Central Bank of the Republic of China (Taiwan)

Financial Stability Report

May 2012 | Issue No. 6

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About the Financial Stability Report

Key points of the task to promote financial stability

Promoting financial stability not only is 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 Financial Stability Report is issued annually. The aims of this 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 2012.

I. Overview

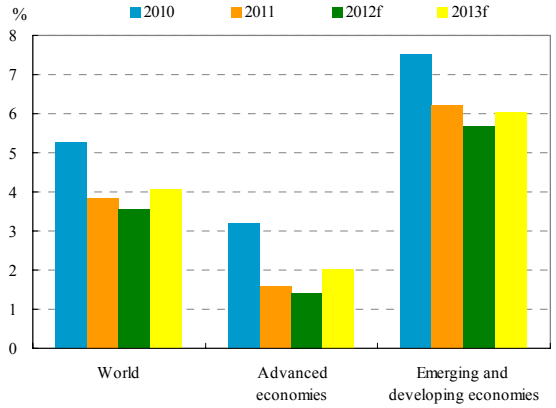
Global downside risks elevated, and the global financial system remained fragile

Global growth decelerated alongside escalating downside risks, but inflationary pressures subdued

The global economy grew at a tepid pace in the first half of 2011. From the second half of the year onwards, growth further weakened and downside risks increased due to intensifying strains in Europe relating to the sovereign debt crisis and fears over economic fragilities elsewhere. The International Monetary Fund (IMF) estimated that the global economic growth rate substantially dropped to 3.9% through 2011 from 5.3% a year earlier. This number is expected to further decrease to 3.5% in 2012 but rebound to 4.1% in 2013[1] on account of improving financial conditions and less fiscal tightening (Chart 1.1). Advanced economies saw a considerable slowdown in economic growth, while the euro area economy is even predicted to go into a mild recession. Economic growth in emerging and developing economies experienced a greater-than-expected slowdown in 2011.

Consumer prices trended up across the world in the first half of 2011, especially in emerging and developing economies. In the second half of 2011, however, with softening global demand, consumer price growth either moderated or fell as international raw materials prices gradually stabilized. Reflecting this, inflationary pressures abated. The IMF estimated that the global headline inflation rate (consumer price index, CPI) settled at 4.84% in 2011, above the 3.68% recorded a year earlier. In 2012, global oil

Chart 1.1 Global economic growth rates



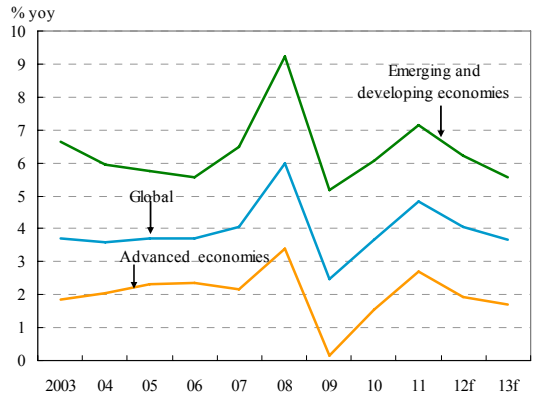
Note: Figures for 2012 and 2013 are IMF estimates.
Source: IMF (2012), *World Economic Outlook*, April.

[1] IMF (2012), *World Economic Outlook*, April.

prices are projected to remain elevated due to geopolitical tensions, but non-oil commodity prices could fall below the levels registered one year earlier. Against this backdrop, global headline inflation is expected to fall back to 4.04%[2] (Chart 1.2).

According to analyses from the IMF and other international institutions,[3] several risks continued to cloud the global growth outlook, including: (1) more massive and persistent bank deleveraging and credit tightening in the euro area; (2) still-fragile financial systems and slack macro demand; (3) the absence of progress in medium-term fiscal adjustment plans by the US and Japan; (4) the spillovers of downside risks from advanced economies to emerging and developing economies; (5) soaring risks in oil supply; (6) a rise in funding costs due to global risk aversion; and (7) asset price bubbles, currency appreciation and mounting inflation facing some emerging and developing economies as a result of easy monetary policies pursued in advanced economies.

Chart 1.2 Global headline inflation rates

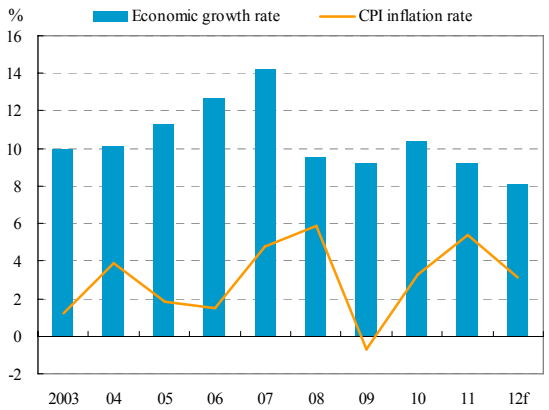


Note: Figures for 2012 and 2013 are IMF estimates.
Source: IMF (2012), *World Economic Outlook*, April.

Mainland China's output growth moderated and credit expansion slowed

In 2011, affected by moderating growth in its trade surplus, decreasing momentum in fixed capital formation and a slight drop in real consumption, Mainland China's economic growth rate declined quarter by quarter and registered 9.2% for the whole of the year, down from 10.4% in 2010. In 2012, Mainland China's export performance would continue to be clouded by the shadows of weak economic conditions in Europe and the US, and its growth policy transformation is expected to suppress investment growth.

Chart 1.3 Economic growth rate and CPI inflation rate of Mainland China

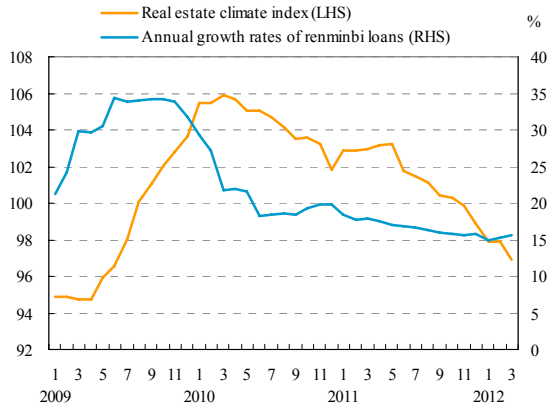


Note: Figures for 2012 are Global Insight projections.
Sources: National Bureau of Statistics of China and Global Insight.

[2] See Note 1.
[3] IMF (2012), *World Economic Outlook*, April; OECD (2011), *Economic Outlook*, No. 90, November; OECD (2012), *What is the economic outlook for OECD countries? An interim assessment*, March; UNCTAD (2012), *World Economic Situation and Prospects 2012*, January; Global Insight (2012), *Global Executive Summary*, January.

Reflecting this, Global Insight projects Mainland China's economic growth rate through 2012 to steadily decrease to 8.1%[4] (Chart 1.3).

Chart 1.4 Credit supply and housing market in Mainland China



Sources: People's Bank of China and National Bureau of Statistics of China.

In the first three quarters of 2011, the People's Bank of China (PBC) continuously tightened the money supply, but subsequently cut the reserve requirement ratio (RRR) for depository financial institutions three times following the adoption of an easier monetary stance from the fourth quarter of the year onwards. This change in stance was largely because masses of small and medium enterprises facing funding cuts went bankrupt as market liquidity tightened up, and inflationary pressures receded as domestic and international prices eased. In 2011, on the back of a decelerating credit expansion and cooling housing market (Chart 1.4), the adverse impacts of the rapid correction in house prices on real estate-related industries and banks' asset quality needed to be watched vigilantly. Furthermore, against a background of moderating economic growth and cooling down of the property market, the credit risk of a booming shadow banking system[5] in Mainland China could keep rising. This may negatively affect the asset quality of banks through contagion effects and thus its potential impacts warrant close monitoring.

The global financial system remained fragile

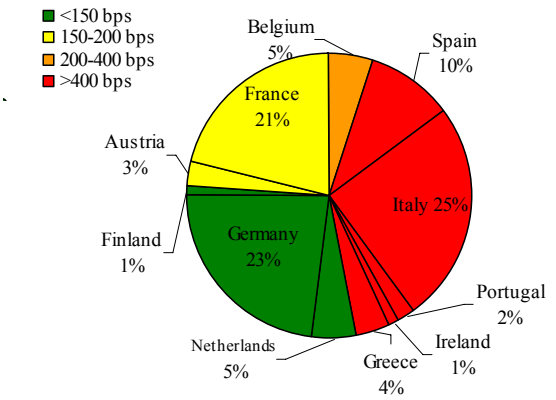
With aggravating European sovereign debt strains in the second half of 2011, the sovereign funding stress spilled over from the periphery of the euro area into the core, resulting in an acute increase in sovereign credit default swap (CDS) spreads for many euro area member states (Chart 1.5). The European sovereign debt crisis further spread from sovereigns to the banking sector, igniting an adverse feedback loop between the financial sector and the real economy. Consequently, the global financial system was swamped in a danger zone of instability. International organizations and the euro area economies sequentially launched a series of policy steps with a view to dampening the deterioration in the sovereign debt crisis and banking sector. These measures, to some extent, have borne fruit for restoring confidence

[4] Global Insight Estimate in May 2012.

[5] Shadow banking in Mainland China includes: (1) non-bank institutions, such as pawnshops, credit guarantee companies and micro-finance companies; (2) private equity funds; (3) wealth management products, such as entrusted loans and trust loans; (4) financial innovation products, such as asset securitization and derivatives. This definition refers to IMF (2011), "*People's Republic of China: Financial System Stability Assessment*," Country Report No. 11/321, November and relevant papers.

in financial markets. However, upward pressures on sovereign financing in periphery countries could keep threatening global financial stability.[6]

Chart 1.5 Credit default swap spreads of euro area government debt



Notes: 1. The ratios refer to the weight of an individual country's government debt to total euro area government debt.
2. Spreads as of April 2012.
3. As of 2011 Q2, total euro area government debt stood at €6.9 trillion.

Sources: Bloomberg; IMF (2012), *Global Financial Stability Report*, April.

International financial reforms continued to progress

There was some progress made on recent international financial reforms. Firstly, individual countries speeded up revamping their domestic regulations related to capital adequacy in response to the implementation of Basel III starting in 2013. Thus far, only a few countries have completed the final rules. Most countries have either been drafting the regulations or releasing the drafts for comments. Secondly, the Financial Stability Board (FSB) provided a policy framework for global systemically important financial institutions (G-SIFIs). Meanwhile, stress tests, which are used to assess the resilience of individual firms or the whole financial system to withstand adverse impacts, have drawn increasing attention from European and US supervisors in recent years. The above-mentioned points are the focus of recent international financial reforms.

Trend growth rate of the domestic economy moderated alongside mounting inflationary pressures, but external debt servicing ability remained robust

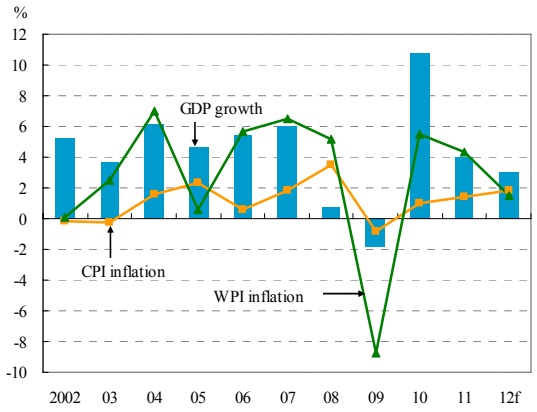
The domestic economy maintained steady growth in the first half of 2011 but then moderated in the second half of the year owing to drag from the intensifying European sovereign debt crisis and slowing growth momentum in the global economy. Based on Directorate-General of Budget, Accounting and Statistics (DGBAS) figures, the annual economic growth rate stood at 4.03% in 2011, exhibiting a dramatic drop from 10.72% a year earlier. It is expected to continue declining to 3.03% in 2012[7] (Chart 1.6).

[6] In response to mounting risks to stability, the IMF suggested that stepping up coordination among cross-border governments and taking necessary policy responses to entrench financial stability are warranted.

[7] The figures are based on a DGBAS press release on 25 May 2012.

With elevated international raw material prices, the wholesale price index (WPI) inflation rate visibly rose in the first half of 2011 but tracked downward notably at the end of December. The annual average WPI inflation rate dropped to 4.32% for the year as a whole compared to 5.46% in 2010. Similarly, the annual headline inflation rate also saw an upward trend in the first half of 2011 but moved at a moderate pace in the second half of the year due to easing international raw material prices. The CPI and core inflation rates in 2011 were 1.42% and 1.33%, respectively, higher than those of 0.96% and 0.44% a year earlier but still at a mild level. In the beginning of 2012, an upsurge in international oil prices fueled soaring inflationary pressures on energy-related product prices. Besides this, the introduction of the Gasoline and Electricity Price Rationalization Policy by the government in April 2012, combined with a three-stage adjustment of electricity fares starting from June, might increase fluctuations in the consumer price level. On the other hand, declining global demand has lowered the prices of agricultural and industrial raw materials. Meanwhile, an Executive Yuan panel in charge of monitoring and stabilizing retail prices required relevant government agencies to launch a policy package to facilitate a stable retail price level. Reflecting these varied influences, the DGBAS projects the annual CPI and WPI inflation rates for 2012 to register 1.84% and 1.49%,[8] respectively (Chart 1.6).

Chart 1.6 Economic growth rate and inflation rate in Taiwan



Note: Figure for 2012 is DGBAS forecast.
Source: DGBAS.

In the second half of 2011, increasing uncertainties in global economic and financial conditions were widely expected to affect domestic economic growth, and domestic prices rose steadily. Against this backdrop, the CBC Board kept policy rates unchanged three times from the third quarter of the year onwards with the aim of entrenching price and financial stability, and further sustaining sound economic growth. In this context, the CBC will continuously pay close attention to the evolution of domestic prices and adopt appropriate monetary policy setting in a timely manner, so as to maintain domestic price stability.

The current account surplus persisted in 2011, while foreign exchange reserves accumulated over the same period and climbed to US$395.1 billion at the end of April 2012. This implies that Taiwan's foreign exchange reserves have a robust capacity to meet payment obligations

[8] See Note 7.

for imports and to service short-term external debt. Moreover, outstanding external debt relative to annual gross domestic product (GDP) and annual exports registered 26.27% and 39.75% at the end of 2011, respectively, indicating that there were no signs of servicing pressure on external debt. Fiscal deficits turned narrower throughout the year, while outstanding government debt kept accumulating.

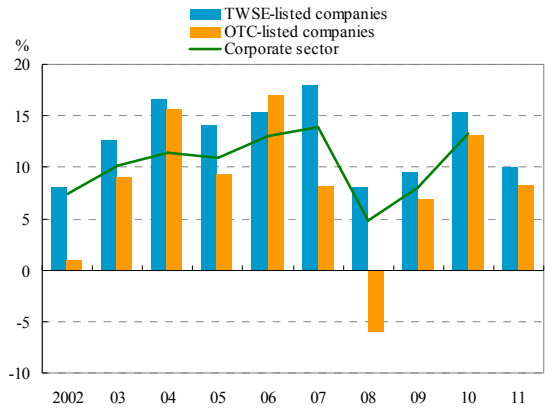
Non-financial sectors

Corporate sector

In 2011, the profitability of Taiwan Stock Exchange (TWSE) listed and over-the-counter (OTC) listed companies both declined amid the European sovereign debt crisis and the drag from slowing global economic growth in the second half of the year (Chart 1.7). The leverage ratio rose slightly for TWSE-listed companies as some large companies issued bonds to raise long-term funds, while it fell for OTC-listed companies due to decreasing liabilities. Short-term debt servicing capacity weakened as a result of shrinking profitability, but it still remained at an acceptable level.

The credit quality of corporate loans stayed satisfactory, underpinned by a descending non-performing loan (NPL) ratio. Nevertheless, operating performances for certain industries deteriorated due to flagging market demand and global competition, leading to a rise in credit risks. Moreover, rising international oil prices, decelerating global economic growth and Mainland China's lowered GDP target may affect future performance of the corporate sector and, therefore, warrant close attention.

Chart 1.7 Return on equity in corporate sector



Notes: 1. Return on equity = net income before interest and tax / average equity.
2. Latest data for the corporate sector is as of the end of 2010, while that for TWSE-listed and OTC-listed companies are as of the end of 2011.
Sources: JCIC and TEJ.

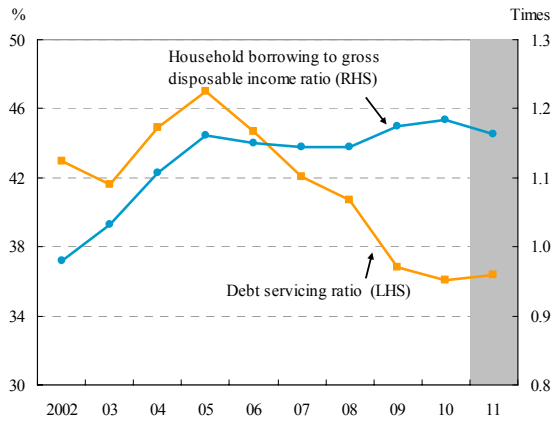
Household sector

Household borrowing saw a moderate growth in 2011, and reached NT$11.36 trillion, or 82.65% of GDP, at the end of the year. Bolstered by a notable rise in gross disposable income, the ratio of household borrowing to gross disposable income over the same period was brought back to 1.16 times, representing a slightly alleviated household debt burden. However, driven by a rise in short-term

working capital loans, the debt servicing ratio ascended to 36.40% in 2011, indicating that short-term household debt servicing pressure increased somewhat (Chart 1.8).

In 2011, the credit quality of the household borrowings from banks remained sound, backstopped by a descending NPL ratio. Looking ahead, an improving domestic unemployment rate, along with increasing regular earnings, will be favorable to strengthen household debt servicing capacity.

Chart 1.8 Household debt servicing ratio

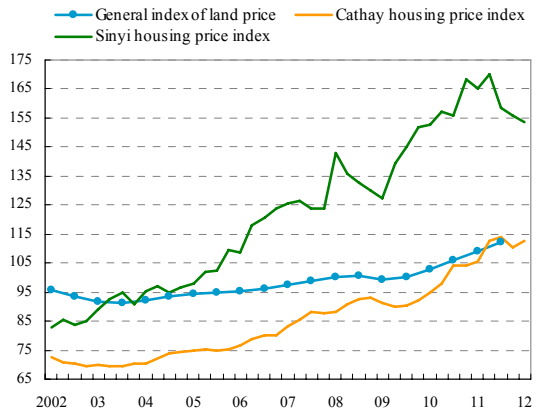


Notes: 1. Gross disposable income in shadow area is CBC estimate.
2. Debt servicing ratio = borrowing service and principal payment / gross disposable income.
Sources: CBC, JCIC and DGBAS.

Real estate market

During the first half of 2011, real estate prices continuously climbed and indices repeatedly struck new highs. However, house price growth turned to moderate from June onwards, placing a buildup of downward adjustment pressure on house prices in some areas with ample housing supply. This was mainly motivated by the imposition of the Specifically Selected Goods and Services Tax, weakening domestic economic activity and the slump in stock markets. In the beginning of 2012, house prices of new construction projects saw a rebound, but the bargaining power of buyers increased (Chart 1.9). From the second quarter of 2011 onwards, transaction volume significantly contracted and the number of vacant residential properties stayed high. In addition, several new projects have been successively completed in more recent years, which may further push the supply of new houses up.

Chart 1.9 Land and house price indices

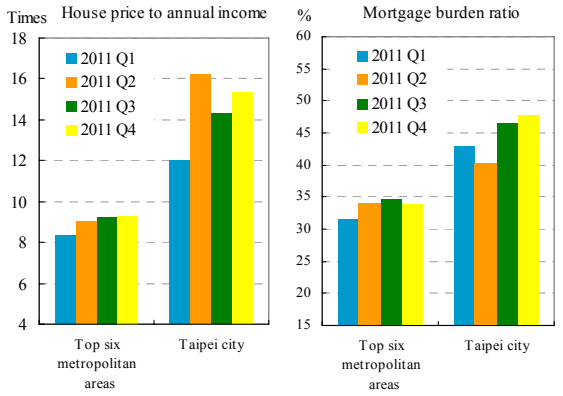


Note: General index of land price is released semi-annually (in March and September).
Sources: MOI, Cathay Real Estate, and Sinyi Real Estate Inc.

As a consequence of climbing housing prices, the mortgage burden for homebuyers became heavier. Both the average house price to income ratio and the average mortgage burden ratio in six metropolitan areas ascended. Among the metropolitan areas, Taipei City saw the heaviest mortgage burden as its house price to income ratio and mortgage burden ratio

reached 15.3% and 47.8%, respectively (Chart 1.10). In addition, real estate-related loans grew at a slower pace in 2011, curbed by the effect of CBC and Financial Supervisory Commission (FSC) measures to strengthen risk management on the real estate-related loans of banks. Meanwhile, mortgage interest rates rose steadily in the wake of the CBC's rate rises in the first half of the year.

Chart 1.10 House price to income ratio and mortgage burden ratio



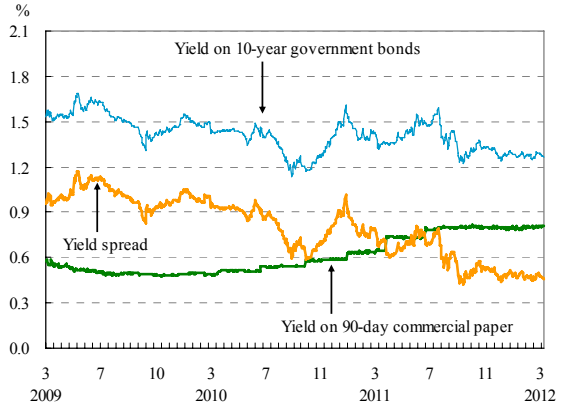
Notes: 1. Mortgage burden ratio = monthly mortgage expenditure / household monthly income.
2. Top six metropolitan areas refer to Taipei City, New Taipei City, Taoyuan and Hsinchu City and County, Taichung City, Tainan City, and Kaohsiung City.
Source: Taiwan Housing Demand Survey Report, MOI.

Financial sectors

Financial market

Trading volume slightly rebounded in the bills markets, while the bond market remained sluggish

Chart 1.11 Yield spread



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

In 2011, the outstanding amount of bills issuance saw an increase in the primary bills market as a result of an extension in the issuance of commercial paper and certificates of deposit. This also led to a rise in trading volumes in the secondary bills markets. Meanwhile, the bond market remained lackluster as outright transactions were still inactive owing to ample liquidity and less bonds being traded in the market. Transactions in the bond market are expected to remain at a low level in 2012.

With regard to market rates, short-term market rates trended upward alongside soaring government bond yields amid the CBC's two policy rate rises in the first half of 2011. However, capital flowed into the bond market as investors sought a flight to safety amid the intensifying European sovereign debt crisis from August onwards. Accordingly, government bond yields declined to annual lows. This resulted in a shrinkage in yield spread between short-term and long-term rates. At the end of March 2012, the yield spread was only 46 basis

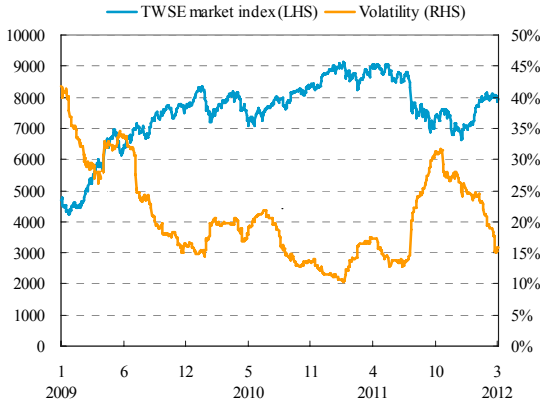
points, and still remains at a relatively low level (Chart 1.11).

Stock indices trended down after hitting new highs, while volatility sharply increased before dropping

The Taiwan Stock Exchange Weighted Index (TAIEX) of the TWSE market hit a new high point of 9,145 at the end of January 2011. Subsequently, led by the confluence of international political turmoil and the earthquake in Japan, the index declined and fluctuated within a narrow range. From August onwards, driven by the spillover effects of the European sovereign debt crisis and the sharp increase in net stock selling by foreign investors,[9] the TAIEX trended down again and dipped to an annual low of 6,633 on 19 December. It rebounded to 7,072 at the end of December, decreasing by 21.18% through 2011. In the beginning of 2012, the brighter outlook for European and US recoveries caused major stock markets around the world to soar. Furthermore, investor confidence was restored and foreign investors resumed net buying positions as uncertainties receded with the end of the presidential election in Taiwan. This propelled the TAIEX to move up to 7,933 at the end of March 2012, an increase of 12.17% from the end of December 2011[10] (Chart 1.12).

Equity market volatility settled at a low level in the first half of 2011. In the second half of the year, in response to sharp falls in the TWSE and OTC indices, volatility in the markets became amplified and reached annual highs in October before gradually falling. In 2012 Q1, the volatility in the TWSE and OTC markets trended downward as the local stock markets resumed stability (Chart 1.12).

Chart 1.12 TWSE market index and volatility



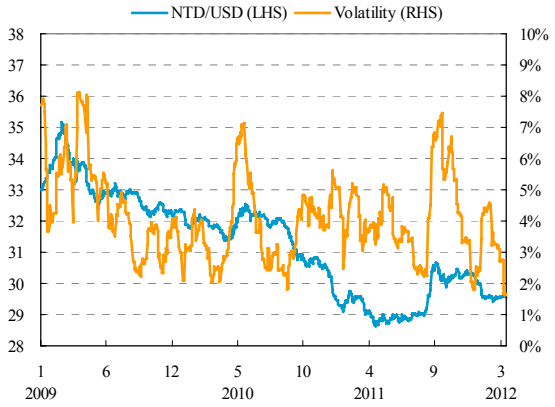
Note: Volatility refers to the annualized standard deviation of 60-day daily index returns.
Sources: TWSE and CBC.

[9] In August 2011, foreign investors (foreign institutional investors, overseas Chinese, and foreign individual investors) were net sellers of NT$190.3 billion worth of securities in Taiwan, with the net selling amount reaching a new high for a single month since May 2010.

[10] In April 2012, the TAIEX reversed its upward trend and closed at 7,502 by the end of the month, owing to the reintroduction of a stock trading income tax and greater concerns over the European sovereign debt crisis. The index's increase narrowed to 6.08% over the previous year-end.

The NT dollar exchange rate reversed from appreciation to depreciation but remained relatively stable compared to other currencies

Chart 1.13 Movements of NT dollar exchange rate against US dollar



Note: Volatility refers to the annualized standard deviation of 20-day daily returns.
Source: CBC.

The NT dollar exchange rate against the US dollar showed an appreciating trend in the first half of 2011. However, in the second half of the year, the spillover effects of the European sovereign debt crisis provoked a plunge in global stock markets and further resulted in a massive repatriation of foreign capital. This, coupled with a strong US dollar due to increasing hedging demand, fueled the NT dollar exchange rate to enter into a period of depreciation. It stood at 30.290 against the US dollar at the end of December, appreciating merely by 0.26% for the year as a whole. In early 2012, the NT dollar exchange rate continued appreciating, reaching 29.530 against the US dollar at the end of March (Chart 1.13).

The volatility in the NT dollar exchange rate against the US dollar fluctuated between 3% and 5% in the first half of 2011, and then intensified from September and peaked at 7.47% in the middle of October. However, the volatility moderated at the end of the year and registered an annual average of 4.25%. The average volatility during the first quarter of 2012 posted a much milder figure of 3.14% (Chart 1.13). Still, the NT dollar exchange rate was relatively stable compared to the volatility in the exchange rates of other major currencies (such as the Japanese yen) against the US dollar.

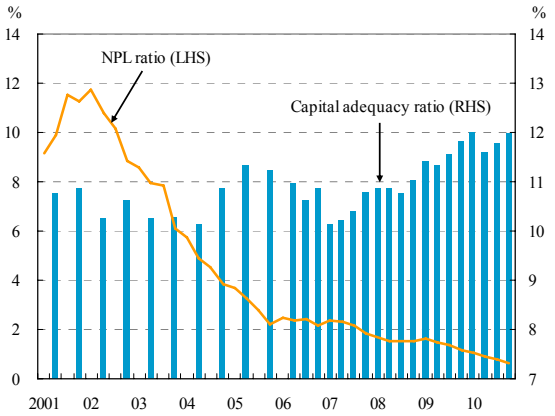
Financial institutions

Domestic banks

In 2011, the growth in loans increased moderately, arising from weakening demand for corporate loans and personal mortgage loans due to slowing global economic growth and imposition of the Specifically Selected Goods and Services Tax. The NPL ratio kept touching new lows, implying sustained improvement in asset quality (Chart 1.14). Nevertheless, some large borrowers applied for debt negotiations that warrant increased vigilance as they may

exert potential negative impacts on the asset quality and profitability of domestic banks.[11] The concentration of credit exposure in real estate-related loans was still at a high level, albeit somewhat improved. Furthermore, credit to customers in Mainland China merely accounted for a small share of total credit. The estimated Value at Risk (VaR) for market risk exposures of domestic banks had limited influence on capital adequacy. Liquidity risk was moderate on the back of ample funds.

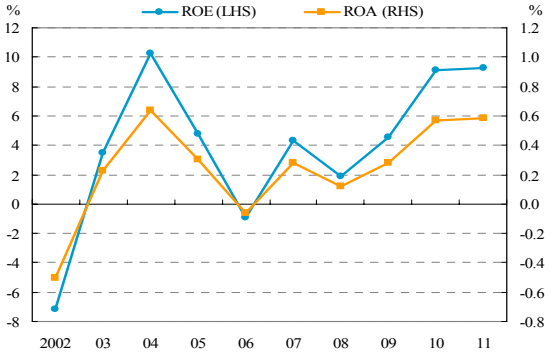
Chart 1.14 NPL and capital adequacy ratios of domestic banks



Note: The data for capital adequacy ratios are on a semi-annual basis prior to June 2006 and on a quarterly basis beginning June 2006.
Source: CBC.

Owing to the rise of net interest income led by the increase of interest rate spreads between deposits and loans, the combined net income before tax for domestic banks reached a historical high of NT$200.8 billion in 2011. The average return on equity (ROE) and return on assets (ROA) rose to 9.27% and 0.58%, respectively, over the same period, close to the high levels recorded in 2004 (Chart 1.15). The average capital adequacy ratio rebounded to 12.06% (Chart 1.14), indicating an improvement in banks' risk bearing capabilities. Nevertheless, with the international tendency of capital reform and the amendment of domestic capital regulations, banks could face more pressures to raise capital in the future.

Chart 1.15 ROE & ROA of domestic banks



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

Life insurance companies

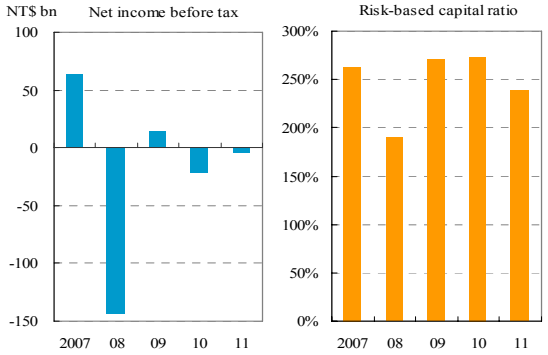
Life insurance companies saw continued losses as a consequence of the reduction in premium income driven by the implementation of Taiwan's Statements of Financial Accounting Standards (SFAS) 40 as well as shrinking profits, or even losses, of overseas investment positions. Reinforcement of their profitability is needed (Chart 1.16). The average return on

[11] When the total exposures of banks to ProMOS Technologies Inc. were classified as non-performing in April 2012, the NPL ratio of domestic banks increased to 0.63% at the end of April. Domestic banks had set aside 80% provisions on their loans to ProMOS Technologies. Hence, a potential default by ProMOS would have a limited impact on domestic banks in the future.

usable funds over the same period merely registered 3.52%, revealing that the potential losses attributing to negative interest rate spreads have not yet been alleviated. Meanwhile, global financial market turmoil resulting from the European sovereign debt crisis has cast a shadow over the future performance of their domestic and overseas investments.

The average risk-based capital (RBC) ratio of life insurance companies, excluding Kuo Hua Life Insurance Company, which was taken into receivership by the FSC,[12] declined to 238.38% at the end of 2011 from 273.84% in 2010, yet was still higher than the statutory minimum of 200%. This was predominantly caused by the fact that continual losses undermined the accumulation of regulatory capital, and the expansion in domestic and overseas securities investments positions induced a rise in total risk capital. With a view to lessening the impact of short-term volatility upon profits and losses, the FSC allowed life insurance companies to set their foreign exchange volatility reserves under the liabilities item, which took effect from 1 March 2012. This could contribute to stabilizing the foreign exchange profits and losses in life insurance companies, and allow them to manage their foreign exchange risks in a more flexible manner and to mitigate their hedging costs.

