Central Bank of the Republic of China (Taiwan)

Financial Stability Report

May 2009 | Issue No. 3

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About the Financial Stability Report

Key points of the task to promote financial stability

Promoting financial stability is not only one of the operational objectives pursued by the Central Bank of the Republic of China (Taiwan), the CBC, but also lays the cornerstone for the effective implementation of monetary policy. To achieve this objective, in addition to serving as lender of last resort when necessary, the CBC regularly monitors the financial system and the overall economic and financial environment. This allows it to be constantly aware of the potential vulnerabilities and risks that could threaten financial stability so that the relevant financial authorities and market participants can respond in a timely manner to avoid financial turbulence.

In its work to promote financial stability, the CBC focuses primarily on the risks that could affect the stability of the overall financial system. Nevertheless, the CBC still pays close attention to the status of individual institutions as their weaknesses can trigger systemic risks.

Purpose of this report

The aims of this semiannual report are to offer insight into the state of Taiwan's financial system and its potential vulnerabilities and risks, and to spark broad-based discussion that will enhance awareness of risk among market participants and spur them to take responsive action in a timely manner. This does not mean, however, that the risks mentioned in this report are sure to occur. Furthermore, this report is intended to serve as a reference for financial authorities, market participants, and others interested in the subject. Readers are advised to interpret or quote the information contained herein with caution.

Definition of financial stability

There is as yet no universally accepted definition of "financial stability." Defined positively, "financial stability" can be thought of in terms of the financial system's ability to: (1) facilitate an efficient allocation of economic resources both spatially and intertemporally; (2) assess and manage financial risks; and (3) withstand adverse shocks. From a negative view,

"financial instability" refers to the occurrence of currency, banking, or foreign debt crises, or inability of the financial system to absorb adverse endogenous or exogenous shocks, and allocate resources efficiently, with the result that it cannot facilitate real economic performance in a sustained manner.

Note: Except as otherwise noted, all data and information cited in this report is current as of 30 April 2009.

I. Overview

Taiwan's financial system remained stable despite some potential risks

In the second half of 2008, Taiwan's financial markets fluctuated sharply amid spillovers from the global financial crisis but gradually returned to smooth functioning after proactive policy actions taken by the government. The asset quality of domestic financial institutions remained satisfactory despite a sharp decline in profitability. Except for a few banks and life insurance companies, the majority of financial institutions played their intermediation role effectively on the back of adequate capital levels. Payment and settlement systems operated smoothly with improved efficiency. Reflecting this, the financial system in Taiwan remained stable. Nevertheless, the domestic economy entered a recession. Whether it will trigger deterioration in the credit conditions of the real sector and cause the financial system to assume higher risks warrants closer monitoring.

Global financial crisis impacted the real and financial sectors

The global financial turmoil sparked by the US subprime mortgage crisis extended into 2008 and in September entered a new phase of disorder following the bankruptcy of Lehman Brothers. With globalization prevailing in the financial services industry, the impact of the crisis has spread out from the US to other countries, from advanced countries to emerging and developing economies, from the housing market to financial institutions and financial markets, from the financial sector to the real economy. Furthermore, it resulted in a vicious circle with an adverse feedback loop between the financial system and the real economy.

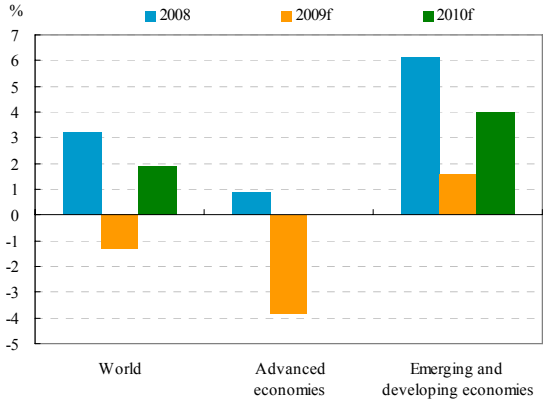
The causes of the global financial crisis are complex and intertwined but may be summarized as follows: (1) a decrease in investors' concerns about risks due to excessive liquidity worldwide; (2) loose credit underwriting standards resulting from the prevalence of the originate-to-distribute business model; (3) information asymmetry and principal-agent problems in the securitization process; (4) conflicts of interest and model bias at rating agencies; (5) risk management at financial institutions was outpaced by financial innovation; and (6) fair value accounting and the new Basel capital accord (Basel II) led to pro-cyclical leveraging in financial institutions.

The global financial crisis not only severely affected the financial sector but also spread to the real economy. With respect to the financial sector, financial institutions in major countries faced skyrocketing non-performing loan ratios, tightened credit underwriting standards, and sizable losses. In April 2009, the International Monetary Fund (IMF) updated its estimates of write-downs on the global holdings of US-originated assets to US$2.7 trillion. Against the backdrop of turbulent financial market conditions, short-term interest rates surged dramatically driven by stringent funding conditions, the sub-prime mortgage-backed securities index dropped markedly, outstanding balances of the asset-backed commercial paper (ABCP) market were scaled back substantially, and share prices tumbled in the stock markets of the US, Japan, Europe and emerging Asian countries before a rebound emerged in March 2009.

Regarding the real economy, economic growth in advanced economies turned negative in the second half of 2008 in the wake of the financial crisis. The IMF projected the global economy would undergo a downturn with a growth rate of -1.3% in 2009 before a moderate recovery in 2010. The advanced economies would suffer a substantial contraction in economic activity with a growth rate of -3.8% in 2009, while the emerging and developing economies would fall to a growth rate of 1.6% over the same period (Chart 1.1). In addition, due to elevated uncertainties following the financial crisis, consumer confidence was persistently eroded before a slight rebound in March 2009. There was an acute rise in unemployment rates in advanced economies, and significant increases in unemployment also posed challenges to emerging economies. The consumer price index (CPI) in major industrial economies has been declining since mid-2008, reflecting increasing deflationary risks.

To cope with the impact stemming from the US sub-prime mortgage crisis, many countries have adopted a succession of measures designed to stabilize the financial system and to revitalize the economy via expansionary fiscal policies. Regarding measures to stabilize the financial system, many countries successively cut policy rates. In addition, the US Federal Reserve System (Fed) and Bank of England utilized innovative funding facilities (such as the US Term Auction Facility and the UK Special Liquidity Scheme) to inject funds into the financial markets. Furthermore, national governments actively

Chart 1.1 Global economic growth rates



Note: Forecast for advanced economies in 2010 is 0%.
Source: IMF, "World Economic Outlook," April 2009.

implemented a series of policy measures to enhance the soundness of financial institutions' balance sheets so as to help them sustain, including: (1) providing guarantees for deposit and non-deposit debt of financial institutions; (2) strengthening the capital structure of individual financial institutions; and (3) revitalizing financial institutions' assets. With respect to economic stimulus measures, the US, UK and major Asian countries have actively executed expansionary fiscal policies and launched a variety of macroeconomic stimulus packages, comprising: (1) offering tax cuts or tax rebates to stimulate private consumption; (2) expanding public expenditures; (3) promoting employment; and (4) supporting the housing market. The scale of these packages exceeds 2% of GDP in their corresponding countries.

The impact of the current financial crisis on global economic activity has been unexpectedly severe. A variety of data sources indicate that global financial and economic conditions will remain weak in the short run and are expected to face further substantial challenges in the future. These include deteriorating economic activity, moderating credit growth, rising external funding pressures on emerging economies, intensifying deflationary risks in advanced economies and escalating protectionism. Governments and international organizations successively proposed a number of recommendations on supervisory reform to avoid the recurrence of financial crises in the future, including: (1) enhancing supervision of the practice of financial institutions' operations, such as improving the practice of mortgage operations, mitigating information asymmetry and principal-agent problems in the securitization process, eliminating conflicts of interest and model bias at rating agencies, and streamlining the design of structured products; (2) strengthening the supervisory framework in individual countries, with examples such as the US blueprint for reforming its supervisory structure and the UK plan to revamp financial supervision and regulation; (3) improvements in several accounting issues such as fair value accounting and establishing a uniform global accounting standard; (4) amending Basel II's capital requirements on trading book, asset securitization and off-balance sheet instruments, and urging more countries to implement Basel II; (5) enhancing the supervision of private equity funds (including hedge funds); and (6) establishing a mechanism for consistent and systemic cross-border cooperation and coordination.

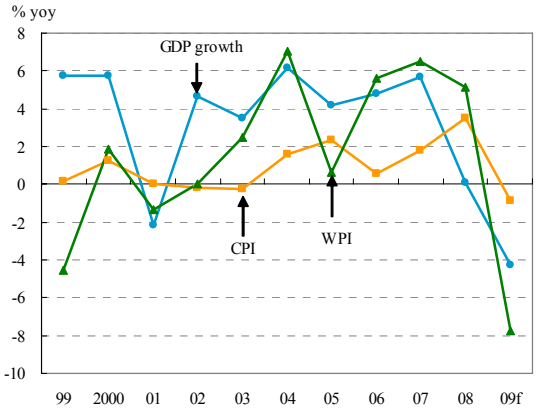
Since the causes and policy responses regarding the global financial crisis are a worthy reference for domestic financial authorities and financial industry participants, an exclusive chapter is included in this report to better the understanding of the crisis.

Domestic economy entered a downturn and inflationary pressures receded

In the second half of 2008, the declining world economy severely affected Taiwan's export momentum and the manufacturing sector. Private investment shrank rapidly, while private consumption declined steadily. Statistics from the Directorate-General of Budget, Accounting and Statistics (DGBAS) indicated that Taiwan's economic growth registered -1.05% and -8.61% in 2008 Q3 and Q4, respectively, causing annual economic growth to drop materially to 0.06% in 2008 from the previous year's 5.70%. Looking ahead, Taiwan's exports and private investment are expected to contract markedly along with waning private consumption, despite the government's persistent efforts to mitigate these adverse impacts and boost domestic demand by expanding public investment. The DGBAS forecast that Taiwan's economy will post a negative growth rate of -4.25% in 2009. Its preliminary statistics revealed that economic growth fell to a trough of -10.24% in 2009 Q1 owing to a marked contraction in exports. However, the economy was expected to gradually improve from Q2 onwards and return to positive territory in Q4.[1] With respect to prices, in the second half of 2008, the deteriorating world economy and sharp declines in the prices of crude oil, raw materials and commodities contributed significantly to receding inflationary pressures. Preliminary statistics from the DGBAS indicated that the wholesale price index (WPI) and CPI inflation rates stood at 5.15% and 3.53% in 2008, respectively. It was projected the annual WPI and CPI inflation rates will fall to 7.75% and 0.84%, respectively, in 2009 (Chart 1.2).

Taiwan's foreign exchange reserves continued to accumulate and reached US$304.7 billion in April 2009, indicating that Taiwan's foreign exchange reserves have a strong capacity to meet payment obligations for imports and to service short-term external debts. As of the end of 2008, outstanding external debts registered 23.07% in relation to annual GDP, far lower than the internationally recognized warning level, whereas the ratio of external debts to annual exports was merely 35.31%, which to some extent reflected that there were no signs of servicing pressure on external

Chart 1.2 Economic growth rate and inflation rate in Taiwan



Note: Figures for 2009 are DGBAS forecasts.
Source: DGBAS.

[1] The figures for the GDP and related growth rates are based on DGBAS statistics released on 21 May 2009 (hereafter quoting the same source).

debts. With respect to the government's fiscal conditions, rising infrastructure spending aimed at spurring domestic demand caused the fiscal budget deficit to increase dramatically in 2008, registering 2.35% in relation to annual GDP. The ratio, however, is still below the internationally recognized warning level. Moreover, public debts are likely to grow further on the back of ongoing implementation of economic stimulus measures.

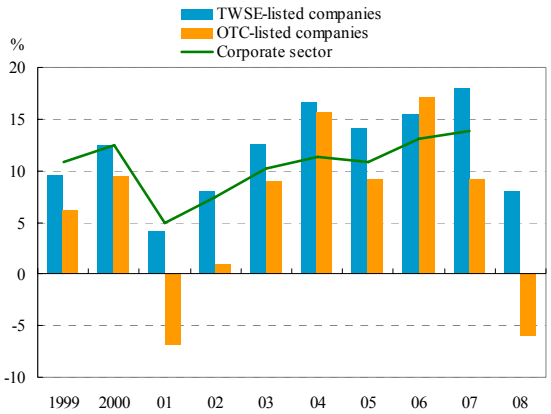
Non-financial sectors

Profitability and financial structure in the corporate sector deteriorated in 2008 but showed slight improvement in 2009 Q1

Against the backdrop of a sharp decline in domestic and foreign economic activities, the profitability of both TWSE-listed and OTC-listed companies shrank considerably in 2008. Their return on equity (ROE) ratio dropped to 8.08% and -5.97%, respectively, together with a marked rise in leverage ratios (Chart 1.3), indicating aggravated financial structures in the corporate sector. In 2009 Q1, the profitability of both TWSE-listed and OTC-listed companies still declined heavily year on year but with a smaller downward movement. Furthermore, there was a slight improvement in financial structures owing to reduced liabilities.

Current ratios and average interest coverage ratios for TWSE-listed and OTC-listed companies both dropped notably in 2008 and did not exhibit much improvement in 2009 Q1, showing a weakening short-term debt servicing capacity. With a rise in the number of enterprises applying for financial relief recently, credit risks heightened, albeit the non-performing ratio of corporate loans remained low. In addition, TWSE-listed and OTC-listed companies, confronted with decaying performance and massive corporate bond redemptions, faced rising pressures on funding.

Chart 1.3 Return on equity in corporate sector

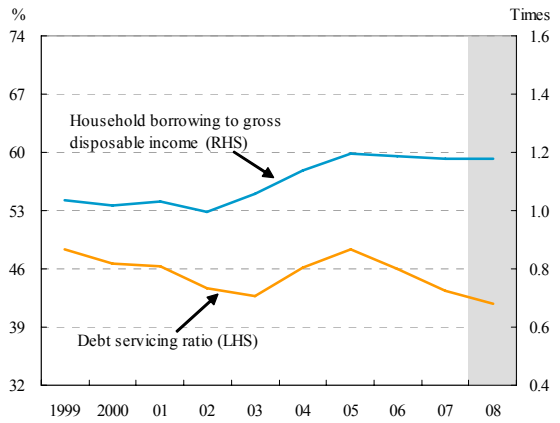


Note: Return on equity = net income before interest and tax / average equity.
Sources: JCIC and TEJ.

Household short-term debt servicing capability improved, but borrowing burden remained heavy

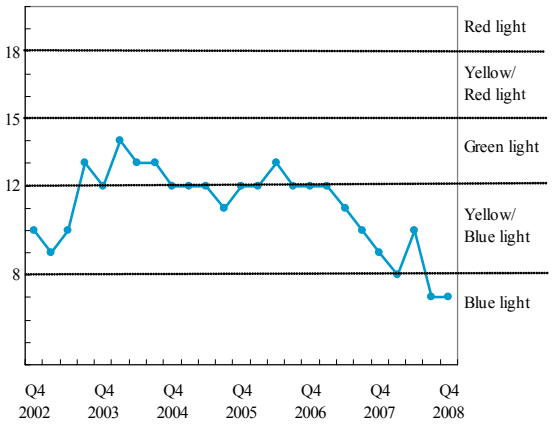
In the second half of 2008, supported by steadily contracting short-term household borrowing, which alleviated the pressures on principal and interest payments, household debt servicing capacity gradually improved. Moreover, against the backdrop of the prevailing economic slowdown, coupled with cautious lending policies of banks and softened individual borrowing demand, household borrowing growth turned negative. However, households' borrowing burdens remained heavy as disposable income contracted synchronously (Chart 1.4). The non-performing loan ratio of household borrowing stayed at a low level, indicating satisfactory credit quality. Nevertheless, adverse effects, such as sluggish domestic economic growth, declining real incomes, and a rising unemployment rate, might undermine household debt servicing capabilities in the future, resulting in increased credit risk in bank loans to this sector.

Chart 1.4 Household debt servicing ratio



Note: Gross disposable income in shaded area is CBC estimate.
Sources: CBC, JCIC, and DGBAS.

Chart 1.5 Real estate cycle indicator



Note: A red light indicates a "heated market," while a blue light indicates a "sluggish market."
Source: "Quarterly Report of Taiwan Real Estate Cycle Indicators," Architecture and Building Research Institute, MOI.

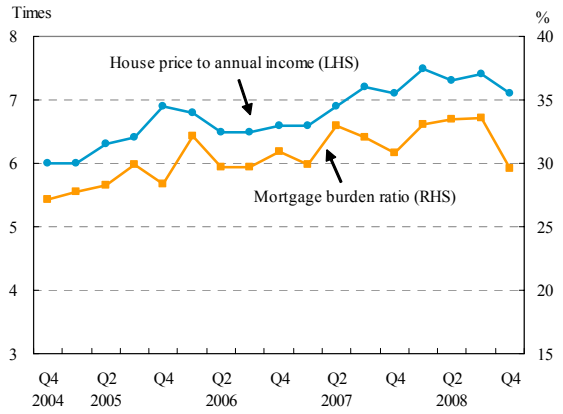
Real estate market stayed sluggish

In the second half of 2008, Taiwan's real estate cycle indicator recorded a blue light for two consecutive quarters (Chart 1.5), representing a sluggish real estate market. House prices remained high but there were some signs of cutbacks in prices. Lackluster economic activity and more conservative attitudes in financial institutions' mortgage loan policies led transaction volumes to shrink conspicuously. The supply of newly constructed residential property remained at high levels, while vacancy rates climbed steadily. The mortgage burden ratio declined as homebuyers turned to purchasing smaller or lower-priced properties. However, the cost burden of homebuyers remained heavy as the house price to income ratio

was still high (Chart 1.6).

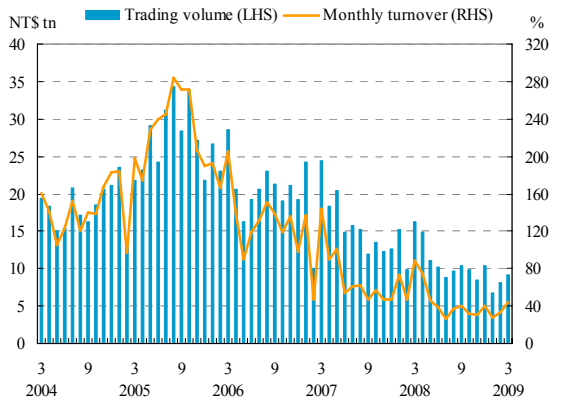
Driven by the CBC's successive rate cuts, banks' mortgage rates were sharply reduced. This, together with a series of supporting measures taken by the government, was expected to stabilize the domestic real estate market. These measures include extending the time limit for construction license permits, continuing to offer additional preferential mortgage loans for homebuyers, and giving the green light to Qualified Domestic Institutional Investors from China to invest in Taiwan's capital markets. Nevertheless, the following factors may continue to exert downward pressures on housing prices: (1) the rising unemployment rate and contracting private wealth could constrain both the willingness and capacity to purchase houses; and (2) increasing supply of newly constructed and foreclosed residential properties may lead to disequilibrium in the market. As a consequence, banks should pay close attention to related credit risks.

Chart 1.6 House price to income ratio & mortgage burden ratio



Note: Mortgage burden ratio = monthly mortgage expenditure/ household monthly income.
Source: "Taiwan Housing Demand Survey Report," MOI.

Chart 1.7 Bond market size and turnover



Notes: 1. Monthly turnover ratio = trading value in the month/ average bonds issued outstanding.
2. Average bonds issued outstanding = (bonds issued outstanding at the end of the month + bonds issued outstanding at the end of the previous month)/2
Sources: CBC and FSC.

Financial sector

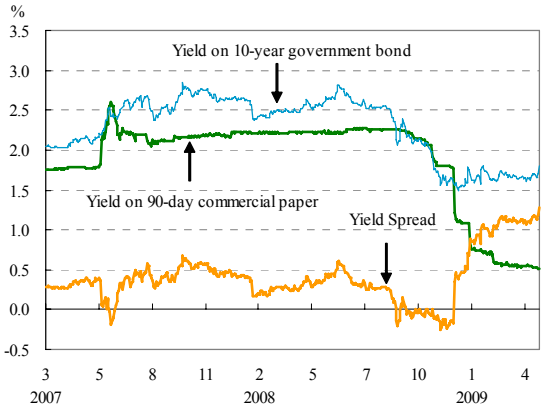
Financial market

Trading volume shrank in bill and bond markets, while yield spreads turned positive and widened notably

Influenced by the shrinking amount of commercial papers underwritten by bills finance companies, together with the increased outright sales and an extension in the period of repurchase transactions for the sake of reducing liquidity risk, the trading volume in the secondary bill market contracted in the second half of 2008 compared to the first half and had only picked up slightly by early 2009. The trading volume in the bond market remained at a

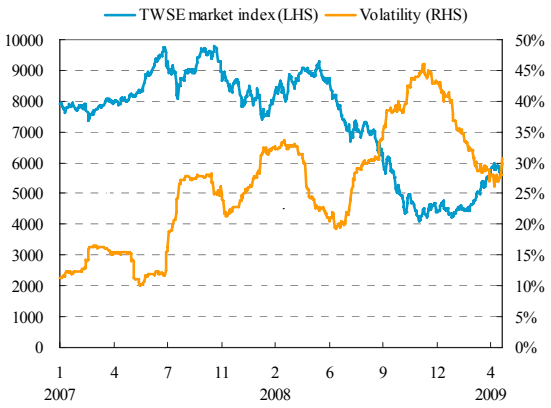
low level as bond availability was greatly reduced since many financial institutions increased holdings of government bonds to effectively manage their idle funds (Chart 1.7). Bond yields dipped markedly after September 2008 due to increasing inflows of funds into the bond market. However, short-term interest rates was greatly brought down by the CBC's several rate cuts and expanded Repo facility operations, which were aimed to inject more funds into the market. This led yield spreads to turn positive and widen noticeably (Chart 1.8). Nevertheless, newly increased bond holdings bore higher interest rate risks as long-term interest rates were quite low.

Chart 1.8 Yield spread



Note: Yield spread refers to yield on 10-year government bond minus yield on 90-day commercial paper.
Source: Bloomberg.

Chart 1.9 Taiwan stock market index and volatility



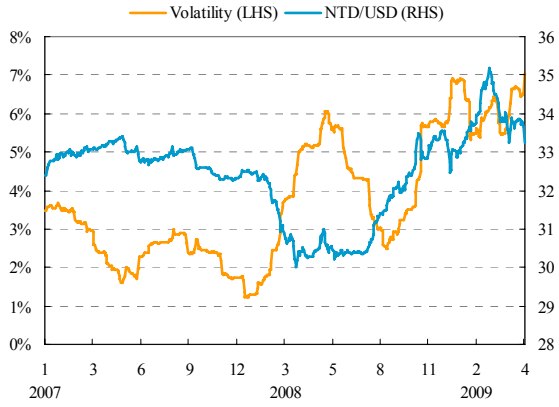
Note: Volatility refers to the annualized standard deviation of 60-day daily index returns.
Source: TWSE and OTC.

Stock prices bottomed out, while volatility moderated after a sharp increase

Affected by the global stock market crash, poor performance in the domestic economy, and massive sell-off from foreign investors, the Taiwan Stock Exchange Weighted Index (TAIEX) slumped to a low of 4,090 in the second half of 2008. Compared to major stock markets around the world, Taiwan was one of the hardest-hit markets, but the fall in its stock price index in 2008 was smaller than those in Hong Kong, Singapore, Thailand and Shanghai. Fueled by a sharp rise in orders for the products of domestic electronic companies and their inventory restocking, the TAIEX stabilized in early 2009. Subsequently, the TAIEX rebounded from March onwards thanks to net foreign capital inflows, a reversal of investment funds back from overseas to local equity markets and a more open policy towards China's investment in Taiwan. The Taiwan stock markets' volatility increased dramatically post July 2008, reflecting a rise in investment risks. The volatility moderated somewhat from early 2009 onwards, but investment risks arising from volatile share prices still remained at a high level (Chart 1.9).

The NT dollar reversed from appreciation to depreciation, but remained relatively stable despite higher volatility

Chart 1.10 NTD/USD exchange rate and volatility



Note: Volatility refers to the annualized standard deviation of 60-day daily returns.
Source: CBC.

After experiencing appreciation for six months, the NT dollar exchange rate against the US dollar turned to depreciation in the second half of 2008 due to the increasing hedging needs for US dollars and continued outward remittance by foreign investors. The NT dollar exchange rate continued to trend downward in early 2009 as the global economy worsened, exports dwindled and demand for US dollars became stronger in the domestic foreign exchange market. However, the NT dollar exchange rate began to pick up after March, led by renewed foreign capital inflows and a weaker US dollar. The NT dollar stood at 33.23 per US dollar at the end of April.

In the second half of 2008, volatility in the NT dollar exchange rate against the US dollar increased dramatically, hitting a peak of 6.92% in January 2009, and then decreased temporarily. The volatility, however, soared again in March as the NT dollar began appreciating (Chart 1.10). Nevertheless, compared to major currencies, the NT dollar exchange rate was relatively stable.

Financial institutions

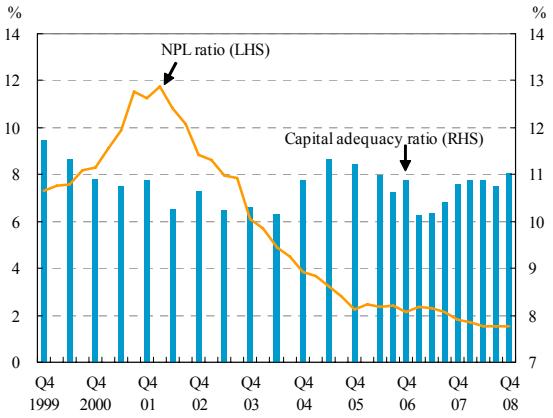
Domestic banks maintained satisfactory asset quality and adequate capital levels, but credit risks and market risks increased

The non-performing loan (NPL) ratio of domestic banks registered 1.54% at the end of 2008 (Chart 1.11), reflecting a satisfactory asset quality, but then moved up slightly to 1.62% in March 2009. Funding remained ample in the banking system and liquidity risks were moderate on the whole. In September 2008, a few private banks temporarily experienced a large number of withdrawals and suffered funding difficulties. However, the liquidity tensions of these banks eased after the CBC's expansion of Repo facility operations and the government's blanket guarantee for deposits of all insured institutions. Amid worsened domestic economic conditions, domestic banks faced heightened credit risks in their credit

exposure to the corporate sector, household sector and the real estate market, while their market risk in equity investments also increased notably.

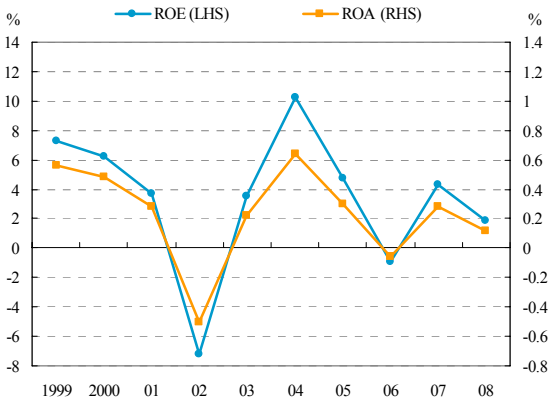
Profitability at domestic banks posted a sharp decline of 55.68% in 2008 from the previous year, while both return on equity and return on assets fell (Chart 1.12). Bank profitability also contracted by 21.79% in 2009 Q1 on a year-on-year basis. Shrinking interest rate spreads between deposits and loans, coupled with increasing disputes and contracting wealth management business, may erode the profitability of domestic banks and pose considerable challenges to their operations. Domestic banks' capital remained adequate (Chart 1.11); however, whether their credit and market risk losses will further increase and in turn affect their capital adequacy conditions warrants closer monitoring.

Chart 1.11 NPL and capital adequacy ratios of domestic banks



Note: The capital adequacy ratio data are on a semiannual basis prior to June 2006 and on a quarterly basis beginning September 2006.
Source: CBC.

Chart 1.12 ROE & ROA of domestic banks



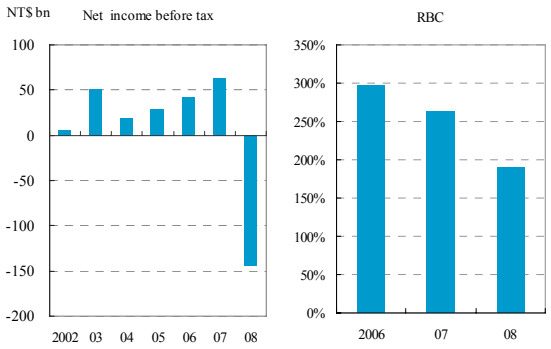
Notes: 1. ROE (return on equity) = net income before income tax/average equity.
2. ROA (return on assets) = net income before income tax/average total assets.
3. Figures for 2006 and 2007 exclude the Chinese Bank and Bowa Bank which were taken into conservatorship in 2007.
Source: CBC.

Life insurers were subject to losses and weakened capital conditions

The asset size of Taiwan's life insurance companies grew at a slower pace in the second half of 2008. Moreover, in the face of deteriorating domestic and external investment environments, along with limited investment opportunities, life insurance companies' uses of funds revealed marked increases in bank deposits, while securities investments grew moderately and real estate investments edged up. Life insurers as a whole suffered a considerable loss of NT$144.2 billion in 2008 as a result of investment loss recognition and increased provisions in insurance policy reserves. The average return on investment at life insurance companies dropped notably in 2008, and negative interest rate spreads imposed a heavy burden on profitability. The net worth of life insurance companies contracted sharply at the end of 2008 compared with the

previous year due to operating losses. However, the average risk-based capital (RBC) ratio at the end of 2008 was higher than the figure posted at the end of June 2008, primarily because of the fact that the FSC released an interim measure to adjust the risk-based capital system of the insurance industry and some life insurance companies raised capital (Chart 1.13).

Chart 1.13 Net income before tax and risk-based capital ratios of life insurance companies

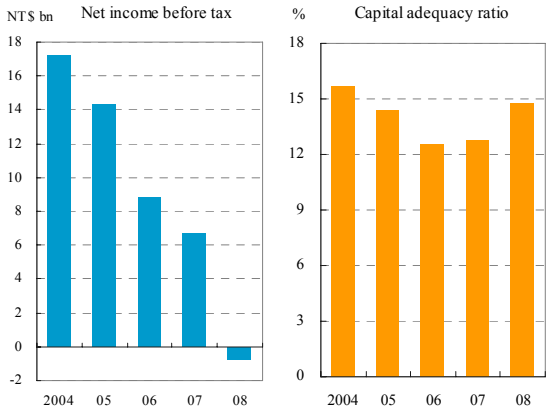


Note: The risk-based capital (RBC) ratios are end-of-year figures.
Source: FSC.

Profits of bills finance companies turned negative, but capital remained adequate

The total assets of bills finance companies continued to contract in the second half of 2008. The guaranteed advances ratio stood at 1.59% at the end of 2008, indicating a satisfactory level of asset quality. Affected by shrinking interest rate spreads and losses in asset-backed commercial paper holdings, the profits of bills finance companies turned negative in 2008 but improved in early 2009 due to gains from bond holdings. The overall capital adequacy rate heightened at the end of 2008 and the leverage ratio improved (Chart 1.14). Liquidity risks once increased but appeared to be moderated from early 2009 onwards, while the outstanding balance of commercial paper guarantees contracted steadily.

Chart 1.14 Net income before tax and capital adequacy ratios of bills finance companies



Note: The capital adequacy ratios are end-of-year figures.
Source: CBC.

Taiwan's policy measures to cope with the global financial crisis

The domestic economy entered a downturn in the second half of 2008 amid the global financial crisis. In order to alleviate the adverse impact stemming from the crisis, in addition to the Economic Stimulus Package in September 2008, the government adopted a series of measures to spur domestic demand, stabilize the financial system and maintain the momentum of economic growth. The major measures are listed as follows:

Easy monetary policy

- Successively lowering policy rates seven times from September 2008 to March 2009 by a total of 2.375 percentage points to reduce funding costs for individuals and enterprises;
- Lowering the required reserve ratios to promote bank lending; and
- Expanding the CBC's Repo facility operations to provide sufficient liquidity to the markets.

