# III. Financial system assessment

## 3.1 Financial markets

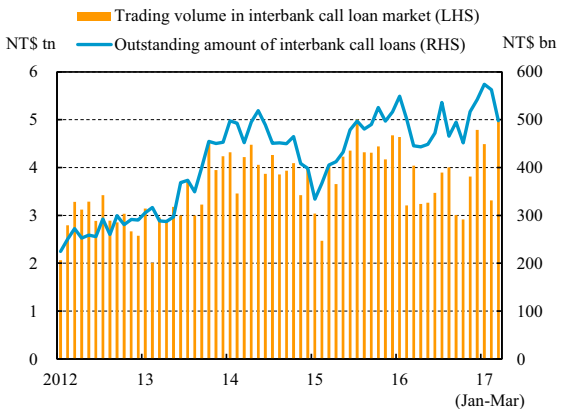
With respect to money and bond markets in 2016, the outstanding amount of interbank call loans increased, but the trading volume declined. The trading volume of bills and bonds in the secondary market fell, although their outstanding amount in the primary market increased. Short-term market rates decreased slightly and then remained at a lower level, while long-term market rates turned to rise after falling. With regard to the stock markets, stock indices trended up, while volatility fluctuated and fell over the same period. In the foreign exchange market, the NT dollar exchange rate against the US dollar fluctuated with an upward trend but volatility remained relatively stable.

### *3.1.1 Money and bond markets*

#### *Outstanding amount of interbank call loans increased, while the trading volume declined*

Supported by stronger funding demands from bills finance companies and some small- and medium-sized banks which had weak funding liquidity, the average daily outstanding amount of interbank call loans in 2016 increased by 7.93% year on year. However, the trading volume of interbank call loans decreased by 9.05% year on year owing to a longer term to maturity [46] resulting in a reduction in the frequency of call loan transactions. In January 2017, affected by peak demand for funds before the Lunar New Year holidays, the average daily outstanding amount of interbank call loans reached a five-year high and then declined. Moreover,

**Chart 3.1 Interbank call loan market**

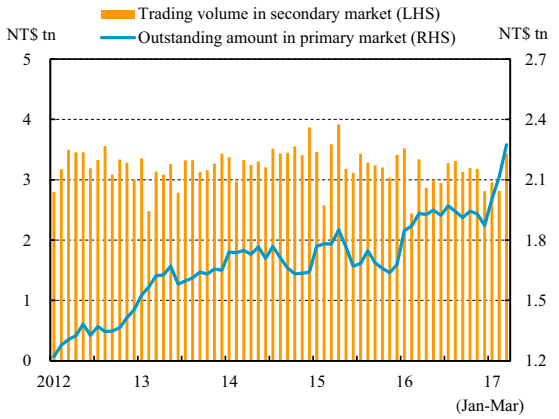



Note: Outstanding amount is the monthly average of daily data.
Source: CBC.

[46] The ratio of overnight call loans to total interbank call loans dropped significantly to 54.5% in 2016 from 63.71% posted a year earlier.

the trading volume of interbank call loans in March increased significantly, compared to the figure in February, reflecting more business days in March(Chart 3.1).

**Chart 3.2 Primary and secondary bill markets**




Sources: CBC and FSC.

### *Bill issuance in the primary market increased, but trading volume in the secondary market shrank*

At the end of 2016, the total amount of bill outstanding substantially increased by NT$195.7 billion or 11.67% year on year, owing to massive issuance of non-guaranteed commercial paper by state-owned enterprises and large private corporates, as well as an increase in negotiable certificates of deposit (NCDs) issued by banks. The outstanding amount of non-guaranteed commercial paper and NCDs increased by NT$133.4 billion (9.91%) and NT$61.8 billion (26.0%), respectively, over the previous year. In 2017 Q1, the total amount of bill outstanding in the primary market continued to trend upwards as commercial paper issuance increased (Chart 3.2).

In 2016, the total amount of bill outstanding in the primary market saw an increase. On the other hand, the bill trading volume in the secondary market over the same period decreased by NT$2.4 trillion or 6.16% year on year. The main reasons behind this were that non-guaranteed commercial paper underwritten and purchased by bills finance companies was immediately sold in the secondary market, and that a massive amount of short-term bills purchased by banks was primarily used as liquid reserves and held to maturity. In 2017 Q1, the trading volume roughly remaied steady (Chart 3.2).

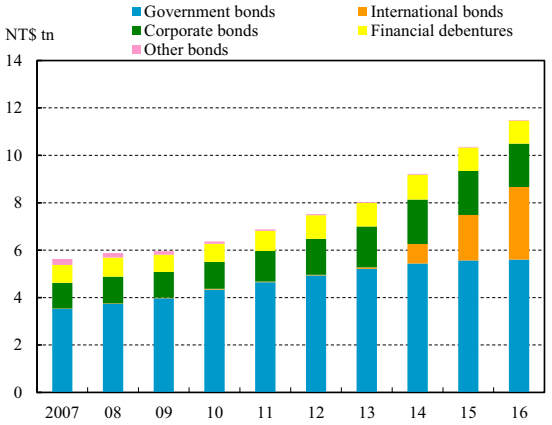
### *Bond issuance in the primary market expanded, but the turnover of outright transactions in the secondary market remained at a lower level*

At the end of 2016, the total amount of bond outstanding increased by NT$1.14 trillion or 11.0% year on year. Analyzed by categories, the outstanding amount of local government bonds was about the same as that of the previous year. Meanwhile, the outstanding amount of international bonds[47] continued to grow sharply by NT$1.15 trillion or 60.04%. It was

[47] Bonds denominated in foreign currencies offered and issued in Taiwan by domestic and overseas issuers are called international bonds.

mainly driven by increased willingness of large international enterprises to raise funds in Taiwan because of rising expectations of the Fed's interest rate hike and convenient access to domestic funds. Moreover, the yields on international bonds were mostly much higher than those of local government bonds with the same maturity and international bonds were excluded from Taiwanese insurers' overseas investment ceilings, attracting life insurance companies to increase investment in international bonds. In addition, owing to weak demand from enterprises for capital expenditures, the outstanding amount of corporate bonds in 2016 decreased by NT$37.61 billion or 2.02% over the previous year. The outstanding amount of financial debentures also decreased by NT$11.48 billion or 1.16% year on year (Chart 3.3).

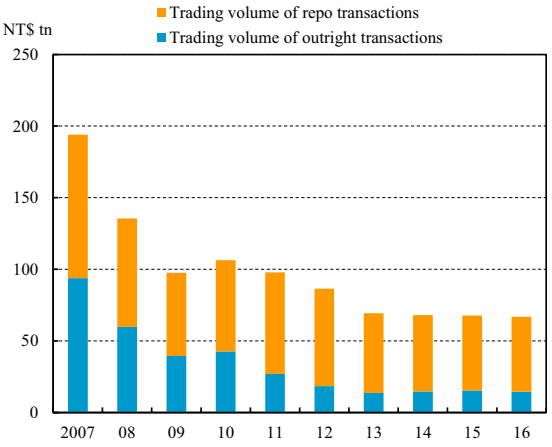
**Chart 3.3 Total amount of bond outstanding in the primary market**




Note: Other bonds include beneficiary securities and foreign bonds.
Source: FSC.

The trading volume in the secondary bond market in 2016 fell by 1.34% year on year (Chart 3.4). The main reasons behind this were that life insurance companies mainly invested in international bonds by adopting buy-and-hold strategies, as well as an amplified concentration of bonds held by banks. In 2017 Q1, the monthly turnover ratio in the secondary major bond market[48] slightly rebounded after descending to a new low level of 4.14% in December 2016, (Chart 3.5).

**Chart 3.4 Outright and repo transactions in the bond market**




Source: CBC.

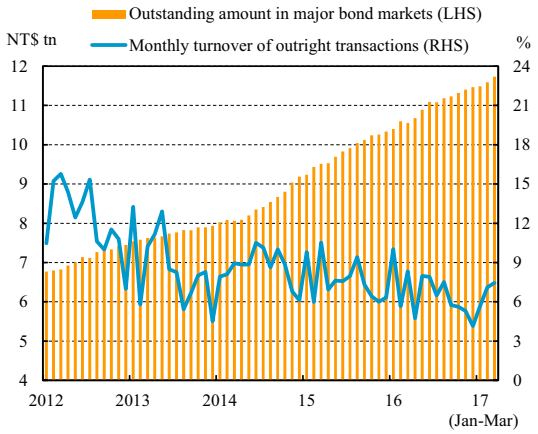
## *Short-term market rates slightly fell, while long-term market rates reversed to rise after falling*

As for short-term market rates, following the CBC's two rate cuts of 12.5 bps in each of the March and June meetings in 2016, coupled with sustaining ample funds in financial markets, the interbank overnight call loan rate slightly fell in the second half of 2016. In 2017 Q1, short-term market rates remained stable at a low level (Chart 3.6).

[48] See Note 8.