Chart 1.16 Net income before tax and risk-based capital ratio of life insurance companies

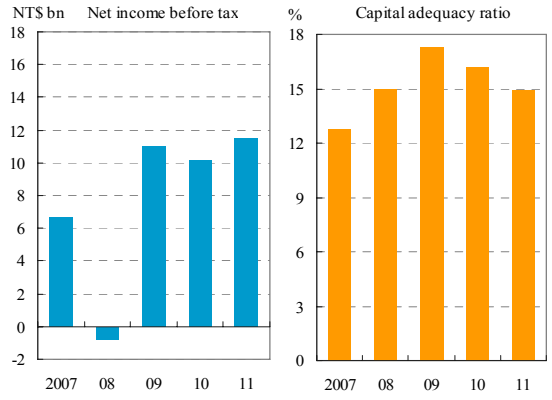


Note: Kuo Hua Life Insurance Company, which was taken into receivership by the Insurance Stabilization Fund on 4 August 2009, is excluded.
Source: FSC.

Bills finance companies

In 2011, the overall profitability of bills finance companies saw growth by virtue of a rise in non-operating incomes, though their operating profits contracted steadily. Credit quality remained satisfactory, while the average capital adequacy ratio descended continuously (Chart 1.17). However, each firm kept the ratio above 13%, still higher than the statutory minimum of 8%.

Chart 1.17 Net income before tax and capital adequacy ratios of bills finance companies



Source: CBC.

[12] Kuo Hua Life Insurance Company was taken into receivership by the Insurance Stabilization Fund on 4 August 2009.

The liquidity risk of bills finance companies remained elevated as a maturity mismatch between assets and liabilities still persisted. The ratio of major liabilities to net worth averaged 7.15, still below the statutory ceiling of ten or twelve times. While the outstanding balance of the commercial paper guarantees business rebounded gradually through 2011, the ratio of guarantees and endorsements to net worth averaged 3.9 at the end of the year, conforming to the statutory ceiling of five times.

Financial infrastructure

Payment systems operated in an orderly fashion and efficiency improved

In 2011, all three systemically important payment systems in Taiwan operated in an orderly fashion. To lessen the check transit risks in the system of check clearing and settlement, the CBC urged the Taiwan Clearing House to stipulate applicable regulations, and required relevant banks and clearing houses to comply with those criteria. The CBC authorized the Taiwan Depository & Clearing Corporation (TDCC) to undertake negotiable certificate of deposit (NCD) redemptions through the services of the CBC Interbank Funds-Transfer System (CIFS). It not only facilitates settlement efficiency, but helps to diminish the credit and liquidity risks of settling assets. Meanwhile, this step also abides by the Recommendations for Securities Settlement Systems jointly issued by the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of the International Organization of Securities Commissions (IOSCO).

Ongoing important reforms for financial supervisory regulations

There were several ongoing breakthroughs regarding financial regulations or supervisory measures during the year 2011 which were conducive to the soundness of the financial system and the development of financial institutions in Taiwan. These reforms mainly included: (1) the Financial Consumer Protection Act that came into force on 30 December 2011. Moreover, the Financial Ombudsman Institution, which was set up according to the Act, commenced operation on 2 January 2012. It has opened up a new era of financial consumerism in Taiwan; and (2) the FSC amended the Regulations Governing the Banking Activity and the Establishment and the Investment by Financial Institution between the Taiwan Area and the Mainland Area in September 2011. The amendment eases the regulatory restrictions for domestic banks investing in Mainland China and conducting banking business with enterprises over there. Furthermore, it also allows Offshore Banking Units (OBU) and overseas affiliates of domestic banks to engage in renminbi business and to invest in

securities in Mainland China.

In order to follow international reform trends and enhance banks' soundness, the FSC declared to phase in Basel III from 2013 in line with the international time frame. The amendment of applicable regulations is already under way. It is expected that the new capital regulations, marked revisions from existing ones, may have significant impacts on domestic banks with regard to their long-term capital plans, risk management and business operations. In this context, banks are advised to promptly assess the impact of the new capital regulations and take preemptive measures.

Taiwan's financial system remained stable

Summarizing the aforementioned analysis, the financial system in Taiwan resumed stability at the end of 2011, following dramatic fluctuations in the aftermath of the European sovereign debt crisis during the second half of the year. Financial institutions saw a notable rebound in profits, while asset quality stayed sound. Most domestic financial institutions, except for a few life insurance companies, registered adequate capital ratios. Payment and settlement systems operated smoothly. By and large, the financial system in Taiwan remained stable. Nevertheless, the lingering impact of slowing world economic growth and the still-fragile global financial system on Taiwan's real economy and financial system warrants increased vigilance. Furthermore, the reduction in profitability of the domestic corporate sector and declining prices and shrinking transaction volume in the real estate market could potentially expose the credit quality of financial institutions to vulnerabilities. In response, precautionary measures and close attention are warranted for Taiwan's financial institutions.

II. International and domestic economic and financial conditions

2.1 International economic and financial conditions

Global economic growth slumped in 2011 as a result of an intensification of the European sovereign debt crisis and fears over fragilities in other regions. The recovery in major advanced economies weakened in response to elevated pressures of sovereign financing, especially in the euro area, which is predicted to go into a mild recession. Growth in emerging and developing economies was moderate and even slower than expected because of the worsening global economy and weakening domestic demand, but activity remained relatively solid in most of these economies. Mainland China's economy grew at a more gradual pace. Measures to stem overheating investment and inflation began to bear fruit, contributing to a reduction in pressure on soaring commodity prices and a deceleration in credit expansion. Nevertheless, credit risks in the shadow banking system kept rising. In the beginning of 2012, world economic growth resumed somewhat thanks to improved activity in the US and an array of measures in the euro area in response to its sovereign debt crisis. From April onwards, however, growth prospects have dimmed given anti-austerity protests spreading across Europe, Greece's political turmoil, worsening non-performing loans in the Spanish banking industry and the deepening European sovereign debt crisis.

The global financial system was swamped in a danger zone of instability owing to the European sovereign debt crisis that emanated from the periphery of the euro area, spread into the core, and further spilled over to the banking sectors of a number of sovereigns. What's more, bank deleveraging resulting in a credit crunch could initiate an adverse feedback loop between the financial sector and real economy. The euro area economies and the IMF have taken various important policy steps, but the crisis has yet relieved despite the fact that some measures have borne fruit for restoring confidence in financial markets. Continuing challenges of sovereign financing facing some economies could threaten global financial stability. Moreover, the impact of the sovereign debt turmoil also spilled over to emerging and developing economies, especially emerging Europe, which was affected most significantly. In other emerging economies, potential vulnerabilities to sudden reversals of capital inflows and deteriorating liquidity would pose upward pressures on financial markets, despite improved shock-bearing capabilities of banking systems.

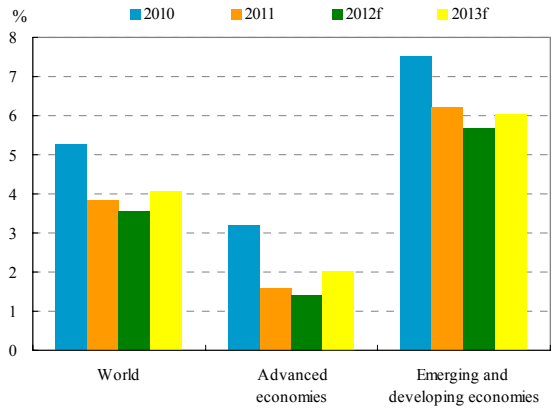
Global downside risks elevated, but inflationary pressures waned

Global growth was moving on a decelerating path, and fragilities remained

The global economy grew at a tepid pace in the first half of 2011. However, from the second half of the year onwards, growth momentum dampened and downside risks increased due to intensifying strains in the European sovereign debt crisis and economic fragilities elsewhere. The IMF estimated that the global economic growth rate substantially dropped to 3.9% through 2011 from 5.3% a year earlier. This number could further decrease to 3.5%, driven largely by an upsurge in sovereign debt yields, the impact of bank deleveraging on output and additional fiscal consolidation. Improving financial conditions and less fiscal tightening might fuel the growth rate to rebound to 4.1% in 2013[13] (Chart 2.1). Other major international institutions announced more pessimistic outlooks for the global economy. For example, Global Insight predicted world real GDP growth to pick up to 3.5% in 2013 from 2.9% in 2012,[14] while the United Nations forecast that the growth of world gross product (WGP) would reach 2.6% in its baseline outlook for 2012 and 3.2% for 2013.[15]

From 2011 onwards, quarterly economic growth in most advanced economies moved at a moderate pace resulting from lackluster economic activity and the spillover effects of the European sovereign debt crisis. However, rebounding private consumption and strong fixed investment boosted a stronger-than-expected growth in US output. The IMF estimated real GDP in advanced economies would drop to 1.6% in 2011 from 3.2% a year earlier, well below the growth rate of 6.2% in emerging and developing economies. It is expected to rebound to 2.0% in 2013 following growth of 1.4% in 2012 (Chart 2.1). On the back of the effects of bank deleveraging on the real economy and the impact of additional fiscal consolidations, the euro area economy is predicted to go into a mild recession in 2012. Meanwhile, output growth in the US is likely to stay moderate, bolstered by recovering domestic demand and an improving labor market.

Chart 2.1 Global economic growth rates



Note: Figures for 2012 and 2013 are IMF estimates.
Source: IMF (2012), *World Economic Outlook*, April.

[13] Except as otherwise noted, all IMF estimates and forecast data and information related to economic growth rates and CPI annual growth cited in this chapter relate to the April 2012 WEO.
[14] Global Insight (2012), *Global Executive Summary*, May.
[15] UNCTAD (2012), *World Economic Situation and Prospects 2012*, January.

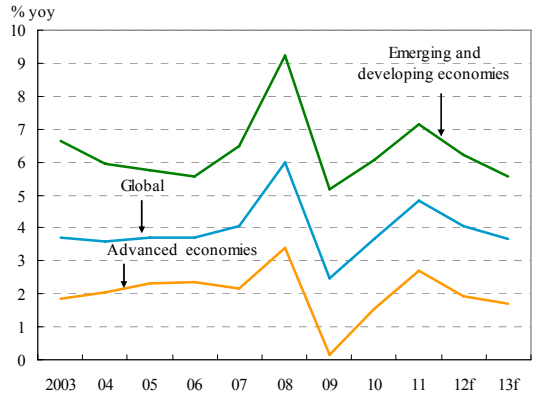
GDP growth in emerging and developing economies experienced a greater-than-expected slowdown in 2011. The IMF estimated that output grew by 6.2% throughout the year from 7.5% in 2010, but Asia, registering an economic growth rate of 7.8%, outpaced elsewhere. Growth in Mainland China contracted to 9.2% as a result of weakening export momentum and domestic demand. Output in emerging and developing economies is projected to register a sustained fall to 5.7% in 2012, but rebound to 6.0% in 2013 (Chart 2.1).

Inflationary pressures receded

Global consumer prices saw an upward trend in the first half of 2011, especially in emerging and developing economies. In the second half of 2011, however, with softening global demand, consumer prices saw a favorable or falling trend by way of gradually stabilizing international raw materials prices. Reflecting this, inflationary pressures abated. The IMF estimated that global headline inflation (consumer price inflation) settled at 4.84% in 2011, above the 3.68% recorded a year earlier. In 2012, global oil prices are projected to remain elevated due to geopolitical tensions, but non-oil commodity prices could drop below the level registered one year earlier. Against this backdrop, global headline inflation is expected to fall back to 4.04% (Chart 2.2).

In advanced economies, inflationary pressures stayed subdued as a result of economic slump and well-anchored inflation expectations. Reflecting this, the IMF projected that headline inflation would drop to 1.9% in 2012, down from a peak of 2.7% in 2011. The US and the euro area would exhibit waning inflationary pressures, while concern about deflation is expected to linger in Japan. Inflationary pressures in emerging and developing economies are predicted to subside, with headline inflation standing at 6.2% during 2012, down from 7.1% in 2011(Chart 2.2), as a consequence of decelerating economic growth and decreasing food prices. Inflationary pressures in emerging Asian economies are broadly expected to ease, except for India and Indonesia.

Chart 2.2 Global headline inflation indices



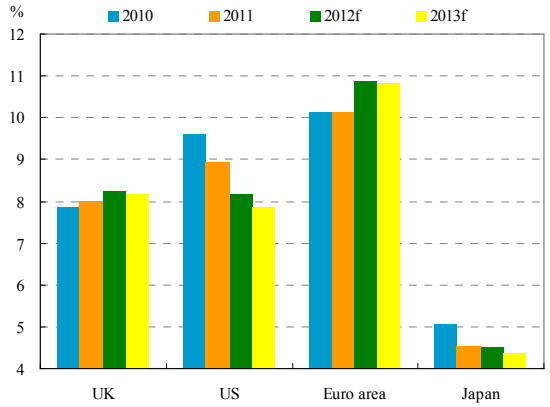
Note: Figures for 2012 and 2013 are IMF estimates.
Source: IMF (2012), *World Economic Outlook*, April.

Unemployment rates in advanced economies showed slight improvements but performance was uneven

The IMF estimated the unemployment rate in advance economies had slipped to 7.94% in 2011 from 8.28% in 2010. Unemployment is expected to see an ongoing improvement in the US and Japan in 2012, whereas it may keep exacerbating in the UK and the euro area over the same period (Chart 2.3). In the US, the tenuous labor market improved gradually, helping the unemployment rate to fall to a three-year low of 8.2% in March 2012.[16] The unemployment rate in the UK stayed at a high level of 8% through 2011 and further surged in the forth quarter of the year, attributable to stagnant economic activity. The rate further rose to 8.2% in March 2012, with 1.02 million unemployed youth.[17] In Japan, the unemployment rate shrank to 4.2% in September 2011, backstopped by earthquake reconstruction, but bounced back to 4.5% in Mach 2012.[18]

In the euro area, unemployment kept advancing on the back of the worsening European sovereign debt crisis, moderating economic growth and increasing corporate layoffs (Chart 2.3). The EA-17 seasonally adjusted unemployment rate rose to 10.8% in February 2012, hitting a peak since the implementation of the euro system. However, there were sharp differences among the member states. The lowest unemployment rates were recorded in Austria (4.2%) and the Netherlands (4.9%), while the highest rates were registered in Spain (23.6%) and Greece (21.8%).[19] In particular, unemployment rates of persons aged below 25 were even greater than 50% in the latter two countries. The high level of unemployment rates in the euro area, especially high youth unemployment, has raised tough issues that need to be urgently addressed by national governments.

Chart 2.3 Unemployment rates in major economies



Note: Figures for 2012 and 2013 are IMF estimates.
Source: IMF (2012), *World Economic Outlook*, April.

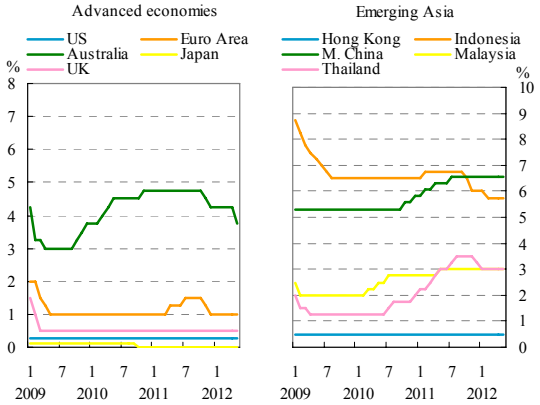
[16] The figure is based on a US Bureau of Labor Statistics (BLS) news release on 6 April 2012.
[17] The figures are based on labor market statistics for January to March 2012, released in the Statistical Bulletin of the UK Office for National Statistics on 16 May 2012.
[18] The figure is based on a news release on 27 Aril 2012 by the Japan Statistics Bureau, Director-General for Policy Planning (Statistical Standards) & Statistical Research and Training Institute.
[19] The unemployment rates for Austria, the Netherlands and Spain are as of February 2012, based on a Eurostat news release on 2 April 2012. The figure for Greece is as of January 2012, released in a Hellenic Statistical Authority news release on 12 April of the same year.

Monetary policy kept easing in advanced economies along with an improvement in fiscal deficits

Most advanced economies continued to adopt easy monetary policies in 2011 in an effort to boost domestic recovery. The Board of Governors of the Federal Reserve System (FED), the Bank of England (BoE) and the Bank of Japan (BOJ) kept their low policy rates unchanged.[20] By contrast, the European Central Bank (ECB) lowered the policy rate in November and December of the same year to provide liquidity support to banks. Meanwhile, the Reserve Bank of Australia also successively cut the cash rate target three times to 3.75% from November 2011 to May 2012[21] (Chart 2.4). Furthermore, the FED, ECB, BOJ, BoE, Bank of Canada and Swiss National Bank jointly reduced the dollar overnight index swap rate to plus 0.5% from plus 1% in the hope of relieving the dollar liquidity shortage in EU-based banks. The move was aimed at easing the liquidity constraints in financial markets and boosting economic activity by promoting access to bank credit for the corporate and household sectors.

The monetary policy stances in emerging Asian economies were varied due to cross-country divergence in economic and financial conditions. Mainland China sequentially hiked policy rates three times in the context of continued policy tightening to restrain housing and consumer prices in the first three quarters of 2011. However, monetary policy turned to an easy stance from the fourth quarter of the year in view of tightening market liquidity and increasing failures of small and medium enterprises due to funding strains. As of the middle of May 2012, the financial institution deposit reserve ratio had been reduced three times in response to slowing economic growth on the horizon. The Bank Indonesia lowered the policy rate

Chart 2.4 Policy rates in selected economies



Notes: 1. Advanced economies: figure for the US is based on federal funds rate target; for Australia, cash rate target; for the UK, official bank rate; for the euro area, the main refinancing operations fixed rate; and for Japan, uncollateralized overnight call rate.
2. Emerging Asia: figure for Hong Kong is based on discount window base rate; for Mainland China, financial institution one-year lending base rate; for Thailand, 1-day repurchase rate; for Indonesia, Bank Indonesia rate; for Malaysia, overnight policy rate.
3. Figures are 3 May 2012 data.

Source: Central banks' websites.

[20] The Federal Open Market Committee (FOMC) decided to maintain the target range for the federal funds rate at 0 to 0.25% on 25 April 2012 and to maintain this exceptionally low level for the federal funds rate at least through to late 2014. Moreover, as of 3 May 2012, the BoE preserved its policy rate at 0.5%, while the BOJ kept the uncollateralized overnight call rate at around 0 to 0.1%.

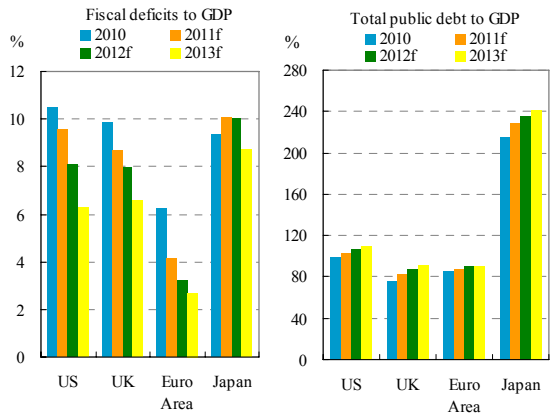
[21] The ECB cut the main refinancing operations fixed rate by 25 basis points to 1.25% in November 2011 and continued cutting the rate to 1.0% in the following month. The Reserve Bank of Australia cut the cash rate target twice, each time by 25 basis points, in November and December 2011, and further cut the rate by 50 basis points to 3.75% on 1 May 2012.

three times to 5.75%[22] from October 2011 to February 2012 in response to the deceleration in global activity. In Thailand, the policy rate stayed on its upward trend in the first half of 2011. Subsequently, floods seriously impacted the Thai economy in the second half of the year, resulting in the rate dropping to 3.0% after consecutive rate cuts in December 2011 and January 2012, respectively. The Bank Negara Malaysia policy rate remained unchanged following a rate rise of 25 basis points in May 2011 (Chart 2.4).

In 2011, the fiscal deficits in most advanced economies improved notably but government debt kept expanding (Chart 2.5). As a result, fiscal risks in advanced economies remained high. In the US and the UK, the fiscal deficit to GDP shrank year on year but total government debt to GDP continued mounting. Spurred by growing earthquake reconstruction spending, Japan saw continued hikes in the fiscal deficit and total government debt, with a government debt-to-GDP ratio of 229.8% in 2011. Meanwhile, in the euro area, the fiscal deficit as a whole shifted to register a sharp plunge, mainly by virtue of a marked improvement in the fiscal position of Germany. Spain also exhibited a highly strengthened fiscal position. For France and Italy, the improvement was limited as new fiscal measures did not completely come into effect until 2012. Greece saw a higher-than-expected fiscal deficit due to poor economic performance.

In 2012, with additional large-scale fiscal consolidations, the reductions in the fiscal deficits of most advanced economies are expected to be sustained. The IMF forecast that the fiscal deficit-to-GDP ratio might fall to 5.7% for the year 2012 from 6.6% in 2011, and further drop to 4.5% in 2013. By contrast, the government debt-to-GDP ratio might keep rising to 106.5% in 2012 from 103.5% a year earlier, and even climb to 108.6% in 2013.[23] The euro area is on the brink of a mild recession in view of softening growth in advanced economies. In this context, large-scale fiscal retrenchment could induce adverse impacts on the economic prospects of this region alongside intensifying pressures on financial markets.

Chart 2.5 Fiscal deficit and public debt in major advanced economies



Source: IMF (2012), *Fiscal Monitor*, April.

[22] In Mainland China, the financial institution one-year lending base rate was cut to 6.06%, 6.31% and 6.56% in February, April and July 2011, respectively. In Indonesia, the BI rate was reduced by 25 basis points to 5.75% in February 2012, following sequential rate cuts that registered the policy rate at 6.5% (October 2011) and 6.0% (November 2011).

[23] IMF (2012), *Fiscal Monitor*, April.

In fact, economists often hold different perspectives with respect to the effect of "fiscal austerity" on the economy. Some argue that the European sovereign debt crisis reflects a "confidence crisis" stemming from investors' distrust of European Union (EU) policymakers. Theoretically, it is plausible that the strong enforcement of fiscal austerity could bring benefits to maintain the EU's fiscal discipline in the face of a protracted downturn. However, the consequences in the real world may breach the underlying theory. This is because fiscal austerity could lead to unfavorable results, including further sluggishness in output, soaring unemployment rates, sharply shrinking taxation, deteriorating fiscal positions, and ultimately increasing difficulty in restoring investor confidence. From 2012 onwards, the convergence of arguments about anti-austerity has gradually gone mainstream driven by still-lingering concerns about the effectiveness of fiscal contractions to relieve the European sovereign debt crisis, and the initiative of economists who advocate replacing the austerity of contracting fiscal spending with structural reforms for boosting economic growth. Given the faltering economy still facing Europe, the emphasis should now shift increasingly to prioritizing measures that can boost growth and tackle high unemployment. In this context, Europe ought to head toward a more stable fiscal stance so as to promote healthy domestic and global economic conditions, and to resume an orderly financial system.

Future economic risks

According to the latest analysis from the IMF and other international institutions,[24] uncertainties continued to cloud the world economic outlook with heightened downside risks, including (1) a more massive and persistent bank deleveraging and credit tightening in the euro area as a result of an intensification of the vicious circle of sovereign debt and banks' funding stress; (2) still-fragile financial systems and slack macro demand; (3) an elevating unemployment rate in advanced economies; (4) the absence of progress in the medium-term fiscal adjustment plans by the US and Japan. In particular, the short term political stalemate in the US could inflame the risk of fiscal contraction; (5) downside risks of advanced economies could threaten economic growth and stability in emerging and developing economies through international trade and financial channels; (6) geopolitical unrest could trigger an abrupt increase in oil prices; (7) global risk aversion could cause a rise in funding costs; and (8) easy monetary policies in advanced economies could induce asset price bubbles, currency appreciation and mounting inflation in some emerging and developing economies. Considering these uncertainties, the IMF and other international organizations suggest that

[24] IMF (2012), *World Economic Outlook*, April; OECD (2011), *Economic Outlook*, No. 90, November; OECD (2012), *What is the economic outlook for OECD countries*? *An interim assessment*, March; UNCTAD (2012), *World Economic Situation and Prospects 2012*, January; Global Insight (2012), *Global Executive Summary*, January.

national governments should adopt appropriate policies or measures in response to the rising macroeconomic risks.

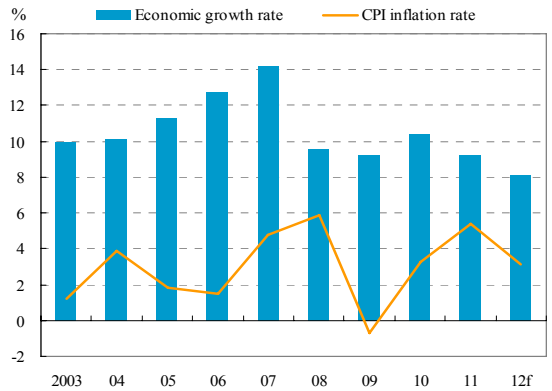
Mainland China's economic growth and credit expansion slowed down

Mainland China's economic growth slowed down and pressure on consumer prices alleviated

In 2011, due to global economic growth slowing down, Mainland China's trade surplus shrank. With Mainland China's "Twelfth Five-Year Plan for National Economic and Social Development" proposing to reorient its growth policies and promote consumption over investment and exports, momentum in fixed capital formation began to decline. However, boosting private consumption in a short time is proving to be much more difficult. As such, instead of increasing, real consumption decreased slightly compared to the previous year. Economic growth, therefore, decreased quarter by quarter from 9.7% in Q1 to 8.9% in Q4 and registered 9.2% for the whole of 2011, down from 10.4% in 2010. In 2012, Mainland China's export performance continues to be clouded by the pessimistic shadows of weak economic conditions in Europe and the US and transformation of its growth policies is expected to suppress investment growth. As a result, Global Insight projected Mainland China's economic growth through 2012 to soften to a rate of 8.1%[25] (Chart 2.6).

Regarding consumer prices, due to increasing food prices driven by rapidly rising wages and international raw materials costs, the CPI inflation rate in the first half of 2011 continued its upward trend from 2010 and climbed from 4.9% in January to 6.5% in July 2011, registering a new high in the past three years. In the second half of the year, as Mainland Chinese officials aggressively implemented measures to stabilize the supply of agricultural products, accompanied by decreasing prices of international raw materials, the increase of food prices slowed and allowed the CPI inflation rate to fall back to 4.1% in December. Nevertheless, the CPI

Chart 2.6 Economic growth rate and CPI inflation rate of Mainland China



Note: Figures for 2012 are Global Insight projections.
Sources: National Bureau of Statistics of China and Global Insight.

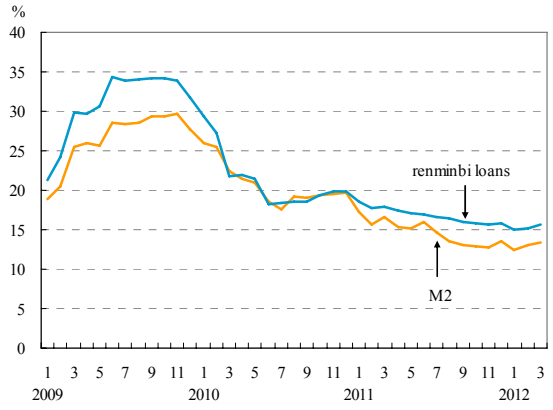
[25] Global Insight estimate in May 2012.

inflation rate for the whole of 2011 still increased by 2.1 percentage points to 5.4% compared to that in 2010. In 2012, the inflationary pressure of a shortage in the supply of agricultural products is expected to ease and over capacity of production in other areas of the economy will continue to stabilize non-food prices. Global Insight projected Mainland China's inflation rate to decrease to 3.1%, indicating an alleviation of inflationary pressure (Chart 2.6).

Bank credit expansion slowed down and monetary policy eased

Overspeed credit expansion in 2009 built up asset bubbles and inflationary pressure in Mainland China. In response to this issue, Mainland China shifted toward a tightening monetary policy stance and adopted measures to curb an overheating real-estate sector and local government financing platforms from 2010 onwards. In the first three quarters of 2011, the PBC continuously tightened the money supply and aggressively drained liquidity from the market by raising the reserve requirement ratio for depository financial institutions six times by a total of three percentage points, raising 1-year renminbi benchmark deposit and lending rates of financial institutions three times to 3.5% and 6.56%, respectively, and conducting open market operations several times. Starting Q4, as tightened monetary policy soaked up market liquidity, masses of small and medium enterprises facing funding cuts went bankrupt. Bearing this situation in mind, alongside declining inflationary pressure resulting from slowing economic growth on the horizon, the PBC reversed its tightened monetary policy stance by lowering the RRR for depository financial institutions three times by a total of 1.5 percentage points during December 2011 to mid-May 2012. Therefore, as of the end of March 2012, the annual growth rates of M2 and renminbi loans decreased from their peaks of 29.7% and 34.4% in 2009 to 13.4% and 15.7% (Chart 2.7). The real estate climate index also descended from its peak of 105.89 in 2010 to 96.92 (Chart 2.8). Both indicated that credit expansion had slowed and the property market had cooled down. However, the rapid adjustment of housing prices may weigh on the real estate industry and the loan quality of banks, and thus warrant close attention.

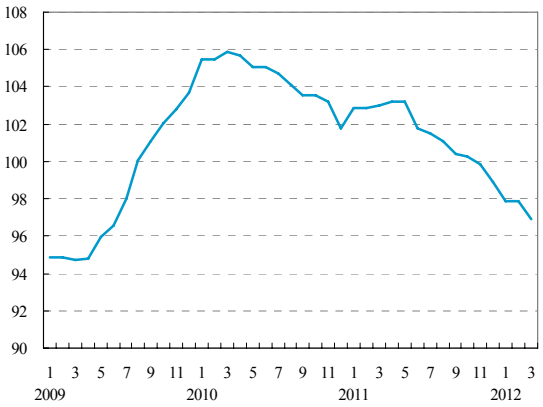
Chart 2.7 Annual growth rates of M2 and renminbi loans in Mainland China



Source: PBC.

Meanwhile, Mainland China imposed interest rate controls and credit rationing which resulted in an imbalance between funding supply and demand. Its credit markets are subject to market access constraints and oligopolized by state-owned banks, also posing challenges to private companies in receiving funding. As a result, the financial intermediation function of the banking system was insufficient, which gave rise to various types of shadow banking [26]. Additionally, starting 2010, Mainland China adopted tightened monetary policy and property market cooling measures, forcing many companies to resort to informal banking channels to meet funding needs, which further led to the quick expansion of the shadow banking system. As a result, the financing scale of the entire economy increased rapidly. While Mainland China's economic growth slowed and its property market cooled down, the credit risk of the shadow banking industry continuously increased. This may negatively impact the asset quality of banks through contagion effects and aggravate economic downside risks, and thus close monitoring of future developments and potential impacts is needed.

Chart 2.8 Real estate climate index of Mainland China



Note: The real estate climate index is a composite of the indexes for real estate investment, source of capital, area of land developed, floor space of buildings under construction, floor space of marketable yet unsold buildings and average sales price of buildings.
Source: National Bureau of Statistics of China.

The global financial system remained fragile

With aggravating European sovereign debt strains in the second half of 2011, the sovereign funding stress spilled over from the periphery of the euro area into the core, and in turn spread to the banking sectors of sovereign countries. This pushed the global financial system to enter into a danger zone with sharply rising risks. International institutions and euro area economies have successively taken rounds of policy steps aimed at taming the deteriorating euro area debt crisis and banking sector problems. Although they have recently been somewhat effective for restoring confidence in financial markets, some economies still face substantial challenges in sovereign financing that might persistently threaten global financial stability. Furthermore, the US and Japan have not yet achieved political consensus for medium term deficit reductions, renewing latent risks to financial stability. In response to

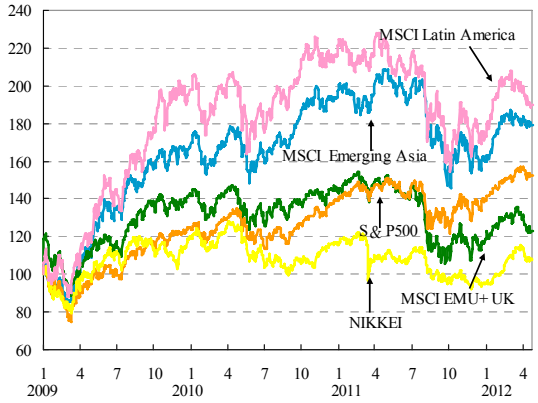
[26] Shadow banking in Mainland China includes: (1) non-bank institutions, such as pawnshops, credit guarantee companies and micro-finance companies; (2) private equity; (3) wealth management products, such as entrusted loans and trust loans; (4) financial innovation products, such as asset securitization and derivatives. This definition draws from IMF (2011), People's Republic of China: Financial System Stability Assessment, Country Report No. 11/321, November, and other relevant papers.

mounting risks to stability, the IMF suggested that stepping up cross-border coordination among governments and taking necessary policy responses to entrench financial stability is warranted.