Measures to stabilize the financial system

- Adopting an interim blanket deposit guarantee to restore depositors' confidence and the health of financial institutions;
- Taking action to stabilize the stock market, such as narrowing the percentage fall limits of share prices, and encouraging listed companies to buy back their own shares as treasury stocks or board members to purchase their own company's shares;
- Resuming short selling on stocks and giving the green light to Qualified Domestic Institutional Investors from China to invest in Taiwan's capital markets so as to increase securities market momentum and expand capital market size;
- Assisting enterprises to raise funds, such as setting up a task force to help enterprises resolve their financing problems, allowing a six-month grace period for principal repayment for well-functioning corporate borrowers with good repayment records, expanding the operation of the Small and Medium Enterprise Credit Guarantee Fund, and assisting enterprises to raise funds from capital markets;
- Assisting individuals to acquire loans from banks, such as providing on two separate occasions additional preferential mortgage loans to eligible homebuyers as well as extending the expiration date or deferring principal repayment of loans on a case-by-case basis;
- Temporarily adjusting the rules on the calculation of risk-based capital ratios for the insurance industry.

Expansionary fiscal policy

- Launching the program of Expanding Investment in Public Works to Revitalize the Economy, which totaled NT$500 billion for a period of four years;
- Distributing consumption vouchers to stimulate private consumption;
- Lowering the estate and gift tax rates to attract capital inflows; and
- Implementing job growth programs to effectively reduce the unemployment rate.

II. The global financial crisis: its unfolding and policy responses

With its roots in the subprime crisis originating in the United States (US) in August 2007, global financial turmoil deepened to unprecedented levels during 2008. Following the bankruptcy of Lehman Brothers, the crisis deteriorated further. Compared to past crises, the current one lingered on as the bailout measures adopted did not achieve the initially expected results.

The crisis spread rapidly from the housing market to financial institutions and financial markets in the US. With the flourishing of globalization, it spilled from the US to other advanced countries and then to emerging and developing economies. The adverse consequences incurred were not confined to the financial sector but gradually spread to the real economy, which in turn caused repercussion effects on the financial sector, thus forming a vicious feedback loop.

The far-reaching impact of the crisis has caused various countries to adopt unprecedented bailout measures, including eased monetary and expansionary fiscal policies. The promotion speed, application span, implementation frequency, and special measures undertaken during these emergent times have rarely been seen in the history of financial crisis management. This chapter summarizes the development and causes of the crisis, its impacts on global finance and economies as well as the policy measures adopted in selected countries.

2.1 The development and causes of the crisis

2.1.1 How the crisis evolved

The current global financial crisis originated from the US subprime mortgage problems. US housing prices underwent a prolonged period of huge rises from 2000 to mid-2006 before gradually turning downward. Owing to the decline of house prices, together with rising interest rates from 2004 onwards, mortgage burdens continued to grow and began to affect many subprime mortgage borrowers. These borrowers were faced with the difficulty of refinancing and the predicament of insolvency. Default cases rose rapidly, leading to

increased foreclosures and in some cases contributed to the failure of mortgage banks.

The subprime debacle was initially confined to the US, and the proportion of subprime mortgages to the total value of general housing loans was also limited.[2] However, because of liberal financial innovation, as well as the prevalence of the originate-to-distribute business model, subprime mortgages were packaged through securitization into multiple complex structured products, such as asset-backed securities (ABS) and collateralized debt obligations (CDO). Such financial products not only heightened the risks but also distributed them to investors in other countries via highly efficient global capital markets, and thereby caused the crisis to quickly spread beyond the US and spill over to other parts of the world.

In mid-2007, the credit spread of structured credit derivatives noticeably widened, arousing investors' concerns over the potential losses incurred by financial firms which had heavily invested in mortgage-linked structured products. The subsequent impact confronted the financial firms with losses from depreciated asset valuations and brought about the tough process of de-leveraging. Credit crowding out occurred in the asset-backed commercial paper (ABCP) market, pushing up interest rates and exposing the issuers to the problem of refinancing their bills at maturity. The credit spreads of ABS and CDO continued to widen, and credit rating organizations downgraded those rated companies significantly. The crisis increasingly spread to all financial markets. Subsequent to October 2007, many large European and American firms, including hedge funds, investment banks, commercial banks and insurance companies, registered huge losses related to subprime securities investments. Moreover, some large financial firms were forced to place the assets and liabilities of heavily-in-loss structured investment vehicles (SIV) back on their balance sheets, causing losses to expand significantly.

From 2008 onwards, many banks in European countries and the US were faced with the immense pressure of raising capital and reducing leverage due to increasing losses and decreasing capital adequacy. In particular, those financial firms relying heavily on wholesale funding were subject to more severe pressures because of the drastic rise in inter-bank lending rates. Though the European and American central banks actively injected funds into the financial markets from August 2007 onwards, the effect of theses injections was simply to relieve the demand for shorter-term funds owing to the augmentation of counterparty risk, whereas inter-bank interest rates for periods longer than three months remained at high levels.

[2] The proportion of outstanding balances of subprime mortgages to general housing loans as of the end of 2006 was about 15%. If Alt-A mortgages superior to subprime mortgages in credit quality are added together, the proportion then becomes about 27%.

The worsening trend of the US housing market continued in 2008. Default in repayment was not only limited to subprime mortgages, but also extended to other credit activities, including Alt-A mortgages, prime mortgages, commercial real estate mortgages, and consumer lending. The default rates of these loans were also rising. Along with the proliferation of mortgage defaults, the financial losses of the two US government-sponsored enterprises (GSE), Fannie Mae and Freddie Mac, which engaged in issuing and guaranteeing mortgage-backed securities, continued increasing. Coupled with the extremely high leverage levels of these enterprises, markets became concerned regarding their repayment ability, causing the stock prices of the two enterprises to slump, and investors to incur huge losses. As the scale of the mortgage-backed securities issued by these two enterprises was very vast, their collapse would have led to a further contraction of mortgage markets, a steep rise in mortgage rates and further declines in house prices, causing wide ranging negative impacts on the economy. These enterprises eventually prompted the Federal Housing Finance Agency to step in and take over on 7 September 2008. Both enterprises were provided with capital and financing by the US Treasury. These policy actions increasingly mitigated market concerns.

The bankruptcy protection filed by Lehman Brothers on 15 September 2008, raised the anxiety of many financial firms over counterparty losses, and in turn led to the malfunction of global banks' financing networks. American International Group (AIG) – the global insurance giant – was impacted by AIG Financial Products Corp. (AIGFP)[3], one of its subsidiaries, which transacted bulky credit default swaps (CDS) and was on the verge of bankruptcy from suffering huge losses. The failing group prompted the US government to inject US$85 billion for an emergency bailout, temporarily mitigating its financial crisis. Moreover, major money market funds were faced with floods of redemption orders from their investors, and some of the funds collapsed. Thus, market concerns about whether financial firms relying on wholesale funding would be able to survive or not heightened. These factors aroused strong, swift and broad market reactions, risky assets sold off, overnight inter-bank lending rates surged, the spread of interest rate swaps widened, credit spreads of CDS jumped, and global stock markets dropped. The shocks gradually spilled over from the financial sector to the real sector, thereby causing economic recessions in most advanced and developing countries.

[3] The headquarters of AIGFP is located in London, UK, which is staffed with 377 employees. The company transacted bulky CDS deals and provided insurance against the default of the mortgage assets of banks to earn high premiums. Subsequent to the financial crisis, the company, buffeted by the sharply declining value of mortgages-backed securities, was forced to supplement its collateral; hence, causing a downward drag on the finances of the parent company. AIG announced that the CDS department incurred a loss of US$350 million in the third quarter of 2007, and then losses of US$25 billion in 2008.

2.1.2 The root causes of the financial crisis

The causes of the financial crisis are complex and intertwined. To summarize current international perspectives, the crisis can be attributed mainly to six fundamental causes:

Excessive global liquidity undermined investors' vigilance to risks

The macroeconomic background of the financial crisis is the so-called "Great Moderation" whereby the global economy entered a prolonged period of low and stable inflation along with high and stable economic growth. During the period, the fast growing and rapidly accumulated savings in many emerging countries as well as wealth accumulation in crude oil- and raw materials-producing countries resulted in a glut of global liquidity and increased the demand for financial products, especially low risk ones (such as US government bonds), leading to an excess demand, and persistently sliding real interest rates.

Furthermore, the speedy growth of global liquidity was encouraged by the Fed easing monetary policy in response to the IT bubble burst, Japan continuing its zero-interest rate policy, and the Euro area implementing a loose monetary policy. Excessive global liquidity reduced investors' sense of risk and made them pour funds into risky assets, leading to a rise in asset prices, a decline of risk-premiums and the formation of a bubble phenomenon in credit and asset markets. Consequently, subprime mortgages' risks remained mostly unnoticed until the housing market slump in 2007.

"Originate-to-distribute" model precipitated a lapse in the credit approval process

The development of financial engineering and financial innovation prompted the prevalence of the "originate-to-distribute" model. Mortgage banks originated mortgages and then sold them to investment banks. The investment banks subsequently re-packaged the mortgages into products such as ABS and CDO through securitization to sell to global institutional investors. After transferring the credit risk of mortgages, the main source of originators' profits came from the sale of the mortgages and service fees charged. Because the profits were based on the volume of mortgages, instead of the quality, loose credit approval standards to augment volume became common. The result was that the subprime market grew substantially and the credit quality of loans dropped noticeably.

Information asymmetry and principle-agent problems existed in securitization

Asset securitization allows banks to liquidate illiquid loans and offers an opportunity for risk to be traded. It provides banks with more channels to avert risk, but also suffers from some serious shortcomings. Firstly, the information of the loan collateral and the underlying borrowers' credit remain with the originating institutions and do not actually transfer to the special purpose vehicles (SPV), thereby possibly making the SPV unaware of the relevant information and risks behind securitization. Secondly, when selling the securitized products, asset managers may not play the role of agent well, leading investors to buy risky products without being fully aware of their risks.

Conflict of interest and model bias at credit rating agencies emerged

The intent of credit rating is not only to determine the risk weights stipulated in Basel II, but also to be used as a basis for risk management and investment decision making by many financial institutions. Nevertheless, a conflict of interest exists as the credit rating agencies charge bond issuers. This conflict has intensified when credit rating agencies not only provided rating services but also offered design and consultancy services for securitized products for the same clients, which included providing these clients with the service of how to structure securities to get the best possible credit rating.

In addition, credit rating agencies could not completely acquire the relevant information behind the asset pools and thus a bias of pricing models when rating the securitized products occurred. Furthermore, the agencies played dual roles of designing securitized products and pricing models at the same time, which led to a lack of objectivity of the models. Moreover, the credit rating models designed by the agencies only covered credit risk, neglecting other risks such as market risk and liquidity risk.

Risk management at financial institutions was outpaced by financial innovation

Following the persistent innovation of financial engineering, subprime mortgages were packaged into structured credit products. However, these products' structures were sophisticated and lacked historical information, and financial institutions can only rely on mathematical models to assess and manage risks. The various assumptions of the assessment models were built upon the foundation of financial stability and sufficient market liquidity. Once the financial system became unstable and liquidity dried up, the risk management methodologies ceased to function.

Furthermore, many financial institutions did not aggregate and manage the risks related to subprime mortgages including investing in financial products (e.g. ABS and CDO), providing liquidity facilities, exposing to counterparty risk and taking reputational risk in their sponsored structured investment vehicles. As these institutions were not aware of the high concentration of the risks of subprime mortgages, it led to a series of losses in the wake of the crisis

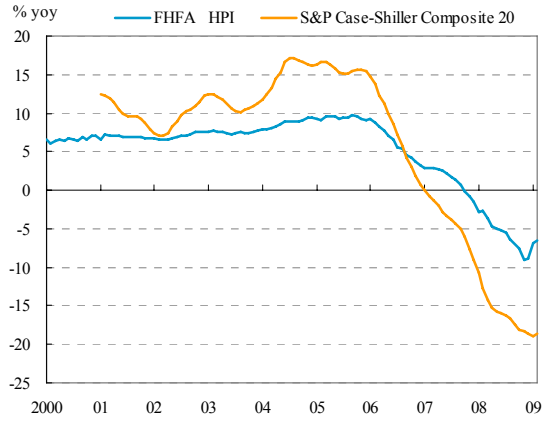
Fair value accounting and Basel II led to pro-cyclical operations by financial institutions

Fair value accounting and Basel II have a procyclicality effect on the economy. When the economy booms, the fair value of assets increases, the leverage ratios of financial institutions decline and the capital adequacy ratios rise. Thus, financial institutions are able to borrow more funds to amplify their assets, producing a positive feedback loop and making the economy much more prosperous. In contrast, when the economy enters a downturn, banks tighten their asset holdings, leading to a much more distressed economy. Such procyclicality increases operating pressure of financial institutions in a downturn and financial system instability.

2.2 Impact on global finance and economy

The financial crisis originating from industrialized countries caused severe impacts on their economies and financial systems. It spilled over to emerging and developing economies and formed a global financial and economic calamity. In the financial sector, financial institutions suffered huge losses, non-performing loan ratios continued to climb, credit spreads remained at high levels, and stock markets fluctuated sharply. In the real sector, economies entered deep recessions, consumer confidence plummeted, unemployment rates climbed, and deflation risks elevated.

Chart 2.1 Annual growth rates across house price indices in the US

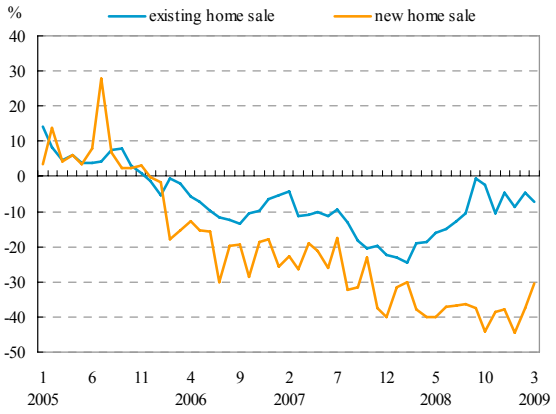


Sources: Federal Housing Finance Agency and S&P.

Housing market weakened and both prices and volumes declined

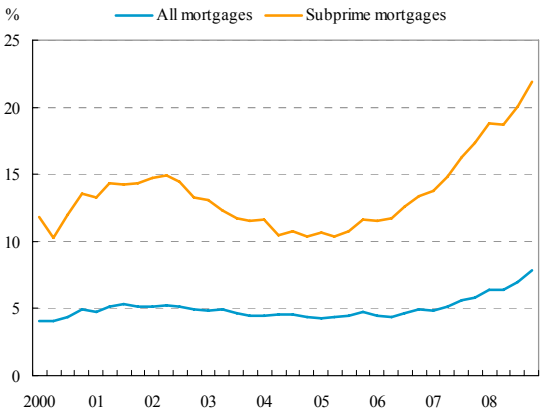
Easy monetary policy in the US between 2001 and 2004, combined with the housing boom and the myth that house prices would not fall, as well as substantially loosened credit conditions by mortgage lending institutions, caused a surge in house prices. However, the housing market began to show signs of weakness as early as 2006. Chart 2.1 shows that the annual growth rates across house price indices in the US declined noticeably from 2006, and turned to negative growth from 2007 onwards. Chart 2.2 shows that the annual growth rates of new and existing home sales in the US started to trend downward from December 2005, of which the growth rate of new home sales declined continuously to hit -48.2% in January 2009 compared with the same month the previous year. Nevertheless, it is worth noting that the annual growth rates of both US house price indices and home sales improved slightly from January 2009 onwards.

Chart 2.2 Annual growth rates of new and existing home sales in the US



Source: Bloomberg.

Chart 2.3 Non-performing loan ratios of US banking institutions' mortgages



Source: Bloomberg.

Financial institutions suffered serious losses and financial markets sank into chaos

Financial institutions incurred huge losses

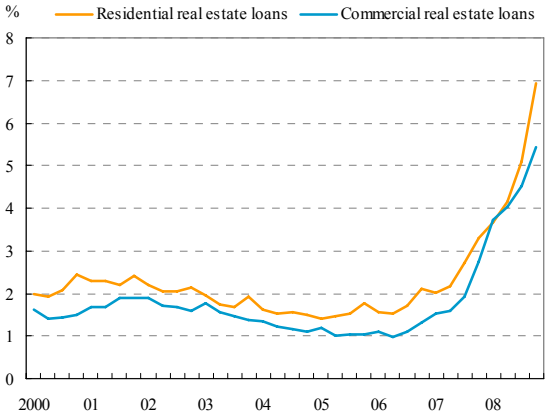
The shock of the subprime debacle not only pushed up the non-performing loan ratios of financial institutions (Chart 2.3 & 2.4) and made them tighten their credit standards[4] (Chart 2.5), but also spilled over to the securitized assets backed by mortgages because of the operating model of funding from securitization. A lack of confidence and a sell-off of assets

[4] The credit standards of financial institutions in the US were somewhat relaxed from January 2009.

caused asset prices to drop precipitously. Additionally, financial institutions incurred huge losses due to the stop loss mechanism and fair value accounting principles. The uncertainty of the severity of losses further pressed market confidence and resulted in credit strains where liquidity hoarding prevailed and banks short of liquidity found it difficult to get funding. Financial institutions were faced with severe liquidity and credit risks.

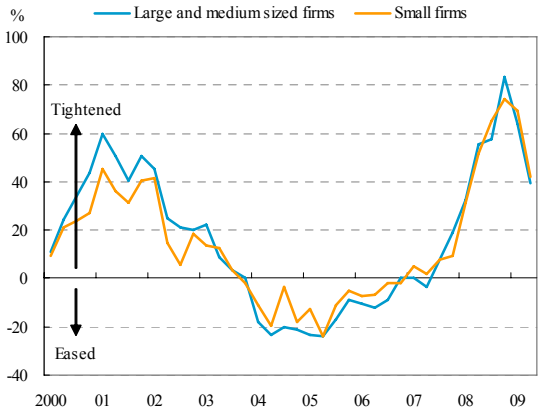
The International Monetary Fund (IMF) continued to raise the loss estimates suffered by global investors who held US-originated assets. It estimated the loss at about US$2.7 trillion[5] in April 2009. Several large US international financial institutions unable to withstand the huge losses, such as Bear Sterns, Merrill Lynch, Citigroup and AIG Group, sought support from the Fed or the US Treasury for emergency funding, bailouts or merger with other institutions. Some investment banks, such as Goldman Sachs and Morgan Stanley, applied to transform into bank holding companies. Some financial giants collapsed and filed for bankruptcy, most notably Lehman Brothers.

Chart 2.4 Non-performing loan ratios of US commercial banks



Note: Non-performing loans refer to loans with delinquent payment of interest and principle for over three months.
Source: Fed.

Chart 2.5 Credit standards of US financial institutions



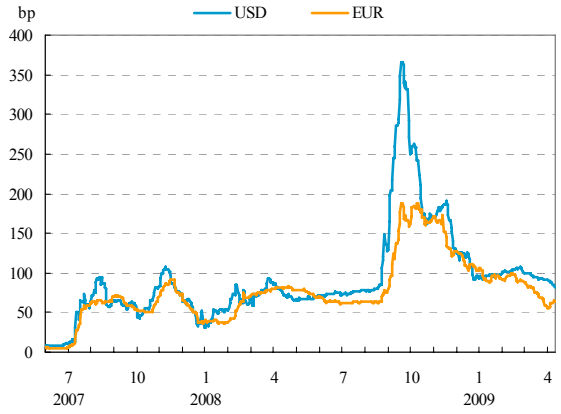
Source: Fed, "Senior Loan Officer Opinion Survey on Bank Lending Practices".

[5] The IMF revised upward the estimated losses of US-related assets several times, from an amount of US$945 billion dollars in April 2008 to US$1.4 trillion in October 2008, to US$2.2 trillion in January 2009, and to 2.7 trillion in April 2009. If added with the losses of European- and Japanese-related assets, then the IMF-estimated losses in April 2009 would reach US$4.1 trillion.

Financial markets lapsed into chaos

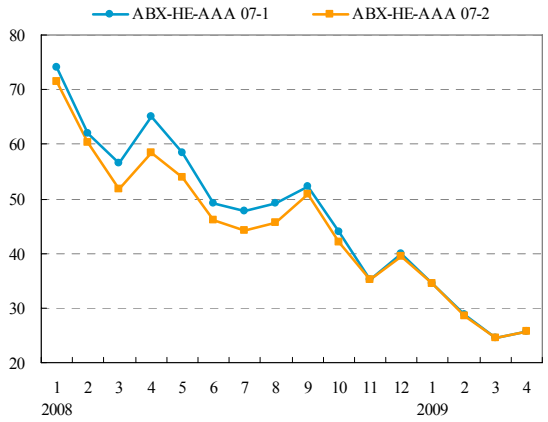
The availability of funds tightened, leading to a rise in interest rates, especially short-term rates. Chart 2.6 shows that the gap between the three-month LIBOR rate and three-month overnight index swaps (OIS) rate widened sharply in the wake of the occurrence of the financial crisis in August 2007, and reached a peak of 366 bps on 11 October 2008. Although the gap between the two rates was lower than 100 bps from March 2009 onwards, it was still higher than the level prior to the financial crisis. The asset-backed securities index (ABX) also noticeably declined, indicating that the value of relevant assets shrank and the risks elevated (Chart 2.7). Moreover, the financial crisis made the scale of US financial markets contract significantly; for example, the ABCP outstanding balances atrophied from an amount of US$1,210 billion in July 2007 to a mere US$610 billion in April 2009 (Chart 2.8).

Chart 2.6 Three-month spreads between LIBOR and OIS



Source: Bloomberg.

Chart 2.7 Movements of the ABX Indices



Source: Bloomberg.

The financial crisis also resulted in sharp stock market fluctuations. Chart 2.9 shows that the indices of the stock markets in the US, Japan, Europe and emerging Asian countries all declined until mid-March 2009.

The economy receded seriously and deflation risk elevated

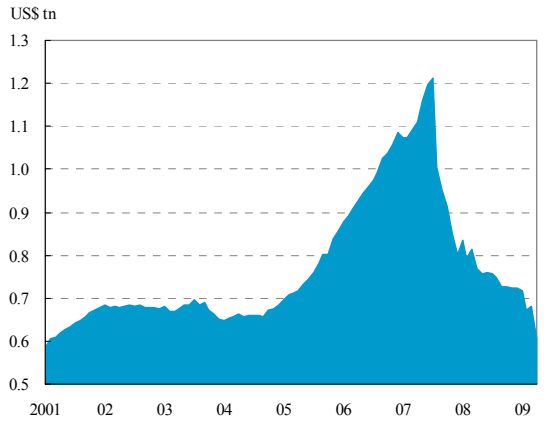
The economy receded seriously

The subsequent repercussions of the financial crisis caused a serious global recession. Chart 2.10 shows that the economies of the US, UK, Japan and Europe started to manifest negative growth in the third or fourth quarter of 2008. Accordingly, the IMF constantly adjusted downward its estimates of economic growth. In April 2009, it forecasted global economic

growth for 2009 would be -1.3%, sliding drastically from the pre-crisis 5.2% recorded for 2007. Economic growth in the US was forecasted to sharply drop to -2.8% for 2009 from 2.0% for 2007.

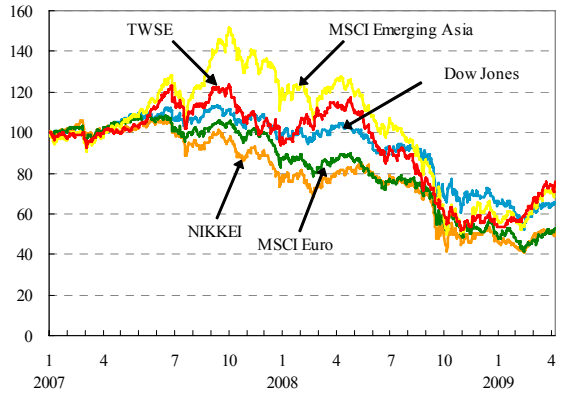
As the economies of most emerging and developing countries are mainly export-driven, their economic growth was also adversely affected due to the spill-over effects of the economic recessions in industrialized countries. The IMF forecasted the economic growth rates of these economies would sharply drop to 1.6% for 2009 from 8.3% for 2007.

Chart 2.8 Outstanding balances of US ABCP



Source: Fed.

Chart 2.9 Trend of global major stock indices



Note: 2007/1/2=100.
Source: Bloomberg.

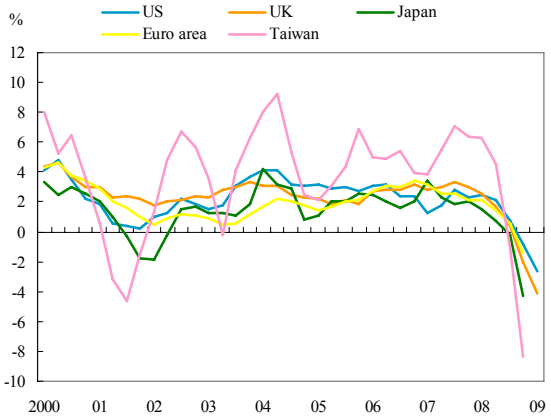
Consumer confidence waned

The lack of confidence is one of the key factors aggravating and prolonging the financial crisis. Many governments have implemented policies to restore confidence. Regretfully, confidence has been slow to return while many uncertainties remain. The consumer confidence indices surveyed by the University of Michigan and the Conference Board revealed that consumer confidence continued to dive, and the index surveyed by the latter was nearly half of that by the former. This showed extreme pessimism about the economic prospects (Chart 2.11). A similar phenomenon of downcast consumer confidence ailed the UK and Germany. In the UK, the consumer confidence index slid to a level of -35 in February 2009 from -7 in January 2007, while the index in Germany dropped to 71 from 99 over the same period. However, except for Germany, the US and the UK showed encouraging signs indicating that their consumer confidence indices stopped falling and appeared to rebound. The indices of both the University of Michigan and the Conference Board rose to a level of 68.3 and 39.2 in April 2009, respectively, while the index for the UK went up to -27.

Unemployment rates trended upward

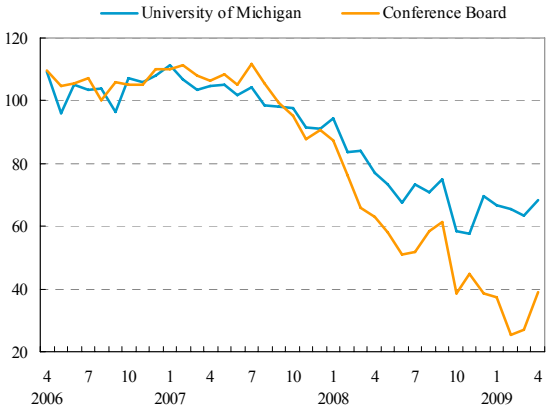
The financial crisis caused a decline in real output, leading to the most severe post-war economic recession. Under the threat of serious losses, financial institutions and corporations resorted to a series of large-scale layoffs, leading to noticeable increases in unemployment rates in various countries. Chart 2.12 shows that the unemployment rates in the advanced industrialized countries, such as the US, UK, Japan and Europe, climbed significantly after the second half of 2008, and the rates both in the US and the Euro area reached highs of more than 8% in March 2009. Emerging economies were also faced with the problem of drastic increases in unemployment. Data from the International Labor Organization indicated that the unemployed population in emerging economies in 2008 increased by 8 million people with their combined unemployment rate hitting 5.9%. The data also forecasted that the unemployed would increase by 32 million people in 2009.

Chart 2.10 Economic growth rates of various countries



Source: Bloomberg.

Chart 2.11 US consumer confidence indices



Source: Bloomberg.

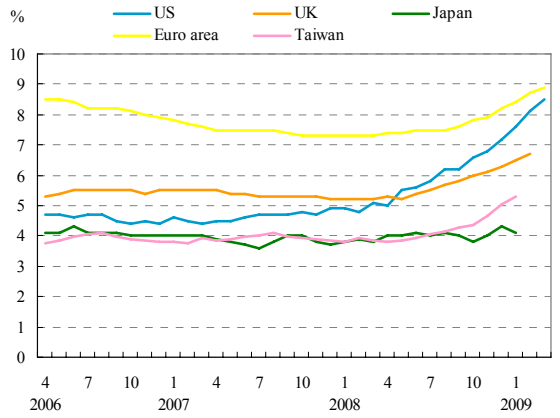
Deflation risk elevated

Gloomy consumer confidence, rising unemployment rates and severe economic recession resulted in a noticeable shrinkage of individual incomes. The annual growth rates of consumer price indices declined (Chart 2.13), and deflation risk in various countries ascended. The IMF published its forecasted data in April 2009, which showed the annual growth rate of the consumer price index for the advanced economies declined to a low of -0.2% for 2009 from 3.4% for 2008, while the rate for emerging and developing countries descended to 5.7% from 9.3%.

Monetary policy confronted with stern challenges

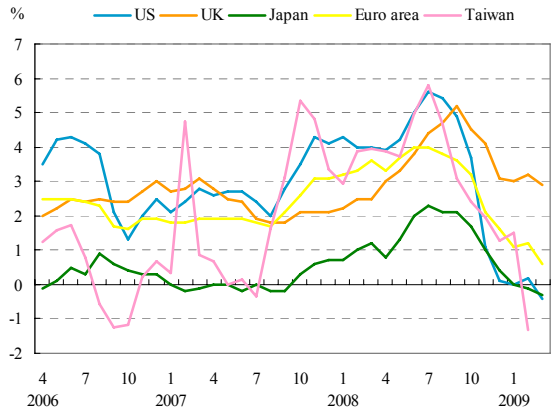
To respond to the financial crisis, the central banks in various countries not only implemented traditional monetary policies, such as lowering policy rates, but also promoted a series of emergency measures, including eased collateral requirements, numerous innovative policy tools and direct financing to non-financial institutions. This somehow reflected the limitations in the operations of traditional monetary policy and the experience that successful monetary policy operations in the past seemed to be insufficient to tackle this financial crisis. The reason behind this is that financial markets experienced structural changes in the past few decades, and the main financial intermediation in some countries (such as the US) has shifted from a bank-based into a market-based one. And banks, in order to respond to market changes, adjusted their traditional funding model of taking deposits, and adopted a securitization model or raised funds from the wholesale fund market. Whatever alterations banks adopted impacted directly on the bank-based design of the monetary policy framework and its transmission mechanism. Central banks proceeded to review the above-mentioned issues in order to be better prepared should a similar crisis occur in the future.

Chart 2.12 Unemployment rates of various countries



Source: Bloomberg.

Chart 2.13 Consumer price indices in various countries



Source: Bloomberg.

2.3 Measures to stabilize the financial system and revitalize the economy in major countries

In response to the impact stemming from the financial crisis, many countries have adopted a succession of measures designed to stabilize financial markets and to revitalize the economy via expansionary fiscal policies.

2.3.1 Measures to stabilize the financial system

In an attempt to relieve the credit crunch caused by the US subprime mortgage crisis, a number of central banks cut policy rates to ease credit market strains. On 8 October 2008, the Fed and five leading central banks took a coordinated action to lower interest rates. In addition to conventional interest rate policies, central banks in major countries implemented an array of the so-called non-conventional policies to inject funds into financial markets.

Furthermore, national governments in major countries actively implemented a series of policy measures to enhance the soundness of financial institutions' balance sheets so as to facilitate their on-going operations, including: (1) providing guarantees for deposit and non-deposit debt of financial institutions; (2) strengthening the capital structure of individual financial institutions; and (3) revitalizing financial institutions' assets (Table 2.1).

Table 2.1 Measures to enhance the soundness of financial institutions' balance sheets in selected countries

Measure	Country
1. Guarantees for deposit and non-deposit debt of financial institutions	
(1) Guarantee on deposits	
· Blanket guarantee on deposits	US (non-interest bearing deposits), Germany, Singapore, Hong Kong
· Raise insurance amount on deposits	US (interest bearing deposits), UK, South Korea
(2) Guarantee on non-deposit debts	
· Guarantee on inter-bank call loans	Germany
· Guarantee on bill/bond debts issued by banks	US, UK
2. Strengthen financial institutions' capital structures through stock purchases or direct capital injections.	US, UK, Germany, Switzerland
3. Revitalize financial institutions' assets	
(1) Guarantee on financial institutions' loans or other assets.	US, UK, Japan
(2) Enhance credit guarantee facilities for small and medium enterprises.	US, UK, Japan, South Korea

Source: Official government websites in selected countries.

