estimated on 4 June 2007 when preliminary GDP figures for 2007 Q1 were released

Sources: Reuters and NESDB

Table 5.5 Headline inflation forecasts by various research houses				
	15 Mar 07		27 Jun 07	
	2007	2008	2007	2008
Lehman Brothers	2.8	3.5	2.8	3.5
Phatra Securities	2.6	2.5	2.5	2.5
TISCO Securities	2.5	n.a.	2.5	2.8
ING	3.0	2.5	2.4	2.5
Capital Nomura	2.4	1.9	2.4	2.4
Kasikom Research	2.0	2.5	2.3	2.5
DBS Bank	1.9	3.9	1.8	3.9
JP Morgan	n.a.	n.a.	1.8	2.4
Goldman Sachs	2.9	3.9	n.a.	n.a.
Stanchart	3.8	3.9	n.a.	n.a.
Average	2.7	3.1	2.3	2.8
NESDB	2.5-3.0 ^{1/}	n.a.	2.0-2.5 ^{2/}	n.a.

^{1/} Estimated on 6 March 2007 when preliminary GDP figures for 2006 Q4 were released

^{2/} Estimated on 4 June 2007 when preliminary GDP figures for 2007 Q1 were released

Sources: Reuters and NESDB

6. Conclusion

The more-than-expected weakening of domestic demand in 2007 Q1, both in private consumption and private investment, coupled with lower-than-expected pressures on inflation as assessed by the MPC, meant that there was room for monetary policy to be eased continuously. This accommodation of monetary policy should help support the continued recovery of domestic demand, which remained fragile, throughout the rest of the year. In 2008, the MPC deemed that economic recovery would strengthen, given the expected rebound in consumer and investor confidence, which would become more apparent with greater political and policy clarity following the planned elections in December 2007. In addition, the more accommodative stance of monetary policy should have a clearer positive impact on the economy. Therefore, the MPC adjusted the average forecast for economic growth slightly upwards to 4-5 per cent in 2007, and 4.5-6 per cent in 2008.

Inflationary pressures remained at a low level despite the increase in global oil prices. Inflation in 2007 Q2 was lower than the MPC assessed, partly as a result of the baht's appreciation, which helped to offset the rise in global oil prices, and hence limiting the pass-through to domestic oil prices. In any case, the transmission to the prices of other goods and services was expected to remain limited, given that domestic spending had yet to fully recover. As a result, the MPC expected that core inflation would remain within the target range throughout the upcoming 8 quarters, with core inflation in 2007 averaging in the range of 0.8-1.5 per cent, and rising in 2008, in line with economic growth, to an average of 1-2 per cent.

Risks to economic growth remained, while price pressures were limited. This prompted the MPC to allow a continued easing of monetary policy. In its meetings on 23 May and 18 July 2007, the MPC decided to lower the policy rate by 0.50 per cent and 0.25 per cent per annum respectively, bringing down the 1-day repurchase rate to 3.25 per cent per annum. From the beginning of 2007, this constituted a cumulative decrease in the policy rate of 1.75 per cent per annum.

Report: “Economic/Business Information Exchange Programme between the Bank of Thailand and the Business Sector”

As of 30 June 2007

From the Economic/Business Information Exchange Programme between the Bank of Thailand and 149 business firms throughout the country during 2007 Q2, several businesses indicated that political uncertainty, increased production costs, and a slowdown in domestic demand were critical factors affecting firm performance and investment decisions. As such, business conditions remained soft as in the previous quarter, which was in line with a slowdown in investment and corporate credit. Meanwhile, exports continued to grow robustly and continued to be an important engine of growth. With respect to the outlook for 2007, most businesses viewed that the economy would grow at a rate close to that of last year, with private consumption and investment likely to pick up in the second half of 2007, especially after the general election scheduled towards the end of the year.