In the first half of 2016, long-term bond interest rates continuously dipped, reflecting the fact that market participants expected interest rates to keep falling owing to a lower-than-expected domestic economic growth rate and financial disruption resulting in massive capital flows into the local bond market for hedging. As a result, the yield on Taiwan's 10-year government bonds fell to a historical low of 0.63% on August 18, 2016. Afterwards, affected by rising expectations of the Fed's interest rate hike and elevating international oil prices, Taiwan's 10-year government bond yields sharply rebounded to above 1% on October 28. From mid-November, owing to rising US inflation expectations and slowing domestic economic growth, coupled with the Fed's interest rate hike of 25 bps in mid-December, the yield on Taiwanese government bonds followed the upward trend of US government bond yields. In 2017 Q1, the yield on Taiwanese government bonds fluctuated within a narrow range resulting from a fall in US government bond yields (Chart 3.6).

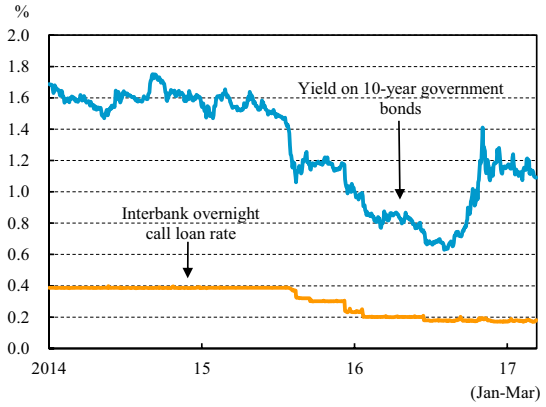
**Chart 3.5 Outstanding amount in major bond markets and monthly turnover**




Notes: 1. Major bonds include government bonds, international bonds, corporate bonds and financial debentures.
2. Monthly turnover = trading value in the month/ average bonds issued outstanding.
Average bonds issued outstanding = (outstanding at the end of the month + outstanding at the end of last month)/2.

Source: FSC.

**Chart 3.6 10-year government bond yield and interbank overnight rate**




Source: Bloomberg.

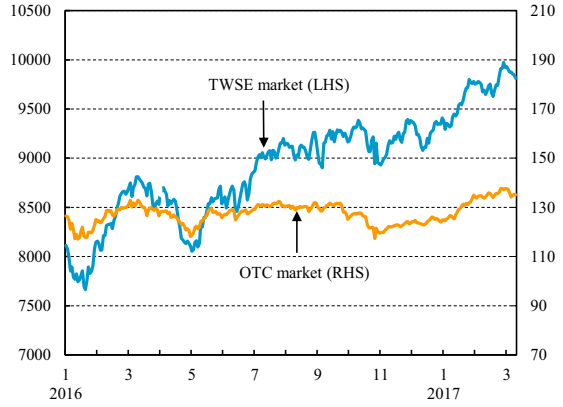
The Fed is expected to keep raising interest rates in 2017. This, coupled with the fact that the yield on Taiwan's government bonds has tended to fluctuate along with those of US government bonds over the past years, mean that the yield on Taiwan's government bonds, which is likely to be affected by that of US government bonds, is expected to trend upwards in the future. Moreover, the mounting uncertainty of international economic and financial conditions may trigger further bouts of global financial market turmoil. Therefore, related interest rate risks warrant close attention.

## 3.1.2 Equity markets

### Stock indices trended up, while volatility fell

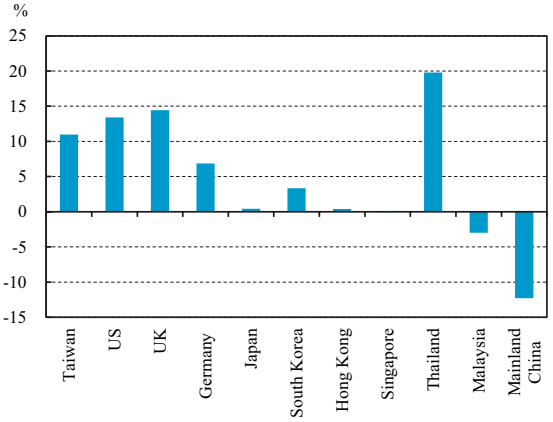
In the first half of 2016, owing to the changes in global stock markets and oil prices, as well as rising expectations of the Fed's interest rate hike, the TAIEX of the TWSE market fluctuated. However, from the second half of 2016 onwards, the rally in international major stock markets, domestic economic recovery and an increase in exports, accompanied by major US stock indices closing at record highs, led the TAIEX on an upward trend to hit a year high of 9,393 on December 9. The TAIEX registered 9,254 at the end of 2016, posting an increase of 10.98% year on year (Chart 3.7). Broken down by sector, the indices for the textile and fiber, automobile, shipping and transportation, tourism, biotechnology & medical care, and chemical, biotechnology & medical care industries reported negative returns, while the indices for the other sectors all rose. In the first quarter of 2017, underpinned by US stock indices constantly hitting record highs and massive net buying by foreign investors, the TAIEX trended up and reached 9,812 at end-March 2017, increasing by 6.03% from the end of 2016 (Chart 3.7).

**Chart 3.7 Taiwan's stock market indices**




Sources: TWSE and TPEx.

**Chart 3.8 Comparison of major stock market performances**



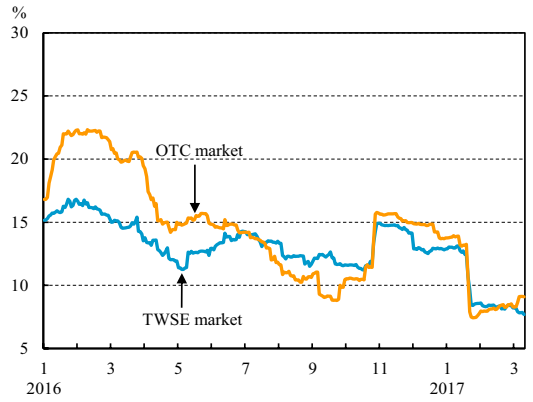

Notes: 1. Figures are for 2016.
2. Taiwan's data are for the TWSE market.
Source: TWSE.

In the OTC market, Taipei Exchange Capitalization Weighted Stock Index (TPEx) fluctuated in the first half of 2016. In the second half of the year, affected by the fall of the indices for cultural & creative and biotechnology & medical care industries, the TPEx moved with a downward trend and closed at 125 at end-December, with an annual drop of 3.00%. The index reversed this trend and climbed in 2017 Q1 to reach 135 at the end of March (Chart 3.7).

Comparing major stock markets around the world, most markets showed positive performances in 2016 except Mainland China and Malaysia, which saw declines in their stock indices, and Singapore, which maintained a similar level to the previous year. Thailand, the UK, and the US outperformed other countries with annual rises of 19.79%, 14.43% and 13.42% (Chart 3.8).

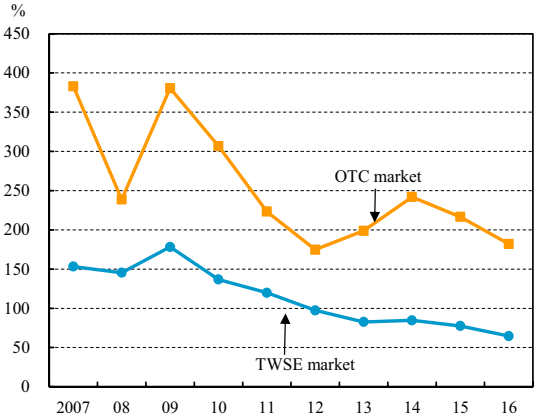
In the first three quarters of 2016, volatility in the TWSE and the OTC markets dropped sharply from their respective highs of 16.82% and 22.33% in the beginning of the year. Subsequently, volatility in those two markets trended upward in the last quarter, standing at 12.94% and 14.84% at the end of December. However, volatility of local stock indices declined to 7.69% and 9.08%, respectively, at the end of March 2017 (Chart 3.9).

**Chart 3.9 Stock price volatility in Taiwan's markets**




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

**Chart 3.10 Annual turnover ratio in Taiwan's stock markets**



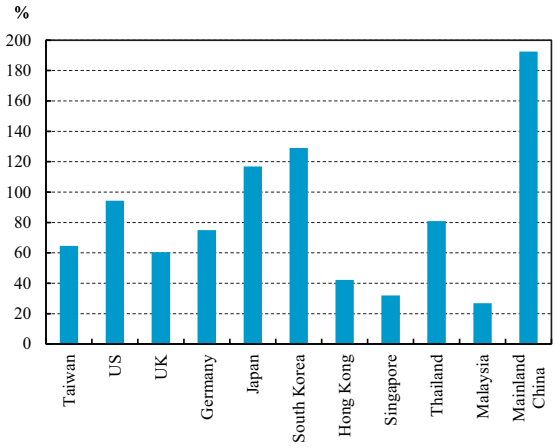

Sources: TWSE and TPEx.

## *Annual turnover ratio declined*

The TWSE and the OTC markets both experienced reductions in trading in 2016. The average monthly trading value in the TWSE market registered NT$1.40 trillion, a decrease of 16.94% year on year, while the annual turnover ratio in terms of trading value declined to 64.60%. In the OTC market, the trading situation was similar to the TWSE market. The average monthly trading value posted NT$420.9 billion in 2016, a decline of 11.23% year on year, while the annual turnover ratio fell to 181.99% (Chart 3.10). The trading value in the TWSE market amplified at the beginning of 2017 and rose to NT$147.9 billion on 2 February, reaching a new high since August 2015. In 2017 Q1, the average monthly trading value in the TWSE and the OTC markets registered NT$1.59 trillion and NT$483.3 billion, respectively. Meanwhile the annual turnover ratio in terms of trading value saw a slight increase and reached 66.56% and 199.79%, respectively, over the same period.