Meanwhile, the G-7, the IMF and the European Union (EU) undertook large-scale cooperative and coordinated actions. The IMF, in an effort to assist members devastated by the financial crisis, has provided special financing of up to US$50 billion to Ukraine, Hungary, Iceland, Pakistan, Latvia, Belarus, El Salvador, Serbia and Armenia since November 2008. In February 2009, Japan committed to loan up to US$100 billion to IMF for supplementing its financial resources, which in turn will assist its members to weather the current global crisis. The April 2009 G-20 summit members also agreed to treble resources available to the IMF to US$750 billion.

The current financial crisis originated from the US. This, together with the fact that the US and the UK are both key international financial centers and pivotal derivatives market hubs, has led to a more severe impact on the financial markets and financial institutions in these two countries. The following summarizes the main measures undertaken by the governments of these two countries to stabilize their financial systems.

US measures to stabilize the financial system

The Fed has taken an easy monetary policy stance since September 2007. It has cut the federal funds target rate ten times to reach the level of 0.0%~0.25% and used innovative funding facilities[6] to increase market liquidity. It also signed currency swap agreements with fourteen foreign central banks, including Australia, Brazil, Canada, Denmark, the UK, the EU, Japan, South Korea, Mexico, New Zealand, Norway, Switzerland, Sweden, and Singapore, to mitigate the elevated pressures stemming from financial turbulence in the short-term US dollar funding market. On 18 March 2009, the Fed announced that it would purchase up to US$750 billion of agency mortgage-backed securities, US$100 billion of agency debt, and US$300 billion of long-term treasury securities.

In October 2008, the Fed and the US Treasury coordinated to take the first round of financial relief measures, including the Troubled Asset Relief Program (TARP) and the Temporary Liquidity Guarantee Program (TLGP). The Obama administration in February 2009 announced the second round of relief measures – the Financial Stability Plan (FSP) – due to concerns over the continued occurrence of substantial losses by financial institutions.

[6] The new funding facilities aim to inject liquidity into financial institutions and specific credit markets, which include Term Auction Facility (TAF), Term Securities Lending Facility (TSLF), Primary Dealer Credit Facility (PDCF), Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), Commercial Paper Funding Facility (CPFF), Money Market Investor Funding Facility (MMIFF) and Term Asset-Backed Securities Loan Facility (TALF).

Troubled Asset Relief Program (TARP)

In mid-September 2008, Lehman Brothers filed for bankruptcy protection, and both Citibank and American International Group (AIG) were in financial distress. In response, the House of Representatives on 3 October 2008, passed the Emergency Economic Stabilization Act of 2008 (EESA), aiming at stabilizing financial markets. Under the Act, the US Treasury was authorized to launch the TARP within the budget limit of US$700 billion.

The primary focus of the TARP was initially to purchase troubled assets from financial institutions. But difficulties in assessing the value of impaired assets, and concerns over persistent and sizeable losses in some financial institutions, caused the Treasury to set up a voluntary Capital Purchase Program (CPP) as part of the TARP and spend up to $250 billion to provide direct capital injections into financial institutions. Through this program, the Treasury has injected capital into major institutions such as AIG, Citibank and Bank of America since October 2008.

Temporary Liquidity Guarantee Program (TLGP)

In addition to purchases of stakes in banks through capital injection, the Federal Deposit Insurance Corporation (FDIC), on 14 October 2008, launched the TLGP with intent to strengthen depositors' and investors' confidence. Under the program, the FDIC offers a three-year guarantee for newly-issued senior unsecured debt of eligible institutions on or before 30 June 2009[7]. Furthermore, it also provides a guarantee for non-interest bearing deposit transaction accounts held at FDIC-insured institutions[8]. The deposit guarantee will expire on 31 December 2009.

Financial Stability Plan (FSP)

Due to concerns over deficiencies in the TARP, the Treasury put in place the FSP so as to improve weaknesses in previous relief measures, to strengthen the financial system, to lay the foundation for economic recovery and to support the feeble real estate market. The FSP consists of six major financial initiatives (Table 2.2) with a scale of up to US$2 trillion to address the troubled assets problem and mitigate credit strains.

[7] On 17 March 2009, the Board of Directors of the FDIC voted to extend the debt guarantee part of the TLGP from 30 June 2009 through 31 October 2009.

[8] On 3 October 2008, the FDIC temporarily raised the insurance amount on interest-bearing deposits from US$100,000 to US$250,000 per depositor before the implementation of the TLGP.

Table 2.2 US Financial Stability Plan

Item	Measure	Content
1	Financial Stability Trust	1. Requiring major financial institutions to undergo a comprehensive stress test. Firms that fail to pass the assessment are eligible to obtain capital from the Capital Assistance Program (CAP), while any investment made by Treasury under the CAP will be placed in a new entity of the Financial Stability Trust. 2. Increasing transparency and disclosure of exposures on the balance sheets of financial firms.
2	Public-Private Investment Fund	1. On a scale of up to US$500 billion ~ US$1 trillion. 2. Putting public and private capital side-by-side to purchase troubled assets, and in turn lead to restoring the financial sector to normal operation. 3. Target: (1) nonperforming loans; (2) troubled asset-backed securities.
3	Consumer and Business Lending Initiative	Expanding the reach of the Term Asset-Backed Securities Loan Facility (TALF), coupled with a bold expansion of its size up to US$ 1 trillion from US$200 billion, to enhance the effectiveness of the stimulus for consumer and business lending.
4	Transparency and Accountability Agenda -Including Dividend Limitation	1. All firms that intend to use government funds through the FSP are required to submit a plan of how they strengthen their lending capacity and commit to participate in mortgage foreclosure mitigation programs. 2. All firms that receive new capital assistance are restricted from paying common dividends, repurchasing shares and pursuing acquisition.
5	Affordable Housing Support and Foreclosure Prevention Plan	1. Driving down overall mortgage rates through the Fed's purchase of government-sponsored enterprise (GSE) mortgage-backed securities and GSE debt. 2. Committing US$50 billion from the TARP to enable monthly payment reductions and loan modifications for distressed mortgage borrowers.
6	A Small Business and Community Lending Initiative	1. Use of the Consumer and Business Lending Initiative to finance AAA- rated Small Business Administration (SBA) loans. 2. Temporarily raising the guarantee for SBA loans to 90%; reducing fees for SBA lending; and less burdensome processing of loan applications.

Source: The US Department of the Treasury.

UK measures to stabilize the financial system

Against the backdrop of the US subprime mortgage crisis spreading to the UK, and with a view to addressing a deterioration in liquidity and asset quality, the Bank of England (BOE) has acted to boost market liquidity by cutting policy rates nine times to 0.5% since December 2007, and by creating an array of new funding facilities[9].

In addition, for the sake of preventing spillovers from the financial crisis and easing the credit constraints of the banking industry, Her Majesty's Treasury (the Treasury) announced the first round of bailouts in October 2008, including the Bank Recapitalisation Scheme and the Credit Guarantee Scheme (CGS). These relief measures, however, were far from effective as most of the government's funds were still kept in the banking system with the result that they failed to play their role of financial intermediary. Consequently, in January 2009, the Treasury launched the second round of relief measures, which included the Asset Purchase Facility (APF), the Asset Protection Scheme (APS), and extending the CGS application period and expanding its scope of guarantee.

Bank Recapitalisation Scheme

On 8 October 2008, the Treasury introduced the Bank Recapitalisation Scheme requiring eight major financial institutions to have a buffer of capital above the minimum requirement. A recapitalisation fund worth £50 billion will be used by the Treasury to inject capital into those large firms unable to raise required funds from the market. On 13 October 2008, the Treasury announced that it would spend £37 billion to make capital investments in the Royal Bank of Scotland (RBS), Lloyds TSB and HBOS through purchases of common shares and preferred shares. In November 2008, the UK government announced the establishment of UK Financial Investments Limited (UKFI) designed to manage all the government's share holdings in banks to safeguard the interests of taxpayers.

Credit Guarantee Scheme (CGS)

In addition to capital injections through purchases of shares, and in order to restore public and investor confidence in banks, the Treasury further announced on 13 October 2008, that it would implement the CGS, which aims to expand the coverage of debt guarantees from deposit debts (£50,000 per bank per depositor) to non-deposit debts (such as certificates of

[9] The measures include the Special Liquidity Scheme (SLS) allowing banks to temporarily swap their high quality but illiquid mortgage-backed and other securities for UK treasury bills from the Bank of England with the aim of improving banks' liquidity positions. This scheme expired on 30 January 2009, and was replaced by the Discount Window Facility and Asset Purchasing Facility (APF).

deposit and commercial paper), to ensure that banks have sufficient funds to maintain normal lending operations. On 15 December 2008, the Treasury announced an extension of the guarantee period under the CGS to being effective from April 2012 until April 2014.

Asset Purchase Facility (APF)

The BOE was authorized by the Treasury to purchase a range of high quality government bonds and private sector assets through the implementation of the APF, with the aim of increasing the money supply and relieving the strain in capital markets. The losses incurred on the BOE's operation of the APF, wherever possible, will be subsidized by the Treasury.

Asset Protection Scheme (APS)

The Treasury launched the Asset Protection Scheme to provide protection against losses on banks' eligible troubled assets with the intent to make financial institutions more willing to lend and continue their normal lending operations. A fixed proportion of losses, incurred on future loss events related to protected assets, will remain with banks and the government will cover 90% of the remaining losses.

Extending application period for CGS and widening its scope of guarantees

In the face of tightening credit conditions in banks, the Treasury promulgated to extend the application period for the CGS to 31 December 2009, from 9 April 2009, and widen the reach of credit guarantees to AAA- rated asset-backed securities, with a view to reinforcing the scheme.

2.3.2 Measures to revitalize the economy

The IMF, in response to spillovers from the financial crisis to the real economy, appealed to national governments to undertake vigorous fiscal policies to bolster weakening aggregate demand. Since 2008, the US, UK and major Asian countries have actively implemented expansionary fiscal policies and launched a variety of macroeconomic stimulus packages, including: (1) offering tax cuts or tax rebates to stimulate private consumption; (2) expanding public expenditures; (3) promoting employment; and (4) supporting the housing market. The scale of these packages exceeds 2% of GDP in their corresponding countries (Table 2.3).

The US

In addition to tax cuts of up to US$100~150 billion in the Emergency Economic Stabilization Act of 2008, President Barack Obama signed the 2009 American Recovery and Reinvestment Bill into law on 17 February 2009, with measures included in the bill worth US$787.2 billion, or 5.5% of GDP. The bill mainly consists of public expenditure, tax relief and protection of the vulnerable, with shares of 39.2%, 36.6% and 24.2%, respectively.

Other Countries

Since September 2008, the UK government has carried out a series of stimulus measures, including Homeowners Support Package (£1 billion), Economic Stimulus Package (£20 billion), and Infrastructure Plan (£10 billion). Meanwhile, some advanced countries (e.g. Japan and Germany) and emerging Asian countries (e.g. China, South Korea, and Singapore) have also successively introduced wide-ranging economic stimulus plans in an effort to boost domestic economic growth.

Table 2.3 Economic stimulus in selected countries

Country	Measure	Release date	Amount	Total amount to GDP (%)		Time frame	Content
US	The American Recovery and Reinvestment Act of 2009	2009/2	US$787. 2 billion	5.54	(5.5)	2 years	The act will spend up to: (1) US$308.5 billion, or 39% of total funds, in public expenditure, infrastructure, science and education; (2) US$288.3 billion, or 37% of total funds, for providing tax cuts to individuals and corporations; and (3) US$190.4 billion, or 24% of total funds, for direct payment in individual, household and medical insurance.
	National Service Bill	2009/3	US$5.7 billion		(0.04)	5 years	To provide a US$5.7 billion fund within five years for: (1) helping the poor; (2) improving education; (3) promoting energy efficiency; (4) enhancing health care; and (5) looking after veterans.
UK	Homeowners Support Package	2008/9	£ 1 billion	2.2	(0.1)	1 year	Includes: (1) reducing the thresholds of housing tax breaks; (2) offering interest-free mortgages for first-time, low-income home buyers; and (3) offering a "sale and rent back" option for those who can not sustain their mortgages.
	Economic Stimulus Package	2008/11	£ 20 billion		(1.4)	2 years	Includes: (1) tax cuts; (2) assistance for low-income families; and (3) expansion of public expenditure.
	Private Finance Initiative Infrastructure Project	2009/1	£ 10 billion		(0.7)	2 years	Includes: (1) rebuilding or refurbishing thousands of national schools in different levels and in turn to create 100,000 job opportunities for the construction industry; (2) deploying environmentally-friendly infrastructure, including renewing rail networks and increasing investment in environmentally-friendly industries; and (3) making a wide range of investments in optical fiber networks.
Germany	The first economic stimulus plan	2008/11	€ 32 billion	3.4	(1.3)	2 years	Includes: (1) providing tax exemptions for car buyers; (2) subsidizing the refurbishment of home appliances aiming to promote energy efficiency; (3) financing to SMEs; and (4) implementing public infrastructure construction.

Country	Measure	Release date	Amount	Total amount to GDP (%)		Time frame	Content
	The second economic stimulus plan	2009/1	€ 50 billion		(2.1)	2 years	The package focuses on public infrastructure. It also includes: (1) tax cuts; (2) reducing health insurance premiums; and (3) offering special support to car manufacturers.
Japan	Comprehensive immediate policy package	2008/8	¥2 trillion	5.3	(0.3)	2 years	Includes: (1) lessening the medical burden of the elderly; (2) supporting the working capital of SMEs; and (3) establishing disaster contingency plans.
	Measures to support people's daily lives	2008/10	¥5.9 trillion		(1.2)	2 years	Includes: (1) providing households with fixed-sum benefits; (2) reinforced measures for non-regular employees; (3) supporting nursing for children and the elderly; (4) reducing the highway toll; and (5) providing tax incentives for enterprises to encourage investment in energy-saving and new energy equipment.
	Immediate policy package to safeguard people's daily lives	2008/12	¥4 trillion		(0.8)	2 years	Includes measures to: (1) support employment; (2) pursue tax reform; and (3) support people's daily lives.
	Policy package to address economic crisis	2009/4	¥15.4 trillion		(3.0)	1 year	Includes: (1) establishing a social safety net for dispatched workers; (2) supporting financing for enterprises; (3) promoting solar power generation; (4) improving medical services; and (5) assisting local governments to develop regional economies.
China	Measures to increase domestic demand and stimulate economic growth	2008/11	RMB 4 trillion	12.0		2 years	Includes: (1) expanding low-income housing; (2) improving rural infrastructure; (3) reinforcing major infrastructure for railways, highways and airports; (4) enhancing health, culture and education; (5) improving ecological environment; (6) pursuing science and technology innovation, and industrial structure adjustment; and (7) pushing post-earthquake rebuilding.
South Korea	Economic stimulus package	2008/11	14 trillion won	10.1	(1.5)	1 year	Includes: (1) revitalizing local economies; (2) promoting industrial investment through tax preference and regulatory reform; (3) animating the housing market; and (4) assisting SMEs and low-income families.

Country	Measure	Release date	Amount	Total amount to GDP (%)		Time frame	Content
	Green economic stimulus package	2009/1	50 trillion won		(5.6)	4 years	To create new jobs through the development of the green business sector, such as energy-saving industry, low carbon transport and green building.
	Supplementary budget for job creation	2009/3	28.9 trillion won		(3.0)	1 year	Includes: (1) creating employment opportunities; (2) supporting SMEs; (3) revitalizing local economies; (4) developing potential industries; and (5) supporting the livelihoods of low-income families.
Singapore	Growth dividends and GST subsidy	2008/11	S$5.06 billion	10.1	(2.1)	5 years	Includes: (1) dispensing additional growth dividends of up to S$1.06 billion to Singaporean citizens, while low-income families will receive more; and (2) providing S$4 billion for the subsidy of the goods and services tax (GST) over five years.
	Resilience Package	2009/1	S$20.5 billion		(8.0)	2 years	Includes: (1) offering job training and preventing unemployment; (2) providing loans by banks; (3) providing subsidies and preferential taxes for corporations; (4) supporting households; and (5) investing in infrastructural construction, education, and medical and health care.

Sources: IMF, World Bank and official websites in selected countries.

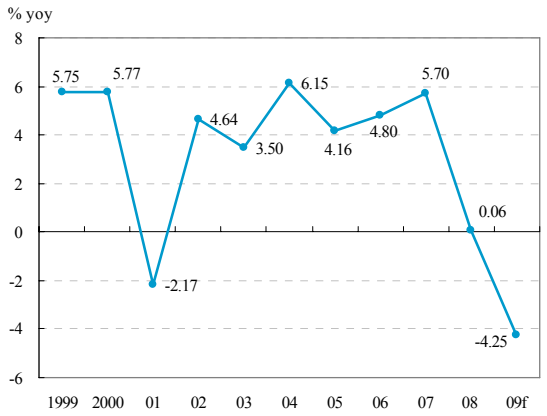
III. Domestic economic and financial conditions

Taiwan's economic growth turned negative in the second half of 2008 and inflationary pressures receded. Nevertheless, short-term external debt servicing ability remained strong as a result of abundant foreign exchange reserves, a current account surplus and a contraction in the scale of external debt. However, the outstanding balance of the government's debts increased due to rising fiscal deficits.

Domestic economy entered a downturn

In the second half of 2008, worsening international financial conditions and a declining world economy severely affected Taiwan's export momentum and the production of its manufacturing sector. Domestic enterprises responded with large-scale layoffs or requiring employees to take unpaid leave. As a result, the domestic unemployment rate increased dramatically, which in turn had a negative impact on private consumption. Private investment also shrank rapidly against the backdrop of a precipitous drop in corporate profitability and an uncertain economic outlook. Statistics from the DGBAS indicated that Taiwan's economic growth registered -1.05% in 2008 Q3, and further deteriorated to -8.61% in 2008 Q4, causing annual economic growth to decline materially to 0.06% in 2008 from the previous year's 5.70% (Chart 3.1). Looking ahead, the sharp global economic downturn may continue to affect Taiwan's exports and private investment despite the government's persistent efforts to mitigate its adverse impacts by taking measures to expand public investment and domestic demand. The DGBAS forecasted that Taiwan's economy would post a negative growth rate of -4.25% in 2009. Its preliminary statistics revealed that the economic growth rate fell to a trough of -10.24% in 2009 Q1 owing to a marked contraction in exports. However, it was expected to gradually improve from Q2

Chart 3.1 Economic growth in Taiwan



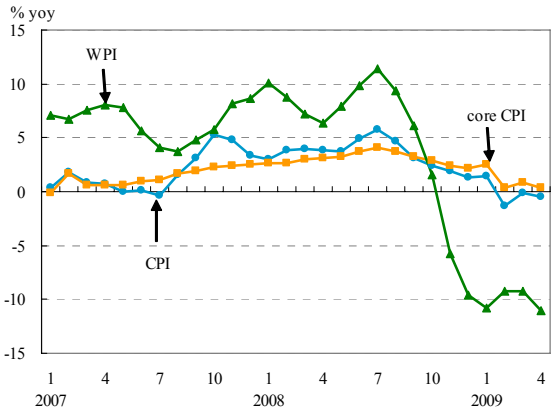
Note: Figure for 2009 is DGBAS forecast.
Source: DGBAS.

onwards and become positive in Q4.

Inflationary pressures receded

The average CPI and core CPI[10] inflation rates increased to 3.53% and 3.08% in 2008, respectively. Both were 1.73 percentage points higher than the previous year. The average WPI inflation rate fell to 5.15% in 2008 from 6.47% a year earlier. After reaching their peaks in July 2008, the deteriorating world economy and sharp declines in the prices of crude oil, raw materials and commodities contributed to the falls in the WPI, CPI and core CPI. The fall was especially significant for the WPI inflation rate which dropped into negative territory from November 2008 onwards (Chart 3.2).

Chart 3.2 Consumer and wholesale price inflation rates



Note: Figures are measured on a year-on-year change basis.
Source: DGBAS.

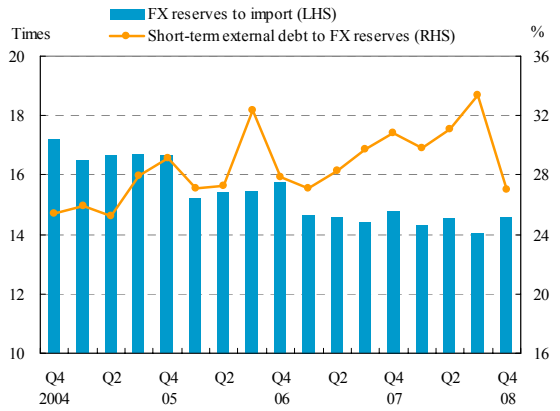
The average WPI inflation rate from January through April of 2009 decelerated to -10.09%, year on year, while that of the CPI and core CPI stood at -0.12% and 1.02%,[11] respectively. It was expected that manufacturers' production costs would decrease and domestic energy and services prices would remain stable on the back of the global economic slowdown, shrinking demand, and the substantial drop in the prices of crude oil and agricultural and industrial raw materials. The DGBAS projected the annual WPI and CPI inflation rates in 2009 to fall to 7.75% and 0.84%, respectively.[12]

[10] The term "core CPI" in this report refers to a consumer price index excluding perishable fresh fruits and vegetables, fish and shellfish, and energy.
[11] The figures are based on a DGBAS press release on 5 May 2009.
[12] The figures are based on a DGBAS press release on 21 May 2009.

Current account surpluses persisted and foreign exchange reserves remained sufficient

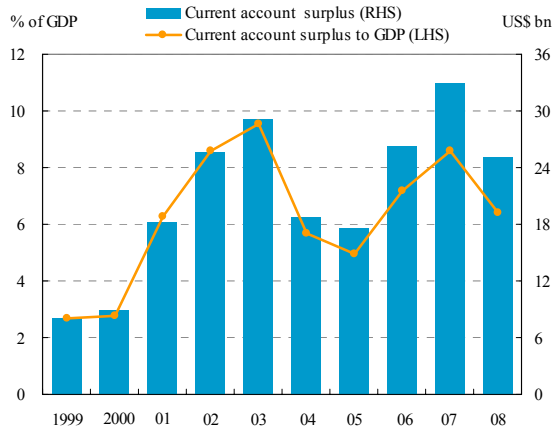
Taiwan's foreign exchange reserves continued to accumulate and reached US$291.7 billion at the end of 2008 despite a temporary fall in Q3 caused by net foreign capital outflows. The outstanding amount further grew to US$304.7 billion in April 2009, reflecting sufficient foreign exchange reserves. As of the end of 2008, foreign exchange reserves were enough to cover 14.56 months of imports,[13] while the ratio of short-term external debt to foreign exchange reserves declined notably to 27% [14] due to a sharp contraction in short-term external debt. These data indicate that Taiwan's foreign exchange reserves have a strong capacity to meet payment obligations for imports and to service short-term external debt (Chart 3.3). In addition, the current account recorded a surplus of US$25 billion in 2008. Nevertheless, the value was 24.12% less than the previous year, mainly due to a sharp contraction in trade surpluses. As a result, the ratio of the current account surplus to GDP dropped to 6.4% in 2008 from 8.57%[15] a year earlier (Chart 3.4).

Chart 3.3 Short-term external debt servicing capacity



Notes: 1. FX reserves and external debts are end-of-period figures.
2. Imports are average monthly figures.
Sources: CBC, DGBAS and MOF.

Chart 3.4 Current account surplus



Note: Current account surplus and GDP are annual figures.
Sources: CBC and DGBAS.

[13] See "Damocles: Testing Times Ahead," Lehman Brothers, 22 July 2004. For import cover of foreign exchange reserves, the cutoff point for risk is three months. A country with an import cover of less than three months is considered to be at relatively high risk.
[14] See Wu Yih-Jiuan, " Taiwan's financial crisis early warning system [in Chinese]" (April 2003), quoting the country risk scoring system of JP Morgan and similar scoring system benchmarks from American Express Bank. The general international consensus is that a reading of less than 50% indicates relatively low risk.
[15] See Note 13. For the ratio of current account deficit to GDP, the cutoff point for risk is 3%. A country in which the reading is greater than 3% and has risen by at least 5 percentage points from the previous year is considered to be at relatively high risk.

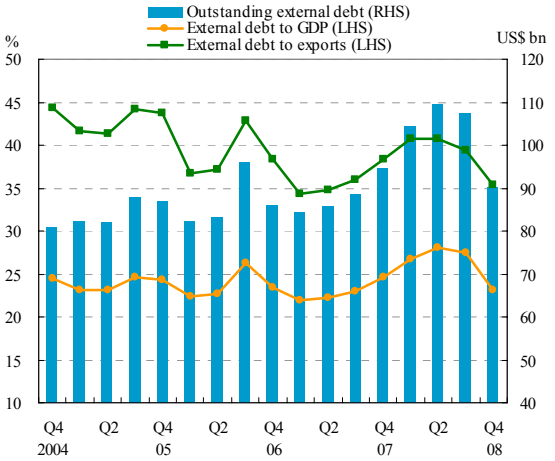
External debt trended downward and servicing capacity remained strong

Taiwan's external debt[16] grew substantially in the first half of 2008, fueled by a rise in net capital inflows. However, external debt shrank substantially in 2008 Q4 due to a reversal of foreign capital flows. As of the end of 2008, outstanding external debt declined to US$90.3 billion or 23.07% of annual GDP, far lower than the internationally recognized warning level of 50%.[17] Meanwhile, the ratio of external debt to annual exports decreased to 35.51%, indicating that export revenues were sufficient to cover external debt (Chart 3.5), and there were no signs of servicing pressure on external debt.[18]

Rising fiscal deficits likely to increase government debts

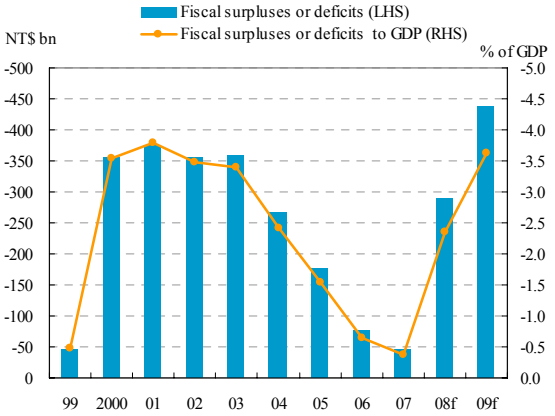
Fiscal deficits fell to a low of NT$46.8 billion at the end of 2007. In 2008, however, the fiscal budget deficit expanded to NT$290.5 billion, or 2.35% of annual GDP, driven by increasing infrastructure spending aimed at spurring domestic demand (Chart 3.6). The ratio, nevertheless, is still below the internationally recognized warning level.[19]

Chart 3.5 External debt servicing capacity



Notes: 1. External debts are end-of-period figures.
2. GDP and exports are annual figures.
Sources: CBC and DGBAS.

Chart 3.6 Fiscal positions



Notes: 1. Fiscal position data includes those of central and local governments.
2. Data of fiscal surpluses (deficits) are end-of-period figures. Figures for 2008 and 2009 are budgeted ones.
Sources: MOF and DGBAS.

[16] External debt is defined by the CBC as the combined amount owed to foreign parties by Taiwan's public and private sectors, including long-term debts with a maturity of greater than one year and short-term debts with a maturity of one year or less. The term "public external debt" refers to debts that the public sector is either obligated to repay directly or has guaranteed (starting from December 2004, figures for public external debt include outstanding foreign debts arising from repo transactions between the CBC and international financial institutions). The term "private external debt" refers to private-sector foreign debts that are not guaranteed by the public sector.

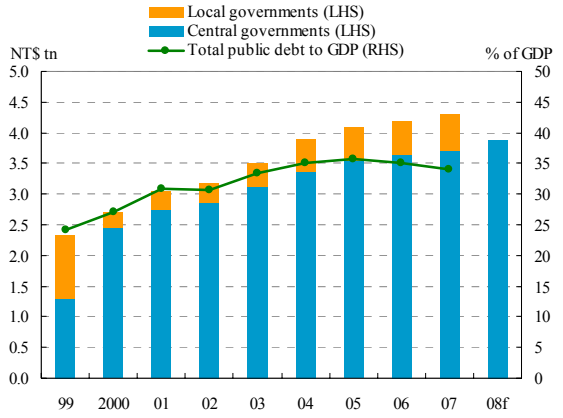
[17] See Note 13. For the ratio of external debt to GDP, the cutoff point for risk is 50%. A country with a ratio higher than 50% is deemed to be at relatively high risk.

[18] See Note 14. A ratio of external debt to exports of less than 100% indicates relatively low risk.

[19] See Note 14. Under the 1992 European Union Maastricht Treaty and the subsequent Stability and Growth Pacts, fiscal deficits in EU member nations are not allowed to exceed 3% of GDP.

As fiscal deficits rose and central and local governments relied on debt issuance to finance debt servicing expenditures, outstanding public debts at all levels of government[20] increased steadily from the late 1990s and stood at NT$4.3 trillion, or 34.07% of annual GDP, at the end of 2007,[21] well below the internationally recognized warning level.[22] In 2008, the central government's outstanding public debt increased steadily to NT$3.9 trillion because of the influence of rising infrastructure construction expenditures. Looking ahead, public debts are likely to grow further in 2009 on the back of ongoing implementation of economic stimulus measures (Chart 3.7).

Chart 3.7 Public debts



Notes: 1. Outstanding public debt refers to non-self-liquidating debt with a maturity of one year or longer, excluding external debt.
2. Outstanding public debt for 2008 is budgeted figure, while the 2008 data for local government is not available.

Sources: MOF and DGBAS.

[20] The term "outstanding debts at all levels of government" as used in this report refers to outstanding non-self-liquidating debts with a maturity of one year or longer. Final audited figures for outstanding one-year-or-longer non-self-liquidating public debt (NT$4.3 trillion) issued by all levels of government during the 2007 fiscal year within their general budgets and extraordinary budgets is equivalent to 36.47% of the average GNP for the preceding three fiscal years (NT$11.8 trillion). This figure is below the ceiling of 48% set out in the Public Debt Act.

[21] This figure indicates the amount of non-self-liquidating debts with a maturity of one year or more issued by all levels of government. If adding in debt with a maturity of less than one year and self-liquidating debt, outstanding government debt as of 31 December 2007 stood at NT$4.7 trillion.

[22] See Note 14. Under the Maastricht Treaty and the subsequent Stability and Growth Pact, outstanding debt in EU member nations is not allowed to exceed 60% of GDP.

IV. Non-financial sectors

The corporate sector, household sector, and real estate market constitute the main sources of risk for credit exposure of Taiwan's financial institutions. The degree of indebtedness and solvency in the corporate sector and household sector, as well as the real estate cycle, have far-reaching impacts upon the asset quality and profitability of financial institutions.

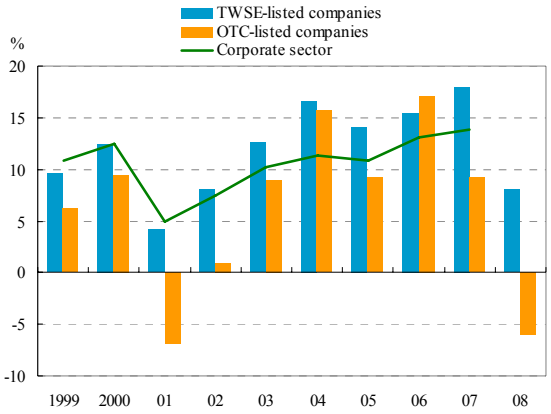
4.1 Corporate sector

After the burst of the IT bubble in 2001, the corporate sector's[23] profitability strengthened while its financial structure and debt servicing capacity continued to improve. However, inflicted by the sharp slowdown in the global economy, the profitability of both TWSE-listed and OTC-listed companies[24] declined dramatically in 2008, and their financial structures and short-term solvency also deteriorated. In addition, the default risk in the corporate sector rose as it faced moderately increasing non-performing loan ratios and greater difficulties in refinancing due to a contraction in the credit market.