Deterioration in some advanced economies' sovereign debt problems spilled over to the euro area banking system

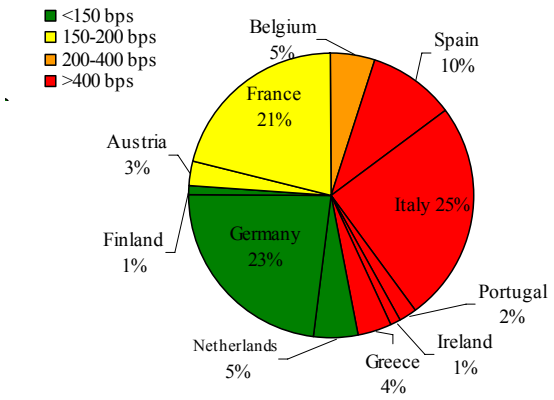
In the first half of 2011, sovereign debt strains in some advanced economies were not completely resolved. Nevertheless, the risks to global stability gradually fell, backstopped by improving growth prospects along with benign liquidity conditions and macroeconomic policies taken by national governments. However, concerns about sovereign debt sustainability renewed with recovery proceeding at a slow pace from the second half of the year. This, together with the fact that euro area member countries were still struggling to forge a political consensus for financial adjustments and fiscal bailouts, contributed to an upswing in sovereign default risks and more sovereign rating downgrades. This was signified by an acute increase in sovereign CDS spreads of periphery countries over core countries. A further loss of investor confidence not only triggered the slump in global stock markets (chart 2.9) but pushed sovereign strains to spill over to core advanced economies of the euro area. As a result, the sovereign CDS spreads of France, Austria and Germany also hit historical highs over this period. In April 2012, the sovereign debt of France and Austria had CDS spreads of over 150 basis points, whereas Belgium registered 250 basis points or so. Some economies—including

Chart 2.9 Performance of key international equity indices



Note: 1 January 2009 = 100.
Source: Bloomberg.

Chart 2.10 Credit default swap spreads of euro area government debt



Notes: 1. The ratios refer to the weight of individual country's government debt to total euro area government debt.
2. Spreads as of April 2012.
3. As of 2011 Q2, the total euro area government debt stood at € 6.9 trillion.
Sources: Bloomberg; IMF (2012), *Global Financial Stability Report*, April.

Greece, Ireland, Italy, Portugal and Spain (GIIPS)—even stood beyond 400 basis points. According to IMF estimates,[27] the total GIIPS government debt accounted for 42% of total euro area government debt (Chart 2.10).

Soaring periphery sovereign default risks spilled into the euro area banking system and real economy. The European core economies (such as France, Germany and the UK) that held massive periphery sovereign debt suffered sizable losses due to a plunge in bond prices. As a result, an increasing number of banks in the region suffered credit downgrades as their health weakened. Some banks closed funding channels due to elevated counterparty risks. Accordingly, European banks took severe liquidity risks stemming from funding strains and saw a sharp increase in the cost of funding which even exceeded that during the Lehman crisis. Funding strains among banks also spilled over into the real economy with tighter conditions for accessing bank credit for small and medium enterprises, and individuals. Moreover, some EU-based banks were being forced to launch significant balance sheet deleveraging plans, in part because of increasing sovereign risks, lackluster economic growth in the euro area, increasing difficulty in rolling over funding and higher capital buffer requirements. Against this backdrop, an IMF report suggested[28] that the large EU-based banks could reduce their assets by US$2.6 trillion from September 2011 to the end of 2013, or equivalent to a 7% fall in total balance sheet size, given that the euro area governments have not yet taken further policy responses. About one-quarter of the fall in assets is estimated to occur through a contraction in loans, with the remainder coming largely from sales of securities and non-core assets. This could reignite the vicious feedback loop between the banking system and real economy.

With a view to stabilizing financial markets and restoring investor confidence, the EU, ECB and IMF sequentially launched a series of policy steps, including offering liquidity support, requiring bailout recipients to cut down fiscal deficits, reaching a new fiscal treaty among EU member states and requiring EU-based major banks to enhance their capital. These measures have had effects, to some extent, in stabilizing financial markets and containing the deterioration in the crisis. However, financial stability risks remained elevated as sovereign debt sustainability in some economies stayed at challenging levels and the effectiveness of backstops, such as long-term refinancing operations and the European Financial Stability Fund, are likely to be limited.[29]

[27] IMF (2012), *Global Financial Stability Report*, April.

[28] See Note 27.

[29] IMF (2012), *Global Financial Stability Report Market Update*, January. The report indicated that long-term refinancing operations did much to alleviate bank-funding concerns, but it has had less of an impact on peripheral sovereign yields. The capacity of the European Financial Stability Fund remains limited. Taking into account resources already committed to program financing, the remainder which is available to be deployed would still likely not be sufficient to contain rising sovereign spreads under stress scenarios.

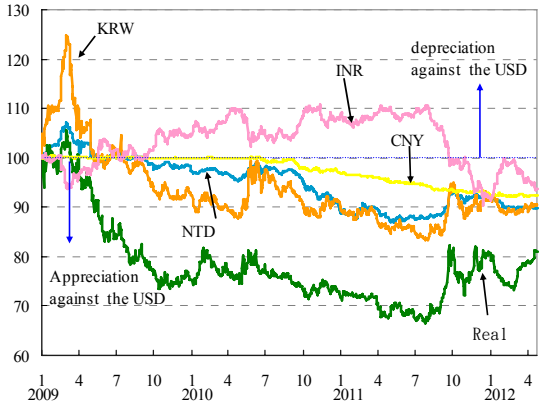
Recently, the US banking sector's health has resumed, but the US financial system remains susceptible to shocks from the European sovereign debt crisis. This is broadly because there are close financial and trade ties between the US and the euro area, the US banking sector holds bulky exposures to EU-based banks, and European banks deleveraged by selling US assets. Indeed, the commercial mortgage-backed securities (CMBS) and asset-backed securities (ABS) markets in the US have recently been under pressure, weighed down by the volume of asset shedding from European banks. Soaring dollar-funding strains in the euro area could also transmit pressure to the US banking sector. While US sovereign debt markets benefited from a flight to safety away from the euro area, such a situation could not be counted on to persist indefinitely. Moreover, against the background of a still-moribund real estate market, US banks will struggle to maintain historical returns on equity in a more stringent regulatory environment. The political impasse over the fiscal consolidation facing the US could also provoke run-ups in sovereign risks. These vulnerabilities in the financial system could renew financial stability risks in the US.

European sovereign debt crisis also spilled over to emerging markets

In the first half of 2011, stronger economic growth in emerging economies, coupled with higher interest rates than in advanced economies, spurred massive capital flows into such economies, and in turn contributed to buoyant stock markets with rising equity prices, exerting upward pressure on currency appreciation in some economies, such as Taiwan, South Korea, Mainland China and Brazil (Chart 2.11). This also brought about some emerging issues, such as a surge in domestic liquidity and credit supply as well as acceleration in leverage levels and asset prices, and ultimately fueled the buildup of risks for overheating and financial imbalances.

In the second half of the year 2011, the deteriorating European sovereign debt crisis spilled over to the European banking system. It not only directly made a serious threat to emerging Europe but spread to other emerging markets. Because European banks had tremendous business lines reaching into emerging Europe, European bank deleveraging curbed capital inflows to those economies, sparking off serious damage to credit supply and economic activity in the

Chart 2.11 Movements of various currencies against the US dollar



Note: 1 January 2009 = 100.
Source: Bloomberg.

region. In addition, the potential spillovers indirectly affected financial systems elsewhere through a contraction of credit and capital outflows. European banks further made a pullback of cross-border lending, especially trade financing. This, combined with a loss of parent bank support for local lending, created unfavorable conditions for accessing bank credit in emerging economies. Meanwhile, capital outflows and deteriorating liquidity also exerted pressures on their foreign exchange, bond and stock markets. For example, in the second half of 2011, many emerging economies suffered slumps in stock markets and dramatic volatilities in foreign exchange markets in the wake of massive capital outflows (Chart 2.9 and 2.11). However, the markets resumed stable trading conditions in the beginning of 2012.

By and large, most emerging economies were resilient to withstand the financial impact and economic spillovers from advanced economies. Nevertheless, given worsening financial and economic conditions, a sharp contraction in domestic and cross-border credit, or large and sudden capital outflows, for example, could pose significant challenges to the resilience of some emerging economies, in particular those in emerging Europe.

Progress in international financial reforms

In December 2010, the Basel Committee on Banking Supervision (BCBS) announced a comprehensive framework presenting reforms on bank capital adequacy and liquidity (also known as Basel III), in an attempt to enhance the resilience of the global banking system, to maintain market confidence in regulatory capital ratios and to provide a level playing field. The implementation will be subject to transitional and phase-in arrangements from 1 January 2013, and be completed by 1 January 2019. In order to adopt Basel III starting in 2013, each Committee member speeded up revamping its domestic regulations related to capital adequacy. However, according to a new survey by the BCBS,[30] among the 27 members, only Japan and Saudi Arabia had completed the final rules as of end-March 2012. The rest of the countries or jurisdictions have either been drafting the regulations or releasing the drafts for comments. This reflects the high degree of sophistication in the revision of the relative rules. In Taiwan, the financial authorities are inclined to follow the supervisory approaches set out by international financial regulatory institutions. To this end, the Financial Supervisory Commission (FSC) has been undertaking the regulations revision taking into account the Basel III. The interim drafts were published in June 2012, while the final rule will be released after a quantitative impact study in the second half of the year, prior to implementation starting in January 2013.[31]

[30] Basel Committee on Banking Supervision (2012), *Progress Report on Basel III Implementation*, April.
[31] For more details, please refer to the text of "The evolution of the implementation of Basel III in Taiwan" in the fourth section titled "Financial infrastructure" of this report.

Moreover, the Financial Stability Board (FSB) provided a policy framework to address the systemic and moral hazard risks associated with global systemically important financial institutions (G-SIFIs), aiming to reduce the probability and severity of the failure of large financial institutions, and prevent a systemic crisis. The policies include (1) the establishment of effective resolution regimes for failing financial firms; (2) requirements for recovery and resolution planning for G-SIFIs; (3) requirements for a 1%-2.5% capital surcharge for G-SIFIs; and (4) more intensive and effective supervision of all G-SIFIs. This framework was endorsed at the 2010 G20 Seoul summit, and the implementation of these measures will begin from 2012. Full implementation is targeted for 2019.

Furthermore, in response to the global financial crisis, US and European financial supervisors successively required domestic banks to conduct stress tests and publish the test results in order to assuage market fears about the soundness of financial institutions in some jurisdictions or countries, and to rebuild market confidence. In light of these recent developments, the stress tests have drawn more attention. In addition, according to their responsibility of safeguarding financial stability, central banks have recently become devoted to developing adequate stress testing frameworks that are able to assess the vulnerabilities and the risk-bearing capability of a financial system. In this context, macro stress tests are regarded as one of the most crucial assessment tools. In Taiwan, in line with international regulatory trends, the FSC requires domestic banks to conduct a stress test at least annually under pillar 2 of Basel II, and to submit the test results to the FSC to serve as a reference for financial supervision. Meanwhile, in accordance with the operational objective that aims at promoting financial stability, the CBC recently developed two macro stress testing models that focus on market and credit risks, respectively, with intent to assess system-wide financial soundness and shock-bearing capability under alternative economic scenarios (Box 1).

2.2 Domestic economic and financial conditions

Taiwan's economy grew at a decelerated pace in 2011 compared to the previous year due to a higher base effect. During the same period, the price level rose moderately. Short-term external debt servicing ability remained strong on the back of a continued surplus in the current account and ample foreign exchange reserves. The scale of external debt continued to expand, while overall external debt servicing ability stayed robust. The government's fiscal deficit shrank, whereas total government debt continuously mounted.

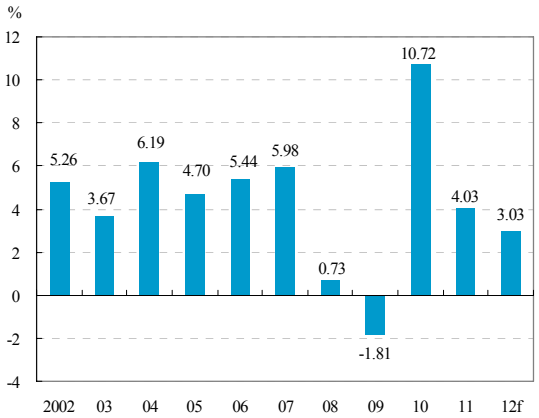
Domestic economic expansion decelerated

In the first half of 2011, as exports expanded steadily on account of stably growing foreign demand from emerging economies and upward momentum in private investment, coupled with mild growth in private consumption as a result of improving employment, rising salaries and buoyant financial markets, the economic growth rate registered 6.62% in Q1 and slightly declined to 4.52% in Q2. As for the second half of the year, the recovery momentum of the global economy became sluggish, resulting in continuously shrinking exports. Moreover, dull stock market performance and shrinking financial wealth also partially weakened the sustainability of private consumption. Meanwhile, private investment saw a slowdown due to moderating external demand. As a result of these unfavorable economic conditions, combined with a higher base in the previous year, the economic growth rates of Q3 and Q4 declined to 3.45% and 1.85%, respectively. The DGBAS statistics stated that the annual economic growth rate dropped to 4.03% in 2011, exhibiting a significant decrease from 10.72% a year earlier (Chart 2.12).

In order to alleviate the adverse impact from sluggish Western economies, the Executive Yuan proposed an "Economic Climate Response Program" in November 2011. Under this Program, short-term countercyclical measures came into effect. Moreover, the Executive Yuan further established the "Global Economic Climate Response Group" with the purpose of improving the ability to respond to global economic fluctuations and developing strategies to reshape Taiwan's economic structure.

In 2012 Q1, as a consequence of dwindling exports and contracting private investment, preliminary statistics from the DGBAS indicated that the economic growth rate was merely 0.39%. Looking ahead, an improving global economy and recovery of the semiconductor industry are expected to be beneficial to a rebound in exports and more industrial investment. However, rising crude oil and electricity prices may lift the overall price level up and may partially offset economic growth by way of a restraint on private consumption. Thus, the DGBAS

Chart 2.12 Economic growth rates in Taiwan



Note: Figure for 2012 is forecast by DGBAS.
Source: DGBAS.

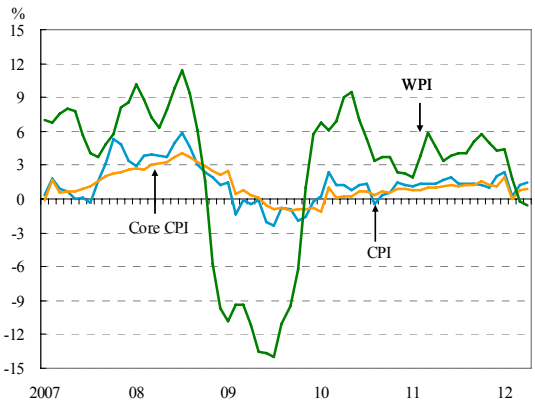
forecast Taiwan's economic growth rate would decline to 3.03%[32] in 2012 (Chart 2.12). Moreover, although the European sovereign debt crisis was temporarily relieved after a second bailout was offered to Greece,[33] US and European peripheral countries' sovereign debt strains have not been properly solved. Other negative factors, including the unstable situation in the Middle East which could lead to global oil price spikes, Mainland China's economy possibly experiencing a hard landing, and the potential recession of the euro area, raise uncertainties concerning the vitality of the global economic recovery, and the ongoing impact on Taiwan's economy is worth close attention.

Domestic prices rose modestly, while inflationary pressures gradually mounted

With still-elevated international prices of raw materials, the WPI inflation rate trended up through 2011 Q1 and hit a peak of 5.82% in March. Afterwards, the easing of the international prices of raw materials and appreciation of the NT dollar exchange rate against the US dollar together brought the WPI inflation rate down significantly (Chart 2.13). As a result, the annual WPI inflation rate registered 4.32% in 2011, lower than the 5.46% recorded a year earlier.

Driven by climbing retail prices of gasoline and some consumer goods such as food, the CPI inflation rate gradually moved up in the first half of 2011. While international prices of raw materials declined and the price of fruits and vegetables remained stable owing to good weather, headline (CPI) inflation in the second half of 2011 was relatively mild. Although higher than the 0.96% and 0.44% logged a year earlier, the average CPI and core CPI inflation rates of 2011 were 1.42% and 1.13%, respectively. For 2012, the average WPI inflation rate from January to April continuously dropped to 1.31%, and the average CPI and core CPI inflation rates declined to 1.32% and 0.87%,[34] respectively, over the same period, revealing that price increases turned moderate in the earlier part of 2012 (Chart 2.13).

Chart 2.13 Consumer and wholesale price inflation rates



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

[32] The figures are based on a DGBAS press release on 25 May 2012.
[33] In March 2012, private bondholders agreed to a restructuring deal with Greece's government, resulting in a €107 billion write-off of Greek debt and a second €130 billion bailout from the European Union.
[34] The figures are based on a DGBAS press release on 7 May 2012.

With regard to 2012 Q1, as the global supply risk of crude oil further ascended in line with the instability in both North Africa and the Middle East, inflationary pressures relating to energy-related products ratcheted up. Furthermore, Taiwan's government announced a "Gasoline And Electricity Price Rationalization Policy" in April 2012 in order to cope with soaring global oil prices and years of low domestic electricity rates. It was proclaimed that electricity rates would be adjusted in three stages starting in June, which might lead to volatility in the consumer price level. However, inflationary pressures are expected to ease due to the following influences: declining global demand has lowered the prices of agricultural and industrial raw materials; domestic housing rents have remained stable; and an Executive Yuan panel charged with monitoring and stabilizing retail prices has urged each department to promote relevant measures. Therefore, the DGBAS projects the annual CPI and WPI inflation rates in 2012 to register 1.84% and 1.49%, respectively.[35]

The CBC raised policy rates twice and then kept them unchanged

In the first half of 2011, global economic growth was robust and the domestic economy grew steadily. As market interest rates moved up gradually, along with heightened inflationary pressures, the CBC twice raised its policy rates by 0.125 percentage points in March and June to contain inflation expectations (Table 2.1).

However, during the second half of 2011, the impact of the European sovereign debt crisis was no longer confined to the financial sector but also spilled over to the real sector. Moreover, the US economy continued to be mired in a political stalemate over fiscal consolidation, a faltering housing market and high unemployment. These lingering concerns combined to make international financial markets turbulent. Such global economic and financial uncertainties have increased, and this may adversely affect Taiwan's economic growth. However, at the same time, inflation expectations have abated. Against this backdrop, the CBC decided to keep policy rates unchanged on three occasions in order to ensure price and financial stability, and further sustain sound economic growth.

Table 2.1 CBC policy interest rates

Effective date	Discount rate	The rate on accommodations with collateral	The rate on accommodations without collateral
1 July 2011	1.875	2.250	4.125
1 April 2011	1.750	2.125	4.000
31 Dec. 2010	1.625	2.000	3.875
1 Oct. 2010	1.500	1.875	3.750
25 June 2010	1.375	1.750	3.625
19 Feb. 2009	1.250	1.625	3.500

Source: CBC.

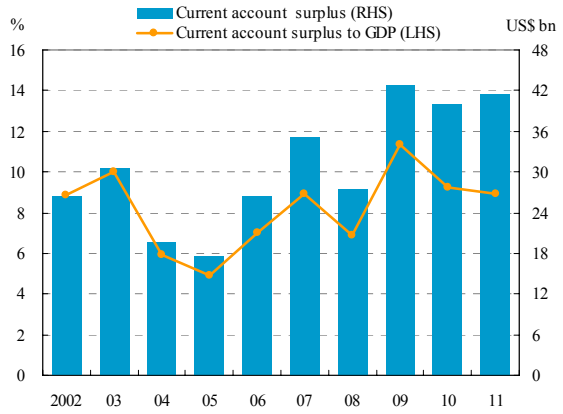
[35] See Note 32.

Current account surpluses persisted and foreign exchange reserves stayed abundant

In 2011, the rise in exports was larger than that in imports, making Taiwan's merchandise trade surplus trend up. Moreover, travel income markedly increased and resulted in a surplus in services. Hence, the annual current account surplus reached US$41.6 billion, or 8.91% of annual GDP[36], increasing by US$1.7 billion or 4.29% compared to 2010 (Chart 2.14). As for the financial account, in 2011, direct investments and portfolio investments both saw net outflows. The capital outflows on the financial account were mainly contributed to by a considerable expansion of business activities in Mainland China by Taiwanese companies and foreign investors' sales of stocks and government bonds, despite the fact that foreign stock certificate redemptions and spillovers from the European sovereign debt crisis brought about some capital inflows. During the same period, other investments[37] somewhat offset the above-mentioned capital outflows effect, but the annual balance of outflows in the financial account still registered US$32.2 billion, notably higher than US$0.3 billion the previous year. With the current account surplus and sharp outflows in the financial account, the balance of payments surplus registered US$6.2 billion in 2011, a significant decrease of 84.47% from a year earlier.

In the first half of 2011, the steady balance of payments surplus together with continuously accumulated earnings on investments made with foreign exchange reserves contributed to ascending foreign exchange reserves, which reached US$400.8 billion in July. However, as a result of net stock selling by foreign institutional investors and foreign stock certificate redemptions by domestic investors due to the tepid global economy and European sovereign debt crisis, foreign exchange reserves declined slightly to US$385.5 billion at the end of 2011, resulting in an increase of only 0.93% compared to the previous year. However, at the end of April 2012, the number had climbed back to

Chart 2.14 Current account surplus



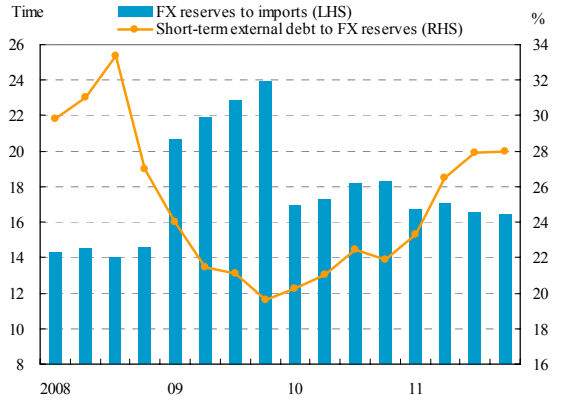
Note: Current account surplus and GDP are annual figures.
Sources: CBC and DGBAS.

[36] 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.

[37] Two parts mainly contributed to the net inflows from other investment in 2011. In the banking sector, it included the redemption of foreign loans and a rise in both the inbound remittance of funds from banks' foreign branches and the deposits received from non-residents. In the private sector, it resulted from the withdrawal of foreign deposits.

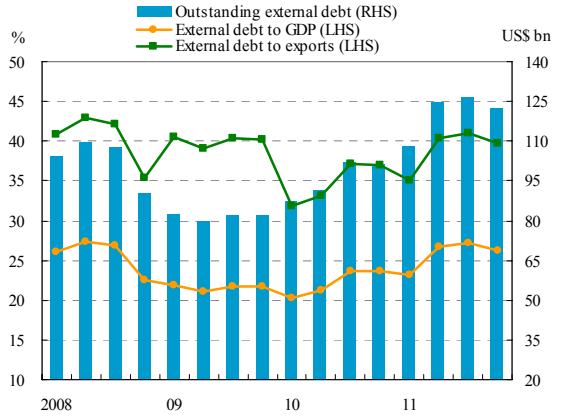
US$395.1 billion, reflecting ample foreign exchange reserves. Nevertheless, the ratio of foreign exchange reserves to imports declined to 16.44 months,[38] led by growth in imports. Furthermore, the ratio of short-term external debt to foreign exchange reserves substantially elevated to 27.96%[39] owing to a notable expansion in short-term external debt. These two ratios, nevertheless, were still below internationally recognized warning levels. Consequently, this implies that Taiwan's foreign exchange reserves have a robust capacity to meet payment obligations for imports and to service short-term external debt (Chart 2.15).

Chart 2.15 Short-term external debt servicing capacity



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

Chart 2.16 External debt servicing capacity



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

External debt contracted after following an upward trajectory and debt-servicing capacity remained strong

There was a substantial increase in Taiwan's external debt[40] in the first three quarters of 2011, resulting from domestic banks borrowing funds from overseas and the increase of NT dollar deposits held by non-residents. However, external debt slightly decreased in 2011 Q4 as a result of the reduction in debt owned by foreign institutional investors. Overall, outstanding external debt stood at US$122.5 billion, or 26.27% of annual GDP, at the end of 2011, implying a moderate level of external debt.[41] Moreover, the ratio of external debt to annual exports was 39.75% as of the end of 2011, indicating that export revenues were still sufficient to cover external debt

[38] A country with a ratio of foreign exchange reserves to imports of more than three months is considered to be at relatively low risk.
[39] The general international consensus is that a ratio of short-term external debt to foreign exchange reserves less than 50% indicates relatively low risk.
[40] The CBC defines external debt as the combined amount owed to foreign parties by Taiwan's public and private sectors, including long-term debt with a maturity of greater than one year and short-term debt with a maturity of one year or less. The term "public external debt" refers to debt 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 debt arising from repo transactions between the CBC and international financial institutions). The term "private external debt" refers to private-sector foreign debt that is not guaranteed by the public sector.
[41] The general international consensus is that a country with a ratio of external debt to GDP lower than 50% is deemed to be at relatively low risk.

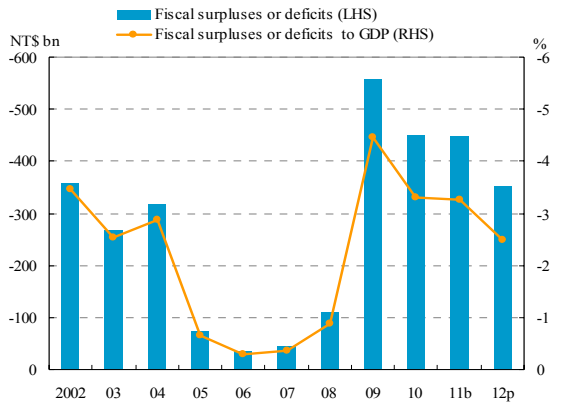
(Chart 2.16), and there were no signs of servicing pressure on external debt.[42]

Fiscal deficits turned to contract while government debt kept accumulating

Since most of the temporary infrastructure construction expenditures in order to spur the economy harmed by the global financial crisis and Typhoon Marakot had ended, government investment contracted from 2010 onwards, and fiscal deficits at all levels of government continued to decline to NT$449 billion in 2011. This, combined with the sustained GDP growth of the same year, caused the ratio of fiscal deficit to annual GDP to decline to 3.27% in 2011, and it is expected to further drop to 2.50% in 2012[43] (Chart 2.17).

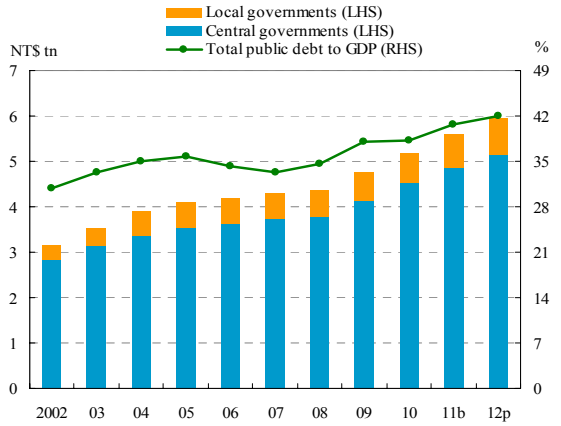
As fiscal deficits stayed high and central and local governments relied on debt issuance to finance debt servicing expenditures, outstanding public debt at all levels of government[44] expanded to NT$5.59 trillion, or 40.67% of annual GDP[45], well above the NT$5.19 trillion[46] recorded in 2010. It is expected that public debt will further grow and stay high in 2012 with the ongoing implementation of a bundle of medium-term infrastructure projects (Chart 2.18).

Chart 2.17 Fiscal position



Notes: 1. Fiscal position data include those of central and local governments.
2. Data of fiscal surpluses (deficits) are annual figures. Figures for 2011 and 2012 are budget and proposal accounts, respectively.
Sources: MOF and DGBAS.

Chart 2.18 Public debt



Notes: 1. Outstanding public debt refers to non-self-liquidating debt with a maturity of one year or longer, excluding external debt.
2. Data of fiscal surpluses (deficits) are annual figures. Figures for 2011 and 2012 are budget and proposal accounts, respectively.
Sources: MOF and DGBAS.

[42] The general international consensus is that a ratio of external debt to exports less than 100% indicates relatively low risk.
[43] To provide more context, fiscal deficits in EU member nations are not allowed to exceed 3% of GDP, based on. the 1992 European Union Maastricht Treaty and the subsequent Stability and Growth Pact.
[44] The term "outstanding debt at all levels of government" as used in this report refers to outstanding non-self-liquidating debt with a maturity of one year or longer. The budgeted figures for outstanding one-year-or-longer non-self-liquidating public debt (NT$5.59 trillion) issued by all levels of government during the 2011 fiscal year is equivalent to 42.06% of the average GNP for the preceding three fiscal years (NT$13.29 trillion). This figure is below the ceiling of 48% (i.e. 40% for central government and 8% for local governments) set out in the Public Debt Act.
[45] As a comparison, outstanding debt in EU member nations is not allowed to exceed 60% of GDP, according to the Maastricht Treaty and the subsequent Stability and Growth Pact.
[46] If adding in debt with a maturity of less than one year and self-liquidating debt, outstanding public debt at the end of 2010 stood at NT$6.41 trillion.

To promote fiscal health, Taiwan's government unveiled the golden 10-year prospects outline in October 2011. In the outline, the fourth item of the comprehensive blueprint that aims for enhancing a sound fiscal system includes five strategies: diversified sources of government funds, industrialized government finance, just taxation, optimized local finance and minimized public debt. It is expected that healthy finance and fair taxation can be fulfilled through these strategies.

Box 1
The practice of stress testing the banking sector in Taiwan

The global financial crisis drew increasing attention to the need for developing stress testing models that can identify systemic risk in a financial sector. Against this backdrop, both the Financial Supervisory Commission (FSC) and the CBC devoted efforts to developing adequate stress testing frameworks that could assess adverse impacts on the banking sector and its risk-bearing capability to withstand shocks caused by extreme but plausible macroeconomic conditions.

1. The FSC requires domestic banks to conduct a stress test at least annually under pillar 2 of Basel II

In order to urge domestic banks to place importance on stress testing and enhance their capability of implementation, the FSC required domestic banks to conduct stress tests on bank-specific market risk and credit risk in 2010 and 2011, respectively, according to the requirement of pillar 2 of Basel II. These stress tests were performed to estimate one-year-ahead potential losses and their impact on individual banks' capital adequacy ratios (CARs) under the stressed scenarios, and the test results are required to be submitted to the FSC to serve as a reference for financial supervision. The results released by the FSC showed that: (1) the average CARs of domestic banks were above the regulatory minimum of 8%; and (2) all banks could meet the minimum regulatory standard after recapitalization and asset reallocation.

2. The CBC developed macro stress testing models

In accordance with the operational objective that aims at promoting financial stability, the CBC has recently been developing macro stress testing models with a view to assessing the resilience of the whole banking system against adverse macroeconomic and financial shocks. Initially, the CBC cooperated with domestic academics to develop stress testing models from 2007 onwards. These models, which intend to offer a quantitative analysis of the potential fragilities in the domestic banking sector, are viewed as a cornerstone for the development of the CBC's macro stress testing framework.

In 2010, the CBC established a macro stress testing model of market risks.[1] In terms of sensitivity analysis and scenario simulation, this model was developed to gauge the effects of different market shocks[2] on individual banks' CARs and Tier-one capital ratios using their market exposure positions during 2007 to 2009, and in turn to assess domestic

banks' risk-bearing capabilities in abnormal market conditions. Specifically, a macroeconomic model was then built to verify whether the parameters of the stressed scenarios could be mapped onto the macroeconomic environment by means of a Vector Autoregression (VAR) analysis. The empirical result suggested that domestic banks' capital levels were generally resilient to withstand the market risk shocks simulated by the stress tests done by the CBC.