- Sales of goods and services. Sales moderated from 2007 Q1 as a result of weak purchasing power of consumers. This was in part attributable to elevated oil prices that caused consumers to be cautious about spending, as reflected in department store sales and consumer product sales that rose only marginally over the same period last year. Likewise, sales of durable goods and luxury items, including commercial real estate, motorcycles, automobiles, and second-hand cars, also slowed down. This softness prompted some businesses to lower their growth projection for this year. However, most businesses still believed that private consumption should start to pick up in the latter half of this year, provided that the government could arrange the general election as planned.
- Private investment. Most businesses still postponed their investment expansion while waiting for greater clarity on government policies, particularly those related to mega-projects. However, some export-oriented industries - for example, those associated with electronic parts and components, computers, and processed poultry and products - continued to expand capacity, upgrade technology, and import new machinery and equipment. Most businesses believed that private investment should start to pick up once business difficulties were resolved and investor concerns were eased. In any case, economic fundamentals remained strong, as seen partly in a marked increase in the number of business contacts with industrial development areas observed recently, and in an improvement in operating profit of firms located in industrial development areas and those conducting factory sales and leasing.
- Exports. Despite a continued appreciation of the baht since the beginning of 2007, exports still expanded favourably from the preceding quarter. This was due partly to the advance orders received in 2006. Moreover, a number of exporting firms needed to remain in operation in order to keep the business running and maintain their customer base, despite incurring profit losses from the baht appreciation. Exports that continued at a robust pace this quarter were mainly those produced by multinational firms - for example, automobiles, printers, electronic parts and components, and frozen seafood - as well as those with steady advance orders such as processed poultry and products, processed seafood, and canned pineapple.
- Manufacturing sector. Softened domestic demand, increased competition, and rising production costs owing to elevated oil prices and wages were cited as negative factors. Certain manufacturers were now facing a liquidity problem given an increase in production costs. A shortage of production inputs was also a problem in certain agro-industrial sectors producing, for example, processed rubber and palm oil. In contrast, several export-oriented industries - such as those producing electronic parts and components, computers, and processed and frozen seafood - continued to expand well in line with external demand.
- Prices. Most firms lacked pricing power on the back of sluggish domestic demand and increased competition - the latter included price wars and aggressive promotion. As a result, firms had to absorb increased costs, resulting in a decline in profit margins in almost all industries. Nevertheless, firms did adjust their behaviour by continuously investing in research and development to hold down production costs, enhance efficiency, and increase value added.
- Labour market and employment. Overall labour market conditions remained tight, with several industries short of both skilled and unskilled labour. The turnover rate stayed elevated in the construction and fishery industries, partly causing a drop in productivity. As a result, some firms had to increase compensation and fringe benefits as well as resort to alien labour in place of Thai labour.
- Financial institutions and Specialized Financial Institutions. Most bank loans were used as working capital. Long-term loans for new investment projects and commercial real estate continued to slow down owing to a softening in demand for credit and a more stringent credit approval policy. The more stringent policy was due partly to deterioration in loan quality, particularly in the SME businesses and customers outside Bangkok whose share of bad debt was on the rise.
- Business limitations and risk factors. Most businesses indicated that clarity in the political situation and government policies was the main factor affecting firm performance and investment decisions, given its direct effects on consumer and business confidence. Moreover, the value of the baht vis-à-vis other currencies, a global economic slowdown, and oil prices remained key risk factors to be closely monitored.

Appendix: Macroeconometric model^{1/}

The Bank of Thailand's macroeconometric model (BOTMM) is an economic forecasting tool, consisting of 25 behavioural equations and 43 identities. The BOTMM presents to the Monetary Policy Committee (MPC) an important tool for economic forecasting. The model is used to analyze the response of the economy to various exogenous shocks and policy changes. It also assists the MPC in formulating the optimal policy to achieve the goals of price stability and sustainable economic growth in the long run.

Improving the model

In this *Report*, the BOTMM was revised by incorporating the most recently published data, particularly the quarterly GDP figures of 2007 Q1 released by the NESDB on 4 June 2007. Other notable changes made to the model since the January 2007 *Report* are as follows.

1. The identity part of the exchange rate equation (equation 3.6) was revised such that the interest rate differential term in the present quarter was replaced with that in the previous quarter. The revision was in line with the Uncovered Interest Parity (UIP) theory. Moreover, the inflation differential term was removed. The behavioural part of the equation or the RISK equation was renamed PRESSURE. Finally, the ratio of current account balance to GDP was used, instead of the ratio of balance of payments to GDP, to capture pressures on the exchange rate resulting from economic fundamentals.

2. The equation for net flows of the private financial account (equation 3.7) was adjusted to exclude the effect of BOT swaps on net private capital flows to better reflect the actual amount of inflows into the economy. Moreover, lagged net private capital flows was added as another explanatory variable. Overall, the revision resulted in a higher R^2 of 71 percent, up from 49 percent in the previous *Report*.

^{1/}The Bank of Thailand's macroeconometric model was first published in the July 2000 *Report*. Revisions to the model were noted in subsequent *Reports*.

3. In the equation for private credits (equation 4.3) non-performing loan write-offs and transfers to AMCs were added to private credits to better reflect the actual amount of credits in the economy that the private sector obtained from financial institutions. Moreover, the variable for net private capital flows was also removed, given that it was not the main source of funds of financial institutions and that it had only a small effect on private credits. The lagged private credits term was also removed and replaced with a constant term.

4. The core consumer price index equation (equation 5.1) was adjusted such that the change in the seasonally-adjusted core consumer price index over the previous quarter ($\Delta \ln(\text{COREsa})$) was replaced with its year-on-year counterpart (i.e., core inflation) as the dependent variable. The new equation contains 4 explanatory variables, namely lagged core inflation, the output gap, and the interaction terms between over-the-year change in the producer price index and two time dummies (PRE2003Q3 and POST2000Q3).

5. The import price deflator equation (equation 5.13) was adjusted such that the Manufacturing Unit Value index was included in the long-run equation in addition to Dubai oil price and non-fuel commodity price.

6. Moreover, an equation for the producer price index was added into the BOTMM as equation 5.17. In the short term, the equation consists of 3 explanatory variables, namely the retail petroleum price index, the farm price index and the import price deflator. The long-run equation consists of 4 explanatory variables: the 3 variables mentioned above plus average earnings.

Effect of variations in the exchange rate and crude oil price on the Thai economy

The model in this *Report* was used to analyse the effect of variations in the exchange rate and the crude oil price on the Thai economy. Table A.1 shows that a one per cent depreciation in the exchange rate (baht per US dollar) would increase core inflation, headline inflation, and economic growth by 0.05, 0.05, and 0.28 per cent, respectively.