Profitability decreased dramatically in 2008

The corporate sector's profitability was enhanced by steady economic growth after 2001. In 2008, however, the return on equity (ROE) for TWSE-listed and OTC-listed companies declined to 8.08% and -5.97%, respectively, much lower than the 18.03% and 9.20% reported in 2007 (Chart 4.1). The reasons behind this were skyrocketing international commodity prices, increasing

Chart 4.1 Return on equity in corporate sector

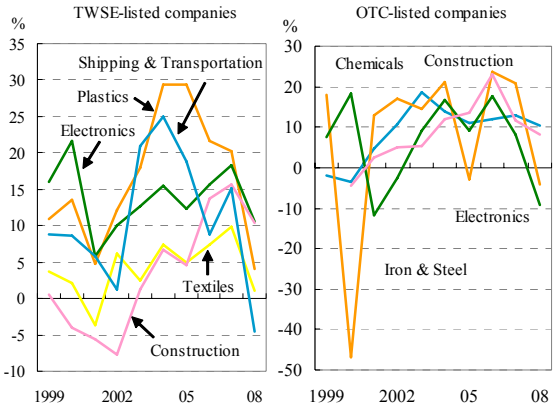


Notes: 1. Return on equity = net income before interest and tax / average equity.
2. Latest data for corporate sector were as of the end of 2007, while that for TWSE-listed and OTC-listed companies were as of the end of 2008.
Sources: JCIC and TEJ.

[23] Data for the corporate sector are from the corporate financial report database operated by the Joint Credit Information Center, excluding that for financial and insurance companies, public administration and defense, and compulsory social security companies.
[24] The data for TWSE-listed and OTC-listed companies are from the Taiwan Economic Journal Co., excluding that for financial and insurance companies and emerging stock-listed companies. The data in 2008 and 2009 Q1 are preliminary.

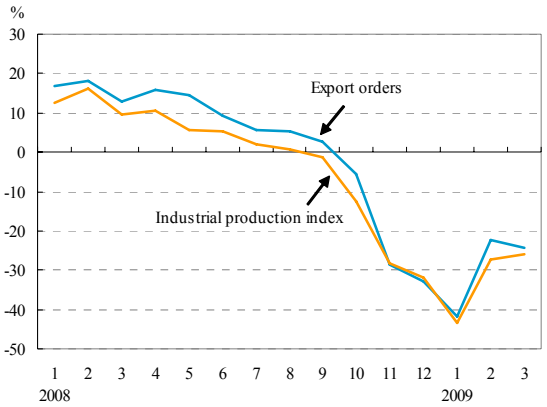
operational costs in China and sluggish consumer demand brought about by inflation in the first half of 2008, followed by declines in exports, private consumption and investment in the second half of 2008 triggered by the sharp global economic slowdown. To break this down by sector, for TWSE-listed companies, ROE for the shipping and transportation industry declined most and became negative, followed by the plastics industry in which ROE remained positive. For OTC-listed companies, the iron and steel industry's ROE was impacted most, followed by the electronics industry. Notably, the electronics industry, which accounted for three quarters of the total assets of OTC-listed companies, saw a drop in ROE to -9.08% in 2008, down from 8.25% in 2007 (Chart 4.2). In 2009 Q1, profitability for both TWSE-listed and OTC-listed companies continued to fall significantly, compared to the same period of 2008, but with a slower pace of contraction compared to the previous quarter.

Chart 4.2 Return on equity of TWSE-listed and OTC-listed companies by major industries



Note: Return on equity = net income before interest and tax / average equity.
Source: TEJ.

Chart 4.3 Annual growth rate of export orders and industrial production index



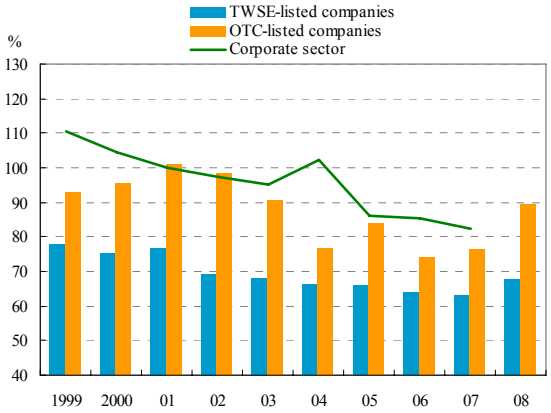
Note: Industrial production index in 2006 was 100.
Source: MOEA.

Taiwan's export industry was impacted seriously owing to a dramatic shrinkage in external demand inflicted by the global economic downturn. The industrial production index and export orders recorded negative growth from September and October of 2008, respectively, and further decreased by 43.31% and 41.70% year on year in January 2009. Nevertheless, after hitting bottom in January, the situation improved due to a sudden massive increase in export orders and inventory restocking (Chart 4.3). In view of continued weakness in export orders and industrial production, and few signs of a robust recovery in the global economy, profitability for the corporate sector is likely to remain weak.

Financial structure worsened in 2008 before improving in 2009 Q1

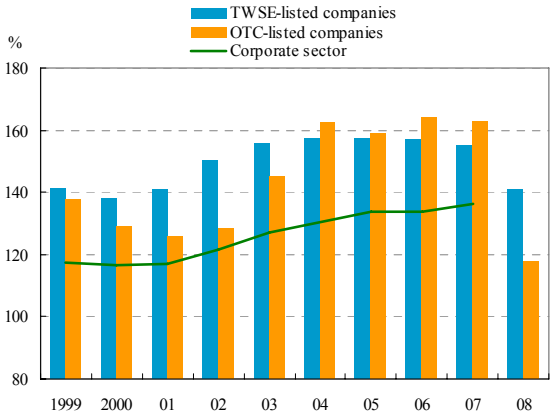
After several years of improvement in the financial structure of the corporate sector, the average leverage ratio declined to 82.20% as of the end of 2007. However, financial structures for TWSE-listed and OTC-listed companies worsened in 2008, with average leverage ratios climbing to 67.59% and 89.44%, respectively, at the end of the year (Chart 4.4). In 2009 Q1, as a consequence of a contraction in liabilities, the average leverage ratios of TWSE-listed and OTC-listed companies improved and returned to levels similar to those reported at the end of 2007.

Chart 4.4 Leverage ratio in corporate sector



Note: Leverage ratio = total liabilities / equity.
Sources: JCIC and TEJ.

Chart 4.5 Current ratio in corporate sector



Note: Current ratio = current assets / current liabilities.
Sources: JCIC and TEJ.

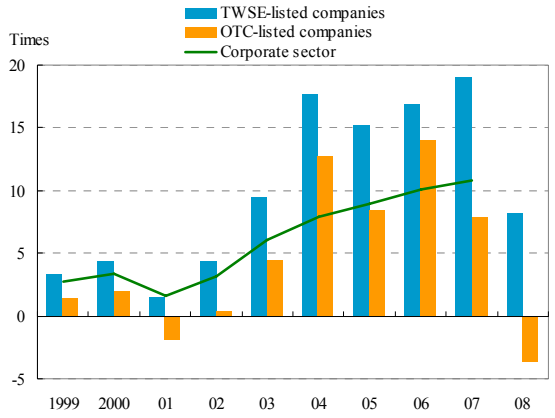
Short-term debt servicing capacity eroded

Short-term debt servicing capacity for the corporate sector as a whole has improved since 2001 as the current ratio and interest coverage ratio, supported by enhanced financial structures as well as profitability, have increased steadily. However, short-term debt servicing capacity for TWSE-listed and OTC-listed companies weakened in 2008 due to declines in both profitability and current assets. As of the end of 2008, the current ratios for TWSE-listed and OTC-listed companies dropped to 141.02% and 117.90%, respectively. This was accompanied by a significant drop in the interest coverage ratio to 8.26 for TWSE-listed companies, and an inability by OTC-listed companies to support their debt servicing capacity due to annual losses (Chart 4.5, 4.6). Underpinned by declining short-term debt levels, current ratios for TWSE-listed and OTC-listed companies rose slightly in 2009 Q1. Nevertheless, the interest coverage ratio for TWSE-listed companies kept declining to 1.02 owing to contracted profitability in Q1, while OTC-listed companies remained unable to service their debt repayments because of losses.

NPL ratio of corporate loans climbed slightly

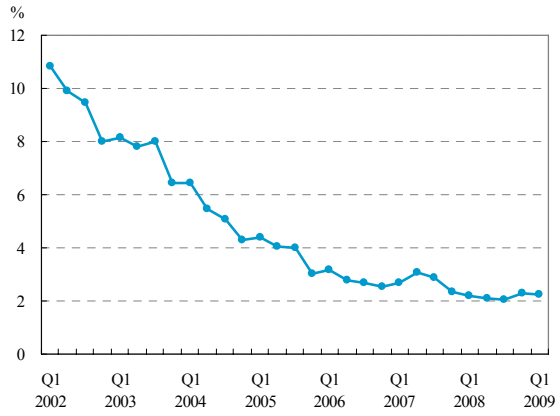
The NPL ratio for corporate loans rose to 2.28% as of the end of 2008, 0.17 percentage points higher than that of the end of June 2008, and remained at the same level as of the end of March 2009 (Chart 4.7). However, it could possibly trend upward in the future as increasing numbers of companies have sought debt renegotiations recently. Additionally, the profitability and debt servicing capacity in the corporate sector may continue to be undermined by the severe global economic downturn.

Chart 4.6 Interest coverage ratio in corporate sector



Note: Interest coverage ratio = income before interest and tax / interest expenses.
Sources: JCIC and TEJ.

Chart 4.7 NPL ratio of corporate loans



Note: End-of-period figures.
Source: JCIC.

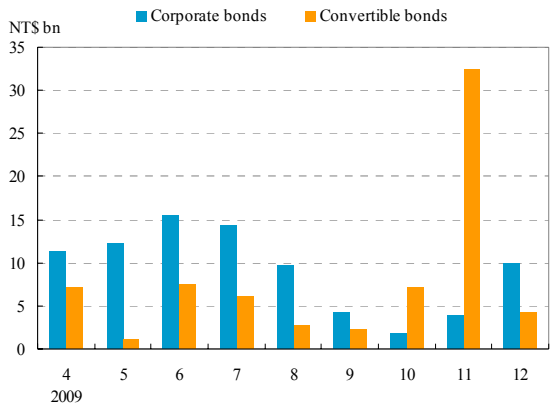
Financing and funding pressures intensified

The credit market seemed to tighten slightly as financial institutions tightened their loan underwriting standards under the consideration of rising default risks in the corporate sector resulting from the domestic economic downturn. Corporations, especially small and medium enterprises (SMEs), faced more difficulties in obtaining finance from financial institutions. Moreover, by the end of 2009, a large amount of corporate bonds will fall due and convertible bonds will be redeemed early because of a higher conversion price than market price (Chart 4.8). Accompanied by falling operating revenues, some listed companies thus face increasing refinancing pressure.

Besides, caused by a sluggish domestic stock market and ascending credit risk for corporations, domestic and overseas securities issuances initiated by public- issuing companies in 2008 contracted dramatically in terms of the number of issuances and the

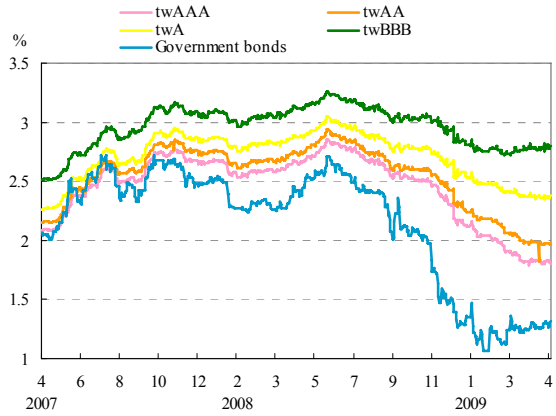
notional amount[25]. There were only 50 new issuances, or NT$37.9 billion of convertible bonds issued in 2008, much less than the 113 new issuances, or NT$101.5 billion reported in 2007, representing the difficulties that many corporations faced in raising funds from the capital market. Moreover, credit spreads[26] expanded significantly over the second half of 2008 when the market became more sensitive to risk. Notably, the average credit spread between twBBB corporate bonds and government bonds expanded dramatically to 158 basis points in late January 2009 and remained at around 150 basis points in April (Chart 4.9), reflecting the rising funding costs of new corporate bond issuances as investors required higher risk premiums.

Chart 4.8 Amount of corporate bonds due by the end of 2009



Notes: 1. Data are as of end-February 2009.
2. Excludes corporate bonds issued by finance and insurance companies.
Sources: GTSM and Market Observation Post System.

Chart 4.9 Yields on corporate and government bonds



Note: Figures refer to yields on 5-year corporate and government bonds.
Source: Bloomberg.

4.2 Household sector

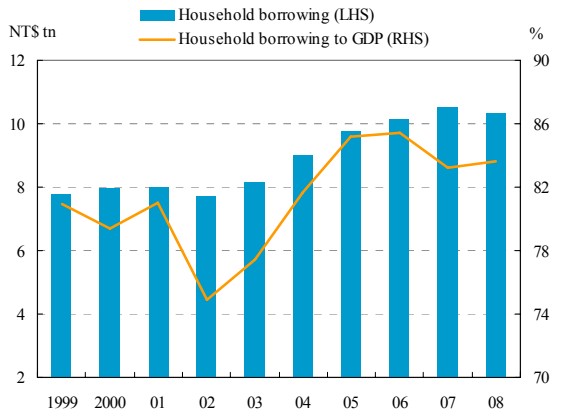
The debt burden of the household sector remained heavy even as household borrowing contracted. Households' short-term debt servicing capacity strengthened and the credit quality of household borrowing remained satisfactory. Nevertheless, in the future, the debt servicing capacity of the household sector may be undermined by the sluggish domestic economy, declining real incomes and a rising unemployment rate. The credit risk of household borrowing may thus increase.

[25] According to the FSC, the number of securities issuances domestically and overseas by publicly-traded companies registered 211 or NT$470.6 billion in 2008, declining by 42.82% in the number of issuances but increasing by 12.02% in the notional amount year on year. While data for financial and insurance companies and Taiwan Power Company are excluded, the number and notional amount in 2008 significantly dropped by 68.17% and 17.63% year on year, respectively.
[26] Yield spreads between 5-year corporate and government bonds.

Household borrowing dropped

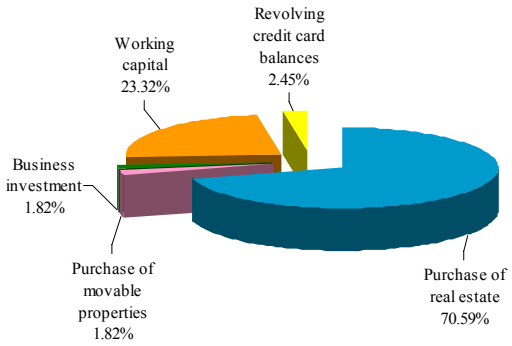
In the second half of 2008, impacted by the domestic economic downturn, household borrowing [27] began declining as banks became more conservative in their credit policies and individual borrowers were more cautious in borrowing. As of the end of 2008, total household borrowing stood at NT$10.34 trillion, a contraction of 1.73% year on year (Chart 4.10). The single largest share of household borrowing went for the purchase of real estate (70.59%), followed by working capital loans[28] (23.32%), whereas revolving credit card balances accounted for only 2.45% (Chart 4.11). Only the loans for purchasing real estate kept rising, while the loans for other purposes all posted negative annual growth rates in 2008.

Chart 4.10 Household borrowing to GDP



Note: Household borrowing data are end-of-period figures.
Sources: CBC, JCIC, and DGBAS.

Chart 4.11 Household borrowing by purpose



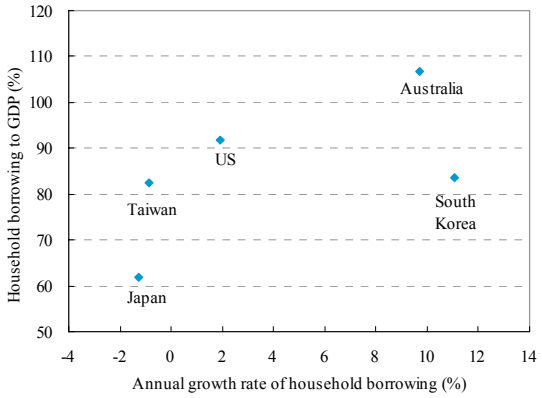
Note: Figures are as of the end of 2008.
Sources: CBC and JCIC.

[27] The term "household borrowing" as used in this section refers to outstanding loans and revolving credit card balances taken out by households from the following financial institutions:
(1) Depository institutions: domestic banks (including medium business banks), local branches of foreign banks, credit cooperatives, credit departments of farmers' associations, credit departments of fishermen's associations, and the Remittances & Savings Department of Chunghwa Post Co.
(2) Other financial institutions: trust and investment companies, life insurance companies, securities finance companies, and securities firms.

[28] The term "working capital loans" includes outstanding cash card loans.

The ratio of household borrowing to GDP increased slightly to 83.60% as of the end of 2008, mainly due to higher GDP contraction (Chart 4.10). Examining total household borrowing across countries, it fell in Taiwan and Japan, maintained moderate growth in the US, and continued to grow at a faster rate in Australia and South Korea. As a percentage of GDP, household borrowing in Taiwan was lower than that in the US and Australia, approximate to that in South Korea, but higher than that in Japan (Chart 4.12).

Chart 4.12 Household indebtedness in selected countries

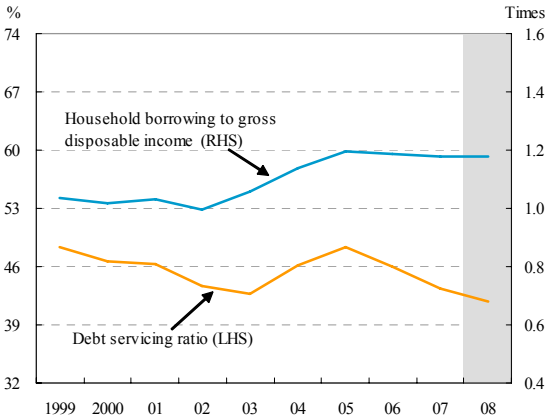


Note: Figures for Taiwan are as of the end of 2008. The others are as of end-September 2008.
Sources: Fed, BOJ, BOK, ABS, IMF, DGBAS, CBC, and JCIC.

Household debt burden remained heavy but short-term debt servicing capacity improved gradually

As of the end of 2008, the ratio of household borrowing to gross disposable income[29] stood at 1.18, the same as at the end of 2007 due to identical decreases of both household borrowing and disposable income. This reveals that the household debt burden remained heavy. However, a continuous decline in short-term borrowing contributed to the debt servicing ratio declining over the past three years to 41.82% in 2008. This showed that the pressures from principal and interest payments on the household sector alleviated and short-term debt servicing capacity improved gradually (Chart 4.13).

Chart 4.13 Household debt servicing ratio



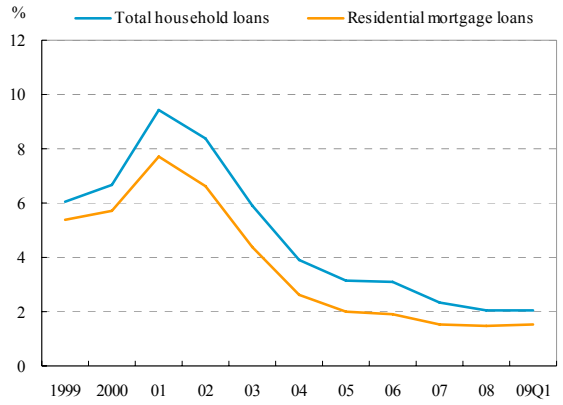
Notes: 1. Gross disposable income in shadow area is CBC estimate.
2. Debt servicing ratio = borrowing service and principal payment / gross disposable income.
Sources: CBC, JCIC, and DGBAS.

The household NPL ratio registered 2.04% as of the end of 2008, down from 2.18% as of the end of June 2008, primarily because of the decline in the NPL ratio for residential mortgage loans which accounted for the largest share of household borrowing. By the end of March 2009, the credit quality of household borrowing remained satisfactory, although both NPL

[29] Gross disposable income = disposable income + rental expenses + interest expenses.

ratios for total household borrowing and for residential mortgage loans increased slightly (Chart 4.14). Nevertheless, the sluggish domestic economy, declining real incomes and an increasing unemployment rate may have adverse impacts on household debt servicing capacity and thus increase the credit risk faced by banks.

Chart 4.14 NPL ratio of household borrowing

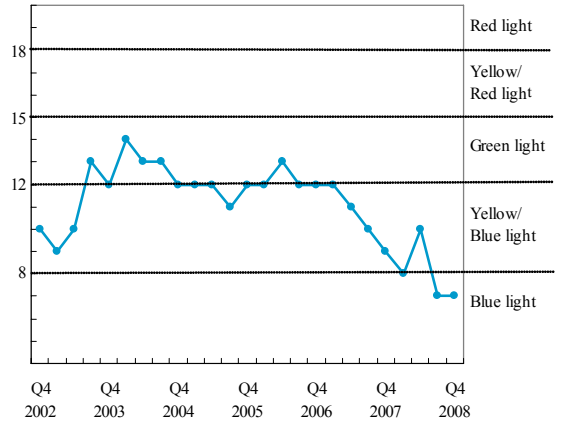


Note: End-of-period figures.
Source: JCIC.

4.3 Real estate market

The real estate market cooled off as transaction volumes plunged dramatically. Amid signs that prices would decline, housing prices remained resilient due to historically low interest rates and a series of stimulus measures adopted by the government to underpin the real estate market. These stimulus measures included extending the expiration of construction license permits, offering additional preferential mortgage loans for homebuyers as well as opening the local real estate market to investors from China. Nevertheless, under the consideration of the rising unemployment rate and shrinking household wealth caused by the economic slump, together with expanding supply in the housing market, downward pressure still existed. Banks should pay attention to the credit risk of real estate-related loans.

Chart 4.15 Real estate cycle indicators



Source: "Quarterly Report of Taiwan Real Estate Cycle Indicators," Architecture and Building Research Institute, MOI.

Real estate market cooled off as downward pressure on housing prices remained

Taiwan's real estate cycle indicators[30] remained under a blue light in 2008 Q4, the same as

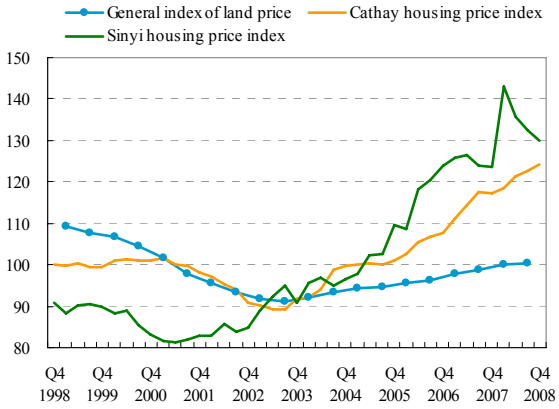
[30] The real estate cycle indicators show five outlooks with different colored lights. A red light indicates a "heated market," a yellow/red light indicates a "moderately heated market," a green light indicates a "stable market," a yellow/blue light indicates a "moderately declining market," and a blue light indicates a "sluggish market."

the previous quarter (Chart 4.15). The composite index of leading indicators[31] in Q4 also dropped dramatically by 1.96% quarter on quarter. This indicated that Taiwan's real estate market appeared to be cooling and that the downward pressure on housing prices still existed.

Real estate prices remained high but signs of softness emerged as transaction volumes contracted

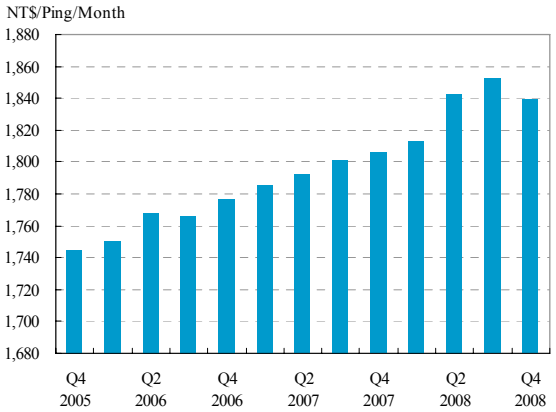
In general, real estate prices remained high in 2008 Q4, but a declining trend emerged in some areas. Taiwan's land prices remained stable as the general index of land price reached 100.51 in September 2008, increasing by 1.61% year on year, and registered a historical high since 2001. The Cathay housing price index (for new housing construction) stood at 124.24 in 2008 Q4, though with a smaller growth rate of 6.10% year on year. The Sinyi housing price index (for existing building sales) continued falling after 2008 Q1 but still registered a high of 129.87 in Q4 with an annual growth rate of 5.05%, showing that prices for existing buildings remained high (Chart 4.16). Average office rental rates in Taipei saw a slight slowdown and registered NT$1,839 per ping (3.3 square meters) per month in 2008 Q4, dropping by 0.7% from the previous quarter, but still increased by 1.83% year on year (Chart 4.17). In 2009 Q1, the Cathay housing price index decreased by 1.65% quarter on quarter, and the Sinyi housing price index kept declining to 127.25 as the office rental rate in Taipei fell to NT$1,799 per ping per month. These falling indices reflected signs of a decline in real estate prices.

Chart 4.16 Land and house price indices



Note: General index of land price is released semiannually (i.e. March and September).
Sources: MOI, Cathay Real Estate, and Sinyi Real Estate Inc.

Chart 4.17 Average office rental rate in Taipei

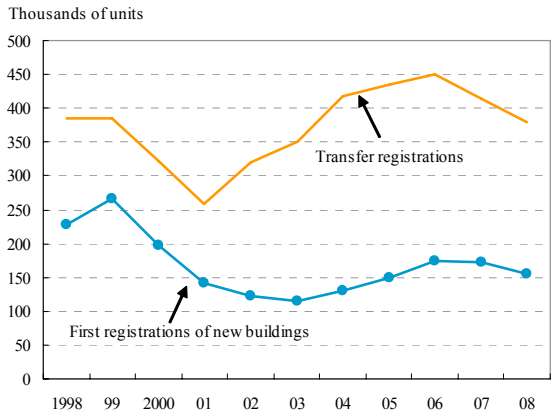


Source: Colliers International "Taipei Office Market Overview."

[31] The composite index of leading indicators is made up of the following five components: GDP, money supply, construction sector stock price index, volatility in outstanding construction loans, and consumer price index.

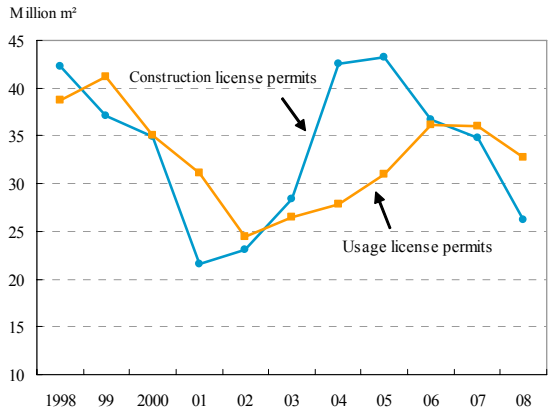
As for transactions in the real estate market, influenced by domestic economic sluggishness and stricter lending standards for housing loans, investors tended to be more conservative, causing real estate transaction volume to contract significantly in the second half of 2008. The number of building ownership transfers descended by 8.52% year on year and registered 379 thousand units in 2008, the lowest figure since 2004. Similarly, the number of first-time ownership registrations decreased by 10.55% year on year and reported 154 thousand units in 2008, indicating that real estate transactions contracted significantly (Chart 4.18). After March 2009, supported by low interest rates, falling housing prices, a bullish domestic stock market, additional preferential mortgage loans for homebuyers and opening of the local real estate market to investors from China, the market for existing buildings warmed up. Nevertheless, the transaction volume was much lower than that of the same period in the previous year.

Chart 4.18 Building ownership registrations



Source: Monthly Bulletin of Interior Statistics, MOI.

Chart 4.19 Floor space of construction license permits and usage license permits



Source: Monthly Bulletin of Interior Statistics, MOI.

New construction shrank greatly but the supply of new residential property remained abundant

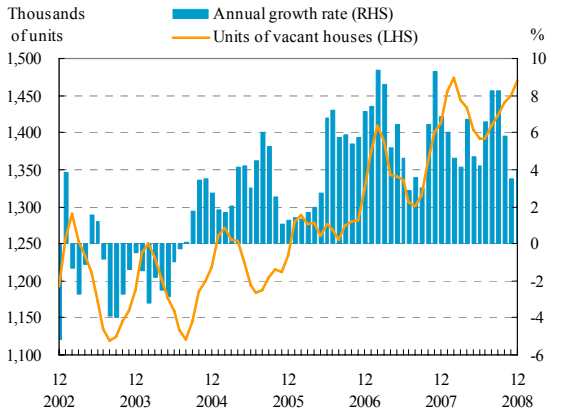
Owing to the sluggish domestic economy and weakening demand in the real estate market, construction companies became more conservative regarding new construction investments. The total floor space of construction license permits in 2008 descended by 24.7% year on year. The substantial shrinkage appeared both in residential and commercial construction. As for the supply of new properties, total floor space of usage permits in 2008 contracted by 9.20% year on year (Chart 4.19), mainly resulting from a decline of 14.70% in new residential properties. However, the supply of new residential properties remained ample and registered 111 thousand units in 2008, despite a 14.86% year on year decline. In addition, the

average number of vacant residential properties was about 1,432 thousand units, increasing by 5.52% year on year (Chart 4.20). From January to March 2009, the average number of vacant residential properties climbed further by 4.50% compared to 2008 and registered a historical high.

Mortgage burden alleviated slightly but public confidence in housing prices fell significantly

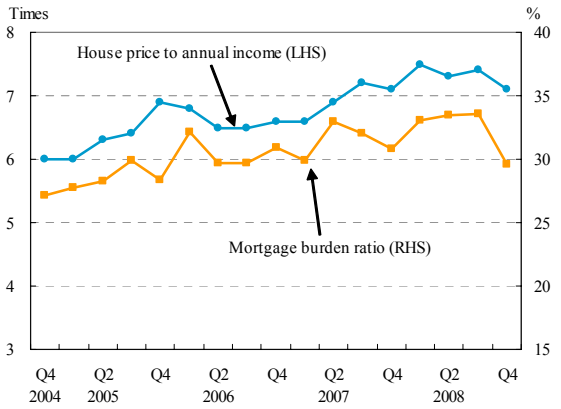
The cost burden for homebuyers alleviated slightly as the average mortgage burden ratio dropped to 29.6% in 2008 Q4, lower than the figures in the previous quarter and in 2007 Q4. However, the house price to income ratio remained high and reached 7.1 in 2008 Q4, the same as that in 2007 Q4, though lower than that in the previous quarter (Chart 4.21). Regarding public confidence in house prices, the composite score dropped significantly from 2008 Q2 and reported a score of 50 points[32] in Q4 (Chart 4.22). This reflected homebuyers' pessimism about future house price movements.

Chart 4.20 Estimated units of vacant houses



Source: Taiwan Power Company.

Chart 4.21 House price to income ratio & mortgage burden ratio



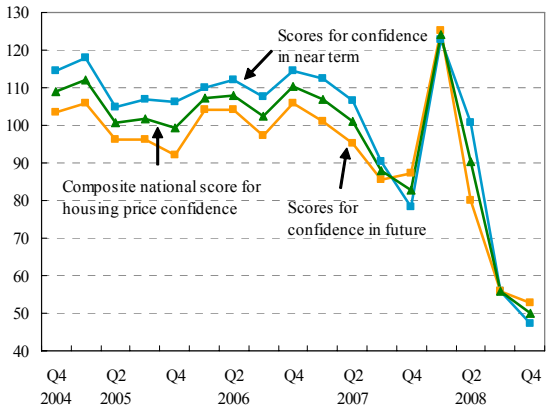
Note: Mortgage burden ratio = monthly mortgage expenditure/household monthly income.
Source: "Taiwan Housing Demand Survey Report," MOI.

[32] The house price confidence scores released by the Council for Economic Planning and Development range from 0 to 200. A score of 100 indicates that the number of people expecting prices to rise is equal to the number of those expecting the opposite, while a score above 100 indicates that more people expect prices to rise, and vice-versa. Scores for confidence in near-term and future prices refer to expectations for prices within the next three months and one year in the future, respectively.