Comparing major stock markets around the world, the annual turnover ratio in Mainland China ranked among the highest in 2016, while that in the stock market in Taiwan was approximately equal to that in the UK, but higher than those in Hong Kong, Singapore, and Malaysia (Chart 3.11).

**Chart 3.11 Comparison of turnover ratios in major stock markets**



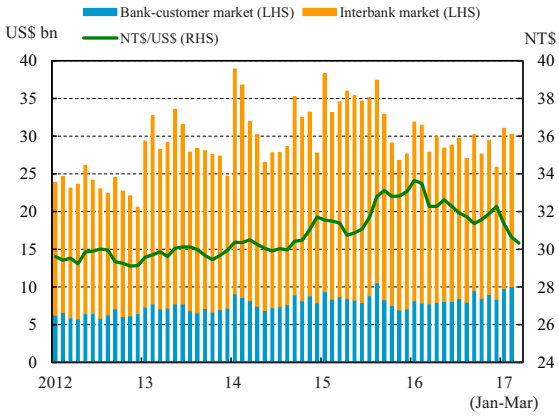

Notes: 1. Figures refer to accumulated turnover ratios in 2016.
2. Taiwan's data are for the TWSE market.
Source: TWSE.

## 3.1.3 Foreign exchange market

### The NT dollar exchange rate reversed to appreciation and the trading volume decreased

From March 2016, the ECB expanding its QE programs, the BoJ continuously adopting a Negative Interest Rate Policy (NIRP) and an expectation of the Fed possibly slowing its interest rate hike schedule caused the US dollar to depreciate. As a result, increasing net foreign capital inflows led the NT dollar exchange rate to appreciate against the US dollar, reaching a yearly high of 31.225 on August 10. Thereafter, starting from October, on account of solid US economic data, President Trump's proposal of expansionary fiscal policy and tax cuts, and the Fed's interest rate hike in mid-December, resulted in the NT dollar exchange rate turning to depreciation against the US dollar. At the end of 2016, the NT dollar exchange rate stood at 32.279, an annual appreciation of 2.44%.

**Chart 3.12 NTD/USD exchange rate and foreign exchange market trading volume**




Notes: 1. Trading volume is the monthly average of daily data, while exchange rate is end-of-period data.
2. The latest data for trading volume are as of February 2017.
Source: CBC.

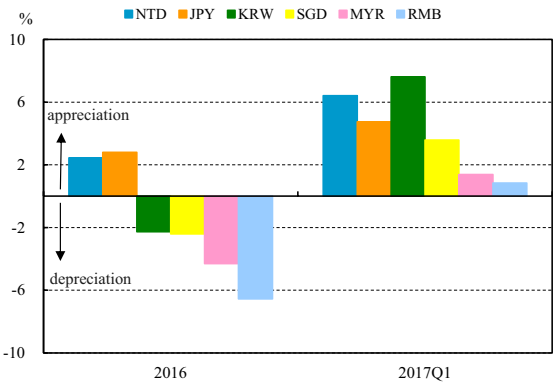
In early 2017, affected by uncertainties surrounding the US President Donald Trump's economic policies, along with a market expectation of weak US dollar policy, the NT dollar exchange rate turned to appreciate against the US dollar and rose to 30.336 at the end of March (Chart 3.12).

The appreciation of the NT dollar against the US dollar at 2.44% was only lower than the Japanese yen's 2.80% in 2016. In the first quarter of 2017, the NT dollar appreciated by 6.40%, while other major Asian currencies also displayed appreciating trends (Chart 3.13).

As for the NT dollar against other key international currencies, in 2016 the NT dollar appreciated by 23.82%, 6.53% and 4.81% against the British pound, the euro and the Korean won, respectively, but depreciated by 0.35% against the Japanese yen over the same period (Chart 3.14).

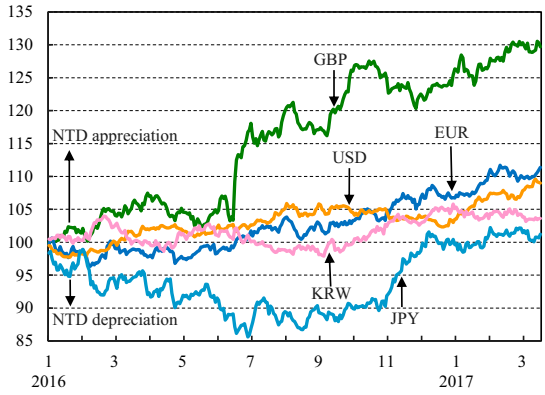
In 2016, the average daily trading volume in Taiwan's foreign exchange market contracted to US$28.9 billion, decreasing by 13.28% compared to US$33.4 billion a year earlier, primarily because of a decrease in the trading volume of the interbank market (Chart 3.12). A breakdown by counterparty showed that the average daily trading volume in the interbank market accounted for 71.22% of the total in 2016, while the bank-customer market made up a 28.78% share. As for types of transactions, foreign exchange swaps accounted for the largest share of 48.22% of the total, followed by spot trading with 39.08%.

**Chart 3.13 Exchange rate changes of major Asian currencies against the US dollar**




Source: CBC.

**Chart 3.14 Movements of NT dollar exchange rate against key international currencies**



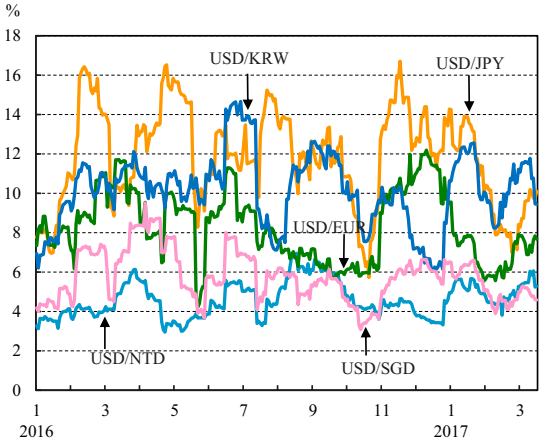

Note: December 31, 2015 = 100.
Source: CBC.

## *NT dollar exchange rate volatility remained relatively stable*

Volatility in the NT dollar exchange rate against the US dollar fluctuated between 2.96% and 6.96% in 2016, and registered an annual average of 4.52%. Volatility in the NT dollar exchange rate against the US dollar moved between 3.32% and 6.07% during 2017 Q1. Since 2016, the NT dollar exchange rate against the US dollar has been relatively stable compared to the exchange rates of major currencies such as the Japanese yen, the euro, the Korean won and the Singapore dollar (Chart 3.15).

Taiwan is a small open economy; therefore, its foreign exchange market may be easily affected by massive and frequent movements of foreign capital. To lessen the effects of short-term inflows and outflows, the IMF has suggested that such economies may take the needed policy steps to raise/lower interest rates, lead local currencies to appreciate/depreciate, or take capital flow management measures.

**Chart 3.15 Exchange rate volatility of various currencies versus the US dollar**



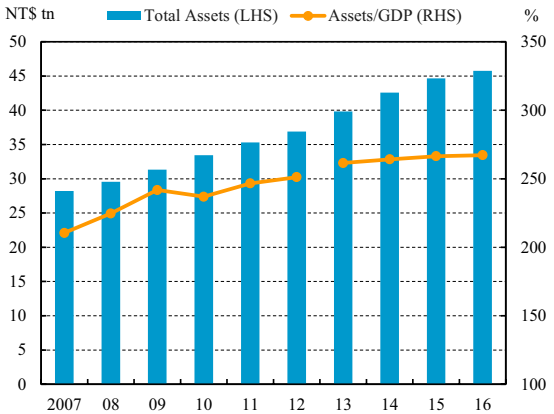

Note: Volatility refers to the annualized standard deviation of 20-day daily returns.
Source: CBC.

# 3.2 Financial institutions

## 3.2.1 Domestic banks

The total assets of domestic banks [49] accumulated continuously in 2016, though at a slower pace than in the previous year. Asset quality declined slightly, and the concentration in corporate loans mildly increased while the concentration of credit exposures in real estate loans decreased slightly. Nevertheless, banks should take prudent actions to address related credit risks deriving from a conservative outlook on real estate transactions. The estimated VaR of overall market risk exposures of domestic banks rose but had a limited influence on their capital adequacy. Moreover, liquidity risk was moderate thanks to ample liquidity in the banking system. The profitability of domestic banks in 2016 declined compared to that of the previous year, while the average capital adequacy ratio rose. This revealed that the capacity of domestic banks to bear losses was satisfactory.

**Chart 3.16 Total assets of domestic banks**




Note: Figures for total assets from 2012 are on the TIFRSs basis, while those of prior years are on the ROC GAAP basis.
Sources: CBC and DGBAS.