In 2011, the CBC further developed a framework which was carried out in a top-down fashion for stress testing the credit risk of the banking sector in Taiwan.[3] A macroeconometric model was used to analyze the statistical correlation between the default rates of banks' portfolios and relevant macroeconomic variables (such as Taiwan's real GDP, global real GDP, global exports, interest rates, property prices and unemployment rates). Additionally, a satellite model was applied to link a measurement of the credit risks to the variables that proxy macroeconomic conditions and to map the external macroeconomic shocks onto banks' balance sheets. Accordingly, one-year-ahead potential credit losses for domestic banks' loan portfolios could be estimated so as to scrutinize the effect of shocks on banks' overall profitability and capital adequacy under different macroeconomic stressed scenarios. In the model-based stressed scenarios, the result showed that the banking sector as a whole, given the one-year-ahead predicted values of overall profit and regulatory capital, was well equipped to withstand the impact of adverse macroeconomic conditions on banks' credit risk exposures.

Notes:
1. The CBC's macro testing model of banks' market risk was mainly based on the stress testing template created by Martin Čihák (2007). However, this model also referred to the stress test process in the context of the Financial Sector Assessment Program (FSAP) of the IMF and the methodology of a domestic research project that was outsourced by the CBC for stress testing the financial system in Taiwan.
2. These shocks include the adverse movement of foreign exchange rates, interest rates and equity prices.
3. The CBC's macro stress testing model of banks' credit risk mainly referred to a similar model employed by the Hong Kong Monetary Authority, the methodologies in CBC outsourced papers and other relevant papers. The framework consists of a macroeconomic model and Monte Carlo simulations with stress tests. In the macroeconomic model, the seemingly unrelated regression (SUR) method was applied to estimate the relationship between the default rates of bank loans and different macroeconomic values based on historical data. A variance-covariance matrix was in turn used to capture the joint error terms between macroeconomic variables and the logit-transformed default rates of bank loans. Multivariate regression analysis was then carried out to determine the macroeconomic variables which exhibited considerable explanatory power or a strong correlation with the sector-specific default rate. Under the Monte Carlo simulation, 10,000 future paths of one-year-ahead values of probabilities of default (PDs) were simulated

based on the SUR estimates, and in turn the simulated 10,000 PDs could be applied to construct a frequency distribution of credit losses for each of the baseline and stressed scenarios.

References: 1. Huang, S. C., (2011), *A Framework for Macro Stress Testing Banks' Market Risk in Taiwan*, CBC internal paper, January.

2. Huang, S. C., (2012), *A Framework for Macro Stress Testing the Credit Risk of Taiwan's Banking Sector,* CBC internal paper, February.

3. Chung, C. F., (2009), *A Stress Testing Framework for the Banking Sector in Taiwan*, CBC outsourced paper, January.

4. Chung, C. F., (2010), *A Framework for Assessing the Possible Credit Losses of Taiwan's Banking Sector*, CBC outsourced paper, January.

5. Chung, C. F., (2011), *A Framework for Quantitative Monitoring the Systemic Risk in the Financial System of Taiwan*, CBC outsourced paper, January.

6. Čihák, M., (2007), *Introduction to Applied Stress Testing*, IMF Working Paper WP/07/59.

7. Wong, J., K. Choi, and T. Fong (2006), *A framework for macro stress testing the credit risk of banks in Hong Kong*, Hong Kong Monetary Authority Quarterly Bulletin, December, pp. 25-38.

III. 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.

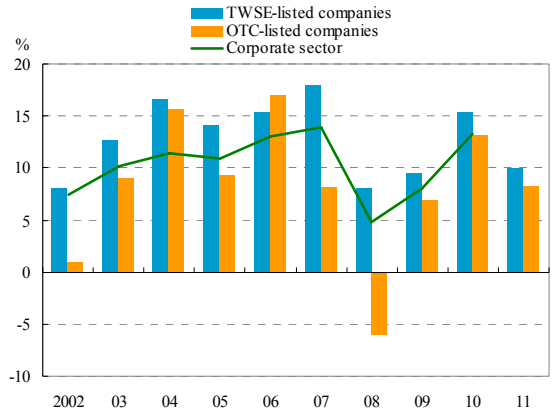
3.1 Corporate sector

Amid weak global economic growth and the European sovereign debt crisis, the profitability of listed companies weakened during the second half of 2011, while corporate leverage ratios showed mixed movements. Short-term debt servicing capacity was still at an acceptable level, though impaired by a deterioration in profitability. The credit quality of corporate loans remained sound as NPL ratios continuously decreased, but some industries began to show signs of increasing credit risk as their operating performance deteriorated in the face of diminishing market demand and global competition. In addition, rising international oil prices, eurozone economic recession, slow recovery of the US economy and China's lowered GDP target may affect future performance of the corporate sector and, therefore, warrant close attention.

Profitability of listed companies weakened in 2011

In the second half of 2011, weak global economic growth and the European sovereign debt crisis not only hit Taiwan's industrial production and exports but also hampered private consumption due to a contraction in wealth. Under these circumstances, the profitability of TWSE-listed and OTC-listed companies in 2011 weakened compared to the

Chart 3.1 Return on equity in corporate sector

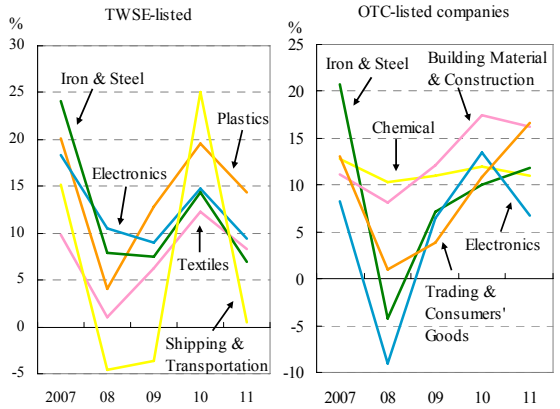


Notes: 1. Return on equity = net income before interest and tax / average equity.
2. Latest data for the corporate sector is as of 2010, while those for TWSE-listed and OTC-listed companies are as of 2011.
Sources: JCIC and TEJ.

previous year as their returns on equity (ROEs) decreased to 10.07% and 8.32%,[47] respectively (Chart 3.1).

All major industries for TWSE-listed companies reported plummeting profitability in 2011, especially the shipping and transportation industry with an ROE that was down to almost zero. For OTC-listed companies, except for the trading & consumers' goods and the iron & steel industries that steadily increased profitability, all other industries experienced deteriorating performance (Chart 3.2). In addition, TWSE-listed and OTC-listed optoelectronics companies reported increasing losses of NT$152.9 billion and NT$2.9 billion, respectively, in 2011.

Chart 3.2 Return on equity of TWSE-listed and OTC-listed companies by major industries

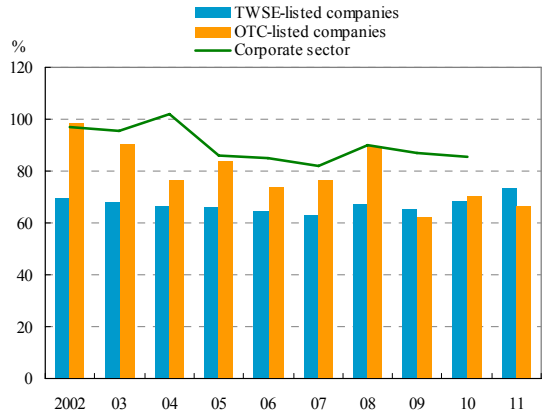


Notes: Return on equity = net income before interest and tax / average equity.
Source: TEJ.

Leverage ratio rose slightly for TWSE-listed companies but fell for OTC-listed companies

At the end of 2011, as some large companies issued bonds to raise long-term funds, the average leverage ratio for TWSE-listed companies slightly rose to 73.53% from 68.45% at the end of the previous year. However, the average leverage ratio for OTC-listed companies fell to 66.25% as a result of decreasing liabilities (Chart 3.3).

Chart 3.3 Leverage ratio in corporate sector



Notes: 1. Leverage ratio = total liabilities / equity.
2. Latest figure for the corporate sector is as of the end of 2010, while those for TWSE-listed and OTC-listed companies are as of the end of 2011.
Sources: JCIC and TEJ.

Short-term debt servicing capacity for listed companies remained acceptable though weakened

At the end of 2011, short-term debt servicing capacity of TWSE-listed companies weakened with both the current ratio and the interest coverage ratio decreasing to 133.23%

[47] The financial data for listed companies came from the Taiwan Economic Journal (TEJ) database, which excluded the data for Nanya Technology Corporation and Powerchip Technology Corporation as both were in the full cash delivery stock category as of the end of 2011. The losses for Nanya and Powerchip were NT$39.9 and NT$22.1 billion, respectively, in 2011. Including these two companies would cause the ROEs of TWSE-listed and OTC-listed companies to decrease to 9.67% and 5.97%, respectively.

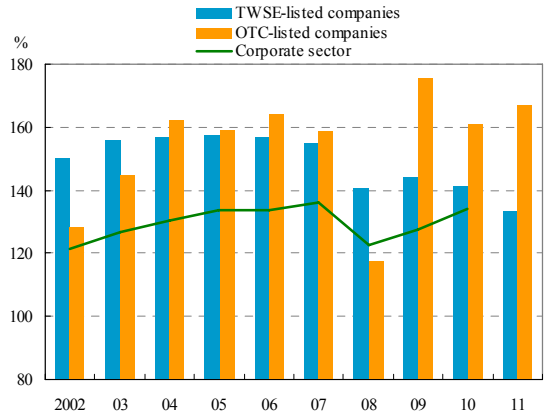
and 18.89, respectively, due to increases in current liabilities and deteriorations in profitability. The current ratio for OTC-listed companies rose to 166.73% as a result of decreased current liabilities, while their interest coverage ratio decreased to 14.82 owing to deteriorations in profitability (Chart 3.4 and 3.5). Overall short-term debt servicing capacity for listed companies remained acceptable though weakened.

Credit quality of corporate loans remained sound, but credit risk for certain industries increased

At the end of 2011, the NPL ratio for corporate loans granted by financial institutions continued to decline to 0.60% from 0.87% at the end of the previous year, reflecting sound credit quality for the corporate sector as a whole (Chart 3.6). However, due to diminishing market demand and global competition, some industries, especially dynamic random access memory (DRAM) and thin film transistor-liquid crystal display (TFT-LCD) manufacturers, saw weakened operating performances that may undermine their debt servicing capacity and negetively impact the loan quality of their creditor banks.

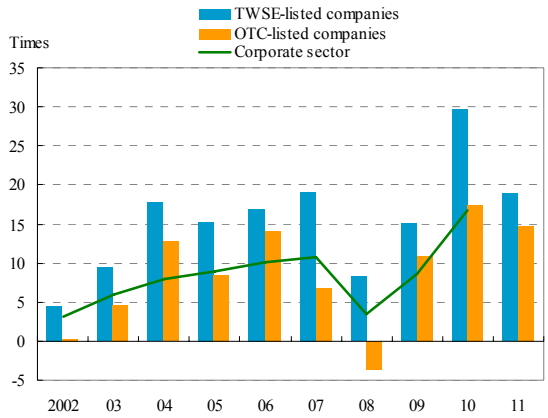
Meanwhile, in response to the global economic slowdown that adversely affected Taiwan's exports and investments during the second half of 2011, the Executive Yuan set up an "Economic Strategic Panel" on 3 November 2011 and put forth countermeasures to provide necessary assistance to industries in need. Starting 2012, global economic conditions began to show signs of stabilization and the DGBAS forecasted that the GDP growth rate of Taiwan would gradually pick up quarter by quarter. In addition, local market liquidity is

Chart 3.4 Current ratio in corporate sector



Notes: 1. Current ratio = current assets / current liabilities.
2. Latest figure for the corporate sector is as of the end of 2010, while those for TWSE-listed and OTC-listed companies are as of the end of 2011.
Sources: JCIC and TEJ.

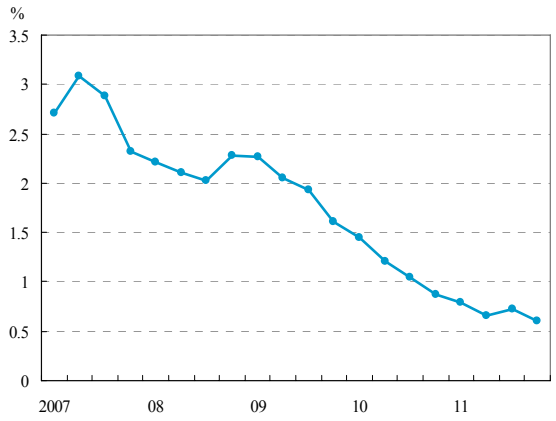
Chart 3.5 Interest coverage ratio in corporate sector



Notes: 1. Interest coverage ratio = income before interest and tax / interest expenses.
2. Latest figure for the corporate sector is as of 2010, while those for TWSE-listed and OTC-listed companies are as of 2011.
Sources: JCIC and TEJ.

abundant and interest rates remain at low levels. All these will help to improve the operating enviornment and financial soundness of the corporate sector. However, rising international oil prices, economic recession in the eurozone, slow recovery of the US economy and China's lessened GDP growth target may affect future performance of the corporate sector and, therefore, warrant close attention.

Chart 3.6 NPL ratio of corporate loans

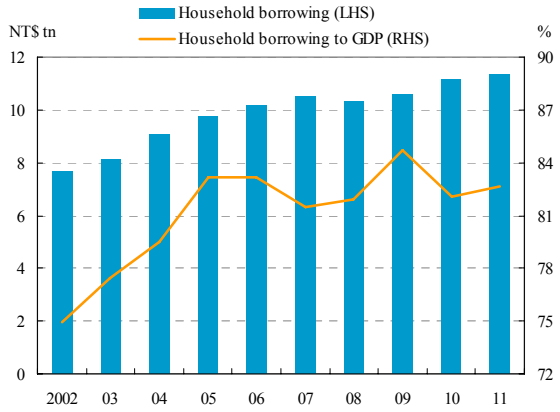


Note: End-of-period figures.
Source: JCIC.

3.2 Household sector

As the growth of total household borrowing slowed and disposable income expanded faster than borrowing, the household debt burden slightly eased. Overall credit quality of household borrowing also remained satisfactory. Moreover, the gradual easing of the unemployment rate and the continuous growth of regular earnings may help to enhance the debt servicing capacity of households.

Chart 3.7 Household borrowing to GDP



Sources: CBC, JCIC and DGBAS.

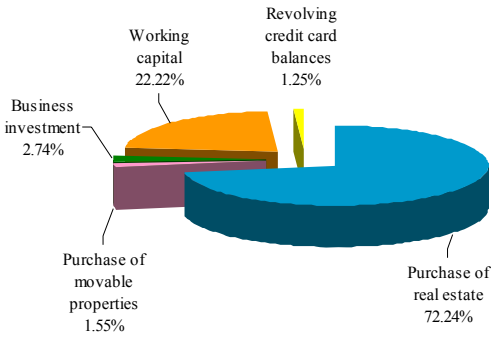
Growth of household borrowing slowed

Total household borrowing[48] at the end of 2011 reached NT$11.36 trillion, equivalent to 82.65% of annual GDP (Chart 3.7). The year-on-year growth rate of household borrowing for 2011 declined from 5.61% at the end of the previous year to 1.71%, mainly attributable to decreased growth of residential mortgage loans. The largest share of household borrowing went for the purchase of real estate (72.24%), with a decreased annual growth rate of 2.53%,

[48] 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.

followed by working capital loans[49] (22.22%), with an increased annual growth rate of 5.87%. Business investment loans, mainly for margin purchases, and revolving balances on credit cards took only minor percentages (Chart 3.8); however, they experienced large falls of 28.00% and 21.78%, respectively, following weakened stock market and local economic conditions in the second half of 2011.

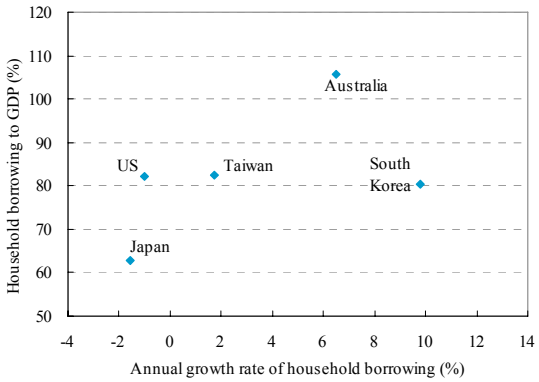
Chart 3.8 Household borrowing by purpose



Note: Figures are as of the end of 2011.
Sources: CBC and JCIC.

Compared to other selected countries, the growth of total household borrowing in Taiwan remained positive but was lower than that in Australia and South Korea. As a percentage of GDP, the household borrowing in Taiwan was lower than that in Australia, approximating that in the US and South Korea, but higher than that in Japan (Chart 3.9).

Chart 3.9 Household indebtedness in selected countries



Note: Figures for Taiwan and the US are as of the end of 2011.
The others are as of the end-September 2011.
Sources: Fed, BOJ, BOK, ABS, IMF, DGBAS, CBC and JCIC.

Household debt burden eased slightly

In 2011, as total household borrowing grew at a slower pace than disposable income, the ratio of household borrowing to gross disposable income[50] eased back to 1.16, reflecting a slightly reduced debt burden.

The debt servicing ratio rose from 36.07% a year earlier to 36.40% in 2011 due to the increase in working capital loans, showing that household short-term debt servicing pressure slightly increased (Chart 3.10). However, the fact that the domestic unemployment rate decreased gradually and regular earnings grew continuously may help to improve the debt servicing capacity of the household sector (Chart 3.11).

[49] The term "working capital loans" includes outstanding cash card loans.
[50] Gross disposable income = disposable income + rental expenses + interest expenses.

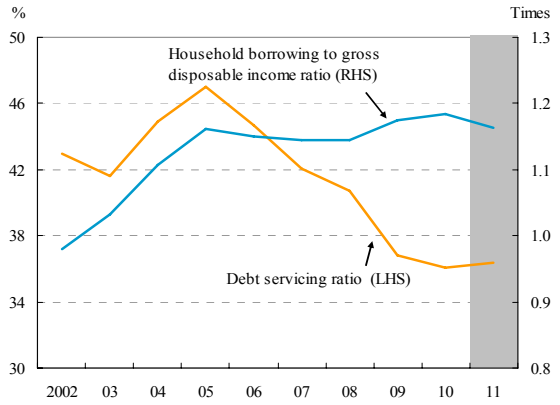
NPL ratio of household borrowing dropped to a record low

The NPL ratio of household borrowing declined from 0.77% a year earlier to 0.51 % at the end of 2011, the lowest level in ten years (Chart 3.12). The main reason behind this was that NPLs for real estate purchases, the largest share of household borrowing, contracted. Household credit quality remained satisfactory.

3.3 Real estate market

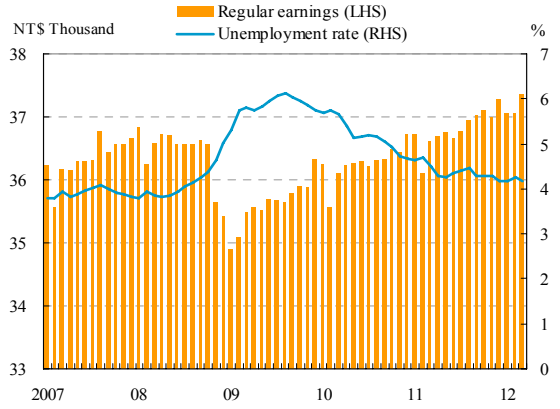
During the first half of 2011, real estate prices continuously climbed and indices repeatedly struck new highs. However, due to factors including the Ministry of Finance (MOF) imposing the Specifically Selected Goods and Services Tax, house prices gradually decreased and trading volume significantly contracted in the second half of 2011. The increase of outstanding real estate-related loans slowed down as mortgage interest rates slowly rebounded. As trading volume in the housing market contracted and massive construction projects introduced over the last few years were continuously completed, areas with high volumes of construction projects faced increasing downward pressure on housing prices.

Chart 3.10 Household debt servicing ratio



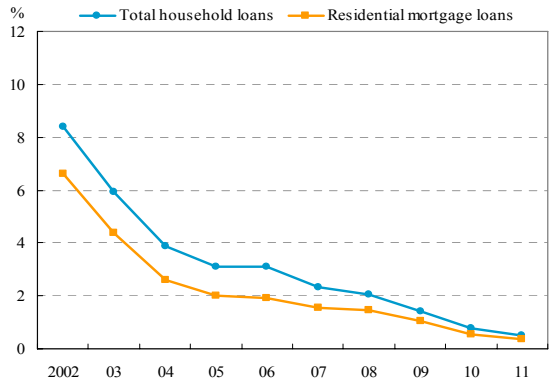
Notes: 1. Gross disposable income in shadow area is CBC estimate.
2. Debt servicing ratio = borrowing service and principal payment / gross disposable income.
Sources: CBC, JCIC and DGBAS.

Chart 3.11 Unemployment rate and regular earnings



Source: DGBAS.

Chart 3.12 NPL ratio of household borrowing

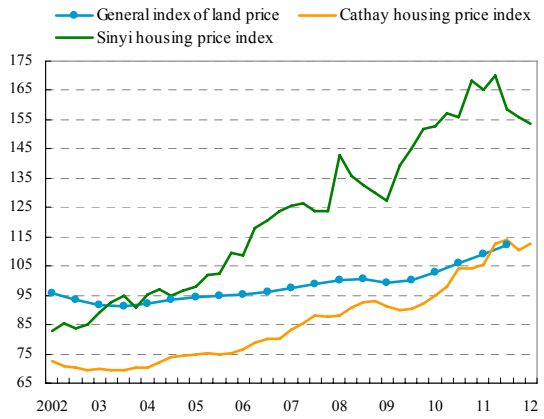


Source: JCIC.

Real estate prices gradually slid after hitting a peak

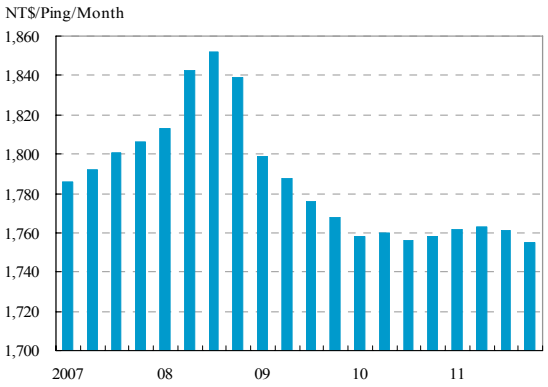
During the first half of 2011, real estate prices continuously climbed and indices repeatedly struck new highs. However, house prices started to slide in June due to the implementation of the Specifically Selected Goods and Services Tax, the slowdown in the economy and the drop in stock market indices. Among the relevant indices, the Taiwan area land price index hit a historical high of 112.05 in September 2011, though with a smaller growth rate of 5.78% year on year. The Cathay housing price index (for new construction) climbed to 114.6 in 2011 Q3, with house prices in several regions repeatedly hitting new highs. However, the index dropped back to 110.24 in Q4 with an annual growth rate of 5.85%, representing a significant decrease from its peak of 15.43% in 2010 Q3. In 2012 Q1, as the real estate industry focused on introducing high-priced houses, the Cathay housing price index rebounded, but house buyer bargaining power kept increasing. The Sinyi housing price index (for existing buildings) turned to decline in 2011 Q3 after reaching a historical high of 170.13 in Q2. In 2012 Q1, it continued decreasing to 153.47, with the growth rate falling to -7.07% (Chart 3.13). However, house prices in Taipei City and New Taipei City were still high, though downward pressure on housing prices remained in New Taipei City and Taichung City due to the high volume of construction projects.

Chart 3.13 Land and house price indices



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

Chart 3.14 Average office rental rate in Taipei



Source: Colliers International "Taipei Office Market Overview."

In 2011, the annual growth rate of the housing component of the CPI was 0.86%, with residential rent growing at a moderate rate of 0.37% year on year. However, as the number of tourists visiting Taiwan increased, shop rentals in certain commercial districts in Taipei City surged significantly. Even so, on the whole, office rentals remained stable with the average rental rate slightly decreasing by 0.17% year on year to NT$1,755 per ping (approximately

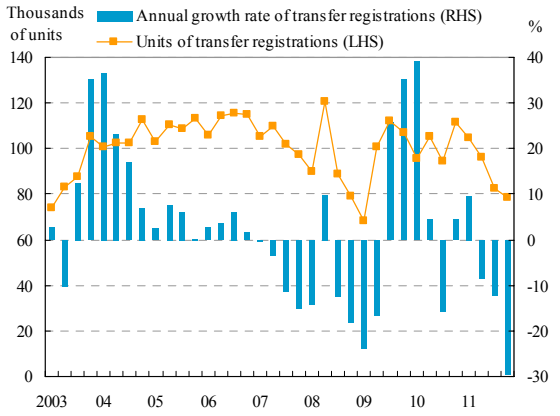
3.3 square meters) in Q4 (Chart 3.14).

Trading volume contracted significantly, while residential property vacancies remained high

Starting 2011, trading volume in the housing market contracted significantly due to the slowdown in the economy, the drops in stock market indices and the implementation of the Specifically Selected Goods and Services Tax. The annual growth rate for the number of building ownership transfers for transaction entered negative territory in Q2 and reached a 10-year low of -29.79% in Q4. The total number of building ownership transfers for transaction in 2011 decreased by 11.09% year on year to 360 thousand units, the lowest since 2004 (Chart 3.15). Compared to other metropolitan areas, the number of building ownership transfers for transaction in Taipei City, New Taipei City and Taichung City registered greater year-on-year decreases of 43.54%, 38.74% and 35.86%, respectively, in 2011 Q4. Furthermore, the total number of building ownership transfers for transaction in 2012 Q1 continued to decrease, falling by 38.86% year on year.

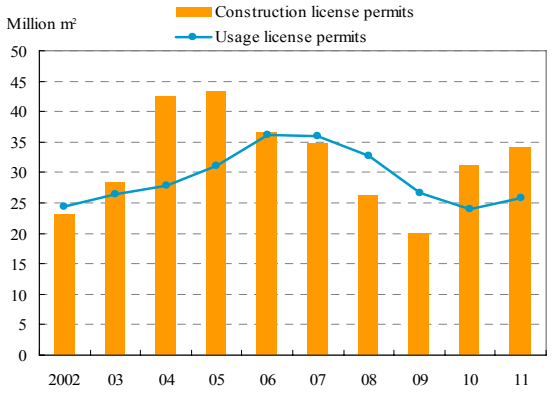
Due to increasing construction projects, the total floor space of construction license permits continued to increase in 2011, growing by 9.54% year on year, with residential real estate reaching year-on-year growth of 18.22% in 2011 and 3.76% in 2012 Q1. Meanwhile, in 2011, as construction projects introduced over the past few years

Chart 3.15 Building ownership registrations for transaction



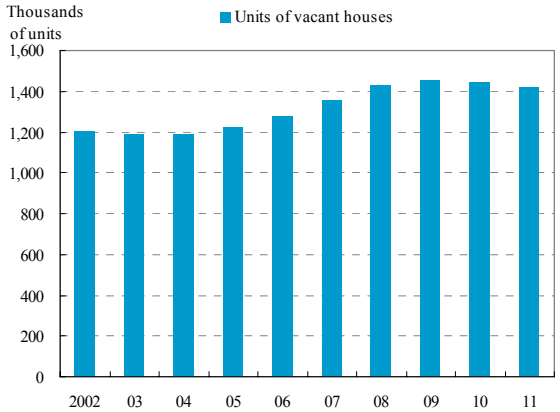
Source: Monthly Bulletin of Interior Statistics, MOI.

Chart 3.16 Floor space of construction license permits and usage license permits



Source: Monthly Bulletin of Interior Statistics, MOI.

Chart 3.17 Estimated units of vacant houses



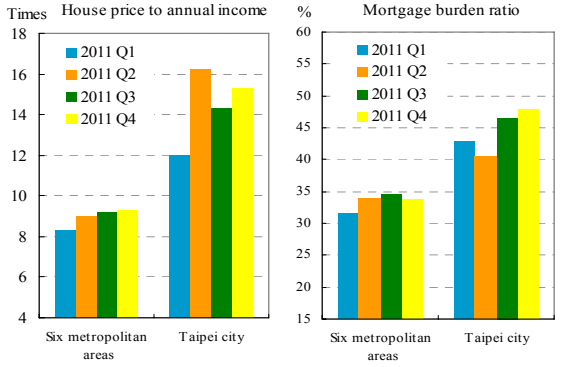
Source: Taiwan Power Company.

were continuously completed and released for sale, the supply of new properties in the market increased. Total floor space of usage permits increased by 7.79% year on year, with commercial properties posting the highest growth of 52.60% and residential properties slightly decreasing by 0.46%. Moreover, the average number of vacant residential properties in 2011, estimated by the number of units consuming less electricity than the minimum service charge from the Taiwan Power Company, decreased by 27 thousand units, or 1.85% year on year, but still stood at a high level of 1.419 million units (Chart 3.17). The movements in housing inventory levels in areas with high vacancy rates and numerous construction projects are worth close monitoring.

Mortgage burden remained heavy

Following climbing housing prices, the average house price to income ratio for the six metropolitan areas increased quarter by quarter to 9.3 in 2011 Q4. As the average mortgage burden ratio also elevated and reached 33.8% in Q4, the mortgage burden remained heavy. Among the metropolitan areas, the mortgage burden was the heaviest in Taipei City as its house price to income ratio and mortgage burden ratio reached 15.3 and 47.8%, respectively (Chart 3.18).

Chart 3.18 House price to income ratio and mortgage burden ratio

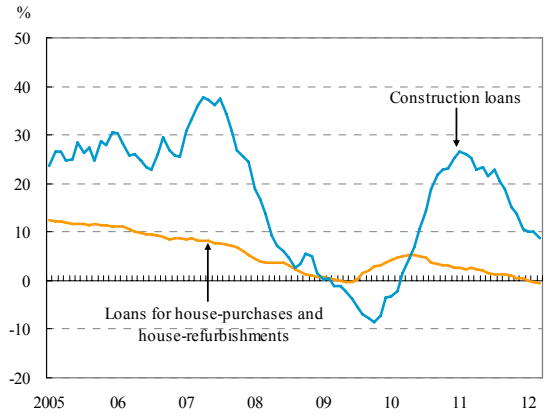


Notes: 1. Mortgage burden ratio = monthly mortgage expenditure / household monthly income.
2. Six metropolitan areas refer to Taipei City, New Taipei City, Taoyuan and Hsinchu City and County, Taichung City, Tainan City, and Kaohsiung City.
Source: "Taiwan Housing Demand Survey Report," MOI.

Real estate-related loans grew at a slower pace, while mortgage interest rates gradually increased

Due to the effect of the CBC and the FSC's measures to strengthen risk management regarding the real estate-related loans of banks, the annual growth rate of loans for house purchases and house refurbishments granted by banks[51] slid steadily to 0.6% at the end of 2011 and fell into negative territory

Chart 3.19 Annual growth rate of real estate-related loans

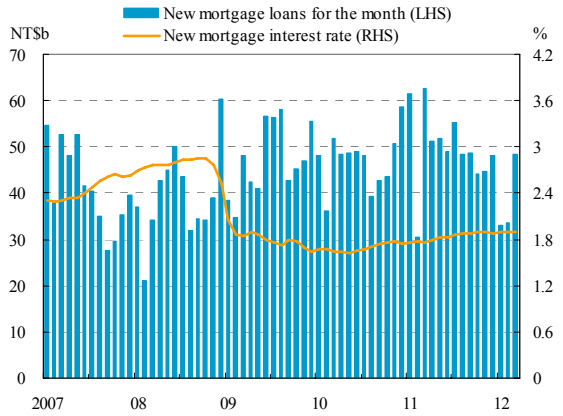


Source: CBC.

[51] Refers to domestic banks and the local branches of foreign banks.

in early 2012, reaching -0.65% in March, though the outstanding balance for such loans continued to grow and amounted to NT$5.76 trillion at the end of 2011. Outstanding construction loans continued to climb in 2011, albeit at a much slower pace of 10.48% year on year, and reached NT$1.41 trillion at the end of 2011. The annual growth rate continued to decrease to 8.68% in March 2012 (Chart 3.19).

Chart 3.20 New mortgages – amount and interest rate



Source: CBC.

Starting 2011 Q2, new loans for house purchases granted by the five largest banks slid significantly and dropped by 17.73% year on year to NT$48.2 billion in December. In 2012 Q1, such new loans continued to contract and decreased by 34.69% year on year. With respect to financing costs, following the CBC's policy rate hikes, the interest rate for new mortgages rebounded after decreasing to a record low of 1.62% in May 2010. It climbed to 1.88% in December 2011 and reached 1.89% in March 2012 (Chart 3.20).