Real estate-related loans grew slowly while mortgage interest rates declined

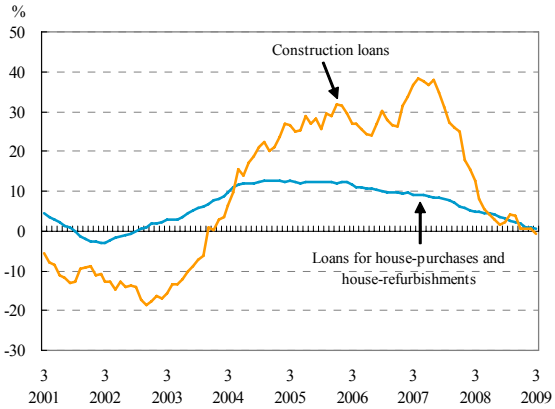
Real estate-related loans granted by banks[33] grew at a slower pace in the second half of 2008 owing to declining demand for house-purchases and house-refurbishments, as well as conservative mortgage practices in the banking industry. The annual growth rate of loans for house-purchases and house-refurbishments dropped to 1.47% in December 2008 and further declined to 0.99% in March 2009, while the annual growth rate of construction loans plunged more dramatically to 0.67% in December 2008 and -0.64% in March 2009 (Chart 4.23). Growth in new mortgage loans granted per month by the five largest banks turned negative from July 2008 but rebounded significantly in December, stimulated by an additional NT$ 200 billion-worth of preferential mortgage loans provided by the government, before declining moderately in March 2009. The mortgage interest rate rose gradually from 2008 Q1 and reached a peak of 2.859% in September. However, it dropped back to 2.523% in December and further declined to 1.850% in March 2009 as banks lowered the mortgage interest rate in line with a succession of the CBC's rate cuts, displaying the effectiveness of the CBC's monetary easing in affecting banks' mortgage rates (Chart 4.24).

Chart 4.22 Scores for house price confidence



Source: "Taiwan Housing Demand Survey Report," MOI.

Chart 4.23 Annual growth rate of real estate-related loans

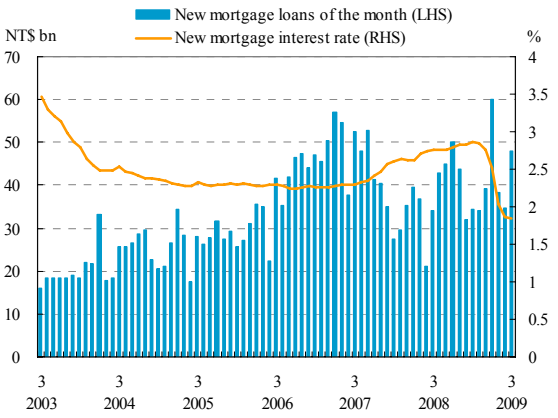


Source: CBC.

[33] The term "bank" here refers to domestic banks and the local branches of foreign banks.

Although the NPL ratio of loans for real estate purchases registered 1.44% in 2008 Q4 and further increased to 1.51% in 2009 Q1, the asset quality of those loans remained satisfactory. This increasing trend warrants closer attention, however, as the ratio has been increasing for five consecutive months. The housing market was expected to be underpinned by historically low mortgage interest rates and a series of measures adopted by the government, including implementing the economic stimulus package, extending the expiration of construction license permits, offering additional preferential mortgage loans for homebuyers as well as opening the local real estate market to investors from China. Nevertheless, given the rising unemployment rate and shrinking household wealth caused by the economic slump, together with expanding supply in the real estate market, downward pressure still existed. Banks should pay attention to the credit risk of real estate-related loans.

Chart 4.24 New mortgage loans – amount & interest rate



Source: CBC.

V. Financial sector

5.1 Financial markets

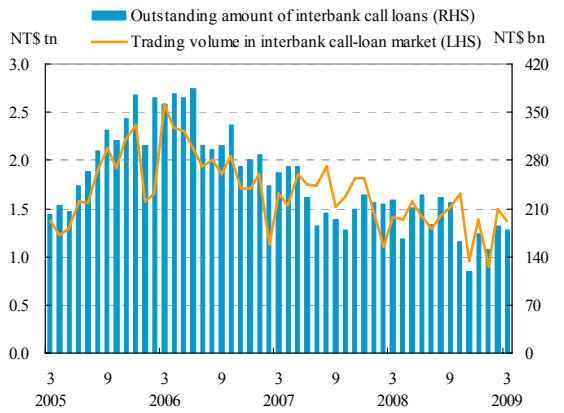
In the domestic money and bond markets, the trading volumes of short-term bills and bonds declined materially, while interbank call loans contracted on a smaller scale in the second half of 2008. The yield spreads between short-term bills and government bonds turned from negative to positive and widened appreciably. As for the domestic stock market, stock indices trended up after sharp falls and volatility dropped after a substantial earlier increase, but trading value contracted noticeably. In the foreign exchange market, the NT dollar exchange rate reversed its appreciating trend and depreciated in the second half of 2008, but then appreciated again in March 2009. Moreover, it experienced a significant drop in trading volume in 2008 Q4. The volatility of the NT dollar exchange rate rose but remained relatively stable when compared to other currencies.

5.1.1 Money and bond markets

Trading volume contracted in both the money market and the bond market

In the second half of 2008, the average monthly trading volume of interbank call loans slightly declined by 1.89% compared to the figure in the first half of the year. Notably, the trading volume fell significantly in November 2008 but then rebounded to some degree in December. Similarly, the average daily outstanding amount of interbank call loans in December 2008 recorded a substantial decrease of 24.17% against the month of June 2008. In 2009 Q1, the average trading volume and outstanding amount of interbank call loans remained at a low level (Chart 5.1).

Chart 5.1 Interbank call-loan market



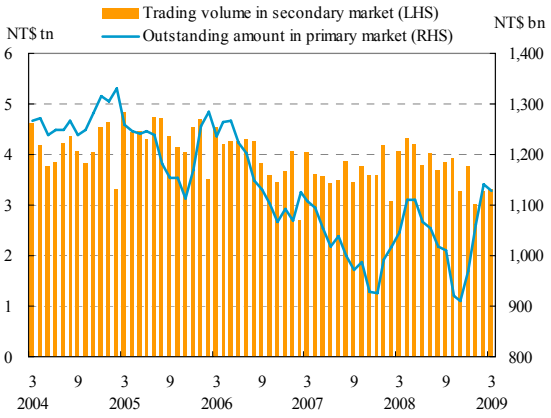
Note: Outstanding amount is the monthly average of daily data.
Source: CBC.

In the primary bill market, the outstanding amount of bills issuance shrank by 9.18% in the second half of 2008. Broken down by

instruments: treasury bills decreased dramatically by 41.63% because of a drop off in issuances and some redemption of outstanding bills by the Ministry of Finance; certificates of deposit declined by 12.87% because of a reduction in issuances of certificates of deposit by banks owing to ample liquidity; and commercial paper dropped steeply in October 2008 due to the credit crunch induced by the global financial crisis, but gradually reversed its decline and grew by 0.78% at the end of 2008 over June of the same year. In early 2009, however, the outstanding amount of bills issuances increased, mainly driven by a sharp rise in the outstanding issuance of treasury bills [34] (Chart 5.2).

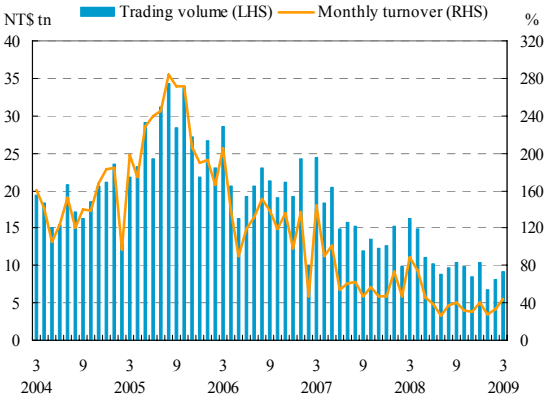
In the secondary bill market, the trading volume decreased by 4.75% in the second half of 2008, mainly due to the contraction of commercial paper transactions while bills finance companies reduced their underwriting of commercial paper and extended the period of outright and repo transactions for the sake of reducing liquidity risk. In 2009 Q1, the trading volume in the secondary market remained low[35] (Chart 5.2).

Chart 5.2 Primary and secondary bill markets



Note: Excludes asset-backed commercial paper (ABCP).
Source: CBC.

Chart 5.3 Bond market size and turnover



Notes: 1. Monthly turnover ratio = trading value in the month / average bonds issued outstanding.
2. Average bonds issued outstanding = (bonds issued outstanding at the end of this month + bonds issued outstanding at the end of the previous month) / 2
Sources: CBC and FSC.

In the bond market, the trading volume for the second half of 2008 decreased by 25.70% over the first half of 2008. Notably, outright transactions dropped significantly while repo transactions saw a moderate decline. The monthly turnover ratio of outright transactions in July 2008 fell to a trough of 25.75%, a five-year low, affected by the cooling of trading activities due to diminishing investment willingness of dealers. Although it rebounded slightly in August and September as investors redirected funds from the lackluster equities

[34] Outstanding issuance of treasury bills herein refers to issues minus redemptions.
[35] The trading value of treasury bills was less than 5% of the trading volume in the secondary market for bills. The effect of its change on the total trading volume is trivial.

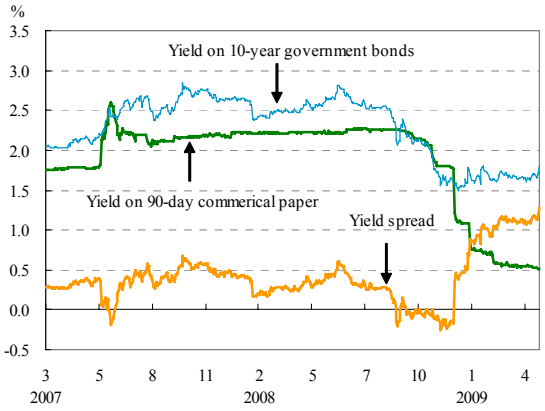
markets into the bond market, it still remained in a lull in 2008 Q4 due to less bonds being traded in the market as many financial institutions held large amounts of government bonds and were reluctant to sell them into the market for the sake of effectively managing their idle funds. In 2009 Q1, the turnover ratio of outright transactions and the trading volume of repo transactions in the bond market remained at a low level (Chart 5.3).

Yield spreads turned from negative to positive and expanded appreciably

In 2008 Q3, affected by the worsening financial crisis and slump in stock markets, investors sought a safe haven in bond markets. As a result, government bond yields trended down and short-term commercial paper rates fluctuated within a narrow range, causing the interest rate spread to shrink gradually and turn negative from mid-September to reach a low of negative 25 basis points in November 2008 (Chart 5.4).

From late September 2008, the CBC initiated interest rate cuts and expanded the scope of Repo facility operations, resulting in a significant drop in short-term interest rates. Bond yields also dipped, but to a lesser extent, as funds flowed into the bond market in response to unfavorable financial conditions. As a result, yield spreads between government bonds and commercial paper turned from negative to positive and expanded noticeably, hitting a peak of 129 basis points in April 2009 (Chart 5.4). Declining bond yields and a widening yield spread may generate capital gains for financial institutions holding long bond positions. However, if the trend of low interest rates is reversed, new bond holdings which financial institutions invested in during the period of low long-term interest rates will face higher interest rate risk.

Chart 5.4 Yield spread



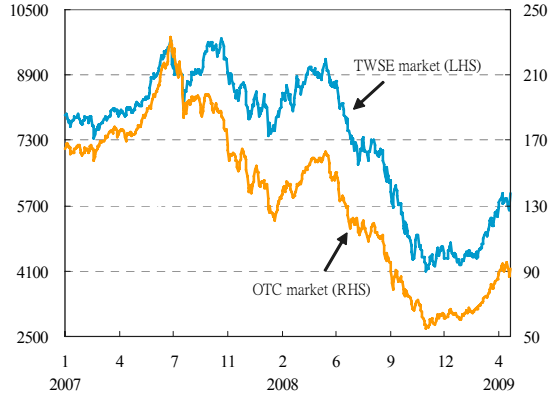
Note: Yield spread refers to yield on 10-year government bonds minus yield on 90-day commercial paper.
Source: Bloomberg.

5.1.2 Equity markets

Stock indices trended up after sharp falls, while volatility dropped after marked increases

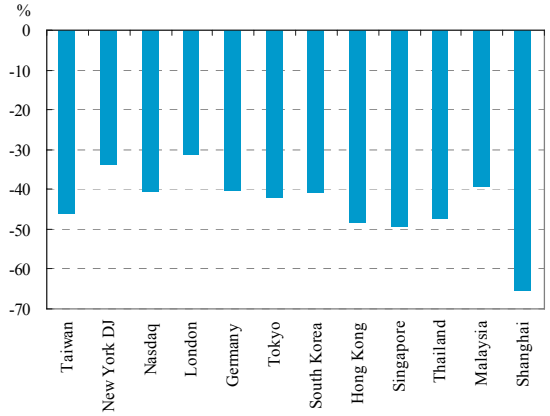
Amid the global financial turmoil and economic downturn, the world's major stock markets repeatedly registered new lows. Affected by the slump in global stock markets and the economic downturn in Taiwan, together with a massive sell-off from foreign investors, the Taiwan Stock Exchange Weighted Index (TAIEX) of the Taiwan stock Exchange (TWSE) market dropped to 4,090 in late November 2008, after reaching a high of 9,295 in mid-May of the same year. However, the TAIEX index stopped falling and fluctuated between 4,200 and 4,800 in early 2009 before gradually climbing to 5,993 at the end of April, a rise of 46.53% compared to the lowest point of last November. The main reasons behind this rebound were the net buying of foreign investors, inflows of residents' portfolio investments from abroad and the emerging effects of easing restrictions on cross-strait securities investment. Meanwhile, Taiwan's GreTai Securities Market Index (GTSM Index) of the over-the-counter (OTC) market closely tracked the movements of the TAIEX, falling sharply to a low of 55 in late November 2008 after hitting a peak of 163 in May of the same year, and then climbing to 91 at the end of April 2009, an increase of 65.45% from its lowest point in November 2008 (Chart 5.5).

Chart 5.5 Taiwan stock market indices



Sources: TWSE and GTSM.

Chart 5.6 Comparison of major stock market performances

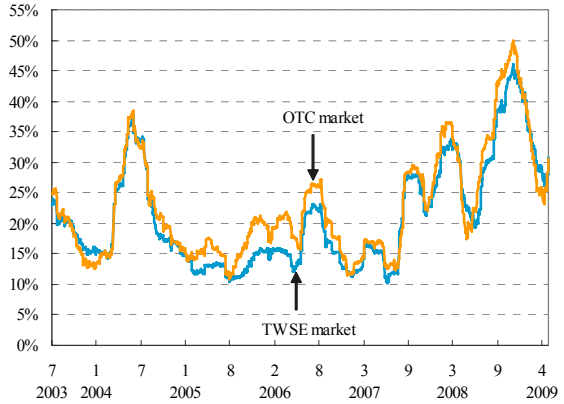


Notes: 1. Figures are for 2008.
2. Taiwan's data is for the TWSE market.
Source: TWSE.

Compared with major stock markets around the world, the Taiwan stock market dropped by 46.03% in 2008, only next to the markets in Hong Kong, Singapore, Thailand, and Shanghai (Chart 5.6).

Broken down by sectors, most indices were in bear territory in 2008 Q4. The indices for the optoelectronics sector and electronics-related sector performed the most poorly, dropping by 35.11% and 37.78%, respectively, whereas the index for the cement sector performed the best, increasing by 16.11% against the downward trend due to domestic demand stimulus projects and the needs for construction related to rebuilding disaster areas in China. The indices for the biotechnology & medical care sector, food sector, and glass and ceramic sector also trended up. In 2009 Q1, most indices entered bullish territory, while the indices for the electronic products distribution sector and optoelectronics sector performed the best, increasing by 29.54% and 28.74%, respectively, but the indices for the finance and insurance sector and glass and ceramic sector performed poorly[36], with drops of 6.78% and 1.35%, respectively.

Chart 5.7 Stock price volatility



Note: Volatility refers to the annualized standard deviation of 60-day daily index returns.
Sources: TWSE, GTSM, and CBC.

Triggered by the global stock market slump from July 2008, the volatility in the TWSE and OTC markets trended up and hit a new 5-year high, reaching 46.00% and 49.95%, respectively, at the end of November 2008. Market volatility subsided from its peak and stood at 30.74% and 30.52% for the TWSE and OTC markets (Chart 5.7), respectively, at the end of April 2009. Although market volatility moderated somewhat, the risk in equity investments remained.

Trading value and turnover ratio decreased dramatically but saw significant rises in March 2009

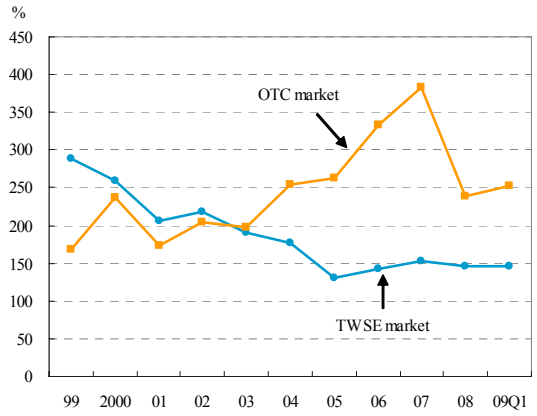
As a result of diminishing investor confidence and the retreat of foreign capital, the TWSE market was mostly sluggish and suffered from a dramatic decrease in total trading value in the second half of 2008. The average monthly trading value in this period was just NT$1.63 trillion, a significant decrease of 50.02% year on year. However, the turnover ratio in terms of trading value on the TWSE in 2008 dropped slightly and stood at 145.45% due to the corresponding trend in trading value and

[36] With the estimated benefits of the upcoming cross-strait financial MOU (memorandum of understanding), the indices for the finance and insurance sectors preformed better than the TAIEX in April 2009.

market value. In early 2009, the trading value in the TWSE market continued to shrink. Nevertheless, it began to expand from March and the monthly average number registered NT$2.31 trillion in the same month owing to foreign investors' net stock purchases. The monthly average turnover ratio also moved in an upward direction and maintained a level of 146.20% in 2009 Q1. The trading value in the OTC market also contracted markedly by 75.49% year on year in the second half of 2008, resulting in a significant decrease in the turnover ratio to 238.71% in 2008. However, the ratio increased modestly to 252.28% in 2009 Q1 (Chart 5.8).

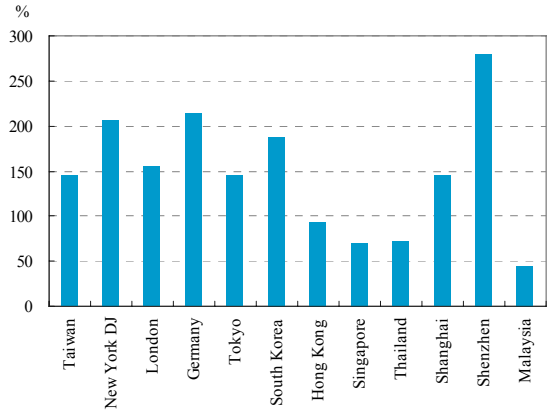
Compared to major stock markets around the world, the annual turnover ratio on the TWSE in 2008 was lower than those on New York's Dow Jones, and the stock markets in London, Germany, South Korea, and Shenzhen, while approximately equal to those in Tokyo and Shanghai, but higher than those in the neighboring markets of Hong Kong, Singapore, Thailand, and Kuala Lumpur (Chart 5.9).

Chart 5.8 Annual turnover ratio in Taiwan's stock markets



Note: 2009 Q1 figures are annualized results of the accumulated monthly turnover ratios.
Sources: TWSE and GTSM.

Chart 5.9 Comparison of turnover ratios in major stock markets



Note: Figures refer to accumulated turnover ratios in 2008 . Taiwan's data is for the TWSE market.
Source: TWSE.

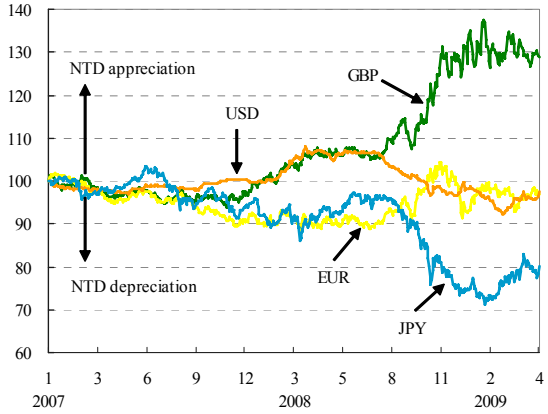
5.1.3 Foreign exchange market

The NT dollar exchange rate reversed from depreciation to appreciation and trading volume shrank considerably in 2008 Q4

After continuous appreciation in the first half of 2008, the NT dollar exchange rate turned to enter a period of depreciation in the second half of 2008, mainly due to the increasing hedging needs for US dollars caused by the global financial crisis and the recession, together with foreign capital outflows from the Taiwan stock market. The NT dollar exchange rate

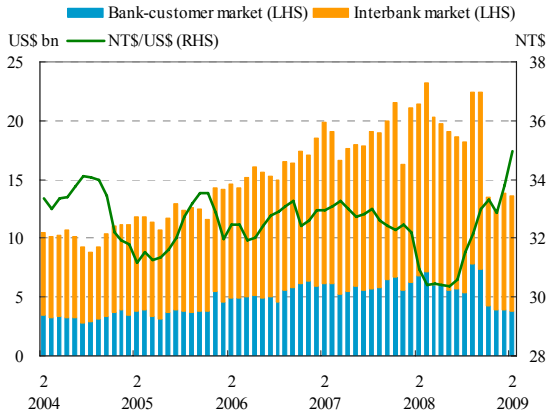
stood at 32.86 against the US dollar at the end of 2008, depreciating by only 1.27% year on year. From early 2009, due to shrinking exports and increasing US dollar demand, the NT dollar depreciated to 34.95 at the end of February. In March, it reversed from depreciating to appreciating owing to capital inflows and a weak US dollar and appreciated to 33.23 against the US dollar at the end of April, showing a slight depreciation of 1.12% compared to the end of 2008 (Chart 5.10). As for other key international currencies, the value of the yen went up significantly from 2008 Q3 as a result of the repatriation of yen carry trade funds back to Japan, which led the NT dollar to depreciate against the yen by 19.78% in 2008. Furthermore, the NT dollar appreciated against the pound and the euro by 33.99% and 3.02%, respectively, over the same period (Chart 5.10).

Chart 5.10 Movements of NT dollar exchange rates against key international currencies



Note: 2 January 2007 = 100.
Source: CBC.

Chart 5.11 NT$/US$ exchange rate and foreign exchange market trading volume



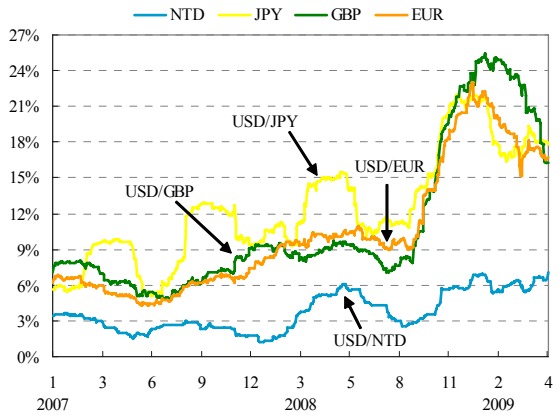
Note: Trading volume is the monthly average of daily data, while exchange rate is end-of-period data.
Source: CBC.

Affected by shrinking financial transactions caused by the global financial crisis and decreasing exports and imports caused by the global recession, the average foreign exchange daily trading volume in 2008 Q4 fell to US$16.1 billion, a decrease of 16.39% year on year. Notably, the daily trading volume in December 2008 fell to US$12.3 billion, a new record low since 2006, but saw a slight increase in early 2009 (Chart 5.11).

A breakdown by counterparty trades shows that the average daily trading volume in the interbank market accounted for 67.85% of the total in 2008 Q4, while the bank-customer market made up a 32.15% share. As for types of transactions, spot trading accounted for 49.54% of the total, followed by foreign exchange swaps with 35.37%.

NT dollar exchange rate volatility against the US dollar increased but was relatively stable compared to other currencies

Chart 5.12 Exchange rate volatility of various currencies against US dollar



Note: Volatility refers to the annualized standard deviation of 60-day daily returns.
Source: CBC.

In the second half of 2008, volatility in the NT dollar exchange rate against the US dollar increased dramatically and the average volatility over Q4 reached up to 5%. In early 2009, the NT dollar exchange rate depreciated hastily and the average volatility accordingly stood at a high of 6.92% in January. Although the volatility declined for a short time after a peak in January, the appreciation of the NT dollar exchange rate in March caused it to rise again and reach 7.04% at the end of April. Notwithstanding the increase in the volatility in the NT dollar exchange rate against the US dollar, the NT dollar exchange rate was relatively stable compared to the volatility in the exchange rates of major currencies such as the pound, euro and yen against the US dollar (Chart 5.12).

5.2 Financial institutions

This section analyses the relatively important financial institutions including domestic banks, life insurance companies and bills finance companies.

5.2.1 Domestic banks

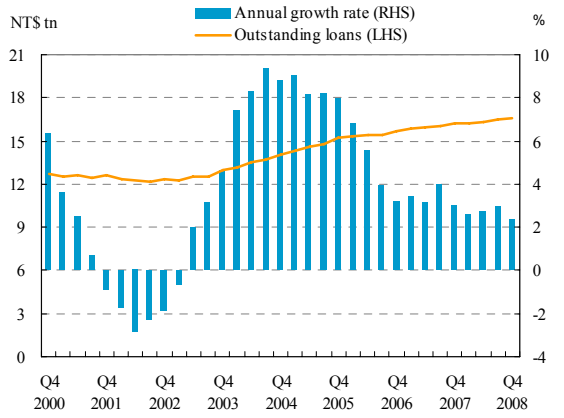
The growth in loans extended by domestic banks slowed down and credit risk in real estate-related loans and corporate loans increased modestly in the second half of 2008. Asset quality remained sound but showed signs of potential deterioration. Market risk relating to stock prices increased substantially; however, its impact on capital adequacy ratios was limited. Liquidity risk remained low as the banking system benefited from holding ample liquidity. The profitability of domestic banks declined substantially in 2008 as their profit sources were continuously eroded. Despite the fact that domestic banks as a whole remained adequately capitalized, closer monitoring of their increasing credit and market risks is warranted.

Credit risk

Customer loan growth slowed

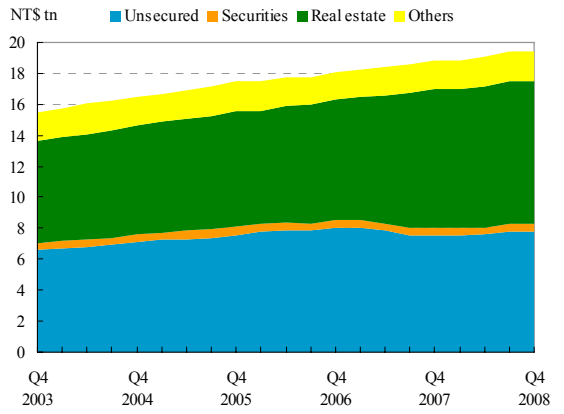
Customer loans[37] were the major type of credit exposure for domestic banks. The outstanding loans of the local business units of domestic banks at the end of 2008 stood at NT$16.57 trillion and accounted for 56.07% of total assets. The annual growth rate in loans continuously decreased to a mere 2.38% in December 2008, the lowest figure recorded since 2004, showing a marked slowdown (Chart 5.13). In 2009 Q1, the year-on-year loan growth rate declined further to only 0.02% in March, with annual growth rates of -0.24% and 0.75% for individual loans and corporate loans, respectively.

Chart 5.13 Outstanding loans and annual loan growth rate in domestic banks



Note: Outstanding loans are end-of-period figures.
Source: CBC.

Chart 5.14 Credit by type of collateral in domestic banks



Note: End-of-period figures.
Source: CBC.

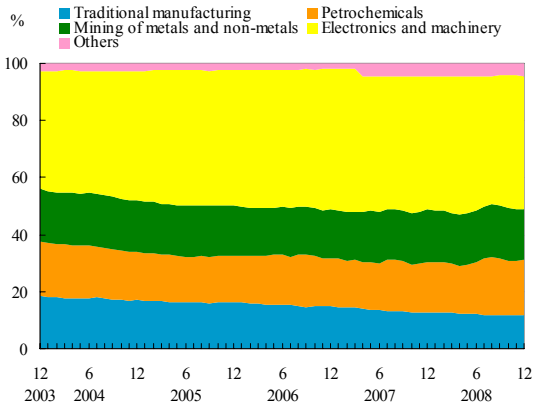
The concentration of credit exposure in the real estate market continued increasing

The concentration of credit exposure in the real estate market has trended upward in recent years, with the second half of 2008 being no exception. The outstanding real estate-related loans[38] of domestic banks reached NT$6.50 trillion and accounted for 39.21% of total loans as of the end of 2008. In addition, real estate secured credit granted by domestic banks amounted to NT$9.24 trillion or 47.50% of total credit at the end of 2008. This ratio was 4.97 percentage points higher than the figure five years ago (Chart 5.14) and trended upward further to 48.13% at the end of March 2009. Among individual banks, thirteen had ratios of real estate secured credit to total credit of over 60% as of the end of 2008.

[37] The term "customer loans" herein refers to amounts lent by local business units of domestic banks to their customers. It excludes interbank lending.
[38] The term "real estate-related loans" includes loans for construction, house purchases, and house refurbishments.

Currently, the non-performing loans (NPL) ratio of real estate-related loans was relatively low. However, the debt servicing capability of residential mortgage borrowers may be undermined in the face of rising unemployment rates, declining real incomes and shrinking personal wealth under the current sluggish economic environment. Together with a cooling off in the real estate market and downward pressures on housing prices, the credit risk of real estate-related loans could possibly increase.

Chart 5.15 Loans to the manufacturing sector by domestic banks

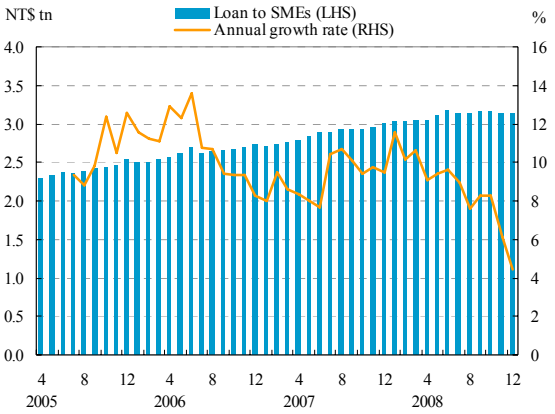


Note: End-of-period figures.
Source: CBC.

Credit risk of corporate loans continued to grow

Outstanding corporate loans of domestic banks stood at NT$7.50 trillion at the end of 2008, while loans to the manufacturing sector accounted for the largest share of 47.01% of the total. Within the manufacturing category[39], the largest proportion of loans were to electronics and machinery-related industries, which stood at NT$1.65 trillion and accounted for 46.71% of the total[40] (Chart 5.15). The ratio continued rising to 47.69% at the end of March 2009.

Chart 5.16 Outstanding loans to SMEs by domestic banks



Note: End-of-period figures.
Source: FSC.

In the second half of 2008, domestic banks became more conservative in extending credit to small and medium enterprises (SMEs)[41]. The total loans to SMEs stayed at NT$3.14 trillion as of the end of 2008, accounting for 41.84% of total corporate loans, while the annual growth rate declined dramatically to 4.42% in December 2008 (Chart 5.16) and turned to be negative with -0.82% reported in March 2009. Among loans to SMEs, the amount guaranteed

[39] Loans to the manufacturing sector are divided into four categories by industry, including electronics and machinery-related industries, mining of metals and non-metals related-industries, petrochemicals related-industries and traditional manufacturing industries. The remainders are classified as "others."

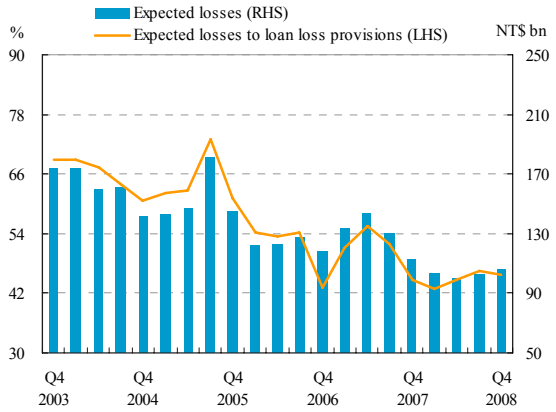
[40] The production value of electronics and machinery-related industries accounted for 39.86% of total manufacturing production value at the end of 2008, which is less than loans to electronics and machinery makers as a percentage of total loans to the manufacturing sector.