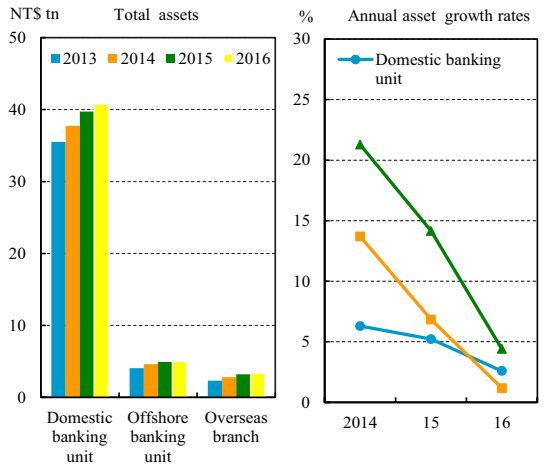
### Total assets continued to increase at a moderate pace

The total assets of domestic banks kept increasing, albeit at a more moderate pace, and reached

[49] The 40 domestic banks referred to in this section include the Agricultural Bank of Taiwan.

NT$45.75 trillion at the end of 2016, equivalent to 267.26% of annual GDP (Chart 3.16). The annual growth rate of total assets decreased to 2.44%[50] from 4.94% a year earlier. Broken down by sector, annual growth rates of assets held by domestic banking units (DBUs), offshore banking units (OBUs), and overseas branches declined continuously, particularly offshore banking units and overseas branches (Chart 3.17). This was mainly because banks' policies regarding loans to Mainland China turned more cautious.

**Chart 3.17 Total assets and annual asset growth rates of domestic banks (DBUs, OBUs and overseas branches)**



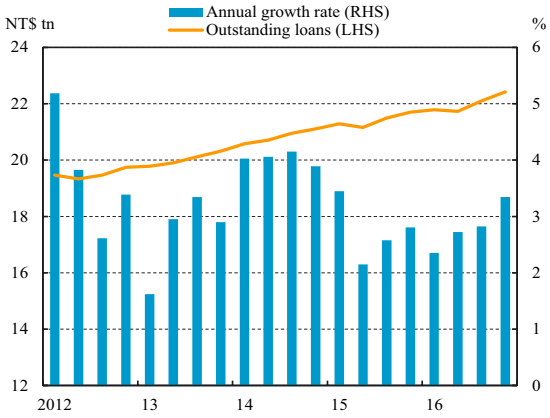

Note: Figures for total assets are inclusive of interbranch transactions.
Source: CBC.

## Credit risk

### *Customer loan growth increased*

Customer loans[51] were the major source of credit risk for domestic banks. Outstanding loans of the DBUs stood at NT$22.43 trillion at the end of 2016, accounting for 49.02% of total assets, with the annual growth rate increasing to 3.35% from 2.80% a year earlier (Chart 3.18).

**Chart 3.18 Outstanding loans and annual loan growth rate in domestic banks**




Source: CBC.

In terms of loan borrowers, the annual growth rate of corporate loans increased to 3.46% at the end of 2016 from 1.48% a year earlier, resulting from higher corporate demand for borrowing when the domestic economic growth gained momentum from Q2 onwards. However, the growth rate of household borrowing fell to 4.00% from 5.17% at the end of the previous year owing to a slowdown in mortgage loan growth, and government loans saw a negative growth rate of -0.45% mainly because increasing government tax revenues lessened the demand for bank borrowing.

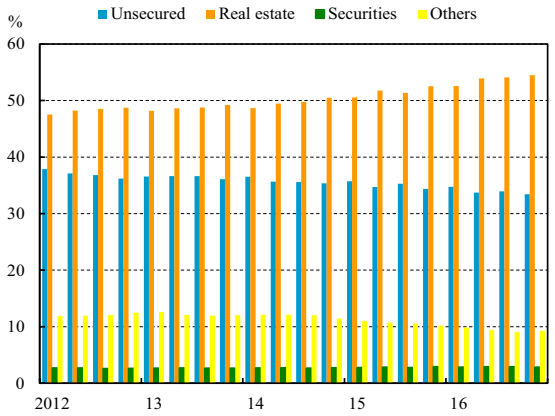
[50] Because life insurance companies obtained some funds from banks' time depositors through endowment policies aimed at expanding their foreign investments, the total assets of domestic banks expanded moderately as a result of slower growth in time deposits.
[51] The term "customer loans" herein refers to discounts, overdrafts, other loans, and import bills purchased. It excludes export bills purchased, non-accrual loans and interbank loans.

### *Concentration of credit exposure in real estate decreased slightly, but the share of real estate-secured credit elevated*

Real estate loans[52] granted by the DBUs of domestic banks amounted to NT$8.14 trillion at the end of 2016, accounting for 36.29% of total loans. The ratio dropped slightly by 0.17 percentage points over the previous year, reflecting lower concentration of credit exposure in real estate loans. However, the total real estate-secured credit granted by domestic banks rose to NT$14.91 trillion, accounting for 54.50% of total credit,[53] with an increase of 1.98 percentage points over the previous year (Chart 3.19).

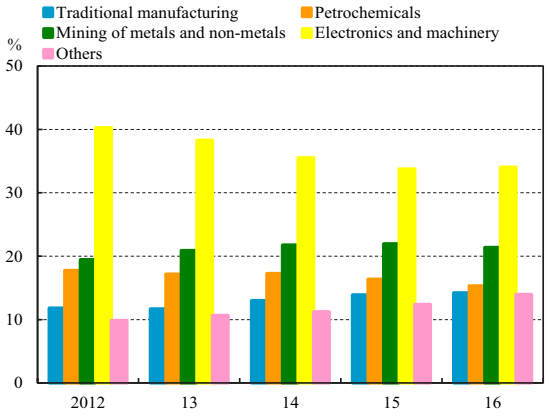
Trading volume in the real estate market contracted and prices trended downwards in 2016 due to the levying of a consolidated housing-and-land income tax and a heavier tax burden on real estate owners. Although the market saw some improvement in early 2017 as its trading volume increased slightly thanks to a gradual recovery of the domestic economy, prospects for the real estate market remained dim. Banks should purdently readjust their loan strategies and strengthen risk management to address related credit risks.

**Chart 3.19 Credit by type of collateral in domestic banks**




Source: CBC.

**Chart 3.20 Exposure to the manufacturing sector by domestic banks**




Note: Exposure to each sector = loans to each sector/loans to the whole manufacturing sector.
Source: CBC.

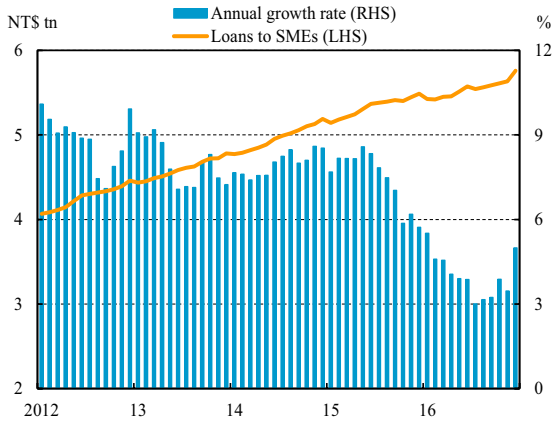
### *Credit concentration of corporate loans slightly increased*

For the DBUs of domestic banks, corporate loans stood at NT$9.82 trillion at the end of 2016, of which loans to the manufacturing sector registered NT$3.85 trillion and accounted for the largest share of 39.20%. Within the manufacturing sector,[54] loans to the electronics

[52] The term "real estate loans" herein refers to house-purchase loans, house-refurbishment loans, and construction loans.
[53] The term "credit" herein includes loans, guarantee payments receivable, and acceptances receivable.
[54] Loans to the manufacturing sector are divided into five categories by industry, including: (1) electronics, (2) mining of metals and non-metals, (3) petrochemicals, (4) traditional manufacturing, and (5) others.

industry stood at NT$1.31 trillion and accounted for 34.04% of loans to the whole sector, slightly increasing over the previous year. This reflected somewhat higher credit contentration of corporate loans in the electronics industry (Chart 3.20).

**Chart 3.21 Loans to SMEs by domestic banks**




Source: CBC.

As for credit to small and medium enterprises (SMEs), SME loans by domestic banks steadily expanded to NT$5.76 trillion at the end of 2016, increasing by NT$273.7 billion or 4.99% over the previous year. However, its growth rate fell by 0.73 percentage points compared to the previous year (Chart 3.21). As the ratio of SME loans to total corporate loans kept rising year by year and reached a ten-year high of 58.67% at the end of 2016, this indicated that banks conformed well to government policy to meet SMEs' funding needs under proper risk control. Moreover, the SME loans guaranteed by the Small and Medium Enterprise Credit Guarantee Fund (SMEG) remained at a relatively high level over recent years and stood at NT$801.8 billion at the end of 2016, although decreasing by 2.59% from the end of 2015.