Targeted prudential measures introduced by the CBC were effective

Considering that surging house prices in specific areas increased the mortgage burden and bank lending remained excessively concentrated on real estate-related loans, not only did the CBC adopt a series of targeted prudential measures focused on land collateralized loans and housing loans in specific areas from October 2009, but the FSC also introduced several measures to supervise the real estate lending risks of banks. Those measures proved to be effective, as the concentration of real estate-related loans gradually decreased and loan-to-value ratios also fell significantly (Box 2).

Box 2
Effectiveness of the CBC's measures to strengthen risk management on real estate-related loans of banks

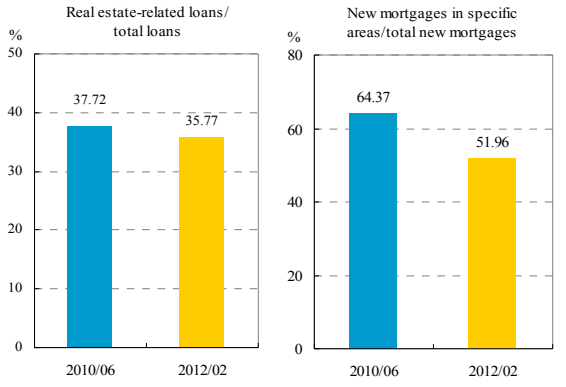
In response to surging house prices in specific areas in Taiwan and excessive concentration in real estate-related loans in the banking sector, the CBC has adopted a series of targeted prudential measures since October 2009. In addition to moral suasions and improvements in the data collection and analysis of real estate-related loans, the CBC promulgated the Regulations Governing the Extension of Housing Loans in Specific Areas by Financial Institutions in June 2010, which capped the loan-to-value (LTV) ratio on second (or more) housing loans for home purchases in Taipei City and ten districts within New Taipei City and removed the grace period for such loans. Furthermore, the CBC amended the above regulations in December 2010 to extend the coverage of specific areas and lower the maximum LTV ratio, as well as tighten underwriting standards for real estate loans collateralized by residential or commercial land plots located at urban planning districts.

Ever since the CBC launched the above-mentioned regulations to govern housing loans in specific areas and land collateralized loans, in conjunction with several measures adopted by the Financial Supervisory Commission (FSC) to supervise the real estate credit risks of banks and the Specifically Selected Goods and Services Tax promulgated by the Ministry of Finance (MOF) on 1 June 2011,[1] the policy measures to tighten risk management on the real estate-related loans of banks have shown promising results.

1. The concentration of real estate-related loans by financial institutions improved

- The concentration of real estate-related loans[2] by financial institutions decreased from 37.72% in June 2010, before the promulgation of the new regulations, to 35.77% in February 2012.
- The concentration of new real estate-related loans in specific areas (including Taipei City and thirteen districts within New Taipei City) by

Chart A2.1 Improvements in the concentration of real estate-related loans



Notes: 1. Real estate-related loans included residential mortgages, house repairs and improvements and loans for construction. Loans of OBUs and overseas branches were excluded.
2. Based on data from domestic banks and local branches of foreign banks.

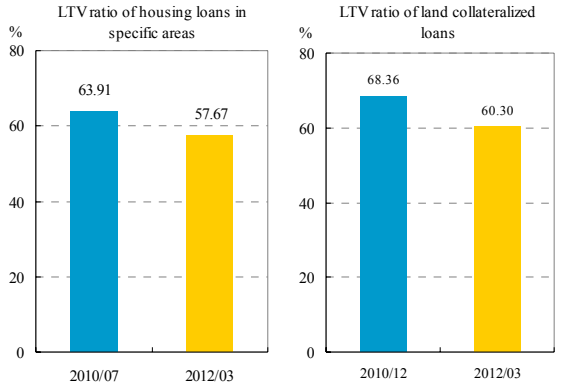
Source: CBC.

financial institutions also decreased from 64.37% in June 2010, before the promulgation of the new regulations, to 51.96% in February 2012 (Chart A2.1).

2. The LTV ratio of real estate-related loans slid significantly

- The average LTV ratio for housing loans in specific areas fell from 63.91% in July 2010, the early stage of the promulgation of the new regulations, to 57.67% in March 2012.

Chart A2.2 Changes in the loan-to-value ratio of real estate-related loans



Note: Based on data from domestic banks and local branches of foreign banks.
Source: CBC.

- The average LTV ratio for land collateralized loans slid to 60.30% in March 2012 from 68.36% in December 2010 after the promulgation of the amendments (Chart A2.2).

Notes: 1. For detailed regulations and measures taken by the CBC, the FSC and the MOF, please see page 57 and Box 4 of the Financial Stability Report No. 5.
2. Real estate-related loans included residential mortgages, loans for house repairs and improvements, and loans for construction granted by local branches of domestic banks and foreign banks.

IV. Financial sectors

4.1 Financial markets

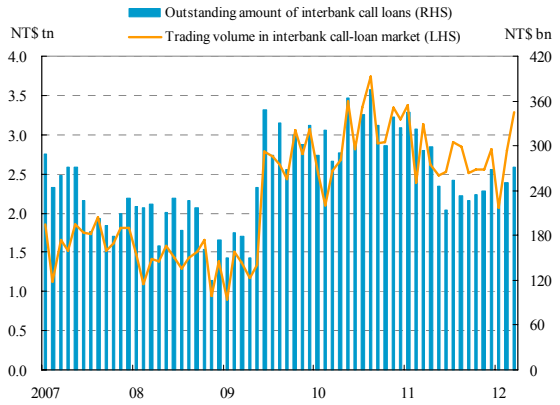
In 2011, trading volume contracted in both the interbank call-loan and bond markets, while trading volume trended upwards in the bills market. The yield spread between long-term and short-term rates still remained at a low level. As for the domestic stock markets, stock indices trended downward after reaching record highs in the first half of 2011, and volatility sharply increased before falling back. In the foreign exchange market, the NT dollar exchange rate against the US dollar reversed from appreciation to depreciation, but remained relatively stable compared to the exchange rates of other major currencies; moreover, trading volume increased gradually.

4.1.1 Money and bond markets

Trading volume contracted in interbank call loans

In 2011, the average monthly trading volume of interbank call loans declined by 7.85% year on year, and the average daily outstanding amount also declined by 17.55% over the previous year. The reason was primarily because the CBC significantly raised the reserve requirement ratio for the NT dollar demand deposits of foreign investors,[52] leading to a significant decline in the trading volume of interbank call loans provided by foreign banks which serve as custodian banks for foreign portfolio investors. In 2012 Q1, the trading volume of

Chart 4.1 Interbank call-loan market

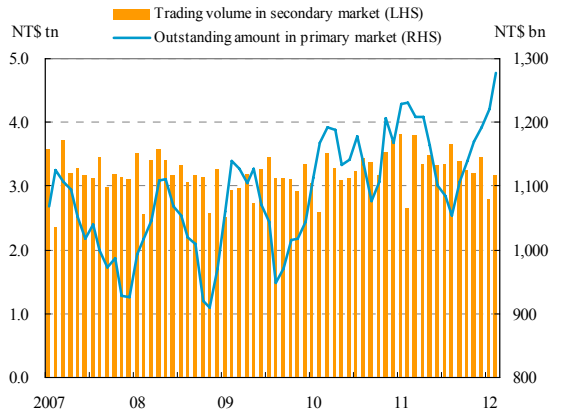


Note: Outstanding amount is the monthly average of daily data.
Source: CBC.

[52] The Special Reserve Requirement for New Taiwan Dollar Demand Deposits as amended on 30 December 2010 requires that financial institutions shall set aside reserves for the NTD demand deposits of overseas Chinese and foreign nationals, foreign institutional investors and Mainland Chinese investors effective from 1 January 2011. The reserve requirement ratio shall be 90 percent for the portion of the aforementioned demand deposits balance exceeding the outstanding balance of 30 December 2010, and 25 percent for the portion not exceeding the 30 December 2010 level. Both are higher than the general demand deposits reserve ratio of 9.775%.

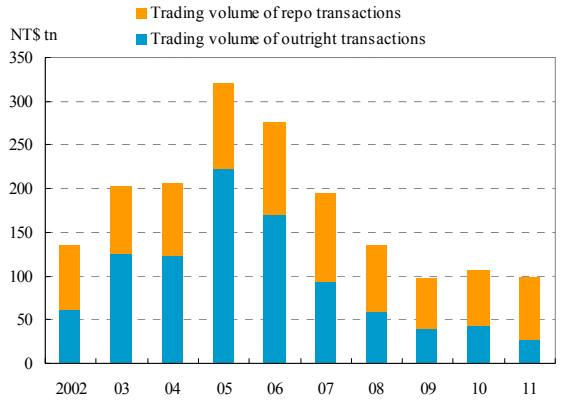
interbank call loans descended markedly in January owing to the Chinese Lunar New Year holidays, and then rebounded from February onwards (Chart 4.1).

Chart 4.2 Primary and secondary bills markets



Sources: CBC and FSC.

Chart 4.3 Outright and repo transactions in the bond market



Source: CBC.

Trading volume in the primary and secondary bills markets rebounded

In the first three quarters of 2011, the outstanding amount of bills issuance saw a declining trend in the primary bills market, though it reversed to a rising trend from September onwards. The reason was primarily because the buildup of economic downside risks in the second half of 2011 caused the CBC to stop raising policy rates in the third quarter of the year. As a result, bond traders adjusted to adopt an active strategy based on the expectation of dropping market rates, leading to an apparent upsurge in the underwriting of commercial paper and extension of bills positions. Therefore, the outstanding amount of bills issuance at the end of 2011 rose by 2.16% year on year. Broken down by instruments, the outstanding issuance amount of certificates of deposit at the end of 2011 increased by 15.45% and commercial paper rose by 7.60%, while that of treasury bills declined by 24.9%. Moreover, in the first two months of 2012, the outstanding amount of bills issuance remained high, reflecting a rebound in the primary bills market.

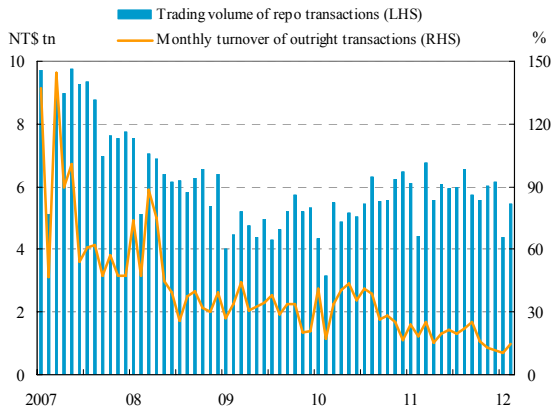
As for the secondary bills market, its trading volume,[53] affected by an increase in the issuance of commercial paper and certificates of deposit, rose by 4.25% year on year in 2011 (Chart 4.2). After a remarkable decline in January 2012 affected by the Chinese Lunar New Year holidays, the trading volume soared from February onwards.

[53] Source: FSC.

Trading volume in the bond market continued to decline, while yield spread ranged at a low level

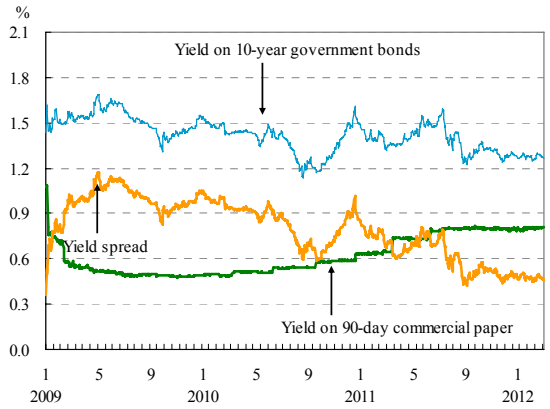
In 2011, the bond market was still sluggish, and trading volume declined by 8.00% year on year. Of the components, outright transactions dropped significantly by 37.03%, while repo transactions increased by 11.44% (Chart 4.3). Outright transactions were sluggish owing to ample liquidity and less bonds being traded in the market. From October onwards, affected by the looming prospect of future interest rate cuts and bond traders' lack of willingness to trade by the end of the year, outright transactions dropped significantly and their monthly turnover ratio fell to a trough of 11.75% in December 2011, a ten-year low. In early 2012, the outright turnover ratio descended to a remarkable low of 10.30% in January owing to the Chinese Lunar New Year holidays, but reversed to increase in February (Chart 4.4). It is expected that the trading volume of outright transactions will remain at a low level in 2012.

Chart 4.4 Bond transactions and turnover



Note: Monthly turnover = trading value in the month / average bonds issued outstanding.
Sources: CBC and FSC.

Chart 4.5 Yield spread



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

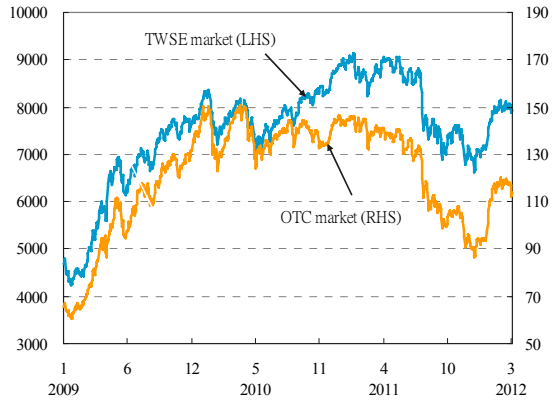
In the first half of 2011, following the CBC's two policy rate rises, short-term market rates and government bond yields both climbed. However, from August onwards, capital inflows into the bond market in the wake of the European sovereign debt crisis led to financial market turmoil as government bond yields declined to annual lows. This resulted in a shrinkage in yield spread between short-term and long-term rates down to 42 basis points in late September, though yield spread widened afterwards for a short time. In March 2012, the same yield spread remained at a low level of only 46 basis points (Chart 4.5).

4.1.2 Equity markets

Stock indices trended down after hitting new highs, while volatility dropped after sharp increases

The Taiwan Stock Exchange Weighted Index (TAIEX) of the Taiwan Stock Exchange (TWSE) market hit a new high of 9,145 in late January 2011, spurred by the robust performance of the US stock market and massive net buying by foreign investors. However, the TAIEX dropped to a first-quarter low of 8,235 on 15 March, owing to the repatriation of foreign capital arising from political and economic turmoil in several countries and the earthquake in Japan. Afterwards, it fluctuated within a narrow range. From August onwards, driven by the spillover effects of the European sovereign debt crisis, a revision of America's long-term credit rating from stable to negative and the slower-than-expected global economic recovery, coupled with the net stock selling by foreign investors,[54] the TAIEX resumed its downward trend and dipped to an annual low of 6,633 on 19 December. It rebounded to 7,072 at the end of December, decreasing by 21.18% year on year. In the beginning of 2012, the brighter outlook for European and US recoveries caused major stock markets around the world to soar. Furthermore, investor confidence was restored and foreign investors resumed net buying positions as uncertainties receded with the end of the presidential election in Taiwan. This propelled the TAIEX to soar up to 7,933 at the end of March 2012, an increase of 12.17% from the end of December 2011. Meanwhile, Taiwan's GreTai Securities Market (GTSM) Index of the over-the-counter (OTC) market closely tracked the movements of the TAIEX, hitting a high of 146 in January before skidding to 94 at year-end 2011. This represented an annual decrease of 34.78%. Similarly, the figure climbed to 114 at the end of March 2012, an increase of 20.98% from the end of 2011[55] (Chart 4.6).

Chart 4.6 Taiwan stock market indices



Sources: TWSE and GTSM.

Compared to major stock markets around the world, most markets showed negative performance in 2011 except for New York's Dow Jones and Kuala Lumpur's Composite Index. The fall of the TAIEX approximately

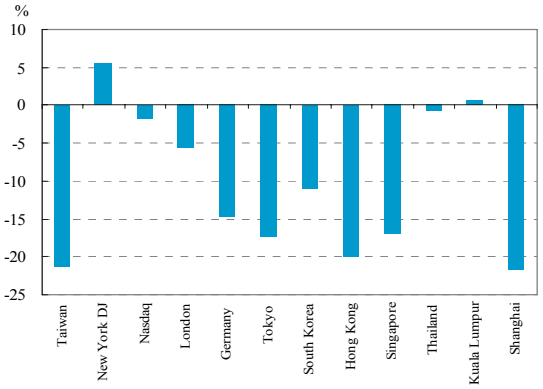
[54] In August 2011, foreign investors (foreign institutional investors, overseas Chinese, and foreign individual investors) were net sellers of NT$190.3 billion worth of securities in Taiwan, with the net selling amount reaching a new high for a single month since May 2010.

[55] In April 2012, the TAIEX reversed its upward trend and closed at 7,502 by the end of the month, owing to the reintroduction of a stock trading income tax and greater concerns over the European sovereign debt crisis. The index's increase narrowed to 6.08% over the previous year-end. Correspondingly, the GTSM index fell to 106 in April 2012, a rise of only 12.78% compared to the end of 2011.

equaled those of the stock indices of Hong Kong and Shanghai (Chart 4.7).

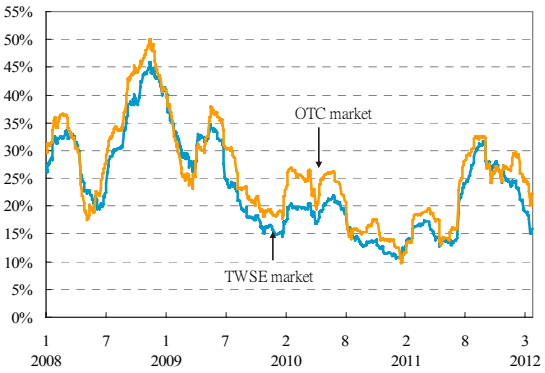
Broken down by sectors, most sector indices in the TWSE market tumbled in 2011, except the Cement, Food, Rubber and Automobile Industry indices which maintained positive performances. Among these indices, the Rubber Index performed the best and increased by 10.16% due to a rise in aggregate demand from Mainland China and the magnification of overall manufacturing capacity. By contrast, the Optoelectrical Industry Index performed the poorest, with a drop of 50.56% throughout the year. This reflected notable losses in the TFT-LCD and the light-emitting diode (LED) industries. In 2012 Q1, most indices, excluding the Oil, Gas and Electricity Industry Index, entered bullish territory following the upward trend of the TAIEX. The Automobile Index outperformed others, with a rise of 34.63%. Additionally, the Optoelectrical Industry Index reversed its downward trend and surged by 20.26%, thanks to the brightening industry outlook.

Chart 4.7 Comparison of major stock market performances



Notes: 1. Figures are for 2011.
2. Taiwan's index is for the TWSE market.
Source: TWSE.

Chart 4.8 Stock price volatility



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

Equity market volatility settled at a low level in the first half of 2011. From the second half of the year, in response to sharp falls in the TWSE and OTC indices, volatility in the markets became amplified and reached annual highs in October, but then declined slightly to 24.95% and 27.03%, respectively, at the end of December. In 2012 Q1, the volatility in the TWSE and OTC markets trended downward as the local stock market gained stability, standing at 15.86% and 22.24%, respectively, at the end of March (Chart 4.8).

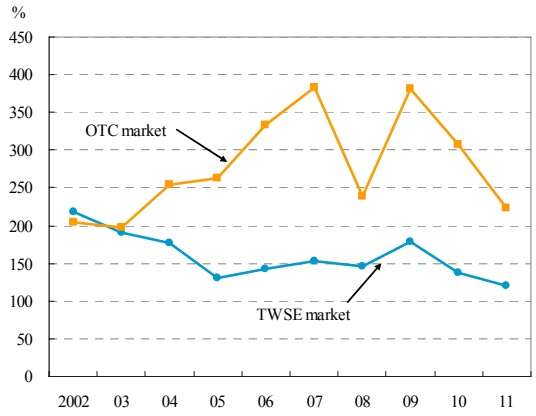
Annual turnover ratio hit a new low

The TWSE and OTC markets were both sluggish in 2011. The average monthly trading value in the TWSE market was NT$2.18 trillion, a decrease of 7.16% year on year, while its annual

turnover ratio in terms of trading value in the same year declined to 119.87%, touching a 10-year low. The transaction volume in the OTC market performed even more lethargically. The average monthly trading value was only NT$332.8 billion in 2011, a decrease of 29.12% year on year. Reflecting this, the annual turnover ratio of the OTC market significantly fell to 223.36%, registering a record low since 2004 (Chart 4.9). In January 2012, affected by the Chinese Lunar New Year holidays, the annual turnover ratios and monthly trading values in the TWSE and OTC markets followed a downward direction. However, the numbers witnessed a rebound in February as the local stock markets staged revivals.

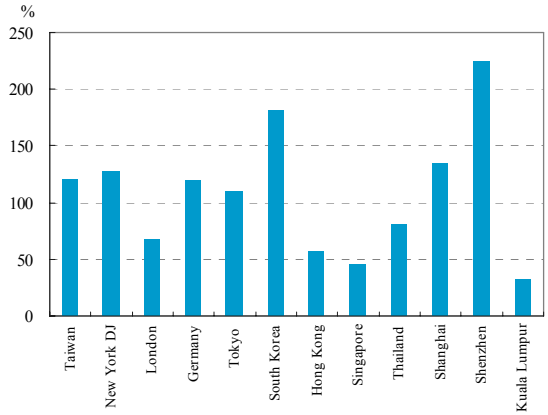
Compared to major stock markets around the world, the annual turnover ratio in the TWSE market in 2011 was lower than the stock markets in New York, South Korea, Shanghai and Shenzhen, while approximately equal to that in Germany, but higher than those in London, Tokyo, Hong Kong, Singapore, Thailand and Kuala Lumpur (Chart 4.10).

Chart 4.9 Annual turnover ratios in Taiwan's stock markets



Sources: TWSE and GTSM.

Chart 4.10 Comparison of turnover ratios in major stock markets

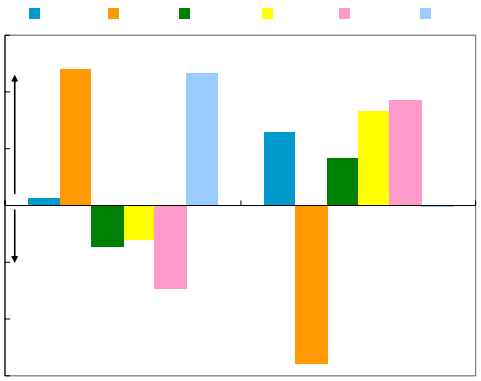


Notes: 1. Figures refer to accumulated turnover ratios in 2011.
2. Taiwan's figure is for the TWSE market.
Source: TWSE.

4.1.3 Foreign exchange market

NT dollar exchange rate reversed from appreciation to depreciation and foreign exchange trading volume increased gradually

Due to quantitative easing in the US and foreign capital inflows, the NT dollar exchange rate kept appreciating in early 2011, reaching 29.1 against the US dollar on 9 February. Afterwards, it turned to a period of depreciation mainly owing to the increasing hedging needs for US dollars arising from global political and economic turmoil and the withdrawal of foreign capital from emerging markets. However, the NT dollar exchange rate reversed



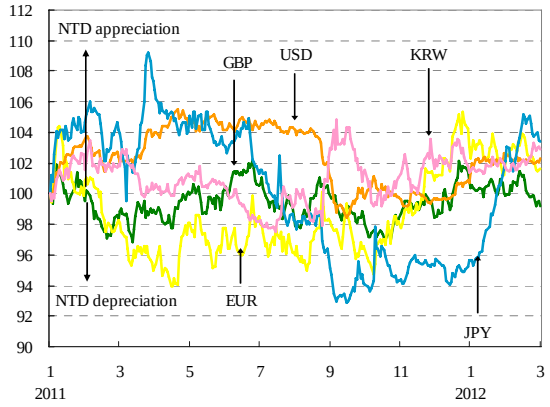
Malaysian ringgit depreciated by 1.48%, 1.22% and 2.94%, respectively (Chart 4.12).

As for the NT dollar against other key international currencies, the value of the yen went up significantly as a result of the increasing hedging needs for international funds, and even though the Japanese government stepped in to intervene in the market, the effect was limited. As a result, the NT dollar depreciated against the yen by 4.37% year on year at the end of 2011. Conversely, the NT dollar appreciated by 0.73% and 3.54% against the British pound

and the euro, respectively, over the same period; in addition, it appreciated by 1.76% against the Korean won (Chart 4.13).

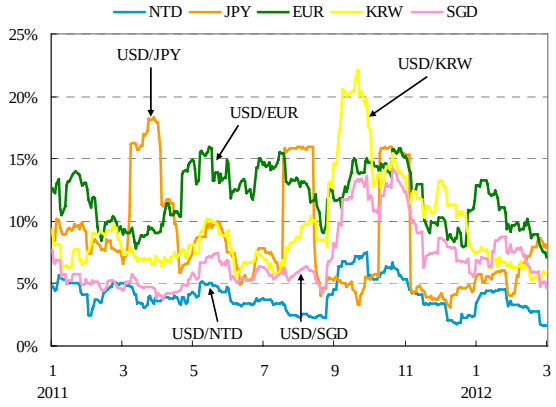
Owing to continued export growth and relatively large international capital movements, the foreign exchange market became more active in 2011 as the average daily trading volume registered US$24.2 billion, increasing by 19.46% year on year (Chart 4.11). A breakdown by counterparties shows that the average daily trading volume in the interbank market accounted for 74.27% of the total in 2011, while the retail bank-customer market made up a 25.73% share. As for types of transactions, spot trading accounted for 42.80% of the total, followed by foreign exchange swaps with 40.82%.

Chart 4.13 Movements of NT dollar exchange rate against key international currencies



Note: 3 January 2011 = 100.
Source: CBC.

Chart 4.14 Exchange rate volatility of various currencies against the US dollar



Note: Volatility refers to the annualized standard deviation of 20-day daily returns.
Source: CBC.

NT dollar exchange rate volatility leveled off after an upward trend and remained relatively stable compared to other currencies

The volatility in the NT dollar exchange rate against the US dollar fluctuated between 3% and 5% in the first half of 2011, and then intensified from September and peaked at 7.47% in the middle of October. However, the volatility moderated at the end of the year and registered an annual average of 4.25%. In early 2012, the volatility in the NT dollar exchange rate against the US dollar continued its downward trend and fell below 2% during the first quarter of the year, thus pushing the quarterly average volatility over the same period down to a much milder figure of 3.14% (Chart 4.14).

The CBC adopts a managed floating exchange rate regime, where in principle the exchange rate is determined by supply and demand in the foreign exchange market. If the market is

disrupted by seasonal or irregular factors (e.g. large inflows or outflows of short-term capital), causing the exchange rate to become excessively volatile, the CBC may step in to maintain an orderly foreign exchange market. Though the volatility in the NT dollar exchange rate against the US dollar temporarily increased in 2011, the NT dollar exchange rate was relatively stable compared to the volatility in the exchange rates of major currencies such as the Japanese yen, euro, Korean won and Singapore dollar against the US dollar (Chart 4.14).

4.2 Financial institutions

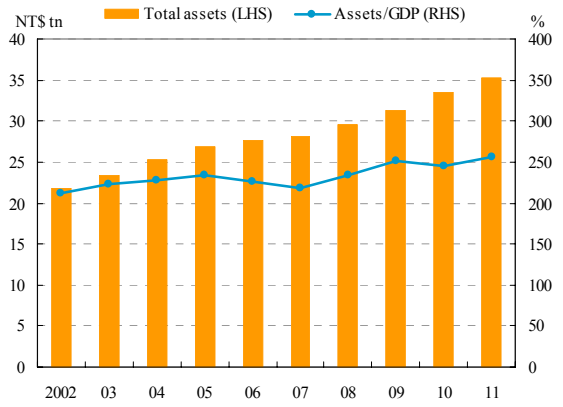
4.2.1 Domestic banks

In 2011, the total assets of domestic banks continually accumulated; however, the annual loan growth rate moderated. Asset quality remained satisfactory and credit risk concentration declined slightly; nevertheless, credit exposure concentrated in the real estate market remains high. The estimated VaR for market risk exposures of domestic banks had limited influence on their capital adequacy. Meanwhile, liquidity risk was moderate as the banking system benefited from ample liquidity. The profitability of domestic banks amplified sharply with a sustained improvement in capital adequacy in 2011, strengthening the capability of domestic banks to bear risks.

Total assets continually accumulated

The total assets of domestic banks kept growing and reached NT$35.3 trillion at the end of 2011, equivalent to 256.79% of annual GDP (Chart 4.15), while the annual growth rate of total assets decreased to 5.53% from 6.73% a year earlier. The main reason behind this was a decline in the outstanding amount of due from banks and interbank borrowings.

Chart 4.15 Total assets of domestic banks



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

Credit risk

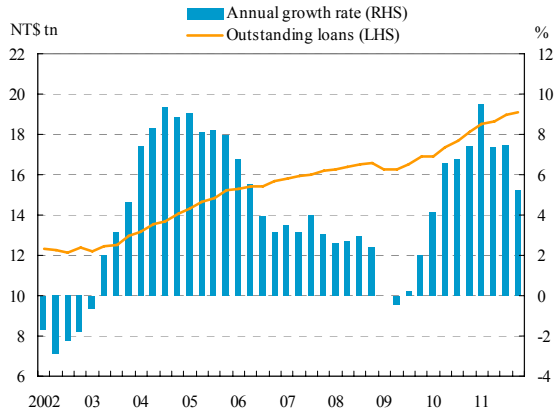
Customer loan growth slowed

Customer loans were the major source of credit risks for domestic banks. Outstanding loans of the local business units of domestic

banks[56] at the end of 2011 stood at NT$19.10 trillion and accounted for 54.11% of total assets.

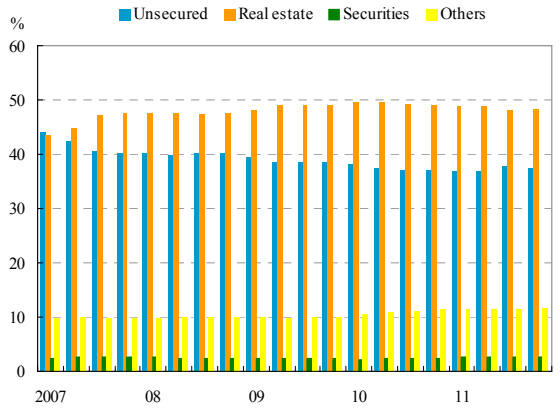
In 2011 Q1, due to a notable rise in loans to government agencies and a lower base compared to a year earlier, the annual loan growth rate increased significantly and reached a 10-year high of 9.47% in March. However, the annual growth rate moderated from the second quarter of the year onwards due to spillovers from the European sovereign debt crisis that shocked the global economy, as well as the implementation of the Specifically Selected Goods and Services Tax, which resulted in a reduction in the funding demands for corporate loans and individual mortgage loans. As a result, the annual loan growth rate declined to 5.21% in December (Chart 4.16). By category of the borrowers, the annual growth rate of individual loans decreased to 3.84% in December from 8.02% a year earlier, and the annual growth rate of corporate loans reached 8.23%, approximately equal to the figure at the end of 2010.

Chart 4.16 Outstanding loans and annual loan growth rate in domestic banks



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

Chart 4.17 Credit by type of collateral in domestic banks



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

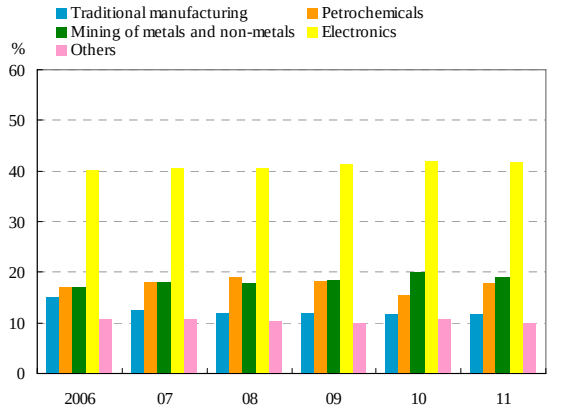
The concentration of credit exposure in real estate-related loans improved but remains high

Outstanding real estate-related loans[57] granted by the local business units of domestic banks moderated throughout the year but sustained a high level of NT$8.46 trillion, accounting for 44.30% of total loans as of the end of 2011. Meanwhile, real estate-secured credit granted by domestic banks amounted to NT$11.0 trillion, or 48.32% of total credit,[58] over the same period. The ratio declined gradually on a quarterly basis, but remains high (Chart 4.17).

[56] The term "local business units of domestic banks" excludes Offshore Banking Units and overseas branches. The term "customer loans" herein refers to discounts, overdrafts, other loans and import bills purchased. It excludes export bills purchased, non-accrual loans and interbank loans.
[57] The term "real estate-related loans" herein refers to lending by local business units of domestic banks to corporations and individuals for purchasing real estate.
[58] The term "credit" herein includes loans, guarantee payments receivable and acceptances receivable.