[41] Domestic banks' loans to SMEs were based on FSC data.

by the Small and Medium Enterprise Credit Guarantee Fund of Taiwan (SMEG) declined by 9.32% year on year and registered NT$478.5 billion, or 14.25% of the total SMEs loans at the end of 2008, while the guaranteed amount and guarantee coverage percentage stood at NT$310.8 billion and 64.96%, respectively.

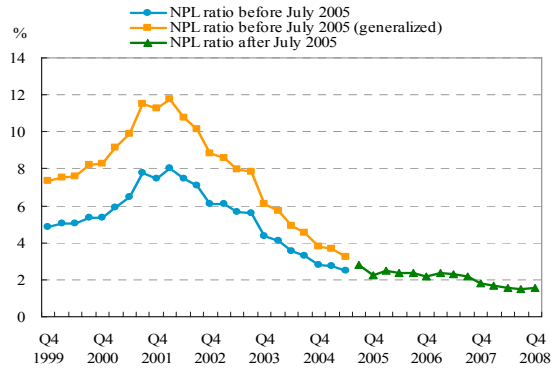
The prevailing global and local economic slowdowns caused a decrease in the profitability in the corporate sector and weakened companies' financial structures and short-term debt repayment capacities. As SMEs tend to be less transparent in financial disclosure and possess weaker loss absorption capacity to weather the current recession, their debt repayment and refinancing ability face far greater challenges. Credit risk of domestic banks relating to corporate loans is thus likely to witness gradual growth.

Chart 5.17 Expected losses on classified assets of domestic banks



Notes: 1. End-of-period figures.
2. Excludes interbank loans.
Source: CBC.

Chart 5.18 Average NPL ratio of domestic banks



Notes: 1. End-of-period figures.
2. Excludes interbank loans.
Source: CBC.

Asset quality remained sound despite potential deterioration

At the end of 2008, the outstanding classified assets[42] of domestic banks stood at NT$612.3 billion, and the average classified asset ratio was 2.07%, increasing by 5.61% and 0.02 percentage points, respectively, compared to the figures at the end of June 2008. Expected losses on classified assets were estimated at NT$106 billion,[43] increasing by 6.53% from the end of June 2008 (Chart 5.17). In 2009 Q1, banks' asset quality showed signs of deterioration, with the outstanding classified assets ratio elevating to 2.36% and their expected losses

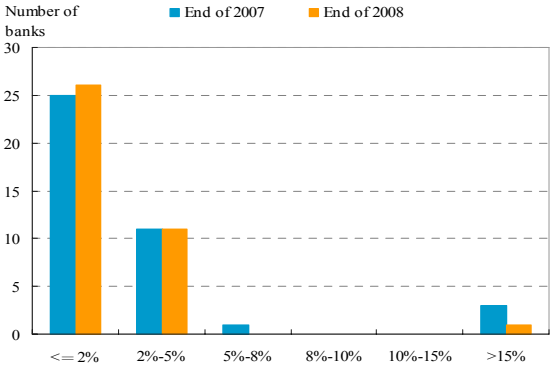
[42] The Regulations Governing the Procedures for Banking Institutions to Evaluate Assets and Deal with Non-performing/Non-accrual Loans break down credit assets into five different categories, as follows: category one – normal credit assets; category two – credit assets requiring special mention; category three – substandard credit assets; category four – doubtful credit assets; category five – loss assets. Other assets break down into four different categories, as follows: category one for normal assets, while category two, category four, and category five are for specially mentioned, doubtful, and loss assets, respectively. The term "classified assets" herein includes all assets classified as category two to five.

[43] Loss herein refers to the losses from loans, acceptances, guarantees, credit card revolving balances, and factoring without recourse.

increasing to NT$111.3 billion at the end of March. However, the provisions set aside by domestic banks were still sufficient to cover expected losses while the ratio of expected losses to loan loss provisions stood at 45.69% as of the end of 2008 (Chart 5.17).

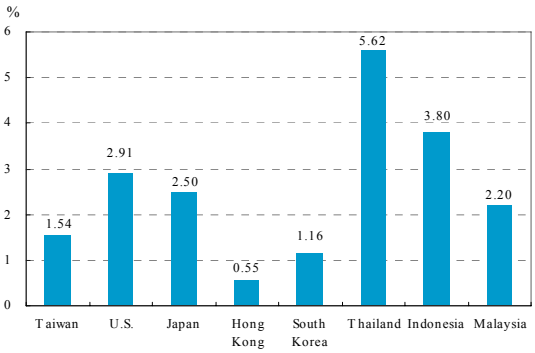
The outstanding NPLs of domestic banks stood at NT$285.9 billion as of the end of 2008, increasing by 1.67% from the end of June 2008. Although the average NPL ratio increased slightly to 1.54%, it remained at a low level (Chart 5.18), before rising further to 1.62% at the end of March 2009. Among individual banks, all had NPL ratios of less than 5%, except for one[44] with a ratio as high as 33.14%, while twenty-six had ratios of less than 2% (Chart 5.19). Compared to the US and other neighboring Asian countries, the NPL ratio of domestic banks was lower than in the US, Japan, Thailand, Indonesia, and Malaysia, but higher than in Hong Kong and South Korea (Chart 5.20).

Chart 5.19 Distribution of NPL ratios of domestic banks



Note: Excludes interbank loans.
Source: CBC.

Chart 5.20 NPL ratios of banks in selected countries



Note: Figures for Japan and Hong Kong are end-September 2008 data. The others are end-December 2008.
Sources: CBC, FDIC, FSA, HKMA, FSS, BOT, BI, and BNM.

The loan loss provisions of domestic banks were substantially enhanced in order to cope with the rise in NPLs in 2008 Q4. As a result, the NPL coverage ratio at the end of 2008 increased to 69.48%, while the loan loss reserve ratio rose to 1.07% (Chart 5.21), indicating that domestic banks started to set additional provisions aside to deal with possible future loan losses.

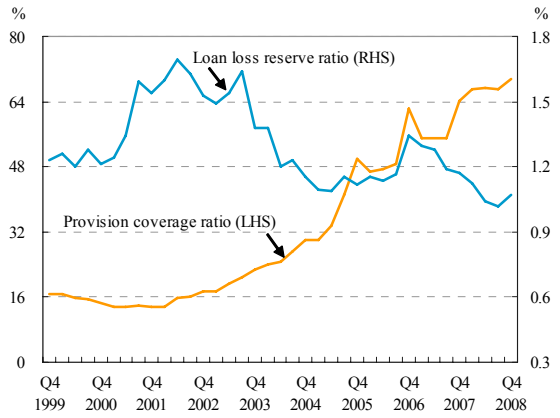
The asset quality of domestic banks remained sound but showed signs of deterioration. Together with potential weakness in the financial health and repayment capability of the corporate and household sectors caused by the economic recession, the credit risk of domestic banks could conceivably escalate.

[44] This bank was taken into conservatorship by the Central Deposit Insurance Corporation (CDIC) on 26 September 2008.

Market risk

Estimated Value-at-Risk dropped

Chart 5.21 Provision coverage ratio and loan loss reserve ratio of domestic banks



Notes: 1. Provision coverage ratio = loan loss provisions / non-performing loans. Loan loss reserve ratio = loan loss provisions / total loans.
2. Excludes interbank loans.
Source: CBC.

The capital requirements for market risks in domestic banks, based on Basel Ⅱ calculations, followed a decreasing trend and only accounted for 2.32% of eligible capital at the end of 2008. The decline was because banks continued to cut market risk positions from the second half of 2007 after the eruption of the US subprime crisis. The estimated Value-at-Risk (VaR)[45] for market exposure of domestic banks stood at NT$124 billion at the end of 2008, dropping by 4.62% from the end of June 2008. Among market risks, equity risk accounted for the largest share at 59.52% of the total VaR, followed by interest rate risk at 38.87%, while foreign exchange risk contributed a mere 1.61%. Compared to the end of June 2008, equity risk rose notably as a

Table 5.1 Market risks in domestic banks

Unit: NT$ bn

Types of risk	Items	End-June 2008	End-Dec. 2008	Changes	
				Amount	%
Foreign exchange	Net position	87.6	43.6	-44.0	-50.23
	VaR	3.1	2.0	-1.1	-35.48
	VaR / net postiton	3.54	4.59		1.05
Interest rate	Net position	3,058.9	3,191.6	132.7	4.34
	VaR	64.3	48.2	-16.1	-25.04
	VaR / net position	2.10	1.51		-0.59
Equity	Net position	525.4	451.9	-73.5	-13.99
	VaR	62.6	73.8	11.2	17.89
	VaR / net position	11.91	16.33		4.42
Total VaR		130.0	124.0	-6.0	-4.62

Source: CBC.

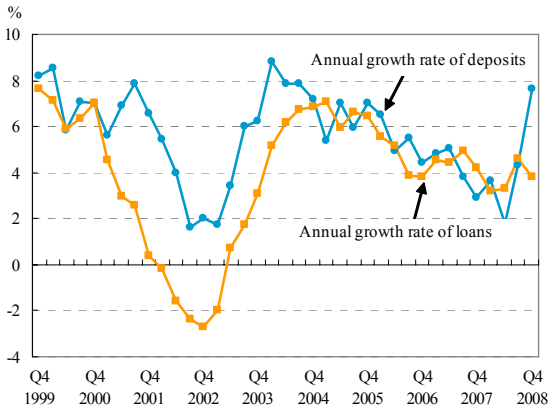
[45] The VaR (Value at Risk) with each category of risk for the test period is estimated by a multivariate historical simulation model for foreign exchange risk, a constant correlation generalized autoregressive conditional heteroscedasticity model for interest rate risk, and a quantile autoregression model for equity risk in this report. The confidence level is 99%, a holding period of ten trading days is used and exposure positions are assumed unchanged. The models are estimated using 250 foreign exchange rate, interest rate, and stock price samples.

result of increasing volatility in the stock market, even with declining equity positions, while interest rate risk and foreign exchange risk diminished due to a reduction in the volatility of long-term interest rates and net foreign exchange positions, respectively (Table 5.1).

The effects of market risks on capital adequacy ratios were limited

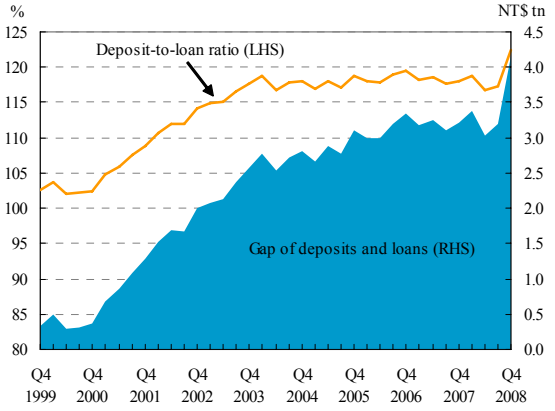
As of the end of 2008, the effects of VaR for foreign exchange rates, interest rates, and stock prices upon the capital adequacy ratios of domestic banks were 0.002, 0.15, and 0.52 percentage points,[46] respectively. Assuming that the above-mentioned risks were mutually independent and occurred simultaneously, market risk would cause a decrease of 0.65 percentage points in the average capital adequacy ratio, and induce the current ratio of 10.91%[47] to fall to 10.26%.

Chart 5.22 Annual growth rate of deposits and loans of domestic banks



Source: CBC.

Chart 5.23 Deposit-to-loan ratio in domestic banks



Notes: 1. Deposit-to-loan ratio = total deposits / total loans.
2. Gap of deposits and loans = total deposits - total loans.
Source: CBC.

Liquidity risk

Liquidity remained ample in the banking system

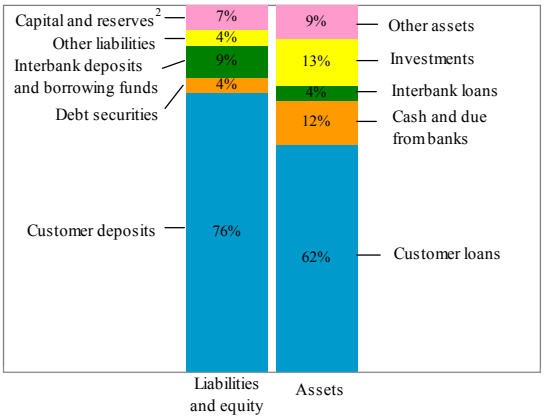
The deposits in domestic banks rose markedly in the second half of 2008 and grew by 7.66% year on year in December owing to a large amount of overseas funds flowing back into bank deposits. In contrast, the annual growth rate of loans dropped to 3.83% in December due to banks' more conservative credit policies (Chart 5.22). As a result, the average deposit-to-loan ratio of domestic banks increased dramatically and reached 122.34% at the end of 2008. The funding surplus (i.e. deposits exceeding lending demand) registered NT$4.16 trillion,

[46] To avoid double counting, the regulatory capital required for market risks is deducted from the effects of VaR on the capital adequacy ratio.
[47] The term "capital adequacy ratio" used herein is based on regulatory capital which has deducted unamortized deferred losses on the sale of NPLs.

reflecting abundant liquidity in domestic banks (Chart 5.23). This situation continued in 2009 Q1, as the deposit-to-loan ratio rose to 127.31% as of the end of March.

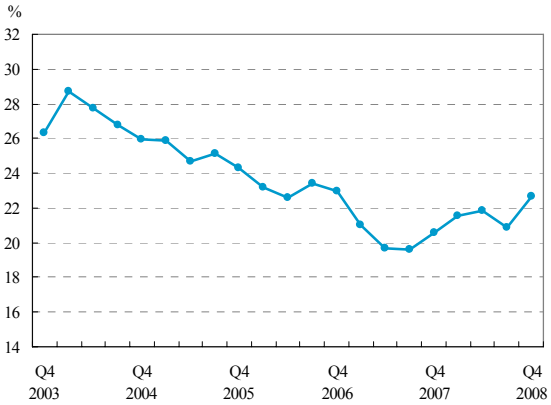
As for the sources of funds, relatively stable customer deposits accounted for 76%, the largest share, of the total in domestic banks, followed by interbank deposits and borrowings at 9%, while debt securities issues contributed a mere 4% at the end of 2008. Regarding the uses of funds, customer loans accounted for the biggest share of 62% but declined by two percentage points from the end of June 2008 due to stricter credit policies, while cash and due from banks accounted for an increasing ratio of 12% of the total (Chart 5.24).

Chart 5.24 Sources and uses of funds in domestic banks



Notes: 1. Figures are end-December 2008.
2. Includes provisions.
Source: CBC.

Chart 5.25 Liquid reserve ratio of domestic banks



Note: Figures are the monthly average of daily data in the last month of quarters.
Source: CBC.

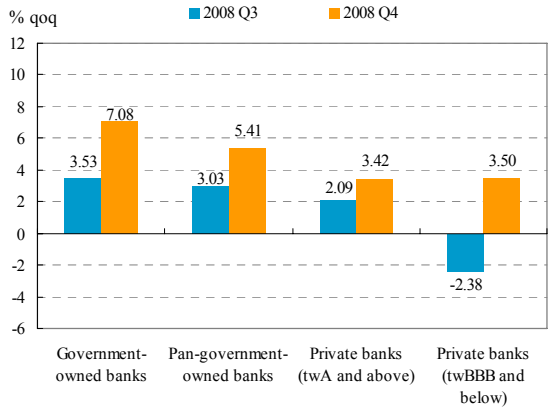
Overall liquidity risk was moderate

The average NT dollar liquid reserve ratio of domestic banks escalated to 22.70% in December 2008, well above the statutory minimum of 7% (Chart 5.25), and rose further to 25.43% in March 2009. The reserve ratio of each domestic bank in December 2008 was higher than 12%. Tier 1 liquid reserve,[48] mainly consisting of certificates of deposit issued by the CBC, accounted for 92.72% of total liquid reserves in December 2008, while Tier 2 and Tier 3 reserves accounted for 6.61% and 0.67%, respectively. This reveals that the quality of liquid assets held by domestic banks remained satisfactory and overall liquidity risks were moderate.

[48] Tier 1 liquid reserves include excess reserves, net due from banks in the call-loan market, re-deposits at designated banks with terms to maturity of no more than one year, certificates of deposit issued by the CBC, government bonds and treasury bills. Tier 2 liquid reserves include NT dollar-denominated bonds issued in Taiwan by international financial organizations, negotiable certificates of deposit, bank debentures, banker's acceptances, trade acceptances, commercial paper and corporate bonds. Tier 3 liquid reserves include beneficial securities issued in accordance with the asset securitization plan and other liquid assets as approved by the CBC.

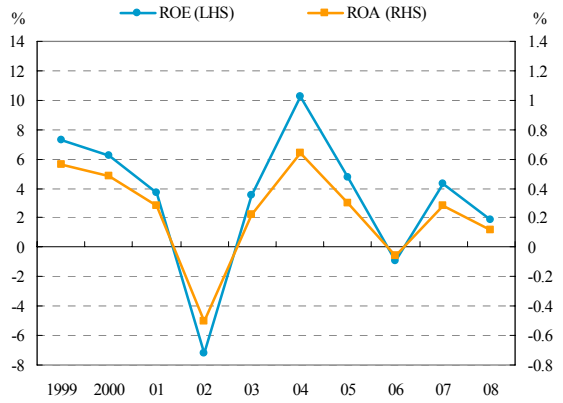
In September 2008, domestic depositors' confidence in some banks was affected as financial institutions in the US and other countries successively became mired in financial difficulties. As a result, a few private banks temporarily experienced a large number of withdrawals and suffered funding difficulties. To cope with this emergent situation, the CBC decreased discount rates and reserve ratios, expanded the scope of Repo facility operations, and provided foreign-currency loans to meet the foreign exchange liquidity demands of domestic banks. In addition, the government provided a blanket guarantee for deposits in all insured institutions (banks and community financial institutions). The above measures effectively eased the deposit drainages and liquidity tensions suffered by private banks (Chart 5.26).

Chart 5.26 Changes in the balances of deposits in domestic banks



Notes: 1. Figures are the percentage change on a quarter-on-quarter basis.
2. There are two government-owned banks and five pan-government-owned banks.
Sources: CBC and credit rating agencies.

Chart 5.27 ROE & ROA of domestic banks



Note: ROE (return on equity) = net income before income tax / average equity. ROA (return on assets) = net income before income tax / average total assets.
Source: CBC.

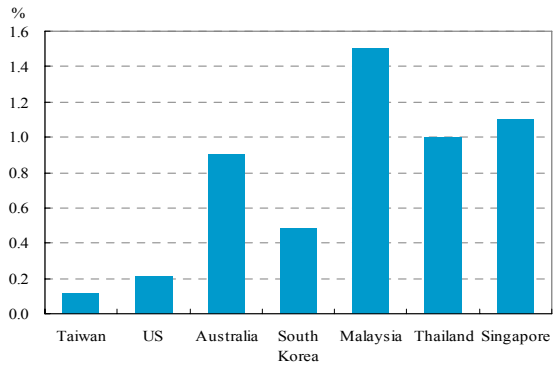
Profitability

Profitability contracted significantly in 2008

Due to huge investment losses, domestic banks as a whole posted a net income before tax of NT$34.4 billion in 2008, a decrease of 55.68% year on year. The average return on equity (ROE) and return on assets (ROA) slid to 1.86% and 0.12%, respectively (Chart 5.27). In 2009 Q1, the net income before tax of domestic banks stood at NT$19.2 billion, 21.79% lower than the same period of 2008. Compared to the US and other Asia-Pacific neighboring countries, the profitability of domestic banks was relatively low (Chart 5.28).

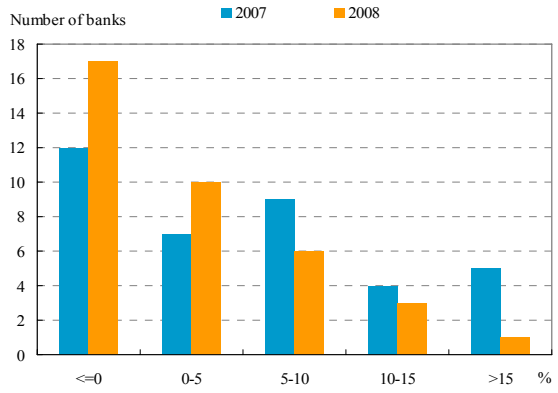
Among twenty-four banks with declining profitability in 2008, seventeen banks suffered losses and posted negative ROEs, mainly because of shrinking revenues or losses on investments. Moreover, the number of banks achieving a profitable ROE of 15% or more decreased from five in 2007 to only one in 2008 (Chart 5.29).

Chart 5.28 Comparison of ROA in selected countries



Note: Data for Singapore is for end-September 2008, while the others are for end-December 2008.
Sources: CBC, FDIC, APRA, FSS, BNM, BOT, and MAS.

Chart 5.29 Distribution of ROE of domestic banks



Source: CBC.

As for operating revenues and costs, total operating revenues of domestic banks declined by 13.15% year on year. This was mainly because : (1) net gains on financial instruments and other net revenues fell dramatically due to the weakened stock market and increasing provisions for potential losses associated with US subprime mortgage-related products; (2) net fees and commission income decreased materially under the influence of a sharp contraction in wealth management businesses such as structured notes and mutual funds; and (3) the increase in net interest income, the primary source of operating revenues, was limited by shrinking interest rate spreads between deposits and loans.[49] On the cost side, operating costs fell by 7.30% year on year as a result of a sharp decline in loan loss provisions, although non-interest expenses leveled off (Chart 5.30).

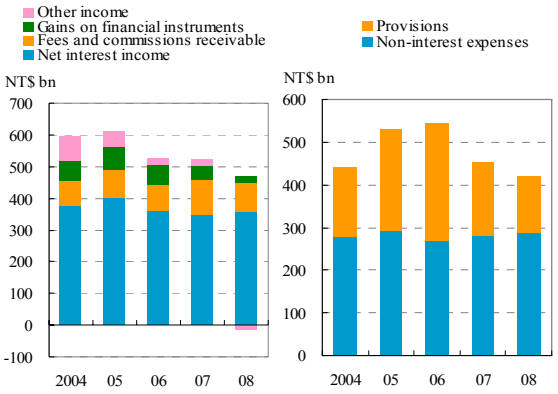
Future profitability might be undermined

Domestic banks reported decreasing investment exposures to US subprime mortgage-related products[50] and set loss provisions to cover most of the related investment losses. Thus, there will be limited influence on banks' future profitability. However, as the global financial crisis has shown little improvement and the domestic and foreign economies have entered severe

[49] The average interest rate spread between deposits and loans was 1.61 percentage points in 2008 Q4, shrinking from 1.69 percentage points in Q2.
[50] Outstanding exposures included US subprime mortgage-related stocks and bonds, and the securitized shares of subprime mortgages.

downturns, the future profitability of domestic banks faces several uncertainties, as follows: (1) escalating corporate and individual credit risks might increase the need for loan loss provisions; (2) narrowed interest rate spreads between deposits and loans will limit the growth of net interest income; and (3) increasing costs of reputational risk could arise from resolving disputes on the sale of structured notes.

Chart 5.30 Composition of incomes and costs of domestic banks



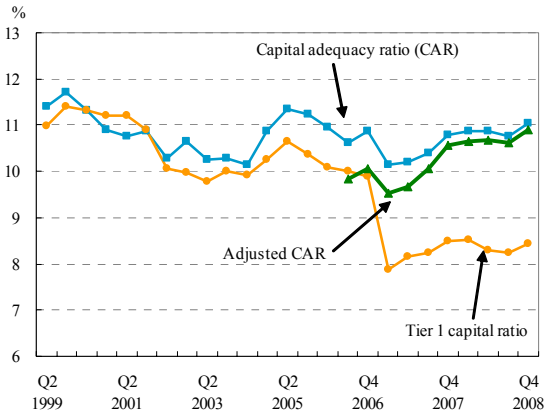
Source: CBC.

Capital adequacy

Capital adequacy ratios increased slightly

Though several banks suffered operating losses and eroded capital in the second half of 2008, the average capital adequacy ratio and Tier 1 capital ratio [51] of domestic banks continued increasing to 11.04% and 8.43%, respectively, at the end of 2008 (Chart 5.31). This was mainly because some banks raised capital by equity offerings or issuing subordinated bonds, or reduced the amount of their capital deductions. Given that unamortized deferred assets of NT$22.4 billion[52] arising from losses recorded on the sale of classified assets were deducted from regulatory capital, the adjusted capital adequacy ratio came to 10.91%, up by 0.23 percentage points from the end of June 2008. It reflected that the capital adequacy of domestic banks improved slightly. However, compared to the US and some Asia-Pacific neighboring countries, the average capital adequacy ratio of domestic banks is lower (Chart 5.32).

Chart 5.31 Capital adequacy ratio of domestic banks



Notes: 1. End-of-period figures.
2. The data are on a semiannual basis prior to June 2006 and on a quarterly basis beginning June 2006.
3. Adjusted capital adequacy ratio = (eligible capital - unamortized deferred assets arising from losses recorded on the sale of non-performing assets) / risk -weighted assets.

Source: CBC.

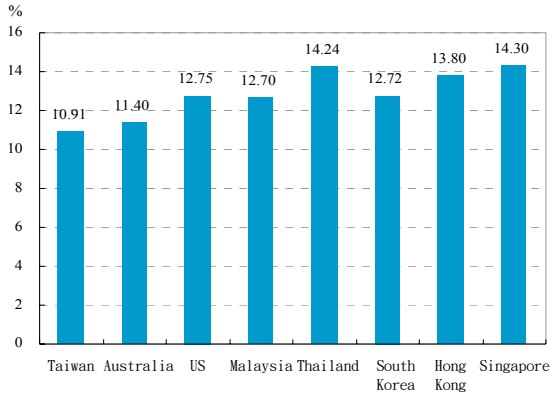
[51] The capital adequacy ratios and the Tier I capital ratios at the end of 2008 herein are according to audited financial statements.
[52] Article 4 of the Regulations Governing the Capital Adequacy of Banks as amended on 5 January 2007 requires that unamortized losses recorded on the sale of non-performing assets in 2007 or later should be deducted from Tier 1 capital. This requirement does not apply to sales made on or before 31 December 2006.

Further breaking down the components of regulatory capital, Tier 1 capital, which features the best risk bearing capacity, accounted for 76.32% of eligible capital, while Tier 2 capital registered 23.40% and Tier 3 capital contributed a mere 0.28% at the end of 2008. The ratio of Tier 1 capital moderately increased, while those of Tier 2 and Tier 3 capital slightly decreased.

Very few banks held insufficient capital, with limited impact on the banking system

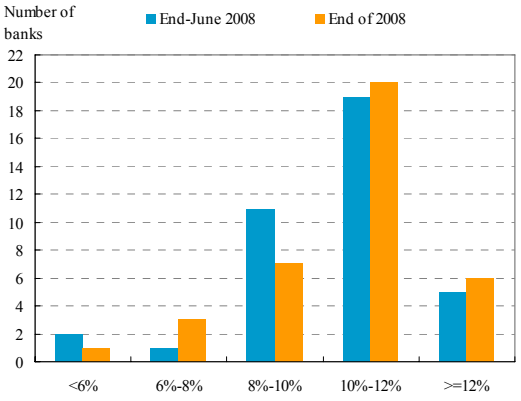
There were two banks with capital adequacy ratios under the statutory minimum (8%) at the end of 2008. As for adjusted capital adequacy ratios, four banks, with combined assets accounting for only 3.85% of the total, had ratios below the statutory minimum with limited impact on the banking system. In addition, there were twenty-six banks with ratios above 10%, two banks more compared with the end of June 2008 (Chart 5.33).

Chart 5.32 Comparison of capital adequacy ratios in selected countries



Notes: 1. Figures for Hong Kong and Singapore are end-September 2008 data, while the others are end-December 2008 data.
2. The figure for Taiwan is adjusted capital adequacy ratio.
Sources: CBC, APRA, FDIC, BNM, BOT, FSS, HKMA, and MAS.

Chart 5.33 Distribution of adjusted capital adequacy ratios of domestic banks



Source: CBC.

Credit ratings

Average credit ratings remained satisfactory

The rankings of Taiwan's banking system in the Standard & Poor's "Banking Industry Country Risk Assessment (BICRA)"[53] remained unchanged in Group 4 in the second half of 2008. In October 2008, Fitch Ratings upgraded Taiwan's ranking on its "Banking System

[53] The classification scheme used by the Banking Industry Country Risk Assessment (BICRA) is a synthetic assessment developed by Standard & Poor's Corporation that is based on the credit standing of financial institutions in the context of the structure and performance of the economy, legal and regulatory infrastructure supporting the financial system, and the competition and operation environment of the banking sector, while factoring out the potential for government support for banks. Assessment results reflect relative country risk and banking sector credit quality, and are indicated with a score of 1 (strongest) to 10 (weakest).

Indicator / Macro-Prudential Indicator (BSI/MPI)."[54] The BSI was upgraded from D to C, reflecting an improvement in both capital and loss reserves held by Taiwan's banking industry, while the MPI remained unchanged at level one (Table 5.2). Compared to other Asian economies, the risks in Taiwan's banking industry were higher than in Hong Kong, Singapore, and Japan, about the same as those in South Korea and Thailand, but much lower than in China, Indonesia, and the Philippines.

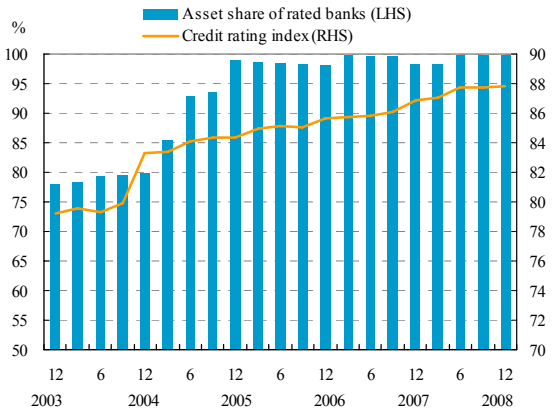
Table 5.2 Systemic risk indicators for the banking system

Banking System	Standard and Poor's	Fitch
	BICRA	BSI/MPI
Hong Kong	2	B/1
Singapore	2	B/1
Japan	3	B/1
South Korea	4	B/3
Taiwan	**4**	**C/1**
Thailand	6	C/1
China	6	D/1
Indonesia	8	D/1
Philippines	8	D/1

Note: Figures are end-December 2008 data.
Sources: Standard and Poor's and Fitch Ratings.

Although there were three banks with downgraded credit ratings in the second half of 2008, the credit rating index[55] continued to rise due to the increasing asset share of highly rated banks (Chart 5.34), reflecting the improvement in the overall credit rating level of domestic banks. In 2009 Q1, the overall credit rating level remained satisfactory, although one bank was downgraded, resulting in a slight decrease in the credit rating index.

Chart 5.34 Credit rating index of rated domestic banks



Note: End-of-period figures.
Sources: CBC.

Uncertainties over future credit ratings were high

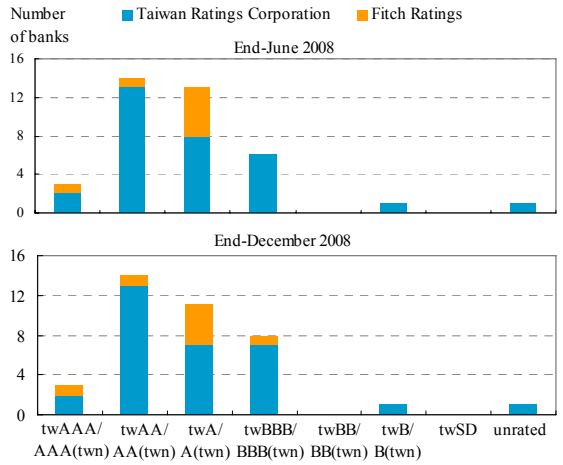
Most rated banks received credit ratings of twAA/twA (Taiwan Ratings) or AA(twn)/A(twn) (Fitch Ratings) at the end of 2008, while there was only one bank with a credit rating of twB- (Chart 5.35). It showed that the credit ratings of domestic banks generally remained unchanged in the second half of 2008, even under unfavorable economic conditions.