Moreover, a one percent increase in the Dubai crude oil price (US dollars per barrel) would affect core inflation, headline inflation, and output growth by 0.01, 0.05, and -0.04 per cent respectively.

Table A.1 Summary of the effect of variations in the exchange rate and crude oil price		
	Effect on the Thai economy in the 4 th quarter ahead	
	A 1% depreciation in the exchange rate	A 1% increase in crude oil price
Core inflation	0.05	0.01
Headline inflation	0.05	0.05
Economic growth	0.28	-0.04

Source: Macroeconometric model, Bank of Thailand

Corporate and household sector models

The corporate and household sector models are tools developed by the BOT to help assess the financial conditions of the Thai corporate and household sectors. The assessment is part of the effort to ensure financial stability, which in turn, is closely intertwined with monetary stability and long-term economic growth - the main objectives of monetary policy under inflation targeting. In this *Report*, the BOT has revised the corporate and household sector models using the latest released data, especially those pertaining to listed companies, household credits, and GDP.

1.8.1 Exports of goods at 1988 constant prices

$$XGR = RXGR * XR$$

1.8.2 Exports of services at 1988 constant prices

$$XSR = RXSR * XR$$

1.9 Imports of goods and services at 1988 constant prices

$$\Delta \ln(MRsa) = 1.136 * \Delta \ln(DDsa) + 0.594 * \Delta \ln(XRsa) - 0.219 * \Delta \ln((PM\$sa * FX88) / CPIsa) - 0.270 * ecmMR(-1)$$

(11.01) (6.36) (-3.05) (-2.95)

Adjusted R-Squared = 0.78 S.E. of regression = 0.0267 LM(2) : 0.79 (0.46)

$$ecmMR = \ln(MRsa) - (-3.619 + 1.000 * \ln(DDsa) + 0.492 * \ln(XRsa) - 0.207 * \ln((PM\$sa * FX88) / CPIsa))$$

1.9.1 Imports of goods at 1988 constant prices

$$MGR = RMGR * MR$$

1.9.2 Imports of services at 1988 constant prices

$$MSR = RMSR * MR$$

1.10 Gross domestic product at 1988 constant prices

$$GDPR = CPR + CGOVR + IPR + IPUB + (XR - MR) + OTHGDP$$

1.11 Gross domestic product at current market prices

$$GDPN = ((CPR * CPI) + (CGOVR * PGCON) + (IPR * PIP) + (IPUB * PIFX) + ((XR * PXS * FX88 / 100) - (MR * PMS * FX88 / 100)) + (OTHGDP * POTHGDP)) / 100$$

1.12 Domestic demand

$$DD = GDPR - XR + MR$$

2. Government sector

2.1 Government revenue

$$GREV = TAXREV + OTHREV$$

2.2 Tax revenue

$$TAXREV = TD + TIND$$

2.3 Direct tax

$$TD = TH + TC$$

$$TH = RH * GDPN$$

$$TC = RC * GDPN$$

2.4 Indirect tax

$$TIND = TVAT + TEXC + OTHTIND$$

$$TVAT = RVAT * (CPR * CPI / 100)$$

$$TEXC = REXC * (CPR * CPI / 100)$$

$$OTHTIND = ROTHTIND * (CPR * CPI / 100)$$

2.5 Government cash balance

$$GCB = GREV - (GCURRENT + GCAPITAL) + NONBUDGET$$

3. External sector

3.1 Current account

$$CURRENTS = (((XGR * PXG) - (MGR * PMG)) + ((XSR * PXSS) - (MSR * PMSS))) / (25.29^3 * 100)$$

$$CURRENTB = CURRENTS * FX$$

3.2 Capital and financial account

$$\begin{aligned}\text{CAPITALS} &= \text{CAPITALSPRI} + \text{OTHCAPS} \\ \text{CAPITALB} &= \text{CAPITALS} * \text{FX}\end{aligned}$$

3.3 Balance of payments

$$\begin{aligned}\text{BPB} &= \text{CAPITALS} * \text{FX} + \text{CURRENTS} * \text{FX} + \text{OTHBP} \\ \text{BPS} &= \text{BPB} / \text{FX}\end{aligned}$$

3.4 International reserves

$$\text{RESERVE} = \text{BPS} + \text{RESERVE}(-1)$$

3.5 Net foreign assets

$$\text{NFA} = \text{NFA}(-1) + \text{BPB} + \text{OTHNFA}$$

3.6 Exchange rate

$$\begin{aligned}\ln(\text{FX88}) &= \ln(\text{FX88}(-1)) + (\ln(1 + \text{FEDFUND}(-1)/400) - \ln(1 + \text{RP1D}(-1)/400)) + \text{PRESSURE} \\ \text{PRESSURE} &= 1.274 * \Delta \ln(\text{REGIONFX}) - 0.408 * \Delta(\text{CURRENTB}(-1)/\text{GDPN}(-1)) \\ \text{FX} &= (\text{FX88} * 25.29^3) / 100 \\ \text{NEER} &= \text{TPFX} * 100 / \text{FX94} \\ \text{REER} &= \text{NEER} / (\text{TPCPI} / \text{CPI} * 100 / 73.43)\end{aligned}$$