Among individual banks, ten had ratios of real estate-secured credit to total credit of over 60%. The number shrank from thirteen a year earlier, reflecting an improvement in the concentration of credit exposure in real estate-related loans. Recently, however, real estate market conditions in some areas with ample housing supply sharply cooled down, placing a buildup of downward adjustment pressure on house prices. Therefore, it would be advisable for banks with credit exposure highly concentrated in real estate-related loans in these areas to review their credit exposure and management to cope with potentially higher credit risks.

Chart 4.18 Weight of loans to the manufacturing sector by domestic banks



Notes: 1. End-of-period figures.
2. Weight of each sector = loans to each sector / loans to the whole manufacturing sector.
3. See note 59 for the definition of manufacturing sector.
Source: CBC.

Industrial credit concentration of corporate loans gradually declined

Outstanding corporate loans of the local business units of domestic banks stood at NT$8.58 trillion at the end of 2011, while loans to the manufacturing sector registered NT$3.93 trillion and accounted for the largest share of 45.82% of the total.

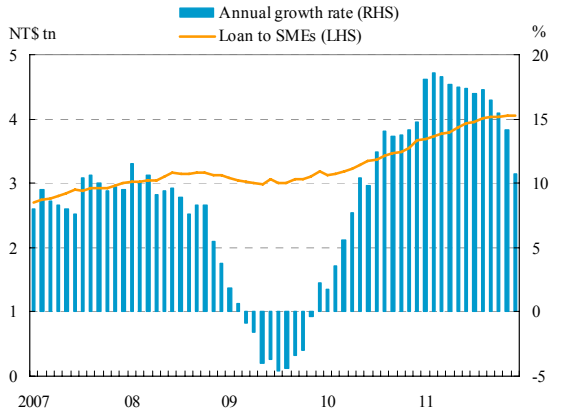
Within the manufacturing category,[59] the largest proportion of loans was for the electronics industry, which stood at NT$1.63 trillion and accounted for 41.59% of the total loans to the whole manufacturing sector (Chart 4.18). The ratio slightly decreased from 42.03% one year earlier, reflecting a descending industrial credit concentration. A few TFT-LCD and DRAM manufacturers suffered great losses, revealing that the electronics industry is exposed to substantial business cycle fluctuations and a rapid transformation of products. Domestic banks should pay close attention to changes in the business cycle and the financial conditions of borrowers to contain credit risks.

The supply of credit to small and medium enterprises (SMEs) continued to grow, albeit at a slower pace in the second half of 2011 due to a funding demand decline resulting from a weakening global recovery. Consequently, outstanding corporate loans to SMEs by domestic

[59] Loans to the manufacturing sector are divided into four categories by industry, including (1) electronics industries, (2) mining of metals and non-metals industries, (3) petrochemicals industries and (4) traditional manufacturing industries. The remainder are classified as "others."

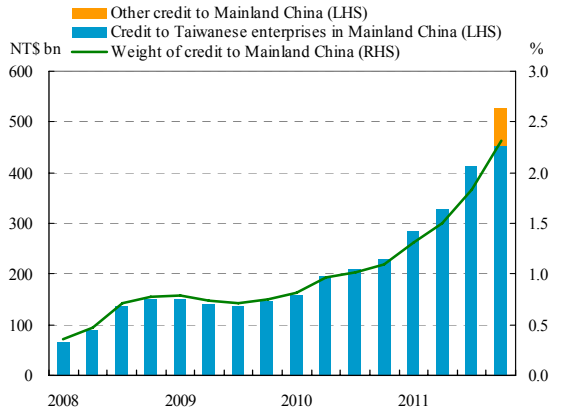
banks registered NT$4.05 trillion[60] at the end of 2011, representing an annual growth rate of 10.71% (Chart 4.19). Furthermore, in line with the government's Economic Vitalization Package and measures to promote employment, the Small and Medium Enterprise Credit Guarantee Fund of Taiwan (SMEG) also implemented several projects to encourage financial institutions to lend to SMEs. As a result, the outstanding amount of loan guarantees applied for by SMEs through the SMEG rose to NT$679.3 billion at the end of 2011, with an annual growth rate of 13.73%, and accounted for 16.76% of total SME loans. The guarantee coverage percentage also increased to 78.96% from 78.09% a year earlier. These statistics point to the favorable conditions for SMEs to acquire necessary funds, reflecting an ample supply of credit to SMEs.

Chart 4.19 Loans to SMEs by domestic banks



Source: FSC.

Chart 4.20 Credit to Mainland China by domestic banks



Note: Figure for "Other credit to Mainland China" started from December 2011.
Source: FSC.

Credit to customers in Mainland China accounted for a small share of total credit

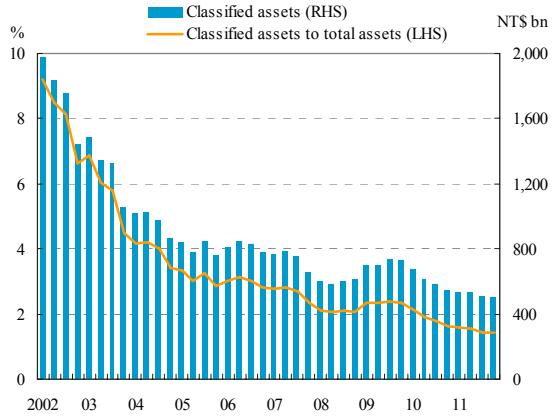
Benefiting from the marked loosening of Regulations Governing the Banking Activity and the Establishment and the Investment by Financial Institution Between the Taiwan Area and the Mainland Area,[61] as well as the substantial development of domestic banks in Mainland China's market, the outstanding credit to Taiwanese enterprises in Mainland China[62] by domestic banks at the end of 2011 registered NT$452.1 billion, a visible year-on-year increase of 96.96%. With the addition of other credit to Mainland China,[63] the

[60] Outstanding corporate loans to SMEs of domestic banks are FSC data.
[61] According to the regulations amended by the FSC on 7 September 2011, loan borrowers in Mainland China not only includes Taiwan's enterprises operating in Mainland China, but also extends to any individuals, legal persons, organizations, other institutions in the Mainland Area or their branches in any country or area outside the Mainland Area.
[62] The term "Outstanding credit to Taiwanese enterprises in Mainland China" herein includes: (1) direct credit to Taiwanese enterprises in Mainland China; (2) credit to legal persons in any country and area outside Mainland China in which the credit line or funds are transferred for use by any Taiwanese enterprises in Mainland China.
[63] The term "other credit to Mainland China" herein refers to the credit to legal persons in any country and/or area outside Mainland China in which the credit line or funds are transferred for use by any Taiwanese enterprises in Mainland China.

total outstanding credit to Mainland China stood at NT$525.9 billion, accounting for only a small share of 2.31% of total loans (Chart 4.20).

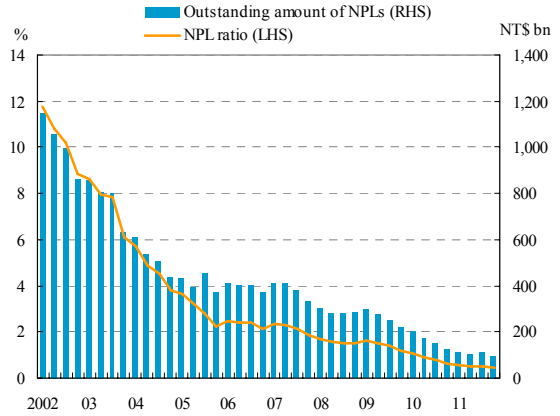
The non-performing credit ratio to Mainland China reached a mere 0.03% at the end of 2011, reflecting satisfactory loan quality. Nevertheless, on the back of the "Twelfth Five-Year Plan," wages and environmental protection costs in Mainland China are expected to grow further. This, coupled with the continued appreciation of the renminbi against the US dollar and slower global economic growth, which are both unfavorable to the competitiveness of exporting industries, points to heightened operational risks for corporations in Mainland China. Accordingly, domestic banks ought to carry out loan reviews and strengthen risk controls to reduce looming credit risks.

Chart 4.21 Classified assets of domestic banks



Notes: Excludes interbank loans.
Source: CBC.

Chart 4.22 NPL ratio of domestic banks



Note: Excludes interbank loans.
Source: CBC.

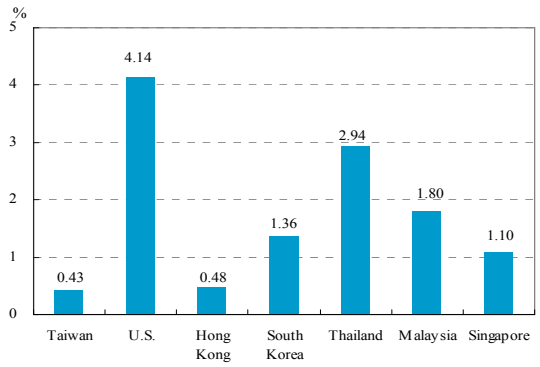
Asset quality remained satisfactory

Outstanding classified assets[64] and the average classified asset ratio of domestic banks stood at NT$503.1 billion and 1.43% at the end of 2011, dropping by 8.28% and 0.21 percentage points, respectively, over the previous year (Chart 4.21). Both registered ten-year record lows, reflecting that asset quality remained satisfactory. The expected losses of classified assets stood at NT$81.7 billion at the end of 2011, increasing by NT$17.3 billion or 26.81% year on year. This was mainly attributed to a notable rise in category five assets that had a higher loss rate. However, the ratio of expected losses to loan loss provisions stood at 28.23%, indicating sufficient provisions held by domestic banks to cover expected losses.

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

The outstanding NPLs of domestic banks stood at NT$94.1 billion at the end of 2011, contracting dramatically by 23.48%. Meanwhile, the average NPL ratio fell to a record low of 0.43%[65] (Chart 4.22). Among 38 domestic banks, all but three had NPL ratios less than 1%. Compared to the US and neighboring Asian countries, the average NPL ratio of domestic banks in Taiwan was similar to that of Hong Kong, but much lower than those of other countries (Chart 4.23).

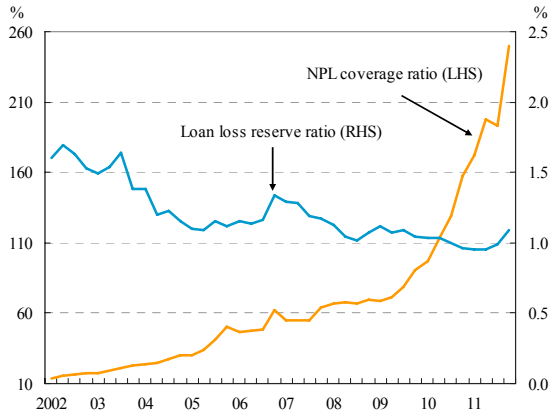
Chart 4.23 NPL ratios of banks in selected countries



Note: Figures are end-December 2011 data.
Sources: CBC, FDIC, HKMA, FSS, BOT, BNM, and MAS.

With a substantial decrease in NPLs, the NPL coverage ratio at the end of 2011 rose dramatically to 250.08%. The loan loss reserve ratio increased to 1.09% from 0.96% a year earlier as the FSC encourged banks to increase loan loss provisions (Chart 4.24). This reflects that the capabiltiy of domestic banks to withstand potential future losses by means of loan loss provisions has been strengthening.

Chart 4.24 NPL coverage ratio and loan loss reserve ratio of domestic banks



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

Market risk

Estimated Value-at-Risk for market risk exposures remained unchanged

The net position of debt securities accounted for the largest share of total market risk exposures of domestic banks, followed by the net position of equity securities and foreign exchange net position at the end of 2011. Using market data as of the end of March 2012, the estimated total VaR[66] for foreign exchange, interest rate and equity exposures of domestic banks at the end of 2011 stood at NT$128.7 billion, almost the same as that of a year earlier.

[65] When the total exposure of domestic banks to ProMOS Technologies Inc. (which entered into delinquency in April 2012) is accounted for, the NPL ratio increased to 0.63% at the end of April.

[66] The market risk model describes dependencies among foreign exchange, interest rate and equity positions' returns series, and provides a correlation structure between returns series. By means of a semi-parametric method, the new model constructs the sample distribution function of each asset's returns series using a Gaussian Kernel estimate for the interior and a generalized Pareto distribution (GPD) estimate for the upper and lower tails. The confidence level of the model is 99%, a holding period of ten trading days is used and exposure positions are assumed unchanged. The models are estimated using 1,000 foreign exchange rate, interest rate, and equity price samples.

Among market risks, equity VaR showed a significant rise of 92.96%, affected by the intensifying European sovereign debt crisis. Interest rate VaR fell moderately as a result of stable interest rates, while foreign exchange VaR diminished substantially due to steady movement of NT dollar exchange rates (Table 4.1).

Table 4.1 Market risks in domestic banks

Unit: NT$ bn

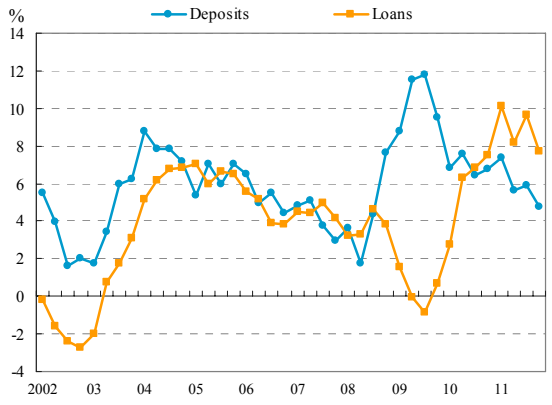
Types of risk	Items	End-Dec. 2010	End-Dec. 2011	Changes	
				Amount	%
Foreign exchange	Net position	57.4	60.3	2.9	5.05
	VaR	2.2	1.5	-0.7	-31.82
	VaR / net position (%)	3.83	2.49		-1.34
Interest rate	Net position	5,649.4	5,848.5	199.1	3.52
	VaR	115.8	111.5	-4.3	-3.71
	VaR / net position (%)	2.05	1.91		-0.14
Equities	Net position	516.8	536.6	19.8	3.83
	VaR	34.1	65.8	31.7	92.96
	VaR / net position (%)	6.6	12.26		5.66
Total VaR		128.4	128.7	0.3	0.23

Note: The total VaR is not equal to the sum of the VaRs of the three types of risks since it has taken the correlation among the three risk categories into consideration.
Source: CBC.

The effects of market risk on capital adequacy ratios were limited

According to the estimated results mentioned above, the total VaR would cause a decrease of 0.61 percentage points in the average capital adequacy ratio of domestic banks and induce the current ratio of 12.06% to fall to 11.45%. It shows that the effects of market risk may be considered as limited.

Chart 4.25 Annual growth rate of deposits and loans of domestic banks



Source: CBC.

Liquidity risk

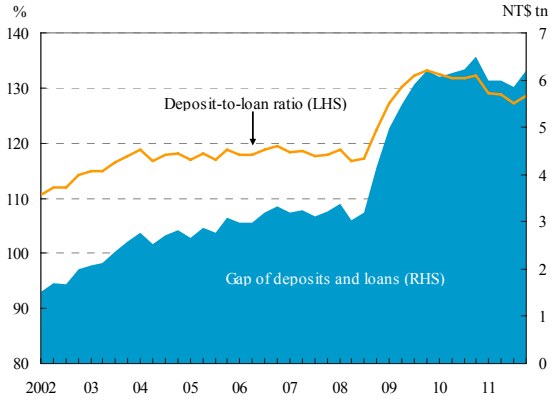
Liquidity in the banking system remained ample

Deposits and loans in domestic banks continued to increase in 2011, but at a slower pace, as the annual growth rate of loans and deposits fell to

7.73% and 4.79%, respectively (Chart 4.25). Given that the increase in loans exceeded that in deposits, the average deposit-to-loan ratio of domestic banks decreased to 128.66% at the end of 2011. The funding surplus (i.e. deposits exceeding loans) also contracted to NT$6.21 trillion; however, the overall liquidity in domestic banks remained abundant (Chart 4.26).

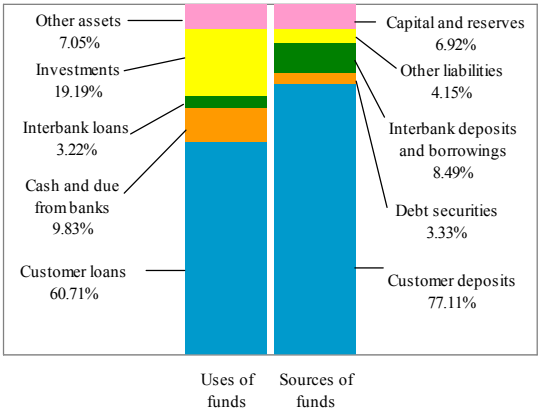
As for the sources of funds, relatively stable customer deposits accounted for the largest share of 77.11% of the total, slightly lower than a year before, followed by interbank deposits and borrowings at 8.49%, while debt securities issues contributed a mere 3.33% at the end of 2011. Regarding the uses of funds, customer loans accounted for the biggest share of 60.71% with a year-on-year rise of 1 percentage point, and cash and due from banks increased to 9.83%, while securities investments slightly fell to 19.19% of the total at the end of 2011 (Chart 4.27).

Chart 4.26 Deposit-to-loan ratio in domestic banks



Notes: Deposit-to-loan ratio = total deposits / total loans.
Source: CBC.

Chart 4.27 Sources and uses of funds in domestic banks



Notes: 1. Figures are as of end-December 2011.
2. Interbank deposits include deposits with the CBC.
Source: CBC.

Overall liquidity risk was moderate

The average NT dollar liquid reserve ratio of domestic banks was 27.96% in December 2011. Although exhibiting a decrease compared to the figure a year earlier, the liquid ratio was still well above the statutory minimum of 10%[67] (Chart 4.28), and the ratio of each domestic bank was higher than 15%. In the same period, Tier 1 liquid reserves, mainly consisting of certificates of deposit issued by the CBC, accounted for 95.34% of total liquid reserves,[68] while Tier 2 and Tier 3 reserves accounted for 4.53% and 0.13%, respectively. This revealed

[67] On 19 July 2011, the CBC raised the minimum liquidity reserve ratio from 7% to 10%, which was effective from October 2011. The relevant liquid reserve should be put up on a daily basis. Financial institutions unable to meet the requirements need to report to the CBC immediately.

[68] 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.

that the quality of liquid assets held by domestic banks remained satisfactory and overall liquidity risk was moderate.

Profitability

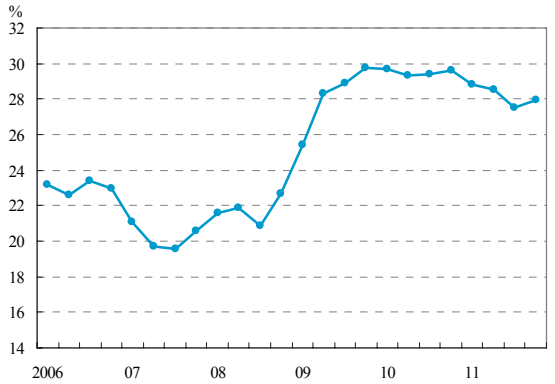
The highest profitability ever recorded

Owing to a rise in net interest income spurred by the expansion of interest rate spreads between deposits and loans, the aggregate net income before tax of domestic banks reached a historical high of NT$200.8 billion in 2011, with a dramatic increase of NT$16 billion, or 8.66%, year on year (Chart 4.29). The average ROE and return on assets (ROA), respectively, rose to 9.27% and 0.58%, slightly higher than the 9.08% and 0.57% posted the year before (Chart 4.30). However, compared to selected Asia-Pacific neighboring countries, the profitability of domestic banks was relatively low (Chart 4.31).

Among the total 38 domestic banks, only three reported losses due to increases of provisions for loan losses and amortization of deferred losses on the sale of classified assets, while the others all posted profits. Sixteen banks achieved profitable ROEs of 10% or more, increasing from eleven in 2010 (Chart 4.32). The ROEs of 21 banks increased compared to those in 2010, indicating improvement in their profitability.

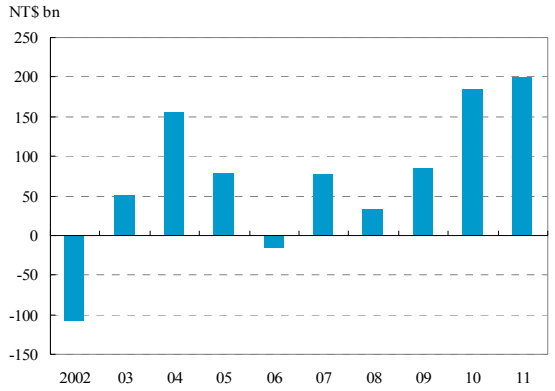
As for operating revenues and costs, total net revenues of domestic banks stood at NT$564.2 billion in 2011, rising by NT$34.7

Chart 4.28 Liquid reserve ratio of domestic banks



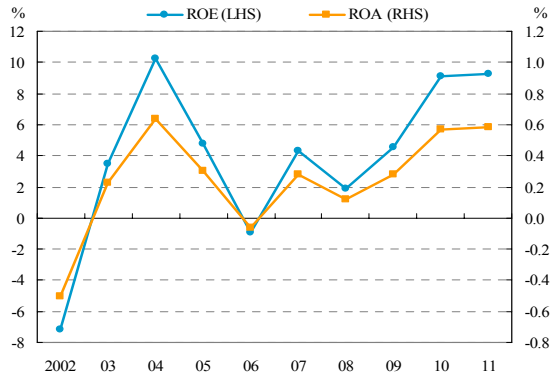
Note: Figures are the average daily data in the last month of a quarter.
Source: CBC.

Chart 4.29 Net income before tax of domestic banks



Source: CBC.

Chart 4.30 ROE & ROA of domestic banks

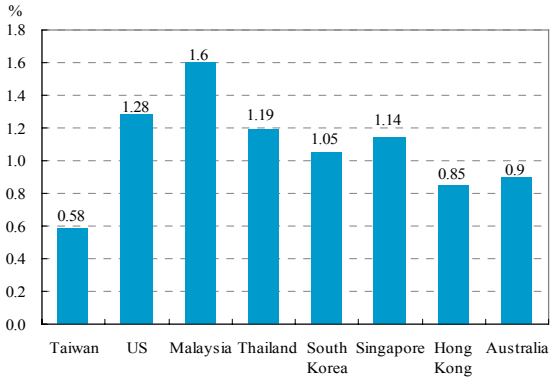


Notes: 1. ROE (return on equity) = net income before tax / average equity.
2. ROA (return on assets) = net income before tax / average total assets.
Source: CBC.

billion or 6.55% year on year. Of which, net interest income, accounting for 62.61% of the total revenues, increased by NT$38.1 billion compared to the previous year and reached NT$353.3 billion, resuming its level before the financial crisis as a result of the growth of loans and the increase of interest rate spreads between deposits and loans. Due to the setback of the asset management business caused by global financial turmoil in the second half of 2011, net fee and commission income fell to NT$119.9 billion, decreasing by NT$4.8 billion and accounting for 21.26% of total revenues. Because valuation of profits and gains on financial assets at fair value dramatically declined, net gains on financial instruments contracted by NT$13.6 billion and registered NT$39 billion, only accounting for 6.92% of total revenues.

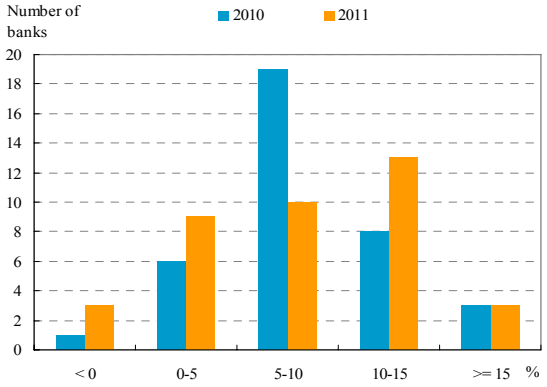
On the cost side, expenses other than interest[69] stood at NT$312.8 billion, rising by NT$16.3 billion compared to the previous year, and accounted for 86.07% of the total due to the growth of personnel costs. Provisions increased to NT$50.6 billion, rising by NT$2.1 billion and accounting for 13.93% of the total as a result of domestic banks being required to set aside additional provisions for category one credit assets (i.e. normal credit assets) at a rate of 0.5% of the outstanding and lift the loan coverage ratio to above 1% (Chart 4.33).

Chart 4.31 Comparison of ROA of banks in selected countries



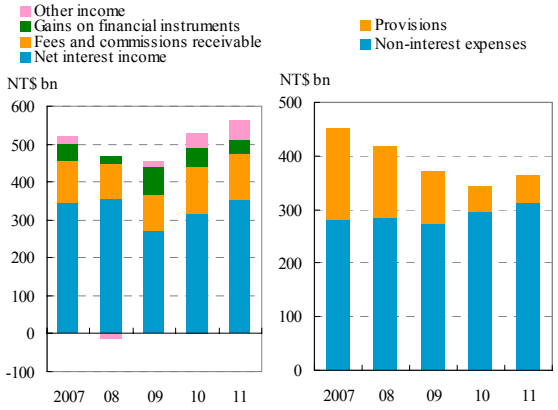
Note: Data are for 2011.
Sources: CBC, FDIC, BNM, BOT, FSS, MAS, HKMA and APRA.

Chart 4.32 Distribution of ROE of domestic banks



Source: CBC.

Chart 4.33 Composition of incomes and costs of domestic banks



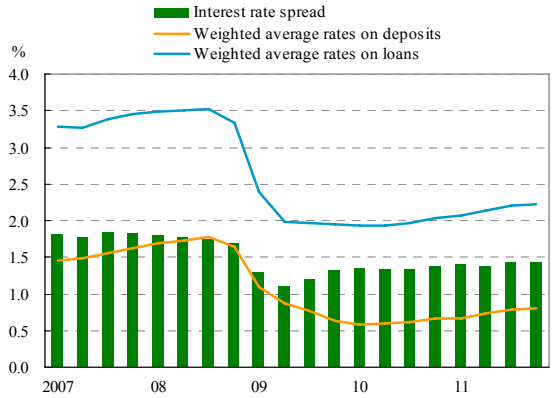
Source: CBC.

[69] Expenses other than interest include personnel costs and other operating and management expenses.

Factors that might affect future profitability

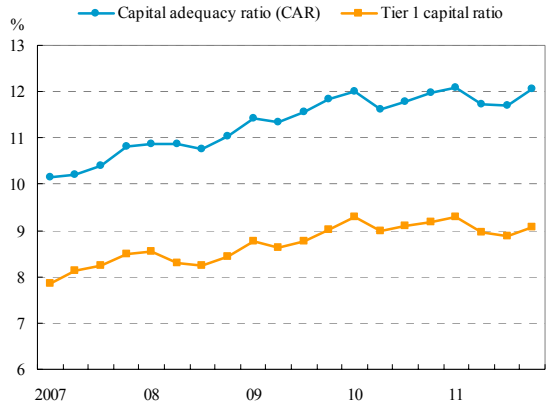
After the CBC raised policy rates five times from June 2010 and took a series of measures to urge banks to implement risk-based pricing on loans and adjust deposit structures, the interest rate spread between deposits and loans gradually expanded to 1.43 percentage points in 2011 Q4 (Chart 4.34). The gradual rebound of the interest rate spread was helpful in boosting domestic banks' profitability. Nevertheless, in an environment of low interest rates worldwide, banks are advised to enhance their innovative capabilities so as to provide differentiated financial services and lift their profits from niche business areas, while in the meantime strengthening their risk management in order to control costs and improve future profitability.

Chart 4.34 Interest rate spread between deposits and loans



Notes: 1. Interest rate spread = weighted average interest rates on loans - weighted average interest rates on deposits.
2. The weighted average interest rates on deposits and loans exclude preferred deposits of retired government employees and central government loans.
Source: CBC.

Chart 4.35 Capital adequacy ratio of domestic banks



Notes: 1. End-of-period figures.
2. Capital adequacy ratio = eligible capital / risk-weighted assets.
3. Tier 1 capital ratio = tier 1 capital / risk-weighted assets.
Source: CBC.

In addition to the above commentary, domestic banks continue to face numerous challenges. First of all, influenced by the recession in the TFT-LCD and DRAM industries, a few large domestic corporations in these industries sank into financial difficulties and applied for loan renegotiations with creditor banks. This might increase pressure for those banks to set aside more provisions for loan losses and undermine their future profits.[70] Secondly, global financial market vulnerability persists since the European sovereign debt crisis remains unresolved. Any contingency may simply lead to further market downturns and could undermine future investment profits of banks. An unfolding of such a scenario needs to be monitored closely.

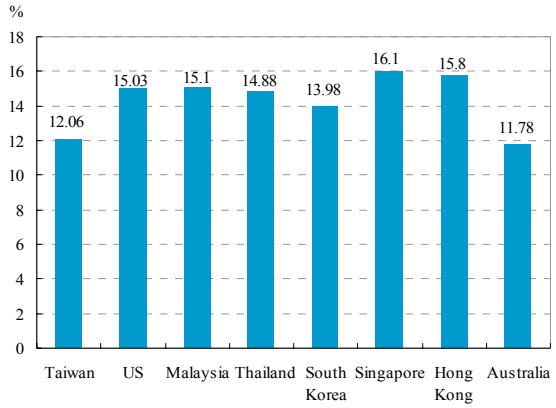
[70] Since domestic banks had set aside about 80% provisions on their loans to ProMOS Technologies, a big DRAM company, further loan losses on it should be limited.

Capital adequacy

Capital adequacy ratios ascended slightly[71]

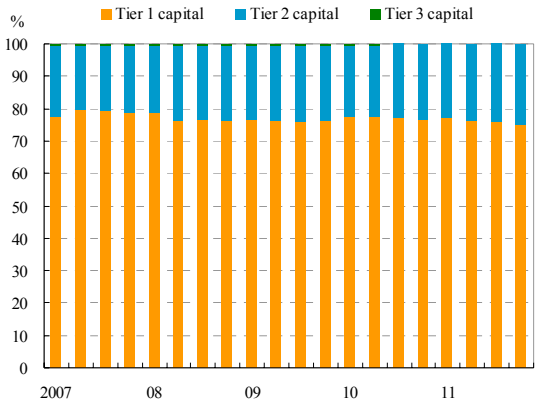
Affected by cash dividend payouts and an increase in risk-weighted assets, the average capital adequacy ratio and Tier 1 capital ratio of domestic banks in 2011 Q2 and Q3 displayed downward trends. Starting from Q4, however, benefiting from the increase in the issuance of long-term subordinated debentures and accumulated earnings, the average capital adequacy ratio rose to 12.06% at the end of 2011, higher than the ratio of 11.96% a year earlier. The Tier 1 capital ratio also rebounded to 9.08%, which was just slightly lower than 9.18% a year earlier (Chart 4.35). Compared to the US and some Asia-Pacific neighboring countries, the average capital adequacy ratio of domestic banks was marginally higher than that of Australia, but lower than those of the US and other Asian countries (Chart 4.36).

Chart 4.36 Comparison of capital adequacy ratios in selected countries



Note: Figures are as of the end of 2011.
Sources: CBC, FDIC, BNM, BOT, FSS, MAS, HKMA and APRA.

Chart 4.37 Components of eligible capital of domestic banks



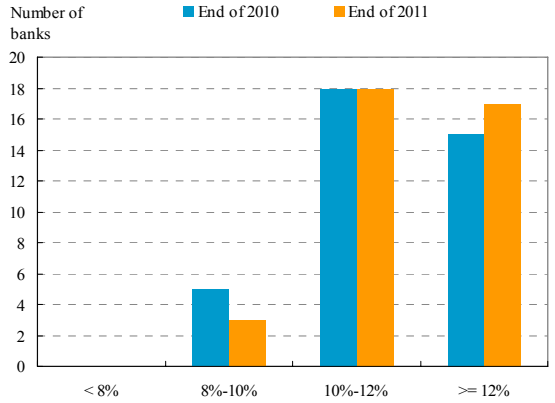
Note: Tier 3 capital figure for the end of 2011 is 0%, and for the other periods figures are from 0% to 0.34%.
Source: CBC.

Further breaking down the components of regulatory capital, Tier 1 capital, which features the best risk-bearing capacity, accounted for 75.28% of eligible capital, while Tier 2 capital registered 24.72%, and Tier 3 capital was zero at the end of 2011. Compared to the end of the previous year, the Tier 1 capital ratio declined by 1.45 percentage points, while the Tier 2 capital ratio saw a rise owing to a higher increase in the outstanding balance of long-term subordinated debentures (Chart 4.37).

[71] In this section, the capital adequacy related ratios of domestic banks at the end of 2011 were audited and certified by certified public accountants.

All domestic banks held sufficient capital, but faced pressure to raise their capital levels

Chart 4.38 Number of domestic banks classified by capital adequacy ratios



Source: CBC.