[54] Fitch Ratings has devised two complementary measures, the Banking System Indicator (BSI) and Macro-Prudential Indicator (MPI), to assess banking system vulnerability. The two indicators are brought together in a Systemic Risk Matrix that emphasizes the complementary nature of both indicators. The BSI, based on the synthetic assessment results composed of individual ratings and systematic risks in the banking system, measures intrinsic banking system quality or strength on a scale from A (very high quality) to E (very low quality). On the other hand, the MPI indicates the vulnerability to stress on above-trend levels of private sector credit, a bubble in real asset prices, and/or major currency appreciation, measuring the vulnerability of the macro environment on a scale from 1 (low) to 3 (high) in terms of banking system vulnerability.

[55] The credit rating index is an asset-weighted average rating score of rated domestic banks, measuring the overall creditworthiness of those banks on a scale from 1 (weakest) to 100 (strongest). The rating score for banks is determined according to their long-term issuer ratings from Taiwan Ratings Corporation or national long-term ratings from Fitch Ratings.

However, there were five banks with a negative rating outlook at the end of 2008 due to increasing uncertainties regarding asset quality, low provisions, or the high pressure of maintaining adequate capital, and two banks with a "developing" rating outlook at the end of 2008. In 2009 Q1, there were four more banks with negative rating outlooks or CreditWatch owing to poor profitability or weakened capital adequacy. Uncertainties over future credit ratings of domestic banks remain high.

Chart 5.35 Distribution of credit ratings of rated domestic banks



Note: Credit rating "twSD" refers to selective default.
Sources: Taiwan Ratings Corporation and Fitch Ratings.

5.2.2 Life insurance companies

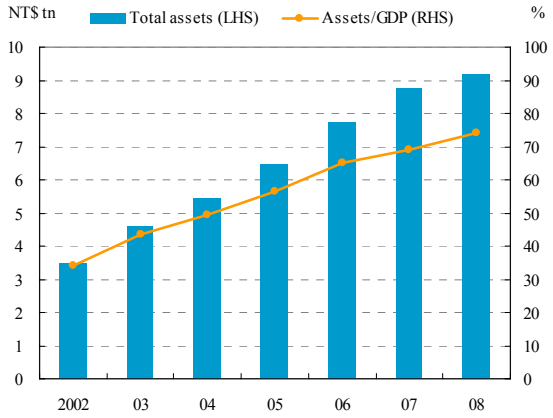
The asset growth of life insurance companies slowed down in 2008. They registered a huge combined net loss before tax of NT$144.2 billion for the year, resulting in a sharp erosion of their net worth, and remained under great pressure from potential losses driven by negative interest rate spreads. As a result of temporarily adjusting the risk-based capital system and capital injections to support some companies, the average risk-based capital (RBC) ratio increased but still remained below the statutory minimum. As for credit ratings, some companies were downgraded or listed on negative rating outlooks or CreditWatch.

Asset growth slowed down

The total assets of life insurance companies increased slowly to NT$9.16 trillion at the end of 2008, equivalent to 74.20% of annual GDP, while its annual growth rate decreased from 12.79% at the end of 2007 to 4.94% (Chart 5.36). The increase in assets was mainly supported by a surge of securities investments and deposits along with a certain degree of growth in loans. However, insurance products held in segregated custody accounts, the major component of other assets, shrank markedly owing to the continued decrease of investment-linked insurance policies resulting from the financial crisis and customer disputes regarding structured products.

The structure of the life insurance market in 2008 changed slightly. As of the end of 2008, twenty-three domestic life insurance companies held a 98.94% market share by assets, while seven foreign life insurance companies[56] commanded a share of only 1.06%. The top three companies held a combined market share of 56.40% and 44.50% in terms of assets and premium income, respectively. These ratios represented a high market concentration in the life insurance industry even though they decreased slightly compared to 2007.

Chart 5.36 Total assets of life insurance companies

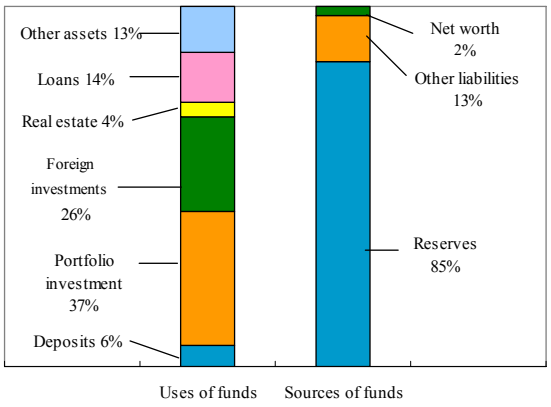


Note: End-of-period figures.
Source: FSC.

Funds invested in deposits increased while securities investments grew slowly

The funds of life insurance companies at the end of 2008 were mainly invested in domestic and foreign securities, accounting for 63% of funds, while 14% of funds were in loans and only 4% in real estate. As for the sources of funds, various policy reserves constituted 85%, while net worth accounted for only 2% of funds (Chart 5.37). Usable funds of life insurance companies in 2008 continued growing while deposits registered a marked increase of 25.97% owing to limited investment opportunities caused by the sluggish investment environment. Securities investments continued increasing but at a much slower pace of growth, whereas real estate investment growth remained steady.

Chart 5.37 Sources and uses of funds in life insurance companies



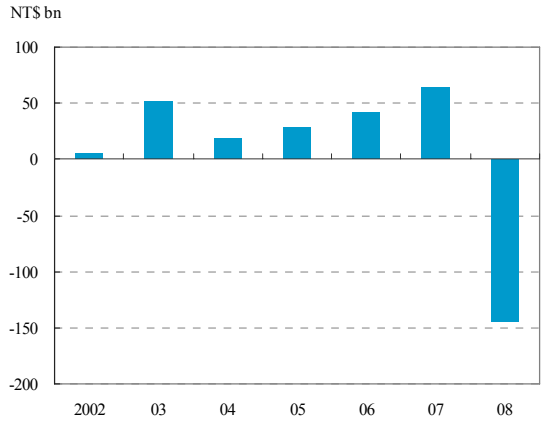
Note: Figures are end-December 2008 data.
Source: FSC.

[56] Including foreign affiliates.

Registering losses in 2008

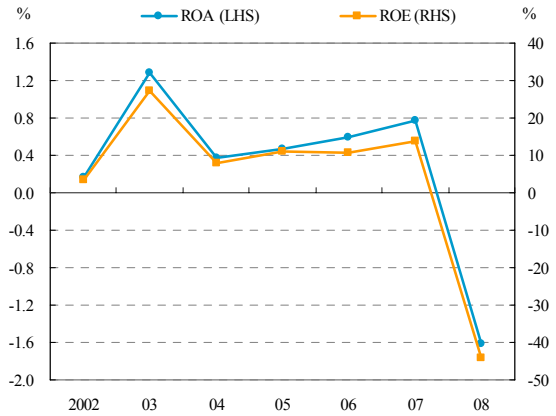
Life insurance companies as a whole registered a net loss before tax of NT$77 billion in the first half of 2008, mainly led by the appreciation of the NT dollar as well as the enormous losses resulting from foreign investments. Although there was a sizable recovery of foreign exchange losses owing to the depreciation of the NT dollar in the second half of 2008, investment losses increased further due to the deepening international financial crisis, and policy reserves increased enormously on account of business expansion. As a result, total net losses before tax registered NT$144.2 billion in 2008 (chart 5.38). Average ROE and ROA also declined substantially and stood at -44.03% and -1.61%, respectively (Chart 5.39). This shows that life insurance companies were the sector of the financial industry most affected by the financial crisis.

Chart 5.38 Net income before tax of life insurance companies



Source: FSC.

Chart 5.39 ROE & ROA of life insurance companies



Note: ROA = net income before tax / average assets.
ROE = net income before tax / average equity.
Source: FSC.

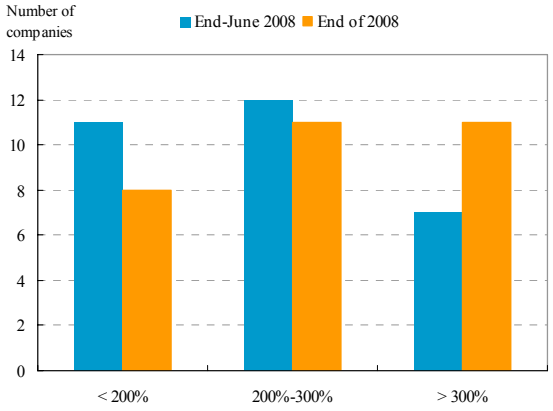
As a consequence of the poor performance of domestic and foreign financial markets, the average return on investment of life insurance companies was only 1.87% in 2008. This was much lower than the 3.78% registered in 2007, showing the deterioration in investment income resulting in the negative interest rate spread. As the depressed investment market and the massive decrease in interest rates after the CBC's seven consecutive discount rate cuts may continue to erode future investment returns, the negative interest rate spread might not improve in the near future and investment losses may take time to recover.

Average RBC ratio fell below the statutory minimum

The net worth of life insurance companies registered NT$ 222.1 billion at the end of 2008, a substantial decrease of 48.70% year on year due to huge losses during the year. In response to

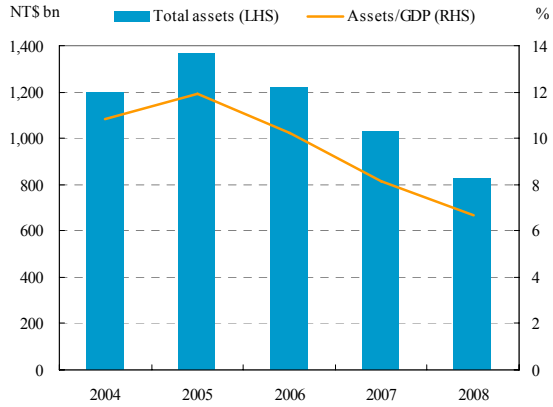
the global financial crisis, however, the FSC temporarily adjusted the risk-based capital system[57] of the insurance industry, and some companies raised capital of over NT$140 billion in total in 2008. As a result, the average RBC ratio [58] for life insurance companies increased considerably from 162.37% at the end of June 2008 to 190.37% at the end of the year, but was still below the statutory minimum of 200%. There were eleven companies with ratios of over 300%. However, eight companies had ratios below the statutory minimum, the combined assets of which accounted for 15.58% of the total (Chart 5.40). The financial structure of these companies needed to be improved.

Chart 5.40 RBC ratio of life insurance companies



Source: FSC.

Chart 5.41 Total assets of bills finance companies



Note: Total assets are end-of-period figures.
Sources: CBC and DGBAS.

Credit ratings for the top three companies remained above twAA or AA (twn)

Of the twelve domestic life insurance companies rated by credit rating agencies, six companies were downgraded or listed on negative rating outlooks or CreditWatch during the period from July 2008 to January 2009, reflecting their weakness in profitability and capital. Nevertheless, the top three companies were rated above twAA or AA(twn), respectively, signifying their strong ability to meet all financial commitments.

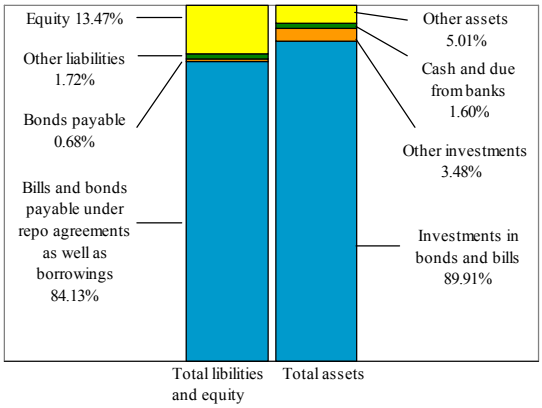
5.2.3 Bills finance companies

The total assets of bills finance companies continued to decrease in 2008. At the same time, profitability deteriorated but asset quality was satisfactory and capital adequacy improved.

[57] See the section "Measures to stabilize the financial system" of chapter six "Taiwan's policy measures to cope with the global financial crisis" in this report.
[58] Risk-Based Capital (RBC) ratio for life insurance companies = regulatory capital/risk-based capital. Under Article 143-4 of the Insurance Act, this ratio must be at least 200%.

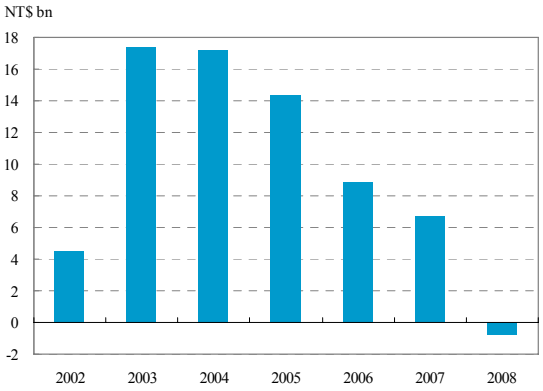
The bills finance companies faced a maturity mismatch between assets and liabilities and a contraction in the commercial paper guarantee business, while liquidity risk temporarily rose in September 2008 but then mitigated.

Chart 5.42 Asset/liability structure of bills finance companies



Note: Figures are end-December 2008 data.
Source: CBC.

Chart 5.43 Net income before tax of bills finance companies



Source: CBC.

Total assets continued to contract

The total assets of bills finance companies continued to decline and stood at NT$823.1 billion, or 6.67% of annual GDP, as of the end of 2008, with a decrease of 20.12% year on year (Chart 5.41). The main reasons behind this were that two bills finance companies were merged by their affiliated banks and that some bills finance companies reduced their investments in bonds and bills. The three largest bills finance companies commanded a market share by assets of 72.66% in total. For other firms, each of them had a market share below 7%.

As for asset/liability structure at the end of 2008, investments in bonds and bills on the asset side accounted for 89.91% of total assets, an increase of 0.64 percentage points compared to June 2008, while bills and bonds payable under repo agreements as well as borrowings on the liability side accounted for 84.13%, a decrease of 1.84 percentage points compared to June 2008 (Chart 5.42).

Profitability deteriorated but saw an improvement in early 2009

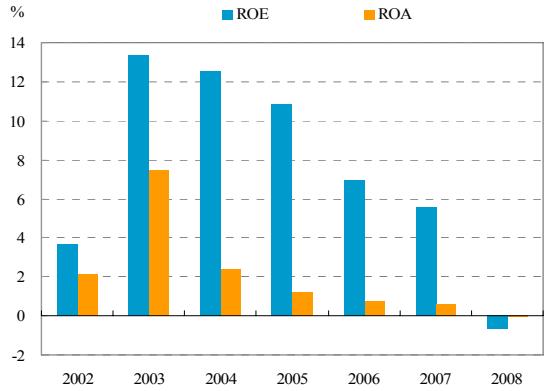
The profitability of bills finance companies deteriorated deeply as they posted a combined net loss before tax of NT$0.78 billion in 2008, a big decrease compared to a gain of NT$6.68 billion in 2007 (Chart 5.43). At the same time, ROE and ROA dropped dramatically to -0.71% and -0.08%, respectively (Chart 5.44). The deterioration in profitability was mainly the result of the narrowing spread between short-term and long-term interest rates as well as the losses of asset-backed commercial paper investments which were linked to defaulted

foreign underlying assets. Because the interest spread widened in early 2009, the profitability of bills finance companies improved and posted a combined net income before tax of NT$3.51 billion in 2009 Q1.

Both the average capital adequacy ratio and financial leverage improved

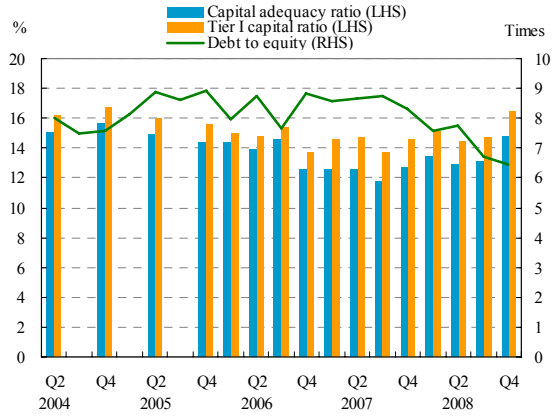
The average capital adequacy ratio of bills finance companies increased and reached 14.96% as of the end of 2008. For individual companies, only one had a ratio slightly below 8% due to losses in 2008, while the others had ratios above 13%. The average Tier 1 capital ratio also rose and stood at 16.63% as of the end of 2008. Owing to a contraction in debt and an increase in equity, the average debt to equity ratio slid markedly to 6.43 times as of the end of 2008 (Chart 5.45). These improvements showed that the financial structure of bills finance companies was continually enhanced during the year.

Chart 5.44 ROE & ROA of bills finance companies



Notes: 1. ROA = net income before tax / average assets.
2. ROE = net income before tax / average equity.
3. ROA in 2008 is merely 0.08%.
Source: CBC.

Chart 5.45 Capital adequacy ratio of bills finance companies

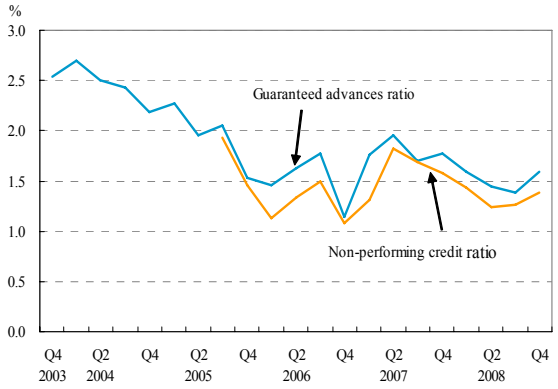


Note: The debt figures before 2003 included securities sold under repo agreements.
Source: CBC.

Credit quality remained satisfactory

The guaranteed advances ratio and non-performing credit ratio [59] for the guarantee business increased and stood at 1.59% and 1.38%, respectively, at the end of 2008, mainly driven by the contraction of outstanding guarantees. However, the quality of credit assets at bills finance companies remained satisfactory (Chart 5.46). The outstanding amount of stock-secured credit registered NT$54.2 billion or 16.92% of total credit at the end of 2008, lower than the figure at the end of June 2008. In spite of the mild rebound in the stock market in 2009 Q1, the risk of stock-secured credit remained high.

Chart 5.46 Guaranteed advances ratio of bills finance companies

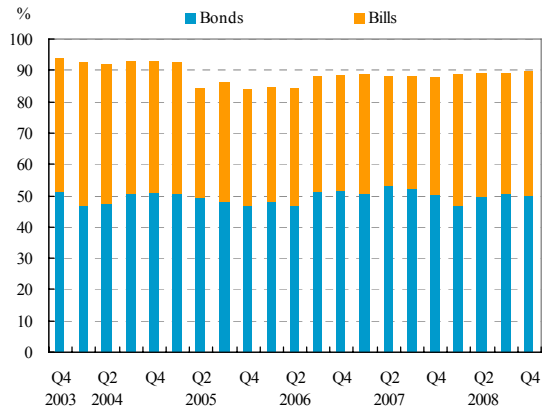


Notes: 1. Guaranteed advances ratio = overdue guarantee advances / (overdue guarantee advances + guarantees). Non-performing credit ratio = non-performing credit / (overdue guarantee advances + guarantees).
2. The data of non-performing credit ratios are compiled from September 2005 onwards.
Source: CBC.

Liquidity risk was mitigated

Investments in bonds and bills constituted 89.91% of the assets of bills finance companies as of the end of 2008. Long-term bonds, in particular, accounted for about 50% (Chart 5.47). As short-term borrowings and repos made up 84.13% of total assets, an apparent mismatch in asset-liability maturity persisted. Bills finance companies were exposed to high liquidity risk from September 2008 when funding from the call-loan market dramatically decreased. This mainly resulted from waning confidence in the domestic financial market alongside the fact that the call loans which bills finance companies borrowed from banks were not covered by the interim blanket deposit insurance scheme. However, the liquidity risk of bills finance companies mitigated in early 2009 as their operations improved due to widening interest rate spreads and ample liquidity in the financial market.

Chart 5.47 Bond & bill positions as percentage of assets at bills finance companies

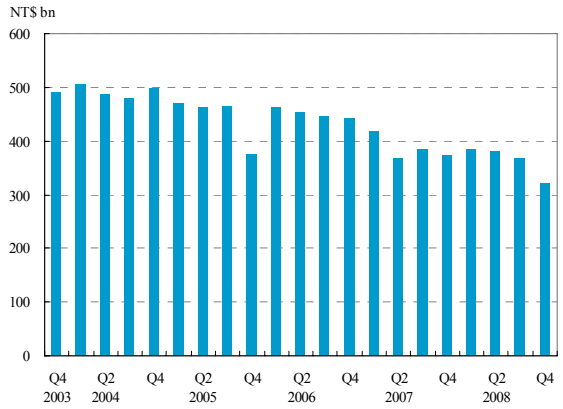


Note: End-of-period figures.
Source: CBC.

[59] Non-performing credit for guaranteed advances refers to those guarantee advances that are more than three months overdue.

The guarantee business shrank

Chart 5.48 Outstanding commercial paper guarantees



Note: End-of-period figures.
Source: CBC.

The outstanding balance of commercial paper guaranteed by bills finance companies continued to decline in the second half of 2008. This figure dropped further to NT$320.3 billion as of the end of 2008, down 15.60% from the end of June 2008. The main reason was that bills finance companies appeared to reduce customers' credit lines in response to the difficulty in obtaining financing from the call-loan market from September 2008 (Chart 5.48). In 2009 Q1, the outstanding balance continued dropping in January and began to increase slightly in February, but the figure at the end of March was still lower than that at the end of 2008.

5.3 Financial infrastructure

5.3.1 Payment and settlement systems

Transactions of major systems

In 2008, the average daily transactions of the three major payment and settlement systems, the CBC Interbank Funds-Transfer System (CIFS), the Interbank Remittance System (IRS) and the Check Clearing House System (CCHS)[60], reached 2.26 million transactions in volume or NT$1.67 trillion in value, increasing by 0.95% or 5.61% year on year, respectively (Table 5.3). The transaction value of the IRS system decreased for the first time, contracting by 2.45% year on year in 2008. The main reason behind this was the average daily value for wire deposits[61] declined owing to the contraction in mutual funds and securities transactions caused by the global financial crisis and economic sluggishness.

[60] The CBC Interbank Funds Transfer System (CIFS) is operated by the CBC, handling interbank fund transfers and payment settlements. The Interbank Remittance System (IRS) is operated by the Financial Information Service Co., Ltd (FISC), providing remittance services, including interbank remittances, ATM withdrawals, fund transfers, financial EDI and internet payments. The Check Clearing House System (CCHS) is supervised by the CBC and handles clearing and settlements of checks, promissory notes, and drafts among banks.

[61] Remittance services provided by the IRS include: (1) wire deposits; (2) treasury remittances; (3) interbank remittances; (4) securities settlement payments; and (5) bills settlement payments.

Table 5.3 Average daily transactions for the three major payment and settlement systems

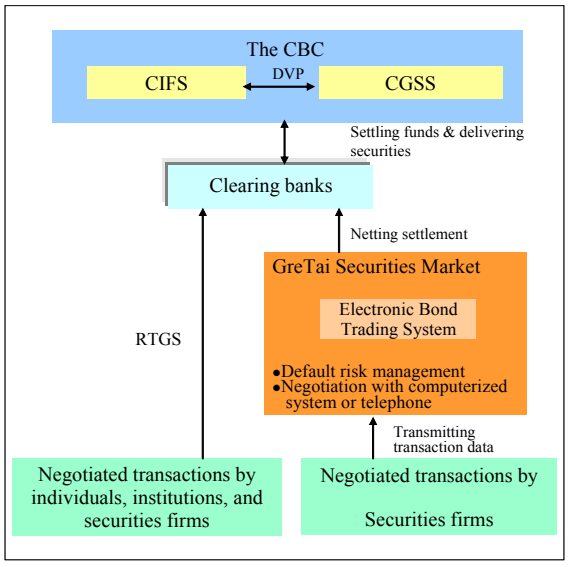
Items	Types of systems	2007	2008	Change (%)
Volume (in thousands of transactions)	CIFS	3.25	3.38	4.00
	IRS	1,652.24	1,717.69	3.96
	CCHS	580.74	536.48	-7.62
	Total	2,236.23	2,257.55	0.95
Value (in NT$ bn)	CIFS	1,012.05	1,120.64	10.73
	IRS	474.92	463.31	-2.45
	CCHS	90.47	82.00	-9.36
	Total	1,577.44	1,665.94	5.61

Source: CBC.

Integration of large-value payment systems

As government bonds dominated the domestic bonds market, the CBC set up the Central Government Securities Settlement System (CGSS) in September 1997 in order to enhance the efficiency of government bonds settlement. Furthermore, the CBC linked the CGSS and the CIFS on a delivery versus payment (DVP) basis in April 2008 to improve settlement security and reduce settlement risk on government bond transactions and to conform to the Recommendations for Securities Settlement Systems.[62]

Chart 5.49 The framework of the Central Government Securities Settlement System



Source: CBC.

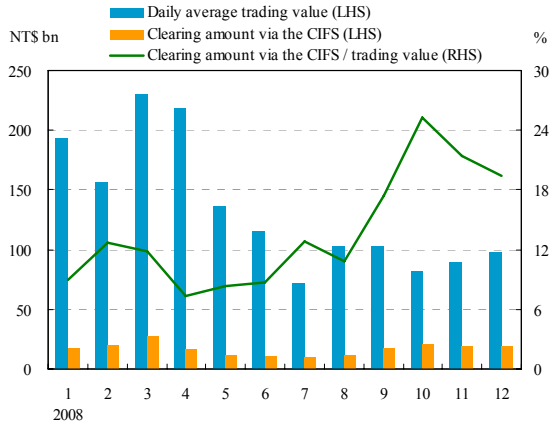
Currently, the underwriting of central government bonds is done via central government bond dealers. As for the secondary market, except for the transactions between investors and securities firms, the transactions among securities firms are done and cleared through the GTSM Electronic Bond Trading System (EBTS),[63] and are

[62] "Recommendations for securities settlement systems," Committee on Payment and Settlement Systems (CPSS) & International Organization of Securities Commissions (IOSCO), November 2001.

[63] The EBTS is operated by the GreTai Securities Market (GTSM), which is a non-profit organization with the mission of developing the over-the-counter market.

settled by sixteen clearing banks via the CIFS and the CGSS (Chart 5.49). After the development of the aforementioned systems, the CIFS was integrated with large-value payment systems for bonds, bills and stocks and complies with international recommendations calling for the use of central bank money for final settlement.

Chart 5.50 GTSM Electronic Bond Trading System



Source: GTSM.

GTSM Electronic Bond Trading System and its liquidity saving mechanism

To enhance the settlement efficiency and security of book-entry central government bond transactions, the CBC incorporated the EBTS into the CIFS in July 2007 to allow payments to be done on a real-time basis. In addition, the EBTS has the advantage of decreasing liquidity needs for securities firms because it adopts a netting settlements mechanism. Consequently, the daily average trading value settled via the CIFS in December 2008 accounted only for 19.3% of the total trading amount (Chart 5.50).

5.3.2 Financial market exit mechanism and ownership management

To enhance financial competitiveness, early warning mechanisms, financial supervision, and corporate governance as well as to place the financial market exit mechanism under the legal framework, the Banking Act of the Republic of China was amended on 30 December 2008, mainly to set up prompt corrective actions and a market exit mechanism based on the capital adequacy ratios of financial institutions, and to strengthen ownership management in banks.

Prompt corrective actions and financial markets exit mechanism

In order to enhance the safety and soundness of the banking sector, as well as to reduce the cost of dealing with problem financial institutions, the newly amended Banking Act introduces prompt corrective actions and classifies banks into four categories based on their capital adequacy ratios, namely well capitalized, undercapitalized, significantly undercapitalized and critically undercapitalized. For those undercapitalized or significantly undercapitalized banks, the Financial Supervisory Commission (FSC) shall take necessary

enforcement actions,[64] such as suspending certain business operations or the duties of management, or placing restrictions on obtaining or disposing certain assets, to urge them to improve their capital adequacy.

Those banks with a capital adequacy ratio or equity to total assets ratio lower than 2% will be deemed as critically undercapitalized. Except for the aforementioned enforcement actions, the FSC shall take them over within 90 days when they are classified as being critically undercapitalized or when they fail to comply with the recapitalization or merger plans within a certain time limit required by the FSC.

Prompt corrective actions assist the FSC in identifying banks with weakening capital structures at an early stage and implementing necessary enforcement and remedial actions on a timely basis, and thus help to strengthen banks' capital adequacy and to ensure the safety and soundness of banking system. Moreover, the FSC are required to take over critically undercapitalized banks within a certain period of time. This requirement will help to speed up the market exit mechanism so as to avoid delaying the resolution of problem banks, as well as to reduce their resolution cost.

Enhancing ownership management in banks

To enhance the transparency of ownership and the fit and proper management, the amended Banking Act stipulates that a single party or single group of related parties holding an equity stake of more than 5% in a bank is required to file with the FSC within ten days, and such a party or group seeking to acquire an equity stake of more than 10%, 25% or 50% must file with the FSC for prior approval. Should the stockholder fail to notify the FSC or obtain prior approval, voting rights for the stockholding exceeding the preceding ratios shall be expropriated and the excess stockholding shall be disposed of within a certain period of time required by the FSC.

5.3.3 Revision of inventory accounting standards

Fair presentation and transparency of financial statements of enterprises are essential to financial institutions' credit decisions. To enhance inventory management, improve transparency in financial statements and promote investors' confidence, as well as to conform

[64] For undercapitalized banks, the enforcement actions include requiring them to submit recapitalization and operational enhancement proposals or limiting the increase of their risk weighted assets. For significantly undercapitalized banks, in addition to those enforcement actions taken for undercapitalized banks, the enforcement actions also include suspending the duties of management, placing restrictions on obtaining or disposing assets, restricting transactions between related parties, limiting deposit interest rates, lowering compensation for management, or designating receivers to take over the banks.

to internationally accepted accounting standards, the revision of the Statement of Financial Accounting Standards No. 10, Inventory Accounting Standards (SFAS 10), was effected as scheduled on 1 January 2009.

The major amendments to SFAS 10 are as follows:

- Inventories are required to be stated as the lower of cost or net realizable value instead of the lower of cost or market value.
- Inventories should not be written down to net realizable value on the basis of total items.
- Using the last-in, first-out formula to measure the cost of inventories is not permitted.
- Any write-down of inventories to net realizable value should be recognized as cost of goods sold when they occur.
- Fixed cost must be allocated on the basis of the normal capacity of the production facilities. Unallocated overheads are recognized as costs of goods sold.
- New accounting treatments are developed for cost of inventories of a service provider.

The FSC has adopted a series of measures to alleviate the impacts of SFAS 10 on enterprises, such as allowing the deferral of the recognition of losses caused by lower capacity utilization until the end of 2009 and proposing to release the trading restrictions for listed securities. Through these measures, it is expected that the impacts of SFAS 10 can be minimized and the compliance of Taiwan's SFAS with internationally accepted accounting standards can be improved.

VI. Taiwan's policy measures to cope with the global financial crisis

The impact of global financial turmoil resulted in downside risks to the local economy in the second half of 2008. In order to alleviate the impacts of the financial crisis, Taiwan's government launched the Economic Vitalization Package in September 2008 [65] and implemented a succession of monetary policies, financial stability measures and fiscal policies so as to increase domestic demand, stabilize the financial system and maintain the momentum of economic growth.

6.1 Monetary policies

To increase domestic demand and provide a sufficient injection of liquidity into the market, the CBC adopted an easy monetary stance. Key measures are summarized as follows:

Lowering the discount rate

The CBC lowered the discount rate by 2.375 percentage points in seven cuts from September 2008 to March 2009 (Table 6.1). Lower interest rates helped to reduce individual and corporate funding costs, encourage private consumption and investment, and stimulate domestic economic growth.

In addition, in order to prompt domestic banks to speedily lower their interest rates in line with the CBC's rate cuts, the CBC, Ministry of Finance and FSC held meetings twice with primary mortgage banks in November 2008. With the consent of those banks, rate adjustments of mortgage loans and corporate loans could be made monthly instead of quarterly (or semiannually) without additional renewal fees before March 2009.