3.7 Net flows of private financial account

$$\begin{aligned}\text{CAPITALSPRI} &= 0.625 * \Delta(\text{RP1D}(-1) - \text{FEDFUND}(-1)) - 0.324 * \text{CURRENTS} + 32.41 * \Delta \ln(\text{GDP} \text{Rsa}(-1)) + 0.523 * \text{CAPITALSPRI}(-1) \\ &\quad (3.26) \qquad \qquad \qquad (-3.18) \qquad \qquad (1.93) \qquad \qquad (4.99) \\ \text{Adjusted R-Squared} &= 0.71 \qquad \qquad \qquad \text{S.E. of regression} = 1.0751 \qquad \qquad \qquad \text{LM}(2) : 0.23 (0.80)\end{aligned}$$

4. Monetary sector

4.1 Three-month deposit rate

$$\begin{aligned}\Delta \text{RD3M} &= 0.257 * \Delta \text{RP1D} + 0.045 * \Delta \text{RP1D}(-1) - 0.164 * \text{ecmRD3M}(-1) \\ &\quad (8.91) \qquad (1.79) \qquad (-5.86) \\ \text{Adjusted R-Squared} &= 0.71 \qquad \qquad \qquad \text{S.E. of regression} = 0.4056 \qquad \qquad \qquad \text{LM}(2) : 0.24 (0.79) \\ \text{ecmRD3M} &= \text{RD3M} - 0.727 * \text{RP1D}\end{aligned}$$

4.2 Minimum lending rate

$$\begin{aligned}\Delta \text{MLR} &= 0.582 * \Delta \text{RD3M} + 0.411 * \Delta \text{MLR}(-1) \\ &\quad (14.42) \qquad (8.29) \\ \text{Adjusted R-Squared} &= 0.88 \qquad \qquad \qquad \text{S.E. of regression} = 0.2137 \qquad \qquad \qquad \text{LM}(2) : 2.47 (0.09)\end{aligned}$$

4.3 Private credit

$$\begin{aligned}\Delta \ln(\text{PCREDITsa}) &= 0.263 - 0.036 * \Delta \text{MLR} + 1.127 * \Delta \ln(\text{GDPNsa}) - 0.044 * \ln(\text{NPL}(-1)) \\ &\quad (3.83) \quad (-2.48) \qquad (2.38) \qquad (-4.13) \\ \text{Adjusted R-Squared} &= 0.39 \qquad \qquad \qquad \text{S.E. of regression} = 0.0293 \qquad \qquad \qquad \text{LM}(2) : 0.38 (0.69)\end{aligned}$$

4.4 Net claims on government

$$\begin{aligned}\Delta \text{CLAIMG} &= -0.407 * (\text{GCB} - \text{FINB}) \\ &\quad (-5.50) \\ \text{Adjusted R-Squared} &= 0.40 \qquad \qquad \qquad \text{S.E. of regression} = 42.54 \qquad \qquad \qquad \text{LM}(2) : 0.15 (0.86)\end{aligned}$$

^{3/} The Baht/USD exchange rate in 1988 is 25.29.

4.5 Money supply

$$M2A^S = NFA + CLAIMG + PCREDIT + OTHM2A$$

$$\Delta \ln(M2A^D_{sa} * 100 / CPI_{sa}) = 0.243 * \Delta \ln(GDPR_{sa}) - 0.006 * \Delta RD3M + 0.002 * CINFEX - 0.224 * ecmM2A^D(-1)$$

(2.73) (-2.13) (3.49) (-4.37)

Adjusted R-Squared = 0.42 S.E. of regression = 0.0118 LM(2) : 0.07 (0.93)

$$ecmM2A^D = \ln(M2A^D_{sa} * 100 / CPI_{sa}) - (4.420 + 0.539 * \ln(GDPR_{sa}) - 0.004 * RD3M)$$

4.6 Securities value

$$\Delta \ln(BMCAP) = 0.0004 * \Delta (CAPITALS * FX) + 2.325 * \Delta \ln(GDPR_{sa}) - 0.108 * \Delta (MLR) - 0.508 * ecmBMCAP(-1)$$

(1.95) (2.29) (-2.61) (-3.26)

Adjusted R-Squared = 0.34 S.E. of regression = 0.0799 LM(2) : 1.00 (0.38)

$$ecmBMCAP = \ln(BMCAP) - (-15.260 + 0.0004 * (CAPITALS * FX) + 3.543 * \ln(GDPR_{sa}) - 0.006 * MLR)$$

5. Price index

5.1 Core consumer price index

$$CINFLAT = 2.626 * \ln(GDPR_{sa} / GDP_{HSM}) + 0.830 * CINFLAT(-1) + 0.139 * (((PPI/PPI(-4)-1) * 100) * PRE2000Q3)$$

(2.50) (30.47) (7.83)

$$+ 0.058 * (((PPI/PPI(-4)-1) * 100) * POST2000Q3)$$

(3.53)

Adjusted R-Squared = 0.96 S.E. of regression = 0.4698 LM(2) : 0.12 (0.89)

5.2 Average earnings

$$\Delta \ln(AVG EARN_{sa}) = 0.306 * \Delta \ln(MINWAGE) + 0.858 * \Delta \ln(CPI_{sa}) - 0.198 * ecmAVGEARN(-1)$$

(3.19) (5.42) (-2.35)