The capital adequacy ratios of all 38 domestic banks remained above the statutory minimum requirement of 8% at the end of 2011. There were seventeen banks with ratios above 12% (Chart 4.38), while 21 banks' ratios showed year-on-year increases. Even though domestic banks' capital adequacy ratios have been gradually increasing and all banks meet current minimum standards, the twofold impact stemming from the introduction of the Basel III and the amendment of national capital-related regulations will put elevated pressure on domestic banks to raise capital.

First, regarding Basel III, the BCBS introduced capital reforms in December 2010 that required banks to raise the quality and levels of capital. Given that the formulation of Taiwan's banking regulations tends to adhere to international requirements, the FSC has declared to phase in Basel III from 2013. For a start, the FSC amended capital regulations on 3 October 2011, which took effect from January 2012, to raise capital charges for securitization transactions and market risks after consulting the BCBS guidance of July 2009.[72] As regards the other capital reforms of Basel III, the FSC has been working on revamping related regulations. An amendment to the "Regulation Governing the Capital Adequacy and Capital Category of Banks" is expected to be completed in 2012 alongside the phased implementation from 2013.

Second, with regard to the amendment of national regulations on the calculation of capital adequacy ratios, the FSC issued a capital directive in the hope of controlling banks' real estate lending risks. From 21 April 2011, new mortgages which fail to conform with the definition of owner-occupied residence loans are required to make a sharp rise in their risk weight to 100%.[73] This will lead domestic banks which grant such mortgages to charge more

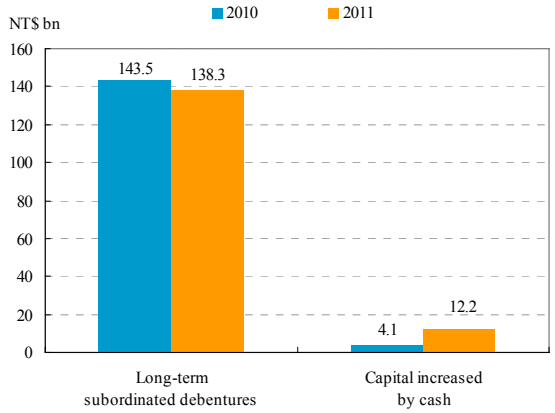
[72] The Basel Committee on Banking Supervision issued three publications of related capital accords in July 2009, including "Enhancements to the Basel II framework," "Revisions to the Basel II market risk framework," and "Guidelines for computing capital for incremental risk in the trading book."

[73] Conforming with the definition of owner-occupied residence loans (excluding NPLs), it allows the use of either one of the following two methods:
1). Based on the LTV ratio, a loan is divided into two parts. For the part that the LTV ratio is less than or equal to 75%, the risk weight is applied to 35%. For the part of the LTV ratio that is greater than 75%, the risk weight is applied to 75%.
2). All loans are applied to a risk weight of 45%.

capital and put upward pressure on increasing their capital.

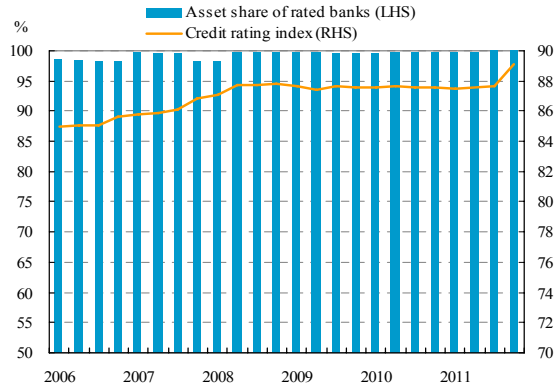
In response to the above-mentioned international trends in capital reforms and the amendment of national regulations, domestic banks have actively engaged in capital raising since 2010. During 2011, the aggregated capital raised by issuing long-term subordinated debentures and cash injections amounted to NT$150.5 billion, above the previous year's amount of NT$147.6 billion (Chart 4.39). However, most of the increased capital was classified as Tier 2 capital, rather than the common equity or Tier 1 capital that Basel III requires to be strengthened. Therefore, domestic banks are advised to review the capital gaps between Basel III requirements and their current capital conditions as soon as possible, and prudentially work out long-term capital plans and dividend payout policies so as to gradually reinforce the quality and levels of capital in line with national and international capital standards.

Chart 4.39 Funds raised by domestic banks in the past two years



Notes: 1. Period for capital increased by cash is based on the FSC's approved date.
2. The data exclude parent financial holding companies' increased investment for subsidiary banks.
Source: CBC.

Chart 4.40 Credit rating index of rated domestic banks



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

Credit ratings

Average credit rating level improved due to new rating criteria

According to the rating results[74] released by credit rating agencies, the credit rating index[75] of Taiwan's domestic banks improved remarkably in 2011 (Chart 4.40). The main reason was

[74] As of the end of 2011, the majority of Taiwan's domestic banks received long-term issuer ratings from Taiwan Ratings Corporation, followed by those with national long-term ratings from Fitch Ratings. Therefore, this section is based primarily on the Taiwan Ratings Corporation ratings (tw~), and secondarily on Fitch ratings (~(twn)).

[75] 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. The higher the index, the better the bank's overall solvency.

that Taiwan Ratings Corpration started to apply new rating criteria[76] recently revised by Standard & Poor's, and this resulted in eight banks being upgraded and two banks being downgraded.[77] Moreover, the Export-Import Bank of the Republic of China was rated for the first time and received the highest rating of AAA(twn), which also helped to improve the overall credit rating level.

Table 4.2 Systemic risk indicators for the banking system

Banking System	Standard and Poor's		Fitch	
	BICRA		BSI/MPI	
	2011/2	2012/2	2011/2	2012/2
Hong Kong	2	2	B/1	B/3
Singapore	2	2	B/1	B/2
Japan	2	2	C/1	C/1
South Korea	4	3	C/3	C/1
Taiwan	**4**	**4**	**C/1**	**C/1**
Malaysia	4	4	C/1	C/1
Thailand	6	5	C/1	C/1
Mainland China	6	5	D/1	D/3
Indonesia	8	7	D/1	D/3
Philippines	8	7	D/1	D/1

Sources: Standard and Poor's and Fitch Ratings.

As for the rating results of Taiwan's banking system released by credit rating agencies, Standard & Poor's "Banking Industry Country Risk Assessment (BICRA)," which was newly revised in November 2011,[78] maintained Taiwan's BICRA unchanged at Group 4. Compared to other Asian economies, the risks of Taiwan's banking industry were higher than those of Hong Kong, Singapore, Japan and South Korea, about the same as that of Malaysia, but much lower than those of Thailand, Mainland China, Indonesia and the Philippines. The rating results of Taiwan's banking system evaluated by Fitch Ratings' "Banking System Indicator / Macro-Prudential Indicator (BSI/MPI)[79]" remained unchanged at level C/1; however, the MPIs of Hong Kong, Singapore, Mainland China and Indonesia were downgraded from level 1 to level 2 or level 3, reflecting that their macrofinancial environments became more fragile (Table 4.2).

[76] On 9 November 2011, Standard & Poor's (S&P) announced that it would be revisiting the ratings of all rated banks globally following its new rating criteria. The new criteria set the Banking Industry Country Risk Assessment as the anchor in rating a bank. The anchor is then adjusted for bank-specific factors including business position, capital and earnings, risk position, funding and liquidity, and government and group support, to determine the issuer credit rating for a bank.

[77] Taiwan Ratings Corporation upgraded eight Taiwanese banks due to strong capital and high government support, while it downgraded two banks due to higher exposure to investment banking activities.

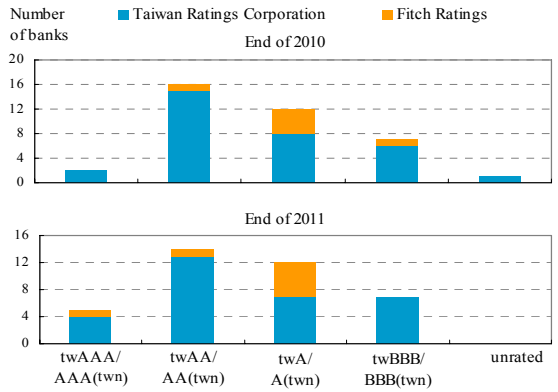
[78] On 9 November 2011, Standard & Poor's revised its Banking Industry Country Risk Assessment (BICRA) methodology. The new methodology has two main analytical components: economic risk and industry risk. The economic risk of a banking sector is determined by factors including economic resilience, economic imbalances, and credit risk in the economy, while industry risk is determined by institutional framework, competitive dynamics and system-wide funding. The overall assessments of those factors will lead to the classification of a country's banking system into BICRA groups, ranging from group 1 (lowest risk) to group 10 (highest risk), in order to indicate the relative country risk and banking sector credit quality.

[79] 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.

Credit ratings of domestic banks are expected to be stable in the near future

All domestic banks were rated by credit rating companies, and most of them maintained credit ratings of twAA/twA (Taiwan Ratings) or AA(twn)/A(twn) (Fitch Ratings) at the end of 2011; none had credit ratings lower than twBBB/BBB(twn) (Chart 4.41). The results were similar to those received the previous year. In addition, all banks received stable or positive rating outlooks or CreditWatch at the end of 2011, showing that credit ratings are expected to be stable in the near future.

Chart 4.41 Number of domestic banks classified by credit ratings

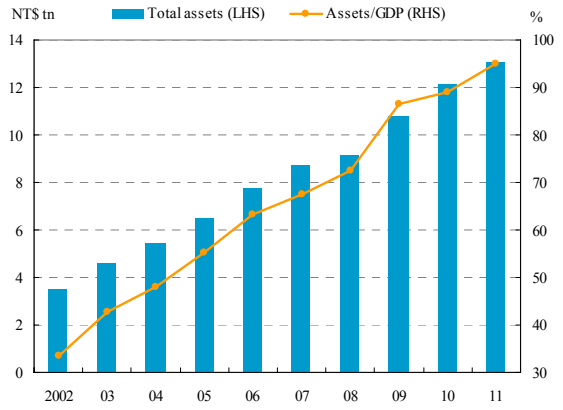


Sources: Taiwan Ratings Corporation and Fitch Ratings.

4.2.2 Life insurance companies

The total assets of life insurance companies continued to grow in 2011, although at a slower pace. The profitability of life insurance companies needs to be improved as overall the industry reported an operating loss. The RBC ratio at the end of 2011 was lower than a year earlier, while some companies fell below the statutory minimum of 200% over the same period. Generally, the credit ratings of the nine rated life insurance companies in 2011 remained stable.

Chart 4.42 Total assets of life insurance companies



Sources: FSC and DGBAS.

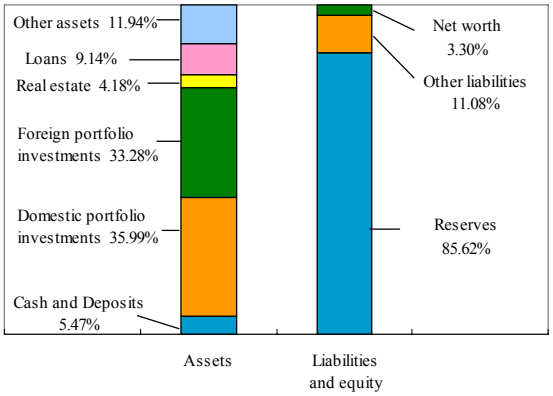
Asset growth slowed down

The total assets of life insurance companies continually grew and reached NT$13.06 trillion at the end of 2011, equivalent to 95.03% of annual GDP (Chart 4.42). However, the annual growth rate of total assets grew at an apparently slower pace of 7.96%, declining from its peak of 18.03% at the end of 2009.

The asset and liability structure of the life insurance industry changed slightly during 2011.

Twenty-four domestic life insurance companies[80] held a 98.53% market share by assets at the end of 2011, with only 1.47% for six foreign life insurance companies. The top three companies in terms of assets held a combined market share of 53.27%, with an increase of 0.55 percentage points compared to the end of the previous year. In terms of premium income, the combined market share of the top three companies was 50.81%, declining by 4.45 percentage points year on year.

Chart 4.43 Asset/liability structure of life insurance companies



Note: Figures are end-December 2011 data.
Source: FSC.

Foreign investments and real estate investments had higher growth

The funds of life insurance companies at the end of 2011 were chiefly invested in domestic and foreign securities, accounting for 35.99% and 33.28%, respectively, while 9.14% was in loans, 5.47% in cash and deposits and 4.18% in real estate. As for the sources of funds, various policy reserves constituted 85.62%, while net worth, influenced by the significant shrinking of unrealized net gains of financial products, dropped from 3.95% at the end of 2010 to 3.30% (Chart 4.43). This showed that the financial leverage of life insurance companies elevated in 2011.

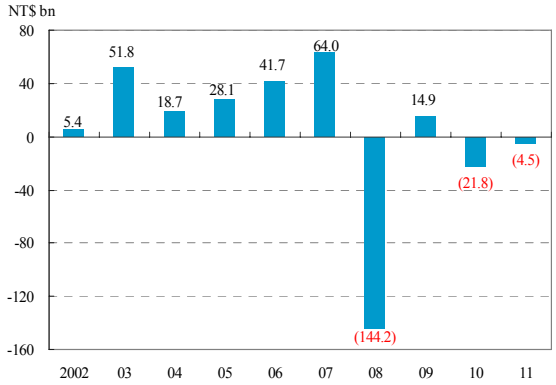
The usable funds of life insurance companies continued growing in 2011, although at a more subdued pace. Of them, foreign investments, benefiting from the relaxation of related regulations, grew substantially by 19.86%. Real estate investments increased by 13.27% due to insufficient supply of other long term investment instruments, although stricter regulations imposed limitations on the usage and yield of funds invested in real estate properties and required additional capital charges when such investments did not conform to the specified regulations. Domestic portfolio investments only increased slightly by 5.38%, owing to concerns over the more volatile stock market, while the assets of insurance products held in segregated custody accounts declined by 3.15%.

[80] Including foreign affiliates.

Losses were reported in 2011

The substantial shrinkage of premium income owing to the implementation of Taiwan's SFAS 40, which were put into practice in January 2011,[81] resulted from a huge contraction of gains from securities investments and even losses on foreign securities investments, leading to a net loss before tax of NT$4.5 billion for life insurance companies in 2011. Therefore, the profitability of the life insurance industry needs to be improved (Chart 4.44).

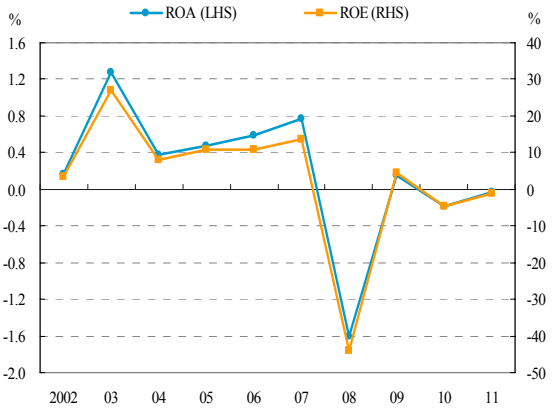
Chart 4.44 Net income before tax of life insurance companies



Source: FSC.

During the same period, average ROE and ROA were -0.99% and -0.04%, respectively (Chart 4.45). If Kuo Hua Life Insurance Company[82] is excluded, life insurance companies as a whole turned to report a net profit before tax of NT$1.7 billion, though with average ROE and ROA remaining at low levels of 0.32% and 0.01%, respectively. In addition, the average return on investments in 2011 was only 3.52%, revealing that the potential losses driven by negative interest rate spreads still needed to be alleviated. This, together with the fact that investment performance could be undermined by more volatile global financial markets resulting from the European sovereign debt crisis, may possibly have an adverse impact on the future profitability of life insurance companies.

Chart 4.45 ROE & ROA of life insurance companies



Notes: 1. ROA = net income before tax / average assets.
2. ROE = net income before tax / average equity.
Source: FSC.

In recent years, the profitability of life insurance companies has been considerably susceptible to the short term volatility of the NT dollar foreign exchange rate. With the intention of alleviating the above-mentioned impact and stabilizing related profits and losses, the FSC amended the "Regulations Governing the Setting Aside of Various Reserves by

[81] After Taiwan's SFAS 40 was put into practice on 1 January 2011, the premiums of insurance contracts without manifest insurance risk were booked as liabilities instead of premium income, which resulted in a decline in premium income.
[82] Kuo Hua Life Insurance Company was taken into receivership by the Insurance Stabilization Fund on 4 August 2009 and registered a net loss before tax of NT$6.2 billion in 2011.

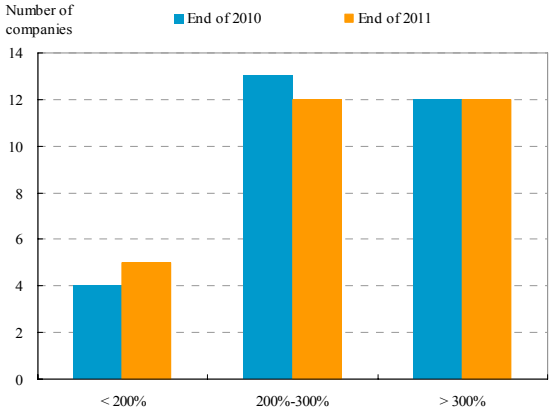
Insurance Enterprises" in February 2012, allowing life insurance companies to set aside foreign exchange volatility reserves on the liability side of their balance sheets from 1 March of the same year to cover potential foreign exchange losses when they may occur. This new reserve mechanism also helps life insurance companies to manage foreign exchange risks more flexibly and reduce related hedging costs.

Average RBC ratio declined

Although some life insurance companies raised more capital during 2011 and the FSC promulgated the tentative measures[83] of risk-based capital requirements, the average RBC ratio[84] of life insurance companies, excluding Kuo Hua Life Insurance Company, declined from 273.84% at the end of 2010 to 238.38% at the end of 2011, but still remained above the statutory minimum of 200%. The decline was mainly driven by the decrease of regulatory capital caused by operating losses and the increase of risk-based capital resulting from the swelling of domestic and foreign securities investments.

By individual companies, there were twelve companies with ratios over 300%, the same as at the end of 2010. However, five companies had ratios below 200% (Chart 4.46), whose combined assets accounted for 4.5% of the total. The financial structure of those companies needs to be improved as soon as possible.

Chart 4.46 Number of life insurance companies classified by RBC ratios



Note: Kuo Hua Life Insurance Company, which was taken into receivership by the Insurance Stabilization Fund on 4 August 2009, is excluded.
Source: FSC.

Overall credit ratings stable

None of the nine life insurance companies rated by Taiwan Ratings Corp. received credit rating adjustments in 2011, although one company was downgraded by Moody's owing to weak profitability and capital status. Moreover, all companies received stable or positive rating outlooks or CreditWatch, showing that the credit ratings of rated companies were expected to be stable in the near future. Of the top three companies,[85] two were rated above twA+,

[83] The FSC promulgated the tentative measures of risk-based capital requirements on 15 December 2011, which allowed insurance companies to calculate unrealized losses on stock-related investments using an arithmetic average of the closing price of each day during the half year preceding the evaluation day, instead of year-end closing prices, but to recognize unrealized gains upon the basis of prices as of the year-end valuation date. This tentative measure only applied to RBC ratio calculation in 2011.

[84] Risk-based capital ratio = regulatory capital / risk-based capital. According to Article 143-4 of the Insurance Act, the risk-based capital ratio of the insurance industry can not be below 200%.

[85] Nan Shan life insurance Company, one of the top three companies, does not request credit ratings agencies to provide a rating service.

signifying their strong ability to fulfill all financial commitments.

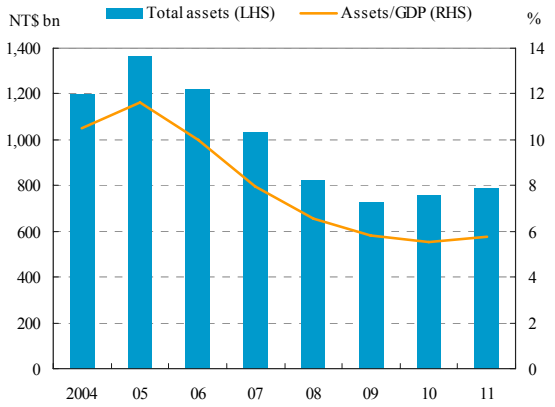
4.2.3 Bills finance companies

The total assets of bills finance companies kept tracking an upward growth path in 2011, while earnings increased slightly, owing to additional non-operating incomes. Although the average capital adequacy ratio continued to decline somewhat, the quality of credit assets remained sound. The problem of maturity mismatch between assets and liabilities in bills finance companies still existed, showing that liquidity risk remained rather high; however, the major liability to equity ratio still conformed to the statutory ceiling. The outstanding balance of the commercial paper guarantee business undertaken by bills finance companies gradually rebounded, and was also below the statutory ceiling.

Total assets kept on a growth path

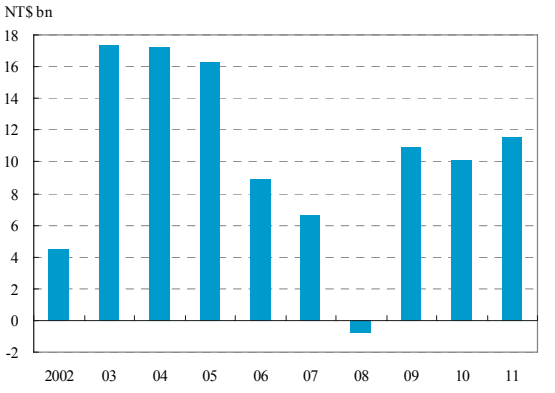
As a result of rising bonds and bills investment positions, the total assets of bills finance companies stood at NT$791 billion at the end of 2011, equivalent to 5.75% of annual GDP and increasing by 4.85% year on year (Chart 4.47). Of the eight bills finance companies,[86] the top three companies held a combined market share of 74.58% by assets, while each of the other firms had a market share below 7%.

Chart 4.47 Total assets of bills finance companies



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

Chart 4.48 Net income before tax of bills finance companies



Source: CBC.

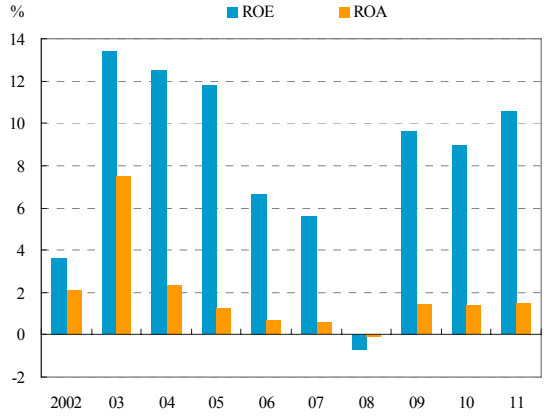
Profitability increased slightly due to additional non-operating income

Bills finance companies posted a net income before tax of NT$11.5 billion in 2011, a year-on-year increase of 13.74% over NT$10.1 billion registered in 2010 (Chart 4.48). The increase in profitability was mainly driven by capital gains of NT$4.7 billion from the

[86] The number of bills finance companies decreased from nine in 2010 to eight in 2011 due to a merger.

property transactions of two companies, which was recorded as non-operating income. At the same time, average ROE and ROA rose to 10.56% and 1.49%, respectively, higher than 8.95% and 1.37% in 2010 (Chart 4.49). If the above-mentioned capital gains from property transactions were excluded, however, the net income before tax of bills finance companies would have contracted by 32.87% year on year in 2011 due to the sharp shrinkage of net interest revenues resulting from ascending short term interest rates compressing the interest rate spread.

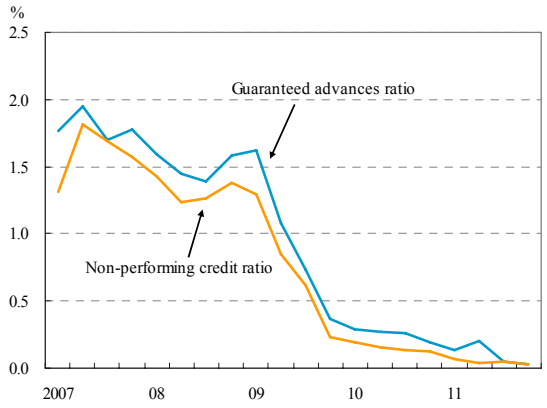
Chart 4.49 ROE & ROA of bills finance companies



Notes: 1. ROE = net income before tax / average equity.
2. ROA = net income before tax / average assets.
Source: CBC.

As the CBC has kept policy rates unchanged since the third quarter of 2011, the pressures of rising funding costs and bond investment evaluation losses caused by the five previous rate rises were anticipated to alleviate temporarily. Moreover, increasing bills issuance, induced by additional short term funding needs during the recent economic rebound, and a stably growing commercial paper guarantees business could be conducive to the future profitability of bills finance companies.

Chart 4.50 Guaranteed advances ratio of bills finance companies



Notes: 1. Guaranteed advances ratio = overdue guarantee advances / (overdue guarantee advances + guarantees).
2. Non-performing credit ratio = non-performing credit / (overdue guarantee advances + guarantees).
Source: CBC.

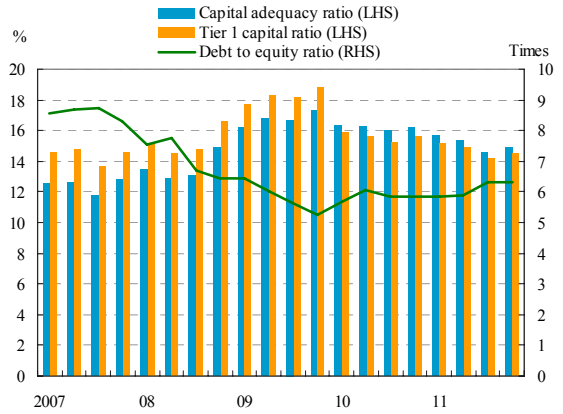
Asset quality remained sound

The average guaranteed advances ratio and the non-performing credit ratio both declined simultaneously to historical lows of 0.02% each at the end of 2011, indicating the credit quality of bills finance companies remained sound (Chart 4.50). At the same time, the ratios of the aggregate amount of credit loss and guarantee reserves to non-performing credit as well as to guaranteed advances, respectively, stood at the same value of 8,593.33%. It showed that the reserves set aside remained sufficient to cover potential credit losses.

Average capital adequacy ratio decreased, yet remained above 13% for each firm

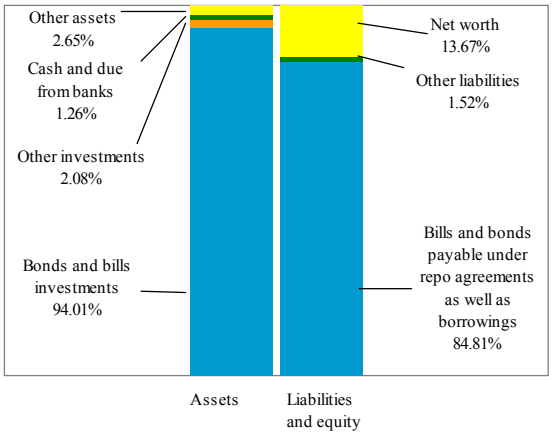
After the FSC amended the Regulations Governing the Capital Adequacy Ratio of Bills Finance Companies and required companies to hold additional capital for operational risk at the end of 2009, the capital adequacy level of bills finance companies trended down, and the average capital adequacy ratio registered 14.90% at the end of 2011, decreasing by 1.30 percentage points year on year. Furthermore, the Tier 1 capital ratio declined from 15.60% a year before to 14.48%. However, the capital adequacy ratio for each firm still remained above 13%, well above the statutory minimum of 8%. The average ratio of debt to equity of bills finance companies went up slightly to 6.31 at the end of 2011, higher than 5.84 at the end of 2010 (Chart 4.51), reflecting a small elevation in financial leverage.

Chart 4.51 Capital adequacy and leverage of bills finance companies



Source: CBC.

Chart 4.52 Asset/liability structure of bills finance companies



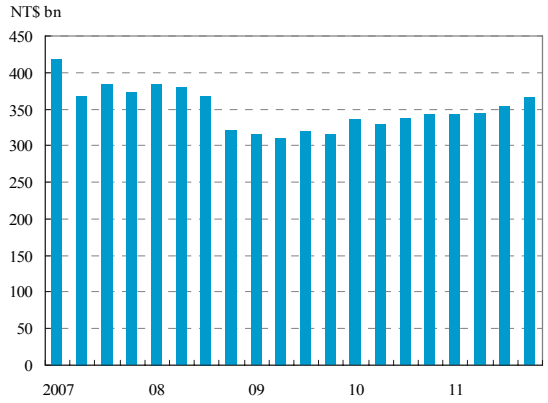
Note: Figures are end-December 2011 data.
Sources: CBC and FSC.

Liquidity risk remained high as the maturity mismatch between assets and liabilities persisted

Looking at the structure of assets and liabilities of bills finance companies at the end of 2011, bonds and bills investments constituted 94.01% of total assets, in which long-term bonds investments accounted for 44.44%. The sources of funds were mainly made up of short-term repo transactions and borrowings, accounting for 84.81% of total assets, while net worth was only 13.67% of total assets (Chart 4.52). The significant maturity mismatch between assets and liabilities showed that bills finance companies still faced high liquidity risk, which needs to be closely monitored.

In order to reduce the business risk and liquidity risk in bills finance companies, the FSC amended the regulations in April 2010, restricting the ceilings of major liabilities[87] of bills finance companies according to their capital scale. At the end of 2011, the average ratio of major liabilities to net worth registered 7.15, higher than 6.35 at the end of 2010. However, none of the bills finance companies exceeded the regulatory ceilings of ten or twelve times.

Chart 4.53 Outstanding commercial paper guarantees



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

Outstanding balance of guarantees rebounded gradually

Following the increase of commercial paper issuance, the outstanding guarantees business undertaken by bills finance companies rebounded gradually, registering NT$366.3 billion at the end of 2011, an increase of NT$24.5 billion or 7.16% year on year (Chart 4.53). In February 2010, the FSC began to set the required ratio of guarantees and endorsements business to net worth undertaken by bills finance companies according to their different capital adequacy ratio levels.[88] At the end of 2011, the average ratio registered 3.90, higher than 3.45 a year before. Although the ratio of each bills finance company rose slightly in 2011, it still conformed to the regulatory ceiling of five times.

[87] According to the amended Directions for Ceilings on the Total Amounts of the Major Liabilities and Reverse Repo Transactions Conducted by Bills Houses by the FSC on 9 April 2010, the major liabilities of a bills finance company could not exceed six times, eight times or ten times its net worth depending on the level of its capital adequacy ratio of below 10%, above 10% but below 12%, or above 12%. If a bills finance company is a subsidiary of a financial holding company or its bank shareholder meets safe and sound criteria, the ceiling will be raised by an additional two times its net worth. As of the end of December 2011, the capital adequacy ratio of each bills finance company was above 12%, so the ceilings were ten times or twelve times for each bills finance company.

[88] According to the amended "Directions for Outstanding Amount of Guarantees and Endorsements of Short-term Bills by Bills Houses" by the FSC on 24 February 2010, the ceiling of the ratio of outstanding commercial paper guaranteed to net worth for a bills finance companies could not exceed one, three, four and five times, respectively, depending on the level of its capital adequacy ratios of below 10%, above 10% but below 11%, above 11% but below 12%, or above 12%. As of the end of December 2011, the capital adequacy ratio of each bills finance company was above 12%, so the ceiling of five times was set for each one.

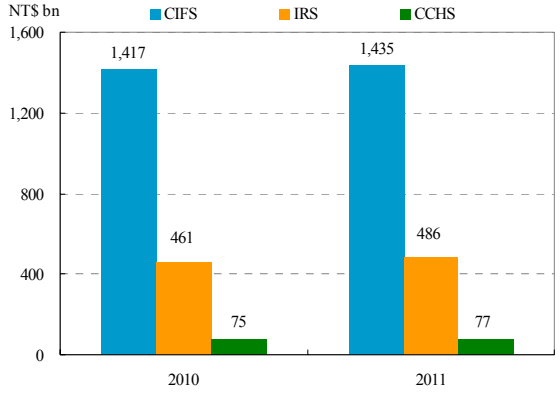
4.3 Financial infrastructure

4.3.1 Payment and settlement systems

Overview of systemically important payment systems

In 2011, the average daily transaction value of the three systemically important payment systems (SIPSs)[89] processing domestic interbank payments increased moderately compared to the previous year. Among them, the CBC Interbank Funds-Transfer System (CIFS), which handles large payments and the final settlement of interbank fund transfers, continued to be the most important one in 2011. Its average daily transaction value reached NT$1.43 trillion and accounted for 72% of the total (Chart 4.54).

Chart 4.54 Average daily transaction value of the three SIPSs



Source: CBC.