***The impact of TRFs and DKOs on banks is expected to diminish as their nominal amount decreased markedly***

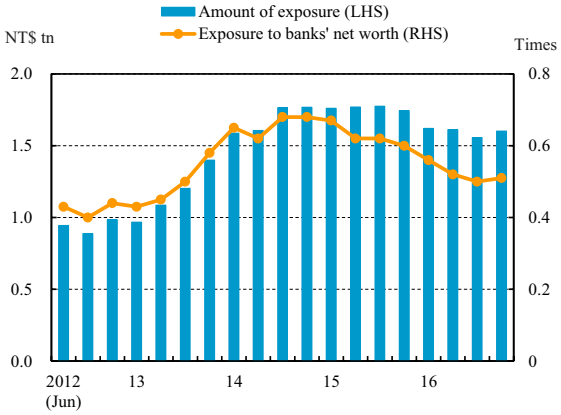
Because of a sharp depreciation in the renminbi from 2014 onwards, domestic banks with large exposures to target redemption forwards (TRFs) and discrete knock-outs (DKOs) faced higher default risk from clients. To address this issue, the FSC has introduced several rounds of supervisory reinforcements during 2014-2017 and banned banks that did not build or implement proper internal control from engaging in such business or levied large fines on such banks.

As most banks have set up sufficient provisions for potential losses from defaults, together with a significant decrease in the nominal amount of TRFs and DKOs and the expiration of most contracts by the end of 2017, its impact on banks is expected to diminish gradually. However, the disputes between banks and investors over such transactions need to be settled appropriately by banks, under the request of the FSC.

### *Exposure to Mainland China decreased*

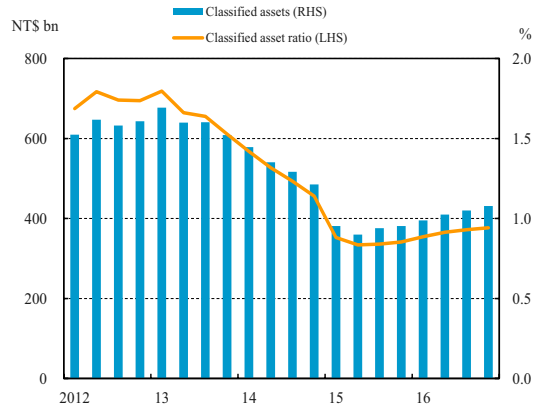
According to Article 12-1 of the *Regulations Governing the Banking Activity and the Establishment and the Investment by Financial Institution Between the Taiwan Area and the Mainland Area*, the aggregate amount of credit, investment, and interbank loans/deposits (hereafter statutory exposure)[55] extended by a domestic bank to customers in the Mainland Area should not exceed 100% of the bank's net worth as of the end of the preceding fiscal year. At the end of 2016, the aggregate amount of such exposure of all domestic banks stood at NT$1.59 trillion, or 51% as a percentage of banks' net worth, lower than 60% a year earlier (Chart 3.22). The exposure level continued to fall and no domestic bank exceeded the limit.

**Chart 3.22 Exposure to Mainland China by domestic banks**




Note: The FSC has implemented the calculation method of statutory exposure in the Mainland China area since April 2012.
Source: FSC.

**Chart 3.23 Classified assets of domestic banks**




Note: Classified asset ratio = classified assets/total assets.
Source: CBC.

In order to reinforce risk control and risk-bearing capacity for credit exposure of domestic banks to customers in the Mainland Area, the FSC implemented several measures[56] from 2014 onwards. Furthermore, in October 2016 the FSC required domestic banks to review their investment exposure to Mainland China, reinforce risk control measures,[57] and regularly evaluate the effectiveness of supervisory measures. However, financial risks in Mainland China are mounting on account of moderating economic growth, increasing default risks of corporate debts,

[55] Statutory exposure refers to aggregate exposure, but excludes: (1) short-term trade financing within one year; (2) credits and investments backed by guarantees or collateral which are fully secured outside Mainland China. Moreover, specific interbank loans/deposits with remaining maturity less than three months and the underlying counterparty rated at investment-grade are weighted with 20% of the aggregate amount of exposure.

[56] See CBC (2015), *Financial Stability Report*, Chapter IV, May.

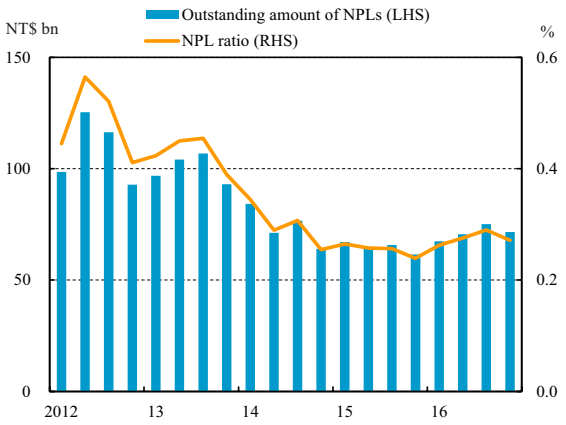
[57] The investment exposure control measures of domestic banks to Mainland China include: (1) requiring banks to review their bond portfolios, and if the investees are non-financial institutions of China's enterprises, banks should strengthen and control their investment risks; (2) examining the concentration of investment exposure to Mainland China, and if the ratios of holdings of bills and bonds issued by China's enterprises to the total amount of investment exposure to Mainland China are more than 30%, banks should re-evaluate their investment policies and reinforce risk control of such portfolios.

heightened volatility in stock and foreign exchange markets, and rising financial risks. Therefore, domestic banks should cautiously monitor economic and financial conditions in Mainland China, as well as prudently controlling their exposure to customers over there.

### *Asset quality declined slightly*

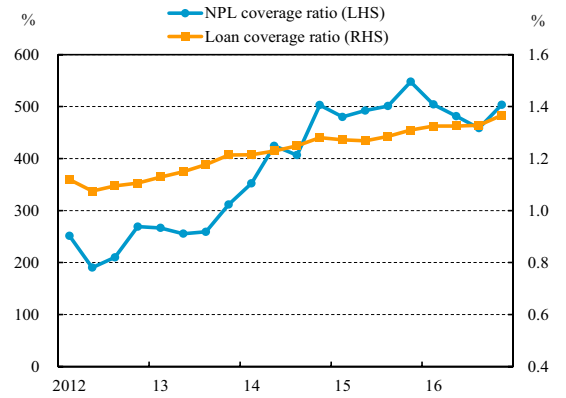
Outstanding classified assets[58] of domestic banks stood at NT$431 billion at the end of 2016, increasing by 13.06% from a year earlier, while the average classified asset ratio also rose to 0.94%, with a modest increase of 0.09 percentage points over the previous year (Chart 3.23). This showed that the asset quality of domestic banks had slightly declined. Meanwhile, the expected losses of classified assets[59] also expanded by NT$6.4 billion or 13.28% from a year earlier to NT$54.7 billion. However, the ratio of expected losses to loss provisions was only 13.55%, indicating domestic banks had sufficient provisions to cover expected losses.

**Chart 3.24 NPL ratio of domestic banks**




Note: Excludes interbank loans.
Source: CBC.

**Chart 3.25 NPL coverage ratio and loan coverage ratio of domestic banks**




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

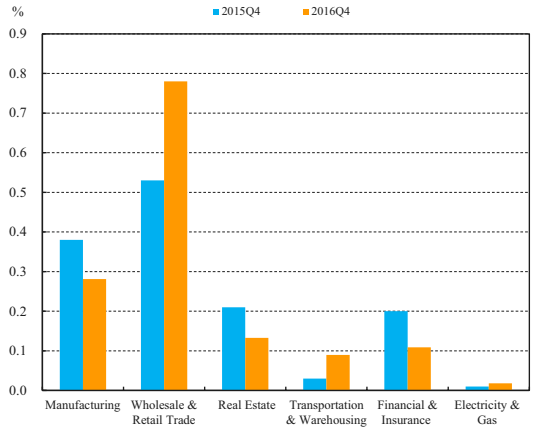
Furthermore, the outstanding NPLs of domestic banks registered NT$71.6 billion at the end of 2016, and the average NPL ratio stood at 0.27%, slightly increasing by 0.03 percentage points year on year (Chart 3.24). As a result of increasing provisions, the loan coverage ratio rose to 1.37% at the end of 2016 (Chart 3.25), but the NPL coverage ratio declined to 503.45% from the previous year due to the larger increase in NPLs over that in provisions. Nevertheless, the capability of domestic banks to cope with potential loan losses remained satisfactory.

[58] 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.

[59] Loss herein refers to the losses from loans, acceptances, guarantees, credit cards, and factoring without recourse.

Among 40 domestic banks, almost all had NPL ratios of less than 1% at the end of 2016. In terms of borrowers, the NPL ratio for individual loans climbed by 0.02 percentage points to 0.25%, whereas for corporate loans it declined by 0.03 percentage points to 0.29%, compared to the previous year. Among corporate loans, the NPL ratios saw a rise in the wholesale and retail trade industries, as well as the transportation and warehousing industries, while the NPL ratios of the manufacturing, real estate, and financial and insurance industries decreased (Chart 3.26).

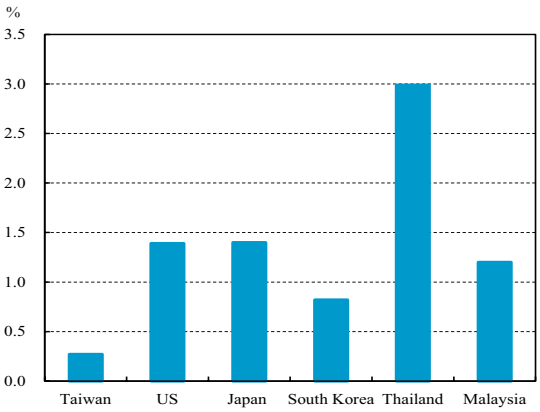
**Chart 3.26 NPL ratios of domestic banks in selected industries**




Note: Excludes interbank loans.
Source: JCIC.