Adjusted R-Squared = 0.32 S.E. of regression = 0.0121 LM(2) : 0.52 (0.60)

$$ecmAVGEARN = \ln(AVG EARN_{sa}) - (2.461 + 0.756 * \ln(MINWAGE(-1)) + 0.541 * \ln(CPI_{sa}))$$

5.3 Energy price index

$$\Delta \ln(CPIEN_{sa}) = 0.563 * \Delta \ln(RPPI_{sa}) - 0.209 * ecmCPIEN(-1)$$

(14.65) (-3.15)

Adjusted R-Squared = 0.74 S.E. of regression = 0.0175 LM(2) : 0.55 (0.58)

$$ecmCPIEN = \ln(CPIEN_{sa}) - (1.117 + 0.786 * \ln(RPPI_{sa}))$$

5.4 Retail petroleum price index

$$\Delta \ln(RPPI_{sa}) = 0.356 * \Delta \ln(DUBA_{sa}) + 0.453 * \Delta \ln(FX88) + 0.177 * \Delta \ln(RPPI_{sa}(-2)) - 0.345 * ecmRPPI(-1)$$

(9.40) (6.60) (2.73) (-4.88)

Adjusted R-Squared = 0.72 S.E. of regression = 0.0291 LM(2) : 0.11 (0.90)

$$ecmRPPI = \ln(RPPI_{sa}) - (-0.361 + 0.582 * \ln(DUBA_{sa}) + 0.709 * \ln(FX88))$$

5.5 Raw food price index

$$\Delta \ln(CPIRFOOD_{sa}) = 0.007 + 0.348 * \Delta \ln(FARMPRICE_{sa}) - 0.072 * ecmCPIRFOOD(-1)$$

(2.81) (5.63) (-1.67)

Adjusted R-Squared = 0.36 S.E. of regression = 0.0176 LM(2) : 0.85 (0.43)

$$ecmCPIRFOOD = \ln(CPIRFOOD_{sa}) - (1.106 + 0.812 * \ln(FARMPRICE_{sa}(-2)))$$

5.6 Farm price index (12 main products)

$$\Delta \ln(FARMPRICE_{12sa}) = 1.041 * \Delta \ln(WFP_{12sa}) + 0.616 * \Delta \ln(FX88) - 0.343 * ecmFARMPRICE_{12}(-1)$$

(9.15) (8.08) (-3.74)

Adjusted R-Squared = 0.68 S.E. of regression = 0.0318 LM(2) : 0.59 (0.56)

$$ecmFARMPRICE_{12} = \ln(FARMPRICE_{12sa}) - (-5.478 + 1.155 * \ln(WFP_{12sa}) + 1.048 * \ln(FX88))$$

5.7 Farm price index

$$\text{FARMPRICE} = (\text{WFARMPRICE}_{12} * \text{FARMPRICE}_{12}) + (\text{WFARMPRICE}_{\text{OTH}} * \text{FARMPRICE}_{\text{OTH}})$$

5.8 Headline consumer price index

$$\text{CPI} = ((1 - \text{WEN} - \text{WRFOOD}) * \text{CORE}) + (\text{WEN} * \text{CPIEN}) + (\text{WRFOOD} * \text{CPIRFOOD})$$

5.9 Private investment deflator

$$\Delta \ln(\text{PIPs}_a) = 1.670 * \Delta \ln(\text{CPIs}_a) + 0.110 * \Delta \ln(\text{FX88}(-2)) - 0.256 * \text{ecmPIP}(-1)$$

(5.34) (2.09) (-2.52)

Adjusted R-Squared = 0.46 S.E. of regression = 0.0207 LM(2) : 0.19 (0.82)

$$\text{ecmPIP} = \ln(\text{PIPs}_a) - (-3.762 + 1.667 * \ln(\text{CPIs}_a) + 0.075 * \ln(\text{FX88}(-1)))$$

5.10 Public investment deflator

$$\Delta \ln(\text{PIFXs}_a) = 1.190 * \Delta \ln(\text{CPIs}_a) - 0.119 * \text{ecmPIFX}(-1)$$

(7.99) (-2.05)

Adjusted R-Squared = 0.31 S.E. of regression = 0.0130 LM(2) : 1.24 (0.30)

$$\text{ecmPIFX} = \ln(\text{PIFXs}_a) - (-1.539 + 1.295 * \ln(\text{CPIs}_a) + 0.017 * \ln(\text{FX88}(-1)))$$

5.11 Government consumption deflator

$$\Delta \ln(\text{PGCONs}_a) = 0.769 * \Delta \ln(\text{CPIs}_a) + 0.034 * \Delta \text{SALARY} - 0.131 * \text{ecmPGCON}(-1)$$

(3.98) (4.15) (-1.79)

Adjusted R-Squared = 0.19 S.E. of regression = 0.0164 LM(2) : 0.26 (0.77)

$$\text{ecmPGCON} = \ln(\text{PGCONs}_a) - (0.245 + 0.988 * \ln(\text{CPIs}_a) + 0.065 * \text{SALARY})$$

5.12 Export price deflator

$$\Delta \ln(\text{PXSs}_a) = 0.210 * \Delta \ln(\text{PMSs}_a(-1)) + 0.592 * \Delta \ln(\text{TPGDPs}_a) - 0.207 * \Delta \ln(\text{FX88}) - 0.352 * \text{ecmPXS}(-1)$$