Reinforcing risk management of the transit of checks

The Check Clearing House System (CCHS) is a crucial part of the payment systems. In the past, the Taiwan Clearing House (TCH) and some financial institutions transited checks for clearing by express delivery service providers. However, if checks were lost or damaged during the process, it would harm the rights of check holders and adversely impact the smooth operation of the financial system. To reinforce risk management of check transitions, under the CBC's requirement, the TCH stipulated regulations and related standard procedures for dealing with checks being reported lost or damaged when delivered by express delivery service providers. All banks processing the operation of check clearing and settlement and all branches of clearinghouses were informed to comply with the regulations and standards.

New redemption mechanism through CIFS for NCDs issued by banks

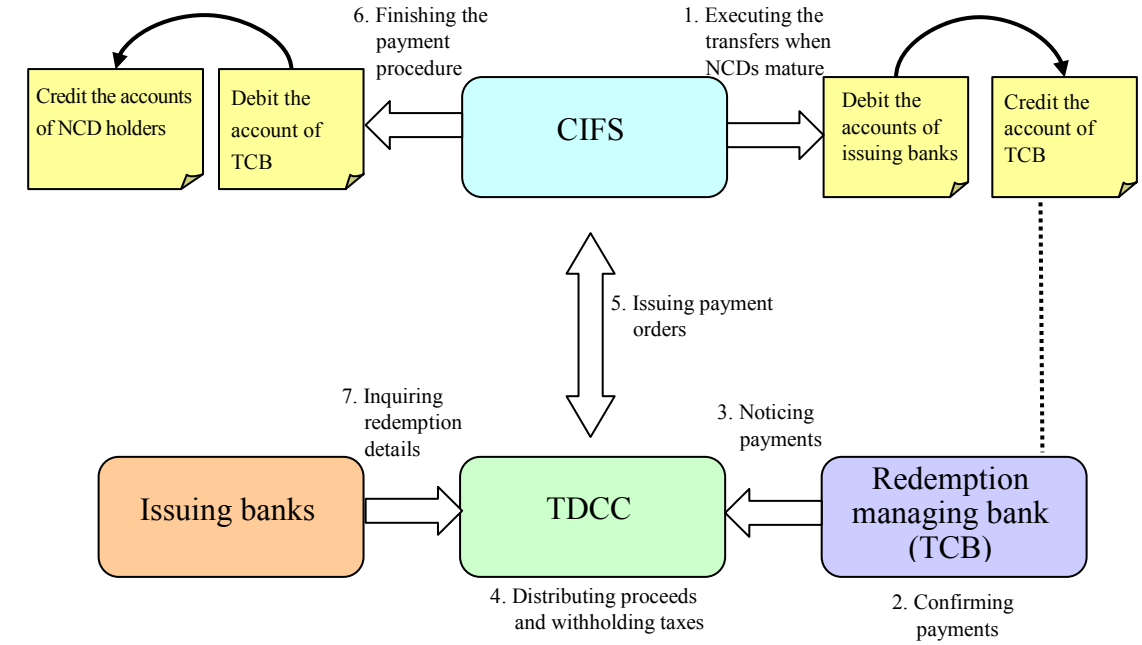
Commencing on 3 January 2011, NCDs newly issued by banks and initially purchased by dealers would be dematerialized and registered and entrusted to the Taiwan Depository &

[89] The three SIPSs include the CBC Interbank Funds-Transfer System (CIFS), the Interbank Remittance System (IRS) and the Check Clearing House System (CCHS).

Clearing Corporation (TDCC) for central custody. When NCDs were due, issuing banks would remit repayment amounts through interbank remittance systems to a special account of the TDCC, managed by the redemption managing bank (the Taiwan Cooperative Bank, TCB), for NCD redemption.

To simplify the redemption procedures of NCDs issued by banks, the TDCC got the approval from the CBC to complete the redemption of NCDs through the CIFS. Namely, issuing banks could notify the CBC before the second business day of NCD issuance and repay them on their due days through the CIFS. The new operating procedure of NCD redemption is shown in Chart 4.55.

Chart 4.55 New redemption procedures of NCDs issued by banks



Sources: CBC and TDCC.

The new procedure started on 7 May 2012 and the total estimated redemption value of NCDs through it is expected to reach NT$193 billion annually. Related benefits are as follows:

- Diminishing credit risks and liquidity risks of cash settlement assets and fulfilling the Recommendations for Securities Settlement Systems jointly issued by the CPSS and the Technical Committee of the IOSCO, which suggests using central bank money to settle ultimate settlement obligations.

- Reducing the operating costs and enhancing the efficiency of clearing and settlement operations by providing automated redemption services.

4.3.2 New Era for the Protection of Financial Consumers in Taiwan

Investment controversies caused by the recent global financial crisis fully demonstrated the lack of laws that existed to protect the rights of consumers of financial products. In order to protect the rights of these relatively disadvantaged financial consumers, the Financial Consumer Protection Act was enacted and promulgated by the President on 29 June 2011, and was implemented from 30 December of the same year. This, coupled with the Financial Ombudsman Institution, which was set up according to the Act and commenced work from 2 January 2012, has opened up a new era for the protection of financial consumers in Taiwan.

After the enactment of the Financial Consumer Protection Act, the protection mechanisms for financial consumers have become more extensive and wide-ranging. Apart from putting more emphasis on financial education, it also places responsibility on the due care of good administration of those parties in the financial industry, including, but not limited to, ascertaining the suitability of products or services offered to financial consumers, clear explanation of the contents of contracts, and full disclosure of any risks that are involved. In addition, to deal with disputes related to the consumption of financial services, the law also provides another mechanism outside of legal courts that is financially proficient and deals with these contentions fairly, quickly and efficiently. This is designed to improve the confidence and trust between consumers and financial institutions, and to decrease financial disputes. For further information about the Financial Consumer Protection Act, please refer to Box 3.

In addition, the government has also taken steps to enforce other mechanisms to protect financial consumers in the recent year. For example:

- The amendment of Article 12-1 and 12-2 of the Banking Act states that when granting mortgages for personal residences and consumer loans, banks cannot require their debtors the provision of joint and several guarantor(s) for whatsoever reasons. In addition, when an applicant provides sufficient collateral to cover the entire amount of the mortgage, banks may not require the borrower to provide general guarantor(s). When banks require the borrower to provide general guarantor(s), they should be subject to certain restrictions.

- Institutions engaging in credit card business must provide cardholders who make long-term use of revolving credit and keep up to date on payments with an option of either paying off the balance in installments or taking out a consumer loan to pay it off.

4.3.3 Gradual lifting of restrictions on cross-strait financial activities

Since the signing of the Cross-Straits Economic Cooperation Framework Agreement (ECFA) and the amendment of the Regulations Governing the Banking Activity and the Establishment and the Investment by Financial Institution between the Taiwan Area and the Mainland Area in 2010, Taiwan's financial institutions have been actively setting up branches, taking equity stakes and expanding business in Mainland China, and Mainland China's financial institutions also have started to establish representative offices in Taiwan. Cross-strait financial interaction has become more frequent and common. In order to gradually open up cross-strait financial activities, improve the competitiveness of Taiwan's banking industry and strengthen relative risk management, the regulatory authorities in Taiwan, in the recent year, actively reviewed and revised regulations related to cross-strait financial activities and relaxed investment restrictions step by step. The FSC and Mainland China's banking regulatory agency also twice held meetings of the Cross-Strait Banking Supervisory Cooperation Platform with a view to reinforcing supervisory collaboration.

Mainland China has already become the target market of Taiwan's banks. As the opening is in the early stage, domestic banks' risk exposures to Mainland China are still limited. However, as financial business expansion in Mainland China speeds up, related exposure will magnify rapidly. Financial institutions should thus strengthen their relative risk control regarding their exposure to Mainland China in order to ensure Taiwan's financial stability. Regulatory authorities should also improve prudential supervision on monitoring and supervising this exposure and the concentration of the domestic financial system to Mainland China so as to adopt adequate responsive measures.

Relaxation of regulatory restrictions on investments and business activities of banks in Mainland China

In response to the needs of Taiwan's banking industry, the FSC once again amended the Regulations Governing the Banking Activity and the Establishment and the Investment by Financial Institution between the Taiwan Area and the Mainland Area on 7 September 2011 with a view to relaxing regulatory restrictions on financial investments and business activities between the two sides of the Strait and requiring domestic financial institutions to enhance related risk control. Primary revisions are summarized in Table 4.3.

Table 4.3 Major amendments of the Regulations Governing the Banking Activity and the Establishment and the Investment by Financial Institution between the Taiwan Area and the Mainland Area

Key Points	Major amendments
1. Adjust the types of entity and forms of operation of Taiwan's banks when entering into the Mainland market	1. Lift the "choose one of two" restriction on the investing entity: Banks in the Taiwan area and/or their subsidiary banks in a third area can at the same time apply to establish branches, set up subsidiary banks, and/or make equity investments in the Mainland Area. 2. Lift the "choose two of three" restriction on the form of investment: Banks in the Taiwan area and/or their subsidiary banks in a third area can freely choose to set up branches, establish subsidiary banks, and/or make equity investments when entering the Mainland China market. 3. Remove the provision that Taiwan's financial institutions can only make an equity investment in a single financial institution in Mainland China.
2. Broaden the scope of cross-strait financial business	1. Broaden the scope of cross-strait financial business: Expanding the scope of financial business conducted by overseas branches, offshore banking units (OBUs), and/or domestic banking units (DBUs) of Taiwan's banks with individuals and/or juridical persons in Mainland China, except for those activities prohibited by the supervisory authorities. 2. Lift the restrictions of loan applicants: Overseas branches and OBUs of Taiwan's banks permitted to undertake loans to individuals and/or juridical persons in the Mainland area and not limited to Taiwanese and/or foreign invested enterprises.
3. Reinforce risk management mechanisms	1. Revise the calculation of investment limits in the Mainland area to be on a bank-wide (group-wide) basis: The total of cumulative allocated operating capital and investments in the Mainland by Taiwan's banks and their subsidiaries may not exceed 15% of an individual bank's net worth, and the total amount of equity investment in the Mainland by Taiwan's financial holding companies and their subsidiaries may not exceed 10% of their net worth. 2. Establish a total-exposure mechanism: The total amount of credit extension, investment, and interbank loans and deposits in Mainland China may not exceed an individual bank's net worth following their final budget for the previous year. 3. Establish proper risk management mechanism: Taiwan's banks engaging in business with individuals, juridical persons, groups and other institutions in the Mainland area, and their branches in countries and/or areas other than Mainland China shall establish risk management mechanisms and adequately evaluate the risks of relevant transactions to ensure the safety of their assets.

Source: FSC.

Moreover, Paragraph 3 in Chapter 4 of the regulation mentioned above that sets out eligibility requirements and regulatory provisions governing equity investments by Mainland banks or Mainland-funded banks in Taiwan's financial institutions has already entered into force on 2 January 2012. Mainland banks wishing to invest in Taiwan's financial institutions will be able to apply for approval in accordance with Article 73 of the same regulation. It also stipulates that (1) the investments in Taiwan's financial institutions are limited to banks and financial

holding companies, (2) Mainland banks can only individually acquire up to 5% of a Taiwanese bank or financial holding company, and (3) the combined equity stakes of all Mainland investors in any one bank or financial holding company must not exceed 10% of the investees paid-in capital.

Opening up the renminbi business and investment in securities issued in Mainland China

In order to respond to the trend of internationalization of the renminbi, to help Taiwan's banks to develop renminbi business, and to provide stable financing channels for Taiwanese enterprises operating in Mainland China, the FSC and the CBC officially promulgated a piece of regulations in July 2011 allowing the OBUs and overseas branches of Taiwanese banks to apply to conduct renminbi business.

Moreover, the FSC announced that guarantees extended by a financial institution in the Mainland area can be considered as qualified collateral prescribed in Article 12 of the Banking Act as long as those financial institutions meet certain requirements.[90] In November 2011, the FSC also allowed OBUs and overseas branches of Taiwan's banks to invest in securities issued by government authorities or companies in Mainland China. With more and more cross-strait financial interactions, the linkages between Taiwan's and Mainland China's financial systems will become more important in the future.

Establishment of the Cross-Strait Banking Supervisory Cooperation Platform

In order to implement supervisory cooperation in accordance with the agreements signed in the Cross-Strait Financial Cooperation Agreement and the Memorandum of Understanding on Banking Supervision, and to build up a mechanism for periodic meetings between both sides of the Strait for discussing financial issues such as financial market access, business operations and banking supervision, the FSC and Mainland China's banking regulatory agency jointly held two meetings of the Cross-Strait Banking Supervisory Cooperation Platform in April and November 2011 and reached several concrete conclusions (Table 4.4). The consensus agreed upon in the meetings can help Taiwan's regulatory authorities to better know the operation and exposure of Taiwan's financial institutions in Mainland China so as to fulfill their responsibility of consolidated supervision.

[90] The requirements are: (1) they have branches in Taiwan; or (2) for those without branches in Taiwan, their total assets or capital in the most recent year should rank among the top 1,000 banks worldwide.

Table 4.4 Conclusions reached in meetings of the Cross-Strait Banking Supervisory Cooperation Platform in 2011.

Supervisory cooperation items	Concrete Conclusions
Supervisory Communication and Cooperation	1. Strengthen regular communication: Increase liaison windows and confirm eleven mutual contact items and communication methods. 2. Establish a periodic meeting mechanism: (i) Participants, who are the heads of the relevant authorities or appointed by the heads, either from Taiwan or Mainland China, should hold positions on an equal basis; (ii) In the early stage, meetings will be held twice a year, and then adjust to once a year depending upon circumstances; (iii) The two sides will take turns to host meetings.
Financial Inspection	1. Inspection plans should be passed to the other side through the liaison window. 2. The receiving side should reply to inspection plans as soon as possible. 3. After the inspections are completed, both sides should exchange opinions.
Strengthen Supervisory Technical Cooperation	1. Enhance banking supervision technical cooperation between both sides. 2. Jointly hold a seminar on the Basel III.
Expedite the Review of Applications	1. Expedite the review of applications for the establishment of commercial representations on either side. 2. Mainland authorities will seek to complete as quickly as possible their review of applications by six Taiwanese banks for their Mainland branches to conduct renminbi business.
Others	Confirm the scope of "green corridors" in the Midwestern and Northeastern regions of Mainland China, which was committed to in the early harvest provisions of the ECFA.

Source: FSC.

4.3.4 Taiwan will implement Basel III progressively

The recent global financial crisis highlighted problems of excessive leverage, inadequate and deteriorated capital bases and insufficient liquidity buffers in the banking sector. In response to these issues, the BCBS has introduced several capital and liquidity reforms (Basel III) since 2009 and finalized them in December 2010. The key points of Basel III are summarized in Table 4.5.[91]

[91] For details, please see Box 2 in Financial Stability Report No. 5 issued by the CBC in May 2011.

Table 4.5 Basel III: capital and liquidity reforms

Dimension	Key points
Microprudential supervision	1. Raise capital quality by employing common equity as the predominant form of capital. 2. Increase capital ratios progressively. 3. Enhance risk coverage, especially in strengthening capital charges for securitization transactions, market risk in the trading book and counterparty risk. 4. Introduce a non-risk based leverage ratio. 5. Propose international liquidity standards, including the Liquidity Coverage Ratio and the Net Stable Funding Ratio.
Macroprudential supervision	1. Propose capital conservation buffers and countercyclical capital buffers to reduce procyclicality. 2. Require global systemically important financial institutions (G-SIFIs) to hold an additional systemic capital surcharge of 1-2.5%.

Source: BCBS.

Although Basel III targeted issues arising in the European and US banking systems, Taiwan always endeavors to meet international standards for financial supervision. In order to follow international reform trends and enhance bank soundness, the FSC, with due consideration on the characteristics and business climate of the financial industry in Taiwan, has declared to phase in Basel III from 2013.[92] It will raise bank capital adequacy standards progressively and ask banks to raise capital quality, as well as to adopt long-term capital planning. The FSC is working on amendments to Basel III-related regulations and, by the end of 2011, had completed two amendments referring to the BCBS guidance of July 2009[93] as follows:

- Revising the requirements for the public disclosure of information on capital adequacy of banks in March 2011. Banks have been obliged to establish a "capital adequacy and risk management section" on their websites for disclosing more qualitative and quantitative information since 30 June 2011.

- Amending capital charge requirements for securitization transactions and market risk in October 2011, such as introducing capital requirements for resecuritizations, increasing credit conversion factors for eligible liquidity facilities, raising capital charges for specific risk for equities in banks' trading books and requiring banks that use internal models for market risk to set aside an incremental risk capital charge and to calculate stressed value-at-risk weekly. The amendment became effective in January 2012.

The aforementioned amendments focused on the capital charge requirements of securitization

[92] The FSC, press release of amendments for "Regulations Governing the Capital Adequacy Ratio and Capital Category of Banks," 23 April 2012.
[93] See Note 72.

and trading book transactions. While the size of securitization transactions that domestic banks are involved in is still small, and thus far no bank in Taiwan has been approved to use internal models for market risk, the impact of such amendments is expected to be limited. However, the subsequent amendments—including: revising the definition of eligible capital, raising regulatory capital levels, and introducing capital conservation buffers, countercyclical capital buffers, a leverage ratio and liquidity measures—are expected to have significant impacts on domestic banks in regard to long-term capital plans, risk management (especially liquidity risk management) and business strategies. Therefore, banks are advised to make assessments of the potential impacts and take countermeasures as soon as possible.

Box 3
Implementation of the Financial Consumer Protection Act in Taiwan

The Financial Consumer Protection Act was put into action on 30 December 2011. The Financial Ombudsmen Institution that was set up in accordance with the law was also put into effect on 2 January 2012. This symbolizes a huge step forward in the protection of financial consumers in Taiwan.

1. Main content of the Financial Consumer Protection Act

The Financial Consumer Protection Act has four chapters and thirty-three articles in all. It is applicable to banks, securities firms, futures firms, insurance companies, electronic stored value card enterprises, and enterprises in other financial services. It is mainly concerned with mechanisms for financial consumer protection and also sets up an institution that deals with disputes in financial consumerism. The highlights are below:

1.1 Target of this law

The target group for the Financial Consumer Protection Act is financial consumers who are at a disadvantage, whether it is from a financial, information or professional standpoint. Therefore, the legal definition for financial consumers is those who accept services or products from financial institutions, but excludes qualified institutional investors and natural or legal persons with a prescribed level of financial capacity or professional expertise[1] in order to more effectively utilize the resources needed to settle financial disputes.

1.2 Key protection measures

- When a financial services enterprise enters into a contract with a financial consumer for the provision of financial products or services, the enterprise shall act in conformity with the principles of fairness, reasonableness, equality, reciprocity, and good faith. Contractual provisions entered into by a financial services enterprise and a financial consumer that are clearly unfair shall be invalid. If there is a disagreement over the meaning of any contractual provision, the provision shall be interpreted in favor of the financial consumer.
- A financial services enterprise, in publishing or broadcasting advertisements or carrying out solicitation or promotional activities, shall not engage in falsehood, deception, concealment, or other conduct sufficient to mislead another party, and shall verify truthfulness of the content of its advertisements. The obligation it bears to

financial consumers shall not be less than that indicated in the content of the aforementioned advertisements or in materials or explanations provided to financial consumers in the aforementioned solicitation or promotional activities.

- Before a financial services enterprise enters into a contract with a financial consumer for the provision of financial products or services, the enterprise shall fully understand the information pertaining to the financial consumer in order to ascertain the suitability of those products or services to the financial consumer.
- Before a financial services enterprise enters into a contract with a financial consumer for the provision of financial products or services, the enterprise shall fully explain important aspects of the financial products or services, and of the contract, to the financial consumer, and shall also fully disclose the associated risks.
- A financial services enterprise violating the rules of the suitability and the obligation of disclosure with fault or not has to compensate the consumers for any injury or loss arising therefrom. And the burden of proof is on the side of the enterprise.

1.3 Mechanism to deal with disputes concerning financial consumers

1.3.1 The Financial Ombudsmen Institution

The Financial Ombudsmen Institution is an organization that specializes in dealing with financial disputes. It is made up of an arbitration committee that hires around 9 to 25 arbitration members. The members are mainly comprised of scholars, professionals or unbiased persons who specialize or have experience in related fields, and are responsible for dealing with ombudsman cases. In addition, the institution has an "arbitration office" which helps the arbitration members to deal with cases that come before them. There is also an education and promotional planning division that informs and educates financial consumers about financial knowledge, assists financial services enterprises in dealing with disputes and complaints, and provides advice for financial consumers.

1.3.2 Financial consumers must make a complaint with financial institutions first before applying to the ombudsman body

Financial consumers shall deal with a financial consumer dispute by first filing a complaint with the relevant financial services enterprise. The financial services enterprise shall appropriately handle the matter within 30 days from the day the complaint is received. If the financial consumer does not accept the disposition or the financial services enterprise fails to handle the matter before the aforementioned time limit, the

financial consumer may, within 60 days from either the day they receive notification of the disposition or the day the time limit expires, apply to the ombudsman body to institute an ombudsman case. After the ombudsman body entertains an application to institute an ombudsman case, it may seek to institute mediation proceedings.

1.3.3 Arbitration decisions made for an amount of money under a certain threshold are binding for financial institutions

If financial service providers have already agreed to abide by the rulings of the law to settle disputes on paper, then they should agree to the decisions made by the arbitration committee for amounts that are less than NT$1 million (for investment products or services) or less than NT$100 thousand (for non-investment products). However, a decision of the arbitration committee is non-binding for related consumers of financial products, and if they do not agree with the ultimate decision, they can continue with legal proceedings.

1.3.4 An arbitration decision has the same effect as a ruling on civil cases in a court

Financial consumers can, within 90 days after the decision by the arbitration committee, apply for approval from the court. After approval, the arbitration decision will have the same legal power as any rulings on civil cases, and the parties involved may not pursue any more legal actions or ask for arbitration according to this law.

1.3.5 Consumers who apply for the process of arbitration do not need to pay

Consumers who apply for arbitration do not need to pay any fees. However, the institution shall ask for annual fees and service fees from financial services enterprises. The annual payment is calculated as 0.008% of the entire financial industry's income as of the previous year, and then under preset rules the fees that each individual financial product or service provider has to pay are calculated. The service fee depends on the amount that a financial institution has to pay, which is decided by the arbitration members, with a ceiling of NT$10 thousand.

2. Current operation

According to the information provided by the Financial Ombudsmen Institution, from 1 January to 13 March 2012, financial dispute cases totaled 1,251. Of these cases, insurance industry related cases were the most at 1,050 (or 83.93%), with the banking industry's 186 cases (or 14.87%) coming in second and the securities and the futures

market's 15 cases (or 1.20%) coming in third.

A deeper analysis shows that, concerning different types of disputes, the banking industry's disputes mostly center around banks' methods of enticing customers, whilst the insurance industry's disputes mainly lie with the sum of compensation, the ways that they entice customers and the services which are not provided according to relative regulations.

3. Expected effect

The government hopes that the Financial Ombudsmen Institution can improve the quality of provision of financial products and services, and also effectively protect consumers of financial products. It also hopes to achieve the following goals:

- To integrate the laws that are separate under the status quo into a single mechanism for consumers of financial products and services to apply for arbitration in order to lessen the resources spent.
- To use the mechanism for dealing with financial disputes such that it will lessen the burden of civil courts.
- To use the arbitration provided in order to get greater insight into the problems concerning financial disputes so as to get a greater grasp on the goals and targets of financial supervisory policies.

Note: As the regulation of the Order No. 10000707320 promulgated by the Financial Supervisory Commission on 12 December 2011.

Appendix: Financial soundness indicators

Table 1: Domestic Banks Unit: %

Items \ Year (end of year)	2006	2007	2008	2009	2010	2011
Earnings and profitability						
Return on assets (ROA)	-0.06	0.28	0.12	0.28	0.57	0.58
Return on equity (ROE)	-0.94	4.32	1.86	4.52	9.08	9.27
Net interest income to gross income	68.34	66.38	78.53	59.54	59.52	62.61
Non interest expenses to gross income	51.21	54.07	62.97	59.81	55.99	55.44
Gains and losses on financial instruments to gross income	12.63	9.08	3.91	16.43	9.93	6.92
Personnel expenses to non-interest expenses	55.37	55.93	54.80	57.56	57.67	57.71
Spread between lending and deposit rates (basis points)	R 2.07	R 1.82	R 1.75	R 1.22	R 1.36	1.41
Asset quality						
Non-performing loans to total loans	2.15	1.83	1.54	1.15	0.61	0.43
Provision coverage ratio	62.26	64.07	69.48	90.35	157.32	250.08
Capital adequacy						
Regulatory capital to risk-weighted assets	10.87	10.80	11.04	11.83	11.96	12.06
Tier 1 capital to risk-weighted assets	9.88	8.50	8.42	9.03	R 9.18	9.08
Capital to total assets	6.19	6.42	6.12	6.25	6.31	6.29
Non-performing loans net of provisions to capital	15.16	12.24	10.33	6.41	2.91	0.56
Liquidity						
Customer deposits to total loans	119.41	117.98	122.34	133.13	132.28	128.66
Liquid assets to total assets	-	10.58	12.69	15.20	10.46	11.05
Liquid assets to short-term liabilities	-	15.66	18.39	20.98	14.65	15.67

Table 1：Domestic Banks (cont.)

Unit: %

Items \ Year (end of year)	2006	2007	2008	2009	2010	2011
Credit risk concentration						
Household loans to total loans	46.74	46.59	45.48	46.41	46.67	46.06
Corporate loans to total loans	43.02	43.90	45.27	43.26	43.66	44.91
Large exposures to capital	144.28	136.85	142.38	142.48	141.73	141.16
Gross asset positions in financial derivatives to capital	5.28	10.35	21.92	8.17	8.54	7.57
Gross liability positions in financial derivatives to capital	4.79	5.44	16.48	8.44	10.02	7.05
Sensitivity to market risk						
Net open position in foreign exchange to capital	3.11	5.02	2.41	2.43	2.72	2.71
Foreign-currency-denominated loans to total loans	13.44	15.57	16.54	16.22	16.28	18.14
Net open position in equities to capital	28.63	30.88	24.99	25.69	24.48	24.15
Foreign-currency-denominated liabilities to total liabilities	19.86	22.20	20.41	19.48	20.31	21.65

Notes: 1. The data of earnings and profitability in 2006 and 2007 exclude Chinese Bank and Bowa Bank.
2. The figuers for “Spread between lending and deposit rates”exclude the data of preferred deposits rates of retired government empolyees and central government lending rates.
3. Figures with “R” are revised data.

Table 2: Non-financial Corporate Sector

Units: %, times

Items \ Year (end of year)	2006	2007	2008	2009	2010	2011
Total liabilities to equity						
Corporate sector	85.21	82.20	90.02	86.88	85.59	-
TWSE-listed companies	64.27	63.28	67.54	65.43	68.45	73.53
OTC-listed companies	74.17	78.21	89.56	62.75	70.57	66.25
Return on equity						
Corporate sector	13.04	13.90	4.76	8.07	13.32	-
TWSE-listed companies	15.34	18.04	8.08	9.58	15.36	10.07
OTC-listed companies	17.06	8.20	-5.98	6.91	13.20	8.32
Net income before interest and tax / interest expenses (times)						
Corporate sector	10.10	10.78	3.39	8.54	16.73	-
TWSE-listed companies	16.85	19.07	8.26	15.03	29.75	18.89
OTC-listed companies	14.06	6.79	-	10.85	17.34	14.82

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.

Table 3: Household Sector

Unit: %

Items \ Year (end of year)	2006	2007	2008	2009	2010	2011
Household borrowing to GDP	83.17	81.47	81.92	R 84.74	R 82.05	82.58
Borrowing service and principal payments to gross disposable income	44.66	42.09	R 40.72	R 36.80	R 36.07	36.40

Notes: 1.The figures of disposable income for 2011 are CBC estimates.
2. Figures with "R" are revised data.

Table 4: Real Estate Market

Unit: %

Items \ Year (end of year)	2006	2007	2008	2009	2010	2011
Land price index	96.38	98.92	100.51	100.38	105.93	112.05
Residential real estate loans to total loans	29.14	30.14	29.16	30.57	29.99	28.64
Commercial real estate loans to total loans	10.74	11.84	12.14	12.47	13.25	13.70

Notes: Figures of Land price index are on a end-September basis (March 2008 = 100).

Table 5: Market Liquidity

Unit: %

Items \ Year (end of year)	2006	2007	2008	2009	2010	2011
The turnover ratio of trading value in stock market	142.20	153.28	145.45	178.28	136.74	119.87
The monthly average turnover ratio in bond market	140.58	74.65	47.93	31.56	32.40	19.39

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.

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 2011 include Bank of Taiwan, Land Bank of Taiwan, Taiwan Cooperative Bank, First Commercial Bank, Hua Nan Commercial Bank, Chang Hwa Commercial Bank, 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, Citibank Taiwan, China Development Industrial Bank, Industrial Bank of Taiwan, Taiwan Business Bank, Standard Chartered Bank (Taiwan), Taichung Commercial Bank, King's Town Bank, HSBC Bank (Taiwan),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, and Chinatrust 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:

  According to the "Regulations Governing the Procedures for Banking Institutions to Evaluate Assets and Deal with Non-performing / Non-accrual Loans," non-performing loans include the following items:
  - Loans for which repayment of principal or interest has been overdue for three months or more.
  - Loans for which the bank has sought payment from primary/subordinate debtors or has disposed of collateral, 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 the Regulations Governing the Capital Adequacy Ratio and Capital Category of Banks.

- 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 which is used to analyze the extent of activities that 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 surpluses, 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 debt 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

ABS	Asset-backed securities
ABS	Australian Bureau of Statistics
APRA	Australian Prudential Regulation Authority
BCBS	Basel Committee on Banking Supervision
BICRA	Banking Industry Country Risk Assessment
BLS	Bureau of Labor Statistics
BNM	Bank Negara Malaysia
BoE	Bank of England
BOJ	Bank of Japan
BOK	Bank of Korea
BOT	Bank of Thailand
BSI	Banking System Indicator
CARs	Capital adequacy ratios
CBC	Central Bank of the Republic of China (Taiwan)
CCHS	Check Clearing House System
CDS	Credit default swap
CIFS	CBC Interbank Funds-Transfer System
CMBS	Commercial mortgage-backed securities
CPI	Consumer price index
CPSS	Committee on Payment and Settlement Systems
DBUs	Domestic business units
DGBAS	Directorate-General of Budget, Accounting and Statistics of the Executive Yuan
DRAM	Dynamic random access memory
ECB	European Central Bank
ECFA	Cross-Straits Economic Cooperation Framework Agreement
EU	European Union

EUR	Eurocurrency
FED	Federal Reserve System
FDIC	Federal Deposit Insurance Corporation
FSAP	Financial Sector Assessment Program
FSB	Financial Stability Board
FSC	Financial Supervisory Commission
FSIs	Financial soundness indicators
FSS	Financial Supervisory Service
G20	Group of Twenty
GBP	Great British Pounds (Sterling)
GDP	Gross domestic product
GIIPS	Greece, Ireland, Italy, Portugal, and Spain
GPD	Generalized Pareto distribution
G-SIFIS	Global systemically important financial institutions
GTSM	Gretai securities market
HKMA	Hong Kong Monetary Authority
IMF	International Monetary Fund
INR	Indian rupee
IOSCO	International Organization of Securities Commissions
IRS	Interbank remittance system
JCIC	Joint Credit Information Center
JPY	Japanese yen
KRW	Korean won
LED	Light-emitting diode
LTV	Loan to value
MAS	Monetary Authority of Singapore
MOF	Ministry of Finance
MOI	Ministry of Interior
MPI	Macro-prudential indicator
NPL	Non-performing loan
MYR	Malaysian ringgit
NCD	Negotiable certificate of deposit
NTD	New Taiwan dollar

OBUs	Offshore banking units
OTC	Over-the-counter
PBC	People's Bank of China
PDs	Probabilities of default
RBC	Risk-based capital
RMB	Renminbi
ROA	Return on assets
ROE	Return on equity
RRR	Reserve requirement ratio
S&P	Standard and Poor's
SFAS	Statement of Financial Accounting Standards
SGD	Singapore dollar
SIPSs	Systemically important payment systems
SMEG	Small and Medium Enterprise Credit Guarantee Fund of Taiwan
SMEs	Small and medium enterprises
SUR	Seemingly unrelated regression
TAIEX	Taiwan Stock Exchange Weighted Index
TCB	Taiwan Cooperative Bank
TCH	Taiwan clearing house
TDCC	Taiwan Depository & Clearing Corporation
TEJ	Taiwan Economic Journal Co., Ltd
TFT-LCD	Thin film transistor-liquid crystal display
TWSE	Taiwan Stock Exchange
USD	US dollar
VAR	Vector autoregression
VaR	Value at Risk
WGP	World gross product
WPI	Wholesale price index

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