Compared to the US and neighboring Asian countries, domestic banks in Taiwan had much lower NPL ratios than banks in countries such as the US, Japan and Thailand (Chart 3.27).

**Chart 3.27 NPL ratios of banks in selected countries**




Note: Figure for Japan is end-September 2016 data, while the others are end-December 2016 data.
Sources: CBC, FDIC, FSA, FSS, BOT and BNM.

## Market risk

### *Estimated value-at-risk for market risk exposures rose slightly*

In order to improve market risk assessments and meet the market risk capital requirements under the *Basel Accord*, the CBC developed a value-at-risk (VaR) model[60] for evaluating foreign exchange, interest rate, and equity risks, which is based on the VaR model of Jorion (2006)[61] and the market risk internal model developed by Chung (2015).[62] When estimating different risks, a dynamic Nelson-Siegel term structure model and a vector autoregressive VAR(1) model for multivariate time series were used for interest rate risks, while a random walk model was utilized for foreign exchange risks and an AR(1)-EGARCH(1,1) model for equity risks. In addition to general market risks, specific risks calculated under the

[60] See CBC (2016), *Financial Stability Report*, Box 2, May.
[61] Jorion, Philippe (2006), *Value at Risk: The New Benchmark for Managing Financial Risk*, Third Edition, McGraw-Hill.
[62] Chung, Ching Fang (2015), *The Development of an Internal Model for Measuring Banks' Market Risks under Basel III*, CBC commissioned paper, December.

standardized approach are also incorporated into the model to estimate interest rate risks and equity risks.

At the end of 2016, the net position of debt securities accounted for the largest share of total market risk exposures of domestic banks, followed by the net positions of foreign exchange and of equity securities. Based on the CBC's VaR model, the estimated total VaR for foreign exchange, interest rate, and equity exposures of domestic banks stood at NT$136.7 billion at the end of 2016, up by NT$4.9 billion or 3.72% compared to a year earlier (Table 3.1). Among them, the interest rate and foreign exchange VaRs increased by 6.67% and 23.81%, respectively, mainly owing to more volatility in international and domestic bond and foreign exchange markets. On the other hand, the equity VaR decreased by 27.21% owing to a reduction in its net position (Table 3.1).

### *The impacts of market risk on capital adequacy ratios were slight*

According to the estimation mentioned above, the total VaR would cause a decrease of 0.37 percentage points in the average capital adequacy ratio of domestic banks and cause the ratio to drop from the current 13.33% to 12.96%. Nevertheless, it would still be higher than the statutory minimum of 8.625%.

**Table 3.1 Market risks of domestic banks**

**Unit: NT$ bn**

| Types of risk | Items | End-Dec. 2015 | End-Dec. 2016 | Changes | |
|---|---|---|---|---|---|
| | | | | Amount | PP;% |
| Foreign exchange | Net position | 208.7 | 223.4 | 14.7 | 7.04 |
| | VaR | 4.2 | 5.2 | 1 | 23.81 |
| | VaR/net position (%) | 2.01 | 2.33 | | 0.32 |
| Interest rate | Net position | 1,447 | 1,547.4 | 100.4 | 6.94 |
| | VaR | 114 | 121.6 | 7.6 | 6.67 |
| | VaR/net position (%) | 7.88 | 7.86 | | -0.02 |
| Equities | Net position | 80.1 | 64.5 | -15.6 | -19.48 |
| | VaR | 13.6 | 9.9 | -3.7 | -27.21 |
| | VaR/net position (%) | 16.98 | 15.35 | | -1.63 |
| Total VaR | | 131.8 | 136.7 | 4.9 | 3.72 |

Note: PP = percentage point.
Source: CBC.

## Liquidity risk

### *Liquidity in the banking system remained ample*

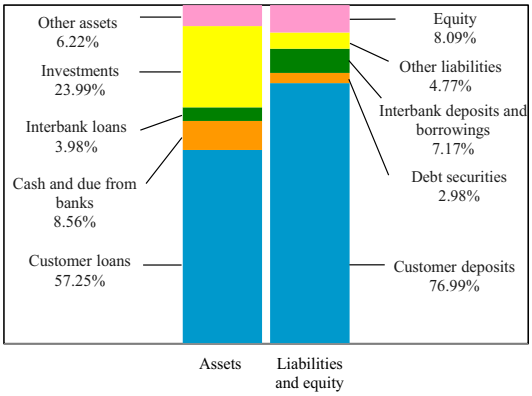
The assets and liabilities structure of domestic banks remained roughly unchanged in 2016. As for the sources of funds, relatively stable customer deposits still made up the largest share of 76.99 % of the total, followed by equity at 8.09%. Regarding the uses of funds, customer loans accounted for the biggest share of 57.25%, followed by securities investments at 23.99% (Chart 3.28).

The average deposit-to-loan ratio of domestic banks stood at 137.25%, higher than 136.21% at the end of the previous year, and the funding surplus (i.e., deposits exceeding loans) also expanded to NT$9.82 trillion. This indicated that the overall liquidity in domestic banks remained abundant (Chart 3.29).

### *Overall liquidity risk remained relatively low*

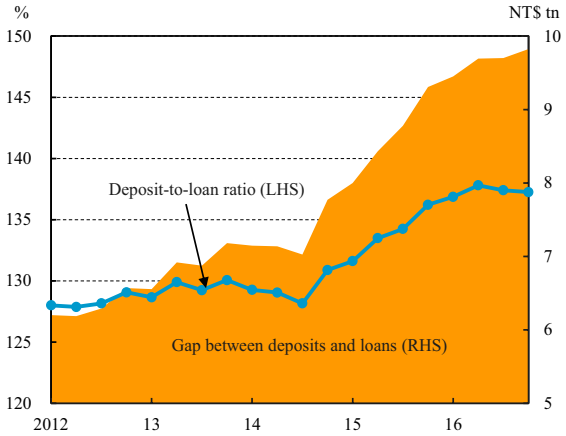
The average NT dollar liquid reserve ratio of domestic banks was well above the statutory minimum of 10% in every month of 2016 and stood at 31.20% in December, an increase of 0.21 percentage points year on year (Chart 3.30). All banks had ratios higher than 15%. Looking at the components of liquid reserves in December 2016, Tier 1 liquid reserves, mainly consisting of

**Chart 3.28 Asset/liability structure of domestic banks**



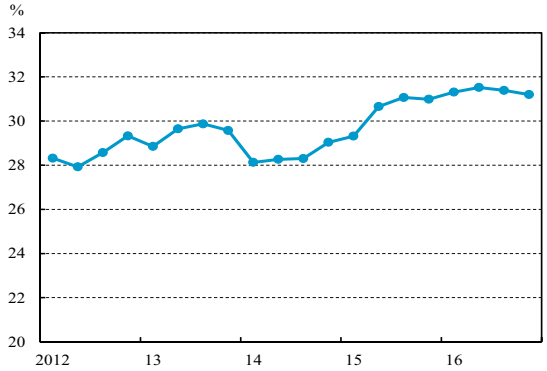

Notes: 1.Figures are as of the end of 2016.
2.Equity includes loss provisions. Interbank deposits include deposits with the CBC.
Source: CBC.

**Chart 3.29 Deposit-to-loan ratio of domestic banks**




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

**Chart 3.30 Liquid reserve ratio of domestic banks**




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

certificates of deposit issued by the CBC, accounted for 86.81% of the total, while Tier 2 and other reserves accounted for a total of 13.19%. The quality of liquid assets held by domestic banks remained satisfactory.

Moreover, the average liquidity coverage ratio (LCR) of domestic banks was 126% at the end of 2016, slightly higher than 125% a year ealier (Chart 3.31). The average ratios of state-owned banks and private banks were 120% and 127%, respectively. All banks met the minimum LCR requirement in 2016. Therefore, overall liquidity risk of domestic banks was relatively low.

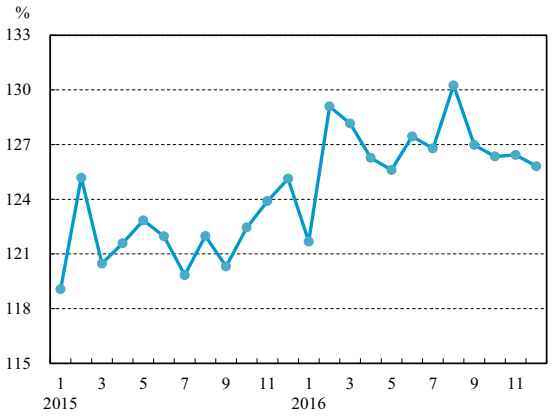
## Profitability

### *Profitability decreased moderately*

The net income before tax of domestic banks was NT$301.9 billion in 2016, decreasing by NT$18.7 billion or 5.85% year on year (Chart 3.32). The decrease was mainly due to rising provisions of most banks and additional losses from a US$180 million (about NT$5.7 billion) penalty paid by Mega Bank for its New York branch for not strictly fulfilling the requirements set forth in the US AML regulations. Moreover, the higher income base in 2015 resulting from CTBC bank recognizing a one-time gain from selling its Sinyi headquarters building was also one of the reasons for the decrease.