(3.38) (2.91) (-5.15) (-4.50)

Adjusted R-Squared = 0.71 S.E. of regression = 0.0156 LM(2) : 1.74 (0.19)

$$\text{ecmPXS} = \ln(\text{PXSs}_a) - (2.336 + 0.323 * \ln(\text{PW_NONFs}_a(-1)) + 0.397 * \ln(\text{MUVs}_a(-1)) - 0.182 * \ln(\text{FX88}))$$

5.12.1 Export price deflator for services

$$\text{PXSs}_a = \text{PXSs}_a(-4) * ((\text{CPIs}_a / \text{FX88}) / (\text{CPIs}_a(-4) / \text{FX88}(-4)))$$

5.12.2 Export price deflator for goods

$$\text{PXGs}_a = (\text{PXSs}_a - \text{RXSR} * \text{PXSs}_a) / \text{RXGR}$$

5.13 Import price deflator

$$\Delta \ln(\text{PMSs}_a) = 0.373 * \Delta \ln(\text{PW_NONFs}_a) - 0.551 * \text{ecmPMS}(-1)$$

(3.54) (-4.60)

Adjusted R-Squared = 0.38 S.E. of regression = 0.0298 LM(2) : 0.55 (0.58)

$$\text{ecmPMS} = \ln(\text{PMSs}_a) - (1.406 + 0.265 * \ln(\text{PW_NONFs}_a(-1)) + 0.426 * \ln(\text{MUVs}_a(-1)) + 0.081 * \ln(\text{DUBAs}_a))$$

5.13.1 Import price deflator for services

$$\text{PMSs}_a = \text{PMSs}_a(-4) * ((\text{TPCPIs}_a * \text{FX94} / \text{NEER}) / (\text{TPCPIs}_a(-4) * \text{FX88}(-4) / \text{NEER}(-4)))$$

5.13.2 Import price deflator for goods

$$\text{PMGs}_a = (\text{PMSs}_a - \text{RMSR} * \text{PMSs}_a) / \text{RMGR}$$

5.14 GDP deflator

$$\text{PGDP} = \text{GDPN} / \text{GDPR} * 100$$

5.15 Inflation expectations

$$\text{CINFEX} = 0.25*\text{CINFLAT}(-1) + 0.25*\text{CINFLAT} + 0.50*\text{CINFLAT}(4)$$

5.16 Housing Price Index

$$\ln(\text{PLANDTHsa}) = -0.006*(\text{MLR}(-1) - \text{CINFEX}(-1)) + 0.517*\ln(\text{PLANDTHsa}(-1)) + 0.491*\ln(\text{PLANDTHsa}(-2))$$

(-2.73) (3.02) (2.85)

Adjusted R-Squared = 0.96 S.E. of regression = 0.0128 LM(2) : 0.92 (0.41)

5.17 Producer Price Index

$$\Delta\ln(\text{PPIsa}) = 0.142*\Delta\ln(\text{RPPIsa}) + 0.226*\Delta\ln(\text{FARMPRICEsa}) + 0.077*\Delta\ln(\text{PMSsa*FX88}) - 0.248*\text{ecmPPI}(-1)$$

(5.50) (5.96) (2.82) (-2.88)

Adjusted R-Squared = 0.67 S.E. of regression = 0.0106 LM(2) : 1.08 (0.35)

$$\text{ecmPPI} = \ln(\text{PPIsa}) - (0.148*\ln(\text{RPPIsa}) + 0.245*\ln(\text{FARMPRICEsa}) + 0.147*\ln(\text{PMSsa*FX88}) + 0.135*\ln(\text{AVGEARNsa}))$$

6. Corporate Sector Model

6.1 Sales, cost of goods sold, profits

6.1.1 Sales

$$\ln(\text{SALESsa}) = -2.365 + 0.583*\ln(\text{GDPNsa}) - 0.021*(\text{MLR} - \text{CINFEX}) + 0.731*\ln(\text{SALESsa}(-1))$$

(-2.30) (2.68) (-4.29) (8.20)

Adjusted R-Squared = 0.99 S.E. of regression = 0.043 LM(2) : 0.034 (0.97)

6.1.2 Cost of goods sold

$$\ln(\text{COGSsa}) = -1.83 + 0.934*\ln(\text{SALESsa}) + 0.424*\ln(\text{PPIsa})$$

(-3.86) (25.39) (2.88)

Adjusted R-Squared = 0.99 S.E. of regression = 0.0344 LM(2) : 0.64 (0.53)

6.1.3 Operating profits

$$\text{EBIT} = \text{SALES} - \text{COGS} - \text{OTHER}$$

6.1.4 Net profits

$$\text{NI} = \text{EBIT} - \text{INT} - \text{TAX} - \text{EXTRA}$$

6.2 Assets, equity, liabilities

6.2.1 Assets

$$\ln(\text{ASSETsa}) = 0.225*\ln(\text{GDPNsa}) + 0.841*\ln(\text{ASSETsa}(-1)) - 0.067*\ln(\text{FX88}(-1))$$

(6.44) (25.89) (-2.93)

Adjusted R-Squared = 0.99 S.E. of regression = 0.0286 LM(2) : 0.67 (0.51)