Table 6.1 CBC discount rate cuts

Effective date	Change (percentage point)	Discount rate (%)
26 Sept. 2008	-0.125	3.50
9 Oct. 2008	-0.250	3.25
30 Oct. 2008	-0.250	3.00
9 Nov. 2008	-0.250	2.75
11 Dec. 2008	-0.750	2.00
7 Jan. 2009	-0.500	1.50
18 Feb. 2009	-0.250	1.25

Source: CBC.

[65] Please refer to Box 2 "Economic Vitalization Package in Taiwan," the second financial stability report, December 2008.

Lowering the required reserve ratios

From 18 September 2008 onward, the CBC lowered the required reserve ratios on demand deposits and time deposits by 1.25 and 0.75 percentage points, respectively, releasing around NT$200 billion of funds with a view to increasing the momentum of bank lending.

Expanding the scope of Repo facility operations

To provide financial institutions with sufficient liquidity, the Board of the CBC reached the decision to expand the scope of Repo facility operations in its meeting on 25 September 2008. The monetary policy decisions included: (1) expanding eligible counterparties to include securities firms and insurance companies; (2) extending the term of Repo facility operations to within 180 days from 30 days; (3) expanding eligible instruments to include CDs issued by the CBC; and (4) allowing financial institutions to apply for the CBC's approval for Repo facility operations based on their funding demand, in addition to the operations announced by the CBC.

6.2 Measures to stabilize the financial system

In order to stabilize financial markets, improve market confidence, as well as assist individual and corporate funding, the government also implemented a number of measures to stabilize the financial system as follows:

Adopting an interim blanket deposit guarantee

The government announced that it would guarantee all deposits in insured financial institutions (both banks and community financial institutions) by their full amount until the end of 2009. Additional deposits to be guaranteed included foreign currency-denominated deposits, inter-bank deposits and lending, and financial bonds issued before or on 23 June 2005. This measure effectively stabilized the market and restored the confidence of depositors.

Initiating approaches for stabilizing stock markets

The impact of global financial turmoil resulted in acute slumps in the local stock markets. In order to stabilize domestic equities prices, the government launched the following measures: (1) temporarily resuming the ban on short-selling 150 listed shares below the previous day's closing price, suspending borrowed and margin stocks from short-selling, and narrowing the

percentage fall limits of share prices; (2) encouraging companies to buy back their own stocks as treasury stocks or company directors to purchase their companies' stocks; and (3) encouraging state-owned financial institutions and the four government-managed funds to purchase low-priced stocks of well-performing companies.

Increasing securities market momentum and expanding capital market size

To increase market momentum, the short-selling of borrowed and margin stocks at or above the closing price on the previous trading day was permitted from 28 November 2008 onwards. As a result, the trading volume in the stock market increased substantially in December 2008. Moreover, after the government resumed the short-selling of 150 listed shares below the closing price on the previous trading day and lifted the limits on the total volume of short-selling for borrowed and margin stocks, starting from 5 January 2009, market liquidity increased. In addition, the FSC released a new regulation on 30 April 2009, which gave the green light to Qualified Domestic Institutional Investors (QDIIs) from China wishing to invest in Taiwan's securities and futures. It was expected to expand the scale of the local capital market so as to promote its internationalization and competitiveness.

Coordinating corporate financing support

In order to assist corporations to weather the current economic downturn and to tackle their business difficulties, the government introduced several projects, including: (1) organizing a Special Task Force on Facilitating Enterprises to Obtain Operational Funds to help small and medium enterprises (SMEs) and large corporations find financing support; (2) releasing two self-disciplined mechanisms by the Bankers' Association allowing corporations that face financial difficulties but still operate normally and pay loan interest as scheduled to extend loans by six months if their expiry date is before the end of 2009, and temporarily loosening collateral requirements on margin loans to ease selling pressure from margin calls; (3) extending the settlement period for dishonored checks; (4) implementing the Program to Encourage Lending by Domestic Banks to Small and Medium Enterprises, which is expected to increase SMEs' lending by NT$300 billion from July 2008 to the end of 2009; (5) providing NT$600 billion in loans to large corporations[66] under the Directions for the Provision of Special Loans and Credit Guarantees to Non-SMEs; and (6) loosening the qualification requirements for credit guarantees, lowering guarantee fees and expanding authorized guarantee coverage by the Small and Medium Enterprise Credit Guarantee Fund

[66] Effective until the end of 2010.

of Taiwan (Taiwan SMEG)[67].

In order to help corporations raise funds from capital markets, the government also implemented several related measures, including: (1) relaxing the lower limit of offering prices for equity offerings; (2) allowing issuers of convertible bonds which are due before the end of 2009 to set additional conversion price reset provisions or modify terms, such as extending the due date, after reaching the final decision at shareholders' meetings and negotiating with bondholders; (3) allowing companies to issue new corporate bonds to pay off previous bond indentures; and (4) allowing public-issuing companies to repay corporate bonds using the residual funds of previous bond issues.

Assisting individuals to get loans from banks

In order to assist individuals to get loans from banks and to reduce the interest burden for homebuyers, the government introduced several measures, which included: (1) providing a total of NT$400 billion in preferential mortgage loans in September 2008 and April 2009, respectively; and (2) allowing borrowers of preferential mortgage loans to extend the expiration date or defer principal repayment of loans if applicable, and allowing involuntarily unemployed workers to defer principal payments of their mortgage loans.

Temporarily adjusting the risk-based capital system of the insurance industry

In view of the impact of the global financial crisis and to maintain the function of the risk-based capital (RBC) system as well as the stability of the domestic insurance market, the FSC promulgated a new regulation in November 2008 to allow insurance companies to raise funds through issuing bonds with a capital nature. Furthermore, the FSC amended the risk-based capital system of the insurance industry in October and November 2008, respectively. The main amendments were: (1) the issuance of bonds with a capital nature can be included in eligible capital, and the maximum limit of bonds with a capital nature and preferred stock of a liability type being included in eligible capital was raised; (2) except for the cross investments among insurance companies, the funds invested in bonds with a capital nature or preferred stock of a liability type need not be deducted from eligible capital; (3) the special reserve for major events and part of unrealized gains or losses arising from investments on stocks, exchange-traded funds (ETFs) and mutual funds can be included in eligible capital. The above amendments are to be in effect until the end of 2009.

[67] Effective until the end of 2009.

6.3 Fiscal policies

In addition to the monetary policies and financial stability measures mentioned above, there are expansionary fiscal policies to promote domestic demand and maintain the momentum of domestic economic growth.

Expanding investment in public works

The government adopted a four year project of Expanding Investment in Public Works to Revitalize the Economy with a total of NT$500 billion to expand investment in public works schemes. Its objectives are to: (1) create a comprehensive and rapid transit network; (2) create a safe and disaster-free environment; (3) improve the quality of the cultural and living environment; (4) strengthen infrastructure to enhance national competitiveness; (5) improve transportation facilities on outlying islands; and (6) foster education and employment. This project is expected to increase real GDP by 0.68 percentage points in 2009.

Encouraging consumption

The government issued consumption vouchers valued at NT$3,600 per person starting from 18 January 2009, totaling around NT$ 80 billion, to effectively stimulate private consumption and boost the domestic economy.

Lowering the estate and gift tax rates

The ceiling of the estate and gift tax rates was lowered to 10% from 50%. It is expected to attract capital remitted abroad to flow back and revitalize domestic markets.

Promoting employment

To create employment opportunities, the government introduced the 2008-2009 Short-Term Employment Promotion Program, which aims to provide approximately 46 thousand and 56 thousand job openings in 2008 and 2009, respectively. Moreover, the 2009-2012 Employment Promotion Program is expected to add 50 thousand employment opportunities per year from 2009 to 2012, and effectively reduce the unemployment rate.

Appendix: Financial soundness indicators

Table 1: Domestic Banks

Unit: %

Items \ Year (end of year)	2003	2004	2005	2006	2007	2008
Earnings and profitability						
Return on assets (ROA)	0.22	0.64	0.30	-0.06	0.28	0.12
Return on equity (ROE)	3.52	10.25	4.74	-0.94	4.32	1.86
Net interest income to gross income	66.86	62.60	66.11	68.34	66.38	78.53
Non interest expenses to gross income	46.35	46.59	47.84	51.21	54.07	62.97
Gains and losses on financial instruments to gross income	15.87	10.13	11.49	12.63	9.08	3.91
Personnel expenses* to non-interest expenses	-	-	-	55.37	55.93	54.80
Spread between lending and deposit rates (basis points)	2.63	2.30	2.22	1.91	1.72	1.66
Asset quality						
Non-performing loans to total loans	6.08	3.82	2.24	2.15	1.83	1.54
Provision coverage ratio	22.68	30.14	50.06	62.26	64.07	69.48
Capital adequacy						
Regulatory capital to risk-weighted assets	10.29	10.87	11.23	10.87	10.80	11.04
Tier 1 capital to risk-weighted assets	10.00	10.25	10.37	9.88	8.50	8.43
Capital to total assets	6.17	6.28	6.45	6.19	6.42	6.12
Non-performing loans net of provisions to capital	51.76	30.61	15.28	15.16	12.22	10.33
Liquidity						
Customer deposits to total loans	117.69	118.10	118.70	119.41	117.98	122.34
Liquid assets* to total assets	-	-	-	-	10.59	12.69
Liquid assets* to short-term liabilities	-	-	-	-	15.66	18.39

Table 1：Domestic Banks (cont.)

Unit: %

Items \ Year (end of year)	2003	2004	2005	2006	2007	2008
Credit risk concentration						
Household loans to total loans	42.65	44.89	46.51	46.74	46.59	45.48
Corporate loans to total loans	42.07	41.30	41.60	43.02	43.90	45.27
Large exposures to capital	-	-	137.32	144.28	136.85	142.38
Gross asset positions in financial derivatives* to capital	-	-	-	5.28	10.35	21.92
Gross liability positions in financial derivatives* to capital	-	-	-	4.79	5.44	16.48
Sensitivity to market risk						
Net open position in foreign exchange* to capital	-	-	-	3.11	5.02	2.41
Foreign-currency-denominated loans* to total loans	-	-	-	13.44	15.57	16.54
Net open position in equities* to capital	-	-	-	28.63	30.88	24.99
Foreign-currency-denominated liabilities* to total liabilities	-	-	-	19.86	22.20	20.41

Notes: 1. The items with "*" are only available from 2006. Liquidity asset related items are disclosed from 2007.
2. The data of earnings and profitability in 2006 and 2007 exclude Chinese Bank and Bowa Bank.

Table 2: Non-financial Corporate Sector

Units: %, times

Items \ Year (end of year)	2003	2004	2005	2006	2007	2008
Total liabilities to equity						
Corporate sector	95.27	102.15	86.10	85.21	82.20	-
TWSE-listed companies	68.03	66.37	66.06	64.06	63.20	67.59
OTC-listed companies	90.48	76.67	84.03	74.13	R 76.49	89.44
Return on equity						
Corporate sector	10.18	11.36	10.88	13.04	13.90	-
TWSE-listed companies	12.64	16.67	14.13	15.43	18.03	8.08
OTC-listed companies	8.97	15.69	9.26	17.06	R 9.20	-5.97
Net income before interest and tax / interest expenses (times)						
Corporate sector	6.03	7.89	8.97	10.10	10.78	-
TWSE-listed companies	9.45	17.72	15.25	16.95	19.08	8.26
OTC-listed companies	4.55	12.72	8.38	14.06	R 7.88	-

Notes: 1. The data of all corporates are from JCIC, and those of TWSE-listed and OTC-listed corporates are from TEJ.
2. The data of "net income before interest and tax / interest expenses" for OTC-listed companies in 2008 is nil due to the net loss of the same year.
3. The figure with "R" is revised data.

Table 3: Household Sector

Unit: %

Items \ Year (end of year)	2003	2004	2005	2006	2007	2008
Household borrowing to GDP	77.43	81.66	85.22	85.45	83.24	83.60
Borrowing service and principal payments to gross disposable income	42.66	R 46.04	48.41	R 46.02	R 43.38	41.82

Notes: 1.The figures of disposable income for 2007 and 2008 are CBC estimates.
2. The figure with "R" is revised data.

Table 4: Real Estate Market

Unit: %

Items \ Year (end of year)	2003	2004	2005	2006	2007	2008
Land price index	91.29	93.35	94.68	96.38	98.92	100.51
Residential real estate loans* to total loans	-	-	-	29.14	30.14	29.16
Commercial real estate loans* to total loans	-	-	-	10.74	11.84	12.14

Notes: 1.Figures of Land price index are on a end-September basis (March 2008 = 100).
2.The items with "*" are only available from 2006.

Table 5: Market Liquidity

Unit: %

Items \ Year (end of year)	2003	2004	2005	2006	2007	2008
The turnover ratio of trading value in stock market	190.82	177.46	131.36	142.20	153.28	145.45
The monthly average turnover ratio in bond market	-	135.40	215.69	140.58	74.65	47.93

Notes: 1.The turnover ratio in terms of trading value in stock market is the cumulative figure of the period.
2.The monthly average turnover ratio in bond market is the average figure of the period. This data is available from 2004.

Explanatory notes: Compilation of financial soundness indicators

I. General notes

- *To facilitate international comparison, most items listed in "Appendix: Financial Soundness Indicators" are compiled in accordance with the "Compilation Guide on Financial Soundness Indicators" issued by the IMF in July 2004. However, a few indicators are not used for analysis in this report due to insufficient time series data.*

- *Unless otherwise stated, the data of all indicators are on a year-end (stock data) or year-to-date (flow data) basis.*

- *Compilation of Domestic Banks' Indicators*

1. The banks in this report as of the end of 2008 include Bank of Taiwan, Land Bank of Taiwan, Taiwan Cooperative Bank, First Commercial Bank, Hua Nan Commercial Bank, Chang Hwa Commercial Bank, Citibank Taiwan, The Shanghai Commercial & Savings Bank, Taipei Fubon Commercial Bank, Cathay United Bank, The Export-Import Bank of the Republic of China, Bank of Kaohsiung, Mega International Commercial Bank Co., Agricultural Bank of Taiwan, China Development Industrial Bank, Industrial Bank of Taiwan, Taiwan Business Bank, Standard Chartered Bank (Taiwan), Taichung Commercial Bank, King's Town Bank, Bank of Taipei, Hwatai Bank, Shin Kong Commercial Bank, Sunny Bank, Bank of Panhsin, Cota Commercial Bank, Union Bank of Taiwan, Far Eastern International Bank, Yuanta Commercial Bank, Bank Sinopac, E. Sun Commercial Bank, Cosmos Bank, Taishin International Bank, Ta Chong Bank, Jih Sun International Bank, Entie Commercial Bank, Chinatrust Commercial Bank, and Chinfon Commercial Bank, amounting to 38 banks.
2. The domestic banks' related indicators are calculated using unaudited data submitted regularly by domestic banks. The submitted data are different from the data posted on the banks' websites, which are audited and certified by certified public accountants or adjusted by the banks. The statistical basis for these two types of data is different.
3. Domestic banks' related indicators are calculated by aggregating the numerators and denominators of each ratio, and then dividing the total numerator by the total denominator to obtain the peer-group ratios. This methodology differs from the winsorized mean on the quarterly "Condition and Performance of Domestic Banks" report compiled by the Department of Financial Inspection of the Central Bank of the Republic of China (Taiwan).

II. Explanatory notes on the indicators

1. Domestic banks' indicators

1.1 Earnings and profitability

1.1.1 Return on assets (ROA)

This indicator is used to analyze domestic banks' efficiency in using their assets.

ROA = net income before income tax / average total assets

- Net income: net income before income tax plus extraordinary items.
- Average total assets: the average of total assets at the beginning and the end of the period.

1.1.2 Return on equity (ROE)

This indicator is used to analyze banks' efficiency in using their capital.

ROE = net income before income tax / average equity

- Net income: same as 1.1.1.
- Average equity: the average of equity at the beginning and the end of the period.

1.1.3 Net interest income to gross income

This indicator is a measure of the relative share of net interest earnings within gross income.

- Net interest income: interest income less interest expenses.
- Gross income: net interest income plus non-interest income.

1.1.4 Non-interest expenses to gross income

This indicator is a measure of the size of administrative expenses to gross income.

Non-interest expenses include operating expenses other than interest expenses as follows:

- Personnel expenses.
- Other expenses related to operations.
  - Expenses for property and equipment, including: purchasing, ordinary and regular maintenance and repair, depreciation, and building rentals paid.
  - Other expenditure related to operations, including: purchases of goods and services (e.g. advertising costs, staff training service expenses, and royalties paid for the use of other produced or non-produced assets).
  - Taxes other than income taxes less any subsidies received from general government.
- Gross income: same as 1.1.3.

1.1.5 Gains and losses on financial instruments to gross income

This indicator is to analyze business revenues from financial market activities as a share of gross income.

Gains and losses on financial instruments include the following items:

- Realized and unrealized gains and losses in the income statement arising on all financial assets and liabilities which are held at fair value through profit or loss, available for sale, and held to maturity.
- Gains and losses on financial assets or liabilities carried at cost.

- Gains and losses on debt instruments without active markets.
- Foreign exchange gains and losses.

Gross income: same as 1.1.3.

1.1.6 Personnel expenses to non-interest expenses

This indicator is to analyze personnel expenses as a share of non-interest expenses.

- Personnel expenses, including: wages and salaries, profit sharing and bonuses, allowances, pensions, social insurance and medical insurance, etc.
- Non-interest expenses: same as 1.1.4.

1.1.7 Spread between lending and deposit rates

This indicator is to analyze the effect of the interest rate spread upon net interest revenues and profitability.

- Spread between lending and deposit rates: the weighted average loan interest rate less the weighted-average deposit interest rate. The annual interest rate spread is the average of four quarters' spreads.

1.2 Asset quality

1.2.1 Non-performing loans to total loans

This indicator is to analyze asset quality in the loan portfolio.

- Non-performing loans

  "Non-performing loans" before 30 June 2005 include the following items:

  · Loans for which repayment of principal has been overdue for more than three months.
  · Medium and long-term loans for which installment repayments are overdue for more than 6 months.
  · Any loan for which the debtor has been sued for non-payment or the underlying collateral has been disposed of.
  · Any loan for which repayment of interest has been overdue for more than six months.

  "Non-performing loans" after 1 July 2005 include the following items, according to the "Regulations Governing the Procedures for Banking Institutions to Evaluate Assets and Deal with Non-performing / Non-accrual Loans," which were issued by the Ministry of Finance on 6 January 2004 and entered into force on 1 July 2005:

  · Loans for which repayment of principal or interest has been overdue for more than three months. Any loan for which the principal debtors and surety have been sued for non-payment or the underlying collateral has been disposed of, although the repayment of principal or interest has not been overdue for more than three months.
- Total loans: Total loans include bills purchased, discounts, accrual and non-accrual loans, but excluding interbank loans.

1.2.2 Provision coverage ratio

This indicator is to analyze the provision policy for loan losses.

- Provision coverage ratio: loan loss provisions / non-performing loans

1.3 Capital adequacy

1.3.1 Regulatory capital to risk-weighted assets

This indicator is to analyze the capital adequacy of domestic banks. The minimum statutory ratio of regulatory capital to risk weighted assets of a bank is 8%, based on Article 44 of the Banking Act.

- Regulatory capital: the eligible capital includes Tier 1 capital, eligible Tier 2 capital and eligible used Tier 3 capital.
- Risk-weighted assets: the term "risk-weighted assets" before the end of 2006 is the aggregate amount of the risk-weighted assets for credit risk together with the capital requirements for market risk multiplied by 12.5. From the beginning of 2007, it is the aggregate amount of the risk-weighted assets for credit risk together with the capital requirements for market risk and operational risk multiplied by 12.5.

1.3.2 Tier 1 capital to risk-weighted assets

This indicator is to analyze the capital adequacy of domestic banks based on the core capital concept.

- Tier 1 capital: includes common stockholder's equity, non-cumulative perpetual subordinated debt, non-cumulative perpetual preferred stock, capital reserves (except the appreciation reserves of fixed assets), retained earnings, minority interest, and cumulative effect of equity adjustments, less supervisory deductions.
- Risk-weighted assets: same as 1.3.1.

1.3.3 Capital to total assets

This indicator is to analyze the degree of financial leverage on assets funded by other than banks' own funds.

- Capital: equity interest of owners in a bank (i.e. the difference between total assets and liabilities).
- Total assets: the sum of financial and non-financial assets.

1.3.4 Non-performing loans net of provisions to capital

This indicator is to analyze the potential impact on capital of non-performing loans.

Non-performing loans net of provisions to capital = (non-performing loans - specific loan provisions) / capital

- Non-performing loans: same as 1.2.1.
- Specific loan provisions: the minimum provision that a bank should allocate in accordance with Article 5 of "Regulations Governing the Procedures for Banking Institutions to Evaluate Assets and Deal with Non-performing / Non-accrual Loans."
- Capital: same as 1.3.3.

1.4 Liquidity

1.4.1 Customer deposits to total loans

This indicator is a measure of liquidity to indicate the degree of dependence on more stable sources of funds (customer deposits) to illiquid assets (loans).

- Customer deposits: including check deposits, demand deposits, time deposits, saving

deposits, and money remittances.

- Total loans: same as 1.2.1.

1.4.2 Liquid assets to total assets

This indicator is to analyze the liquidity available to meet expected and unexpected demands for cash.

- Liquid assets: the core liquid assets comprising cash and cash equivalents, amounts due from the Central Bank, amounts due from banks, and call loans to banks (excluding amounts due from domestic banks which are included in the reporting population).
- Total assets: same as 1.3.3.

1.4.3 Liquid assets to short-term liabilities

This indicator is to analyze the liquidity mismatch of assets and liabilities, and provide an indication of the extent to which banks could meet the short-term withdrawal of funds without facing liquidity problems.

- Liquid assets: same as 1.4.2.
- Short-term liabilities: liabilities with remaining maturity of no more than one year, including deposits, borrowings, debt securities issued, and the net market value of financial derivatives positions (liabilities less assets), but excluding the transactions with domestic banks which are included in the reporting population.

1.5 Credit risk concentration

1.5.1 Household loans to total loans

This indicator is to analyze the concentration of loans to the household sector by domestic business units (DBUs) of domestic banks.

- Household loans: loans from DBUs of domestic banks to the household sector.
- Total loans: total loans (excluding export bills purchased and non-accrual loans) of DBUs of domestic banks.

1.5.2 Corporate loans to total loans

This indicator is to analyze the concentration of loans to local public and private corporate borrowers by domestic business units (DBUs) of domestic banks.

- Corporate loans: loans from DBUs of domestic banks to public and private non-financial corporate borrowers.
- Total loans: same as 1.5.1.

1.5.3 Large exposures to capital

This indicator is to analyze vulnerabilities at domestic banks arising from the concentration of credit risk on single individuals or corporate borrowers.

- Large exposures: refer to the total amount of credit to the first 20 private & government enterprises at domestic banks after integration.
- Capital: same as 1.3.3.

1.5.4 Gross asset positions in financial derivatives to capital

This indicator is to analyze the effect of price changes on gross asset positions in financial

derivatives relative to capital.

- Gross asset positions in financial derivatives: total amounts of positive fair value in hedged and non-hedged financial derivatives such as swap, forward, and option contracts, excluding embedded derivatives inseparable from the underlying instruments.
- Capital: same as 1.3.3.

1.5.5 Gross liability positions in financial derivatives to capital

This indicator is to analyze the effect of price changes on gross liability positions in financial derivatives relative to capital.

- Gross liability positions in financial derivatives: total amounts of negative fair value in hedged and non-hedged financial derivatives such as swap, forward, and option contracts, excluding embedded derivatives inseparable from the underlying instruments.
- Capital: same as 1.3.3.

1.6 Sensitivity to market risk

1.6.1 Net open position in foreign exchange to capital

This indicator measures the mismatch of foreign currency asset and liability positions at domestic banks to assess the potential vulnerability of capital to exchange rate movements.

- Net open position in foreign exchange: the open foreign currency positions in balance sheet and financial derivatives, which are converted into NT dollars using the exchange rates as of the reporting date.
- Capital: same as 1.3.3.

1.6.2 Foreign-currency-denominated loans to total loans

This indicator is to analyze the share of foreign currency loans within gross loans.

- Foreign-currency-denominated loans: the loans to other financial institutions, corporate entities, and individuals that are payable in foreign currency, or in domestic currency but with the amount to be paid linked to a foreign currency.
- Total loans: including loans to customers and other financial institutions.

1.6.3 Net open position in equities to capital

This indicator is to analyze the effect of the fluctuation of banks' net positions in equities compared with own equity.

- Net open position in equities: the sum of on-balance-sheet holdings of equities and notional positions in equity derivatives.
- Capital: same as 1.3.3.

1.6.4 Foreign-currency-denominated liabilities to total liabilities

This indicator is to analyze the relative importance of foreign currency funding within total liabilities.

- Foreign-currency-denominated liabilities: the liabilities that are payable in foreign currency, or in domestic currency but with the amounts to be paid linked to a foreign currency.
- Total liabilities: the total amounts of current, non-contingent liabilities, and the liabilities positions in financial derivatives.

2. Non-financial corporate sector indicators

2.1 Total liabilities to equity

This indicator is a leverage ratio to analyze the extent to which activities are financed through liabilities other than own funds.

- Total liabilities: including short-term and long-term liabilities.
- Equity: the equity interest of the owners in a corporate entity, including funds contributed by owners, capital surplus, retained earnings, and other items related to owners' equity.

2.2 Return on equity

This indicator is to analyze profitability of non-financial corporations in using their capital.

Return on equity = net income before interest and tax / average equity (the "net income before interest and tax" is adopted according to the FSIs of the IMF).

- Net income before interest and tax: net income before tax plus interest expenses from continuing operation units.
- Average equity: the mean of the equity at the beginning and the end of current year.

2.3 Net income before interest and tax / interest expenses

This indicator is to analyze how well non-financial corporate income covers interest expenses.

- Net income before interest and tax: same as 2.2.
- Interest expenses: the interest expense payments on debts within the specified time period of the statement.

3. Household sector indicators

3.1 Household borrowing to GDP

This indicator is to analyze the level of household borrowing to gross domestic product (GDP).

- Household borrowing: household outstanding loans and credit card revolving balances from financial institutions. Financial institutions include depository institutions and other financial institutions (trust and investment companies, life insurance companies, securities finance companies, and securities firms).

3.2 Borrowing service and principal payments to gross disposable income

This indicator is to analyze the capacity of households to cover their debt payments.

- Borrowing service and principal payments: interest and principal payments made on outstanding loans and credit card revolving balances within the specified time period of the statement.
- Gross disposable income: the aggregate of the wages and salaries from employment, property and corporate income (interest, dividends and rent), and current transfers receipts less current taxes on income and wealth and other current transfers expenditures.

4. Real estate market indicators

4.1 Land price index

This indicator is to analyze the price movement of urban land prices in the Taiwan area.

- Land price index: the general index of urban land prices released by the Ministry of Interior each half year (in March and in September).

4.2 Residential real estate loans to total loans

This indicator analyzes the concentration of domestic banks' loans in residential real estate.

- Residential real estate loans: individual loans that are collateralized by residential real estate. Residential real estate includes houses, apartments, and associated land (including owner use and rental use).
- Total loans: same as 1.2.1.

4.3 Commercial real estate loans to total loans

This indicator analyzes the concentration of domestic banks' loans in commercial real estate.

- Commercial real estate loans including: loans to corporate entities and individuals that are collateralized by commercial real estate, loans to construction companies, and loans to companies involved in the development of real estate. Commercial real estate includes buildings and associated land used by enterprises for retail, wholesale, manufacturing, or other purposes.
- Total loans: same as 1.2.1.

5. Market liquidity

5.1 The turnover ratio of trading value in stock market

This indicator is to analyze the average turnover frequency in the stock market (i.e. stock market liquidity).

- The turnover ratio of accumulated trading value: the accumulated value of monthly turnover ratio in terms of trading value within current year of the statement.
- The monthly turnover ratio in terms of trading value in stock market = total trading value / market value
- Total trading value: total trading value of stock transactions in the month.
- Market value: total market value of listed stocks as of the end of the month.

5.2 The monthly average turnover ratio in bond market

This indicator is to analyze the average turnover frequency in the bond market (i.e. bond market liquidity).

- Monthly average turnover ratio in bond market = total amount of monthly turnover ratio in terms of trading value in bond market / 12
    - Monthly turnover ratio in terms of trading value: trading value in the month / average bonds issued outstanding.
    - Trading value in the month: total bond trading value (excluding repo transactions).
    - Bonds issued outstanding: bonds that have been issued and are in the hands of the public.
    - Average bonds issued outstanding = (bonds issued outstanding at the month end plus bonds issued outstanding at previous month end) / 2

Abbreviations

ABCP	Asset-backed commercial paper
ABS	Asset-backed securities
ABS	Australian Bureau of Statistics
ABX	Asset-backed securities index
AIG	American International Group
AIGPF	AIG Financial Products Corp.
AMLF	Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility
APF	Asset Purchase Facility
APRA	Australian Prudential Regulation Authority
APS	Asset Protection Scheme
BI	Bank Indonesia
BICRA	Banking Industry Country Risk Assessment
BNM	Bank Negara Malaysia
BOE	Bank of England
BOJ	Bank of Japan
BOK	Bank of Korea
BOT	Bank of Thailand
BSI	Banking System Indicator
CAP	Capital Assistance Program
CAR	Capital adequacy ratio
CBC	Central Bank of the Republic of China (Taiwan)
CCHS	Check Clearing House System
CDIC	Central Deposit Insurance Corporation
CDO	Collateralized debt obligations
CDS	Credit default swaps
CGS	Credit Guarantee Scheme

CGSS	Central Government Securities Settlement System
CIFS	CBC Interbank Funds-Transfer System
CPFF	Commercial Paper Funding Facility
CPI	Consumer price index
CPP	Capital Purchase Program
CPSS	Committee on Payment and Settlement Systems
DGBAS	Directorate-General of Budget, Accounting and Statistics of Executive Yuan
DVP	Delivery versus payment
EBTS	Electronic Bond Trading System
EESA	Emergency Economic Stabilization Act of 2008
ETF	Exchange-traded fund
EU	European Union
EUR	Eurocurrency
FDIC	Federal Deposit Insurance Corporation
FED	Federal Reserve System
FSA	Financial Services Agency
FSC	Financial Supervisory Commission
FSP	Financial Stability Plan
FSS	Financial Supervisory Service
G20	Group of Twenty
GBP	Great Britain pound
GDP	Gross domestic product
GNP	Gross national product
GSE	Government-sponsored enterprise
GTSM	GreTai Securities Market
HKMA	Hong Kong Monetary Authority
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
IRS	Interbank Remittance System
JCIC	Joint Credit Information Center
JPY	Japanese yen
LHS	Left-hand scale

LIBOR	London Interbank Offered Rate
MAS	Monetary Authority of Singapore
MMIFF	Money Market Investor Funding Facility
MOEA	Ministry of Economic Affairs
MOF	Ministry of Finance
MOI	Ministry of Interior
MPI	Macro-prudential Indicator
NPL	Non-performing loan
NTD	New Taiwan dollar
OIS	Overnight index swaps
OTC	Over-the-counter
PDCF	Primary Dealer Credit Facility
QDII	Qualified Domestic Institutional Investor
RBC	Risk-based capital
RBS	Royal Bank of Scotland
RHS	Right-hand scale
RMB	Renminbi
ROA	Return on assets
ROE	Return on equity
S&P	Standard & Poor's
SBA	Small Business Administration
SFAS	Statement of Financial Accounting Standards
SGD	Singapore dollar
SIV	Structured investment vehicles
SLS	Special Liquidity Scheme
SMEG	Small and Medium Enterprise Credit Guarantee Fund of Taiwan
SMEs	Small and medium enterprises
SPV	Special purpose vehicles
TAF	Term Auction Facility
TAIEX	Taiwan Stock Exchange Weighted Index
TALF	Term Asset-Backed Securities Loan Facility
TARP	Troubled Asset Relief Program
TEJ	Taiwan Economic Journal Co., Ltd

TLGP	Temporary Liquidity Guarantee Program
TSLF	Term Securities Lending Facility
TWSE	Taiwan Stock Exchange Corporation
UKFI	UK Financial Investments Limited
USD	United States dollar
VaR	Value at risk
WPI	Wholesale price index

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