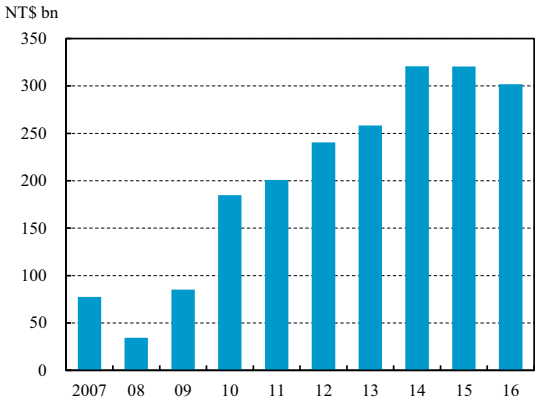
Affected by a decline in net income before tax and continuous increases in equity and

**Chart 3.31 Liquidity coverage ratio of domestic banks**



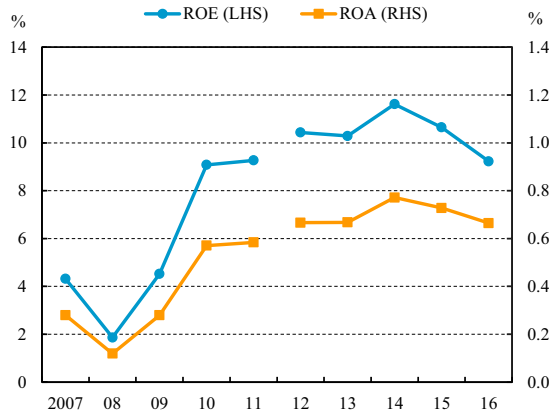

Source: CBC.

**Chart 3.32 Net income before tax of domestic banks**




Note: Figures from 2012 forward are on the TIFRSs basis, while prior years are on the ROC GAAP basis (same as all charts in this section).
Source: CBC.

**Chart 3.33 ROE & ROA of domestic banks**




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

assets, the average ROE and ROA fell year on year to 9.23% and 0.66% from 10.65% and 0.73%, respectively. This showed a weaker profitability of domestic banks in 2016 (Chart 3.33). Compared to selected neighboring Asia-Pacific economies, the ROEs of domestic banks ranked in the middle, higher than the US and South Korea. However, the ROAs still lagged behind their counterparts, only better than Australia and South Korea (Chart 3.34).

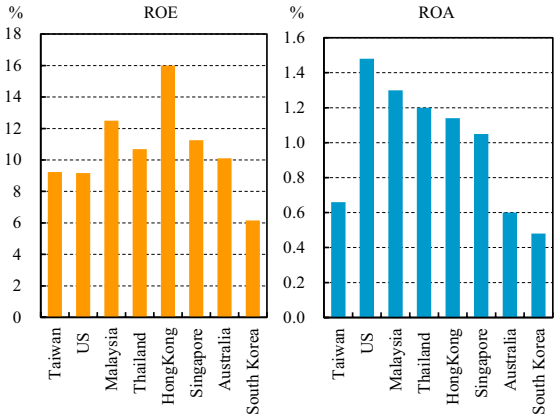
Analyzing domestic banks by segments, net income before tax of domestic banking units (DBUs) and offshore banking units (OBUs) dropped moderately by 3.82% and 3.56%, respectively, while that of overseas branches decreased significantly by 24.92% in 2016. As a result, the contributions of DBUs and OBUs to total profits improved, but the ratio for overseas branches trended down (Chart 3.35).

In 2016, only one bank achieved a profitable ROE of 15% or more, decreasing from two banks in 2015. The number of banks whose ROAs reached the international standard of 1% also saw a decrease from seven to four (Chart 3.36). Nevertheless, there still were nine banks with higher ROEs and 12 banks with higher ROAs compared to 2015.

### *Net operating income grew continually*

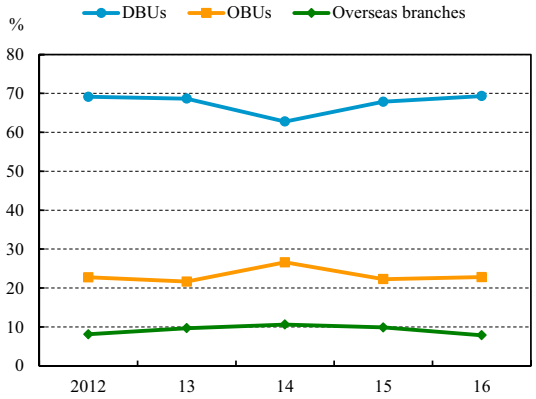
Total net operating income of domestic banks registered NT$746 billion in 2016, increasing by NT$11.5 billion or 1.56% year on year, mainly owing to growth in non-interest

**Chart 3.34 Comparison of ROEs and ROAs of banks in selected economies**



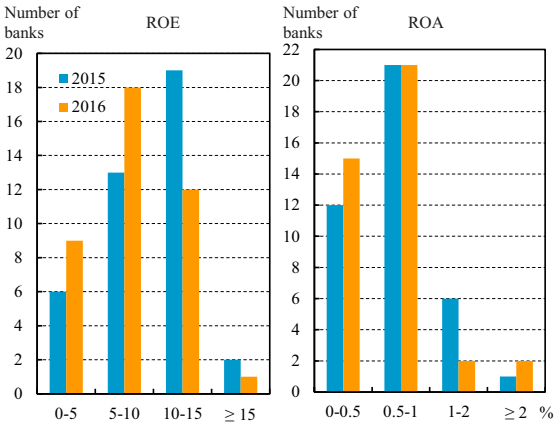

Note: Figures are as of the end of 2016.
Sources: CBC, FDIC, BNM, BOT, HKMA, APRA, FSS and IMF.

**Chart 3.35 Profit contributions of domestic banks by segments**




Note: Overseas branches include branches in Mainland China.
Source: CBC.

**Chart 3.36 Distribution of ROEs and ROAs of domestic banks**




Source: CBC.

income, such as net gains on financial instruments and fee income. Analyzed by income component, net gains on financial instruments significantly grew by NT$14.3 billion or 20.3% year on year, supported by a substantial increase in valuation and disposal gains of financial instruments at fair value. Net fee income also rose by NT$6.6 billion or 3.90% year on year, benefiting from growth in the sale of insurance products and credit card business (Chart 3.37).

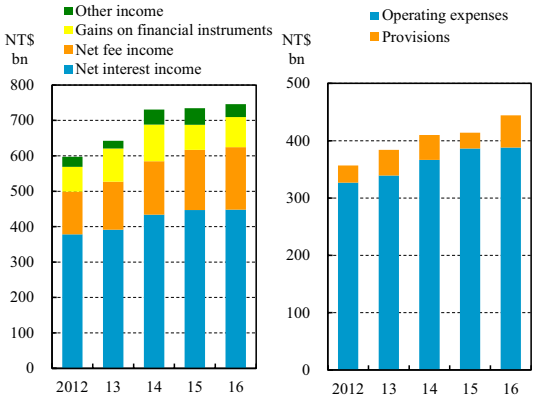
### *Total costs increased markedly due to a rise in provisions*

The total costs of domestic banks registered NT$444.2 billion in 2016, rising by NT$30.2 billion or 7.3% compared to the previous year. Among them, operating expenses[63] slightly increased by NT$1.5 billion or 0.39%, but their share of total costs decreased to 87% from 93% in 2015. Meanwhile, provisions for loan losses and guarantee reserves remarkably increased by NT$28.7 billion or 104.57% year on year. The increase was mainly because domestic banks were required by the FSC to maintain a provision ratio of at least 1.5% against real-estate loans by the end of 2016, and also banks wanted to be prepared to address possible default losses related to TRF contracts (Chart 3.37).

### *Factors that might affect future profitability*

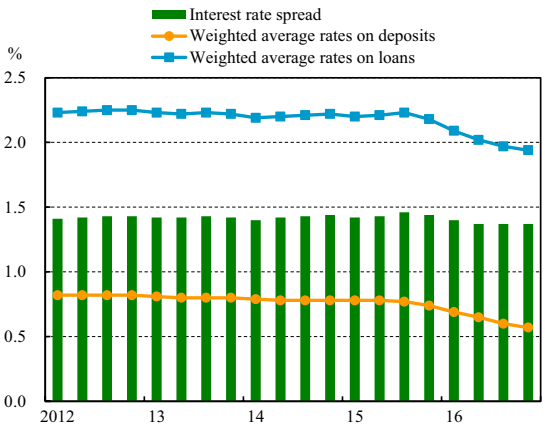
As a result of policy rate cuts by the CBC and increases in large-value loans to government and well-performing private enterprises at low lending rates, the interest rate spread between deposits and loans of domestic banks dropped by 0.07 percentage points from 2015 Q4 to hit a

**Chart 3.37 Composition of income and costs of domestic banks**




Source: CBC.

**Chart 3.38 Interest rate spread of domestic banks**




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.