6.2.2 Equity

$$\Delta\ln(\text{EQUITYsa}) = 0.730*\Delta\ln(\text{GDPNsa}(-2)) - 0.616*\Delta\ln(\text{FX88}) + 0.001*\Delta(\text{NI}) + 0.036*\text{DUM01Q4} - 0.171*\text{ecmEQUITY}(-1)$$

(2.13) (-4.61) (7.35) (2.69) (-2.55)

Adjusted R-Squared = 0.63 S.E. of regression = 0.0528 LM(2) : 1.19 (0.31)

$$\text{ecmEQUITY} = \ln(\text{EQUITYsa}) - (1.661*\ln(\text{GDPNsa}) + 0.403*\text{DUM01Q4} + 0.015*(\text{MLR}(-1) - \text{FEDFUND}(-1)) - 1.077*\ln(\text{FX88}))$$

6.2.3 Liabilities

$$\text{DEBT} = \text{ASSET} - \text{EQUITY}$$

6.3 Debt burden and debt-service ability

6.3.1 Debt to equity ratio

$$\text{DE} = \text{DEBT}/\text{EQUITY}$$

6.3.2 Interest expenses

$$\ln(\text{INTsa}) = -7.371 + 1.377 \cdot \ln(\text{DEBTsa}(-1)) + 0.028 \cdot \text{MLR}(-2) - 0.489 \cdot \text{DUM01Q4}$$

6.3.3 Interest coverage ratio

$$\text{ICR} = \text{EBIT}/\text{INT}$$

7. Household Model

7.1 Liabilities

7.1.1 Banks' lending to household

$$\Delta \ln(\text{LOANHHTsa}) = -0.009 \cdot \Delta \text{MLR}(-1) + 0.356 \cdot \Delta \ln(\text{CPRsa}(-4)) + 0.813 \cdot \Delta \ln(\text{LOANHHTsa}(-1))$$

(-1.91) (2.35) (10.76)

Adjusted R-Squared = 0.64

S.E. of regression = 0.0194

LM(2) : 2.43 (0.10)

7.2 Debt Repayment Capacity

7.2.1 Household Interest Payments

$$\text{INTHH} = (\text{MLR}/100) \cdot \text{LOANHHT}$$

7.2.2 Ratio of Interest Payments to Income after Tax

$$\text{IGEARHH} = \text{INTHH}/(\text{GDPRsa} \cdot (1-\text{RH})) \cdot 100$$

List of variables

Dependent variables

AVGEARN	Average earnings (baht/month)
BMCAP	Securities value (billion baht)
BPB, BPS	Balance of payments (billion baht, billion US dollars)
CAPITALB, CAPITALS	Capital and financial account (billion baht, billion US dollars)
CAPITALSPRI	Net flows of private financial account (billion US dollars)
CGOVR	Government consumption at 1988 constant prices (billion baht)
CINFEX	Inflation expectations
CLAIMG	Net claims on government (billion baht)
CORE, CINFLAT	Core consumer price index (CPI excluding raw food and energy prices) (2002 = 100), Core inflation (per cent)
CPI	Headline consumer price index (2002 = 100)
CPIEN	Energy price index (2002 = 100)
CPIRFOOD	Raw food price index (2002 = 100)
CPR	Total private consumption at 1988 constant prices (billion baht)
CPR1	Private durable goods consumption at 1988 constant prices (including transport equipment, electrical machinery, machinery and equipment, furniture, rubber products, and glass and plastic products) (billion baht)
CPR2	Private non-durable goods consumption at 1988 constant prices (including food products, beverages, energy, and services) (billion baht)
CURRENTB, CURRENTS	Current account balance (billion baht, billion US dollars)
DD	Domestic demand at 1988 constant prices (billion baht)
FARMPRICE	Farm price index (1995 = 100)
FARMPRICE_12	Farm price index (12 main products of Thailand) (1995 = 100)
FX	Exchange rate (baht/US dollar)
FX88	Exchange rate index (1988 = 100)
FX94	Exchange rate index (1994 = 100)
GCB	Government cash balance (billion baht)
GDPN	Gross domestic product at current market prices (billion baht)
GDPR	Gross domestic product at 1988 constant prices (billion baht)
GDPR_HSM	Gross domestic product trend at 1988 constant prices, estimated from Hodrick-Prescott and exponential smoothing methods (billion baht)
GREV	Government revenue (billion baht)
IPR	Private investment at 1988 constant prices (billion baht)
IPUB	Public investment at 1988 constant prices (billion baht)
M2A ^D , M2A ^S	Money supply (M2 + finance companies' promissory notes) (billion baht)
MGR	Imports of goods at 1988 constant prices (billion baht)
MLR	Minimum lending rate (per cent per annum)
MR	Imports of goods and services at 1988 constant prices (billion baht)
MSR	Imports of services at 1988 constant prices (billion baht)
NEER	Nominal effective exchange rate (1994 = 100)
NFA	Net foreign assets (billion baht)
OTHTIND	Other indirect taxes (billion baht)
PCREDIT	Claims on private sector (including securities holdings by the private sector) (billion baht)
PGCON	Government consumption deflator (1988 = 100)
PGDP	GDP deflator (1988 = 100)
PIFX	Public investment deflator (1988 = 100)

PIP	Private investment deflator (1988 = 100)
PLANDTH	Townhouse (including land) price index (1991 = 100)
PMS	Goods and services import price index (US dollars, 1988 = 100)
PMGS	Goods import price index (US dollars, 1988 = 100)
PMSS	Services import price index (US dollars, 1988 = 100)
PPI	Producer price index (2000 = 100)
PRESSURE	Pressure on exchange rate
PXS	Goods and services export price index (US dollars, 1988 = 100)
PXGS	Goods export price index (US dollar, 1988 = 100)
PXSS	Services export price index (US dollars, 1988 = 100)
RD3M	Three-month deposit rate (per cent per annum)
REER	Real effective exchange rate (1994 = 100)
RESERVE	International reserves (billion US dollars)
RPPI	Retail petroleum price index (1996 = 100)
TAXREV	Tax revenue (billion baht)
TC	Corporate income tax (billion baht)
TD	Direct tax (billion baht)
TEXC	Excise tax (billion baht)
TH	Personal income tax (billion baht)
TIND	Indirect tax (billion baht)
TVAT	Value added tax (billion baht)
WEALTH	Asset value (M2A and securities value) (billion baht)
XGR	Exports of goods at 1988 constant prices (billion baht)
XR	Exports of goods and services at 1988 constant prices (billion baht)
XSR	Exports of services at 1988 constant prices (billion baht)

Independent variables

CPIUS	Consumer price index of the United States (1990 = 100)
CGOVN	Government consumption at current prices (billion baht)
DUBAI	Dubai crude oil price (US dollars/barrel)
FARMPRICE_OTH	Other items of farm price index (1995 = 100)
FEDFUND	Federal funds rate (per cent per annum)
FINB	Government bond issuance for financial sector restructuring (billion baht)
GCAPITAL	Government capital expenditure (billion baht)
GCURRENT	Government current expenditure (billion baht)
IPUBN	Government investment at current prices (billion baht)
MINWAGE	Minimum wage (baht/day)
MUV	Manufacturing unit value index (2000 = 100)
NONBUDGET	Government non-budgetary balance (billion baht)
NPL	Non performing loans (billion baht)
OTHBP	Other items of balance of payments (billion baht)
OTHCAPS	Other items of capital and financial account (billion US dollars)
OTHGDP	Other items of gross domestic product at 1988 constant prices (billion baht)
OTHM2A	Other items of M2A (billion baht)
OTHNFA	Other items of net foreign assets (billion baht)
OTHREV	Non-tax revenue (billion baht)
PW_NONF	World non-fuel commodity price index (1995 = 100)
POTHGDP	Other items of gross domestic product deflator (1988 = 100)
RC	Corporate income tax rate (per cent)

REGIONFX	Regional exchange rate index (China, Singapore, Indonesia, Korea, the Philippines) (1994 = 100)
REXC	Excise tax rate (per cent)
RH	Personal income tax rate (per cent)
RMGR	Imports of goods to imports of goods and services ratio
RMSR	Imports of services to imports of goods and services ratio
ROTHTIND	Other indirect tax rate (per cent)
RPID	1-day repurchase rate (per cent per annum)
RVAT	Value added tax rate (per cent)
RXGR	Exports of goods to exports of goods and services ratio
RXSR	Exports of services to exports of goods and services ratio
TPCPI	Trading partners consumer price index (Asian region economies, United States, Japan, euro area economies, and United Kingdom) (1994 = 100)
TPGDP	Trading partners gross domestic product index (Asian region economies, United States, Japan, euro area economies and United Kingdom) (2002 = 100)
TPFX	Trading partners exchange rate per us dollar (Asian region economies, United States, Japan, euro area economies, and United Kingdom) (1994 = 100)
WEN	Energy weight in CPI basket (proportion)
WFARMPRICE_12	Weight of 12 main products in farm price index basket (proportion)
WFARMPRICE_OTH	Weight of other items in farm price index basket (proportion)
WFP_12	World farm price index (12 main products of Thailand) (1995 = 100)
WRFOOD	Raw food weight in CPI basket (proportion)

Dummy variables

POST2000Q3	represents periods since 2000:Q3 where 2000:Q3 onwards = 1, other = 0
PRE2000Q3	represents period before 2000:Q3 where 2000:Q3 onwards = 0, other = 1
SALARY	represents periods where there were changes in the civil servants' salary structure, where 1994:Q4 and 2004:Q2 = 1, other = 0

Corporate variables

ASSET	Assets (billion baht)
COGS	Cost of goods sold (billion baht)
DE	Debt to equity ratio (times)
DEBT	Liabilities (billion baht)
DUM01Q4	Represents debt restructuring period, where 2001 Q4 to present = 1, other = 0
EBIT	Profit (Loss) before interest and income tax expenses (billion baht)
EQUITY	Shareholders' equity (billion baht)
EXTRA	Other expenses (billion baht)
ICR	Interest coverage ratio (times)
INT	Interest expenses (billion baht)
NI	Net profit (loss) (billion baht)
OTHER	Other expenses (billion baht)
PPI	Producer price index (2000 = 100)
SALES	Revenue from sale of goods (billion baht)
TAX	Corporate income tax (unit: billion baht)

Household Model

LOANHHT	Banks' lending to households (billion baht)
INTHH	Interest payments (billion baht)
IGEARHH	Ratio of interest payments to income after tax (per cent)