[63] Operating expenses include employee benefits expenses, depreciation and amortization expenses, and other operating and management expenses.

five-year low at 1.37 percentage points in 2016 Q2 and remained the same in the second half of the year (Chart 3.38). The downtrend in the interest rate spread could undermine future profitability of domestic banks.

Furthermore, after Mega Bank was fined by the US authority for not strictly fulfilling the requirements set forth in the US AML regulations, the FSC has required domestic banks to reinforce their AML control mechanisms and regulatory compliance programs. This, coupled with more actions taken by banks in response to stricter international regulation and supervision of anti-money laundering (Box 1), means that compliance costs of domestic banks will increase and in turn affect their future profitability. Furthermore, the significant appreciation of the NT dollar against the US dollar in 2017 Q1 was also detrimental to those banks with high foreign incomes.

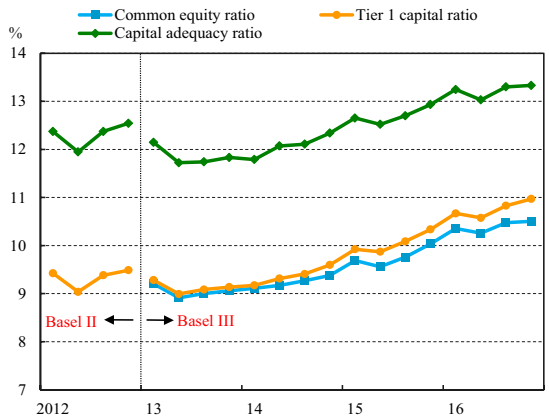
## Capital adequacy

### *Capital ratios trended upward*

In the second quarter of 2016, the average capital ratio of domestic banks declined slightly owing to seasonal factors such as cash dividends being declared and paid. Afterwards, as a result of capital injection and accumulated earnings as well as the issuance of Basel III-compliant capital instruments, the average common equity ratio, Tier 1 capital ratio, and capital adequacy ratio rose to 10.50%, 10.97%, and 13.33%, respectively, at the end of 2016 (Chart 3.39). However, compared to neighboring Asia-Pacific economies, domestic banks in Taiwan had relatively lower capital levels (Chart 3.40).

Further breaking down the components of regulatory capital, common equity Tier 1 capital, which features the best loss-bearing capacity, accounted for 78.80% of eligible capital, while non-common equity Tier 1 capital and Tier 2 capital registered significantly smaller shares of 3.49% and 17.71%, respectively, at the end of 2016. This showed that the capital quality of domestic

**Chart 3.39 Capital ratios of domestic banks**




Notes: 1. Figures from 2013 forward are based on Basel Ⅲ, while prior years are based on Basel Ⅱ
2. Common equity ratio = common equity Tier 1 capital/risk-weighted assets
3. Tier 1 capital ratio = Tier 1 capital/risk-weighted assets
4. Capital adequacy ratio = eligible capital/risk-weighted assets

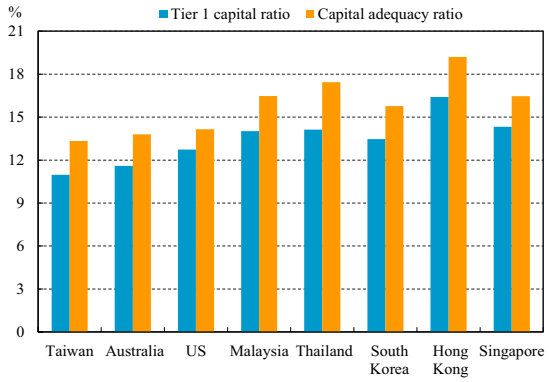
Source: CBC.

banks was satisfactory.

### *The capital levels of all domestic banks were higher than the 2016 statutory minimum*

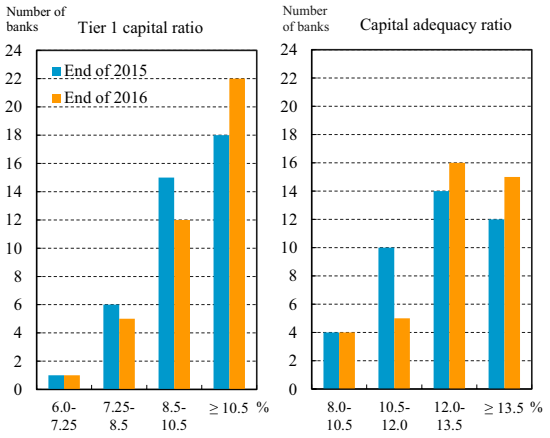
At the end of 2016, the common equity ratios, Tier 1 capital ratios, and capital adequacy ratios for all domestic banks remained above the statutory minimum requirements for 2016.[64] Compared to the end of the previous year, the number of banks with Tier 1 capital ratios higher than 10.5% and capital adequacy ratios higher than 12% significantly increased, indicating that most banks have been improving both their capital levels and quality (Chart 3.41).

**Chart 3.40 Comparison of capital ratios in selected economies**




Note: Figures are as of the end of 2016.
Sources: CBC, APRA, FDIC, BNM, BOT, FSS, HKMA, and IMF.

**Chart 3.41 Number of domestic banks classified by capital ratios**




Source: CBC.

### *A few banks still faced pressure to raise their capital levels*

Even though the capital ratios of all banks met the minimum standards at the end of 2016, a few state-owned and private banks might not fulfill the escalating minimum capital requirements between 2017 and 2019 and thus face pressure to raise their capital levels. Such banks should actively improve their capital adequacy via issuing common stocks or qualified subordinated debts, accumulating earnings, or adjusting asset structures.

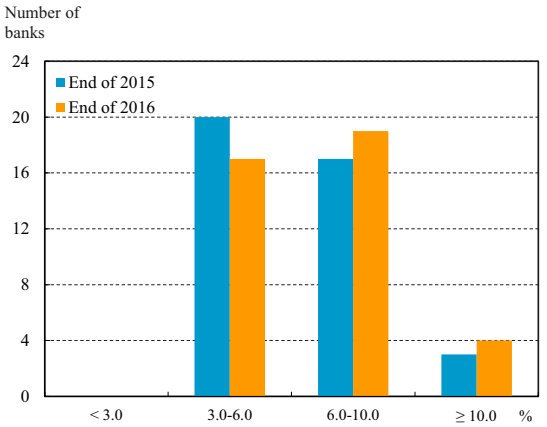
[64] The minimum capital requirements in the Basel Ⅲ transition periods are as follows:

| Ratios | 2016 | 2017 | 2018 | 2019 onwards |
|---|---|---|---|---|
| Common equity ratio (%) | 5.125 | 5.75 | 6.375 | 7.0 |
| Tier 1 capital ratio (%) | 6.625 | 7.25 | 7.875 | 8.5 |
| Capital adequacy ratio (%) | 8.625 | 9.25 | 9.875 | 10.5 |

### *Leverage ratios higher than the international standard of 3%*

The average leverage ratio[65] of domestic banks at the end of 2016 stood at 6.29%, higher than 5.9% a year before. The ratio was well above the international standard of 3%, showing sound leverage levels of domestic banks. By individual banks, no bank had a leverage ratio below 3%, while the number of banks with a leverage ratio higher than 6% came to 23, three more than the number of the previous year (Chart 3.42).

**Chart 3.42 Leverage ratios of domestic banks**




Note: Leverage ratio = Tier 1 capital/total exposures
Source: CBC.

## Credit ratings

### *Average credit rating level further enhanced*

With respect to the overall risk assessments of Taiwan's banking system made by credit rating agencies, Standard & Poor's maintained Taiwan's Banking Industry Country Risk Assessment (BICRA)[66] unchanged at Group 4. Compared to other Asian economies, the risk of Taiwan's banking system was higher than those of Hong Kong, Singapore, Japan, and South Korea, about the same as that of Malaysia, but much lower than those of Mainland China, Thailand, Indonesia and the Philippines. The assessment of Taiwan's banking system by Fitch Ratings' Banking System Indicator/Macro-Prudential Indicator (BSI/MPI)[67] also remained

**Table 3.2 Systemic risk indicators for the banking system**

| Banking System | Standard & Poor's | | Fitch | |
|---|---|---|---|---|
| | BICRA | | BSI/MPI | |
| | 2016/2 | 2017/2 | 2016/2 | 2017/1 |
| Hong Kong | 2 | 2 | a/3 | a/3 |
| Singapore | 2 | 2 | aa/2 | aa/2 |
| Japan | 2 | 2 | a/1 | a/1 |
| South Korea | 3 | 3 | bbb/1 | a/1 |
| **Taiwan** | **4** | **4** | **bbb/1** | **bbb/1** |
| Malaysia | 4 | 4 | bbb/1 | bbb/1 |
| Mainland China | 5 | 5 | bb/3 | bb/1 |
| Thailand | 6 | 6 | bbb/1 | bbb/1 |
| Indonesia | 7 | 7 | bb/2 | bb/1 |
| Philippines | 7 | 7 | bb/1 | bb/1 |

Sources: Standard & Poor's and Fitch Ratings.

[65] With a view to keeping in line with international standards published by the Basel Committee on Banking Supervision (BCBS), the FSC required all banks to calculate Basel III leverage ratios from 2013 onwards and disclose the ratios starting from 2015. Moreover, the leverage ratio will be incorporated into Pillar 1 (minimum capital requirement) from January 1, 2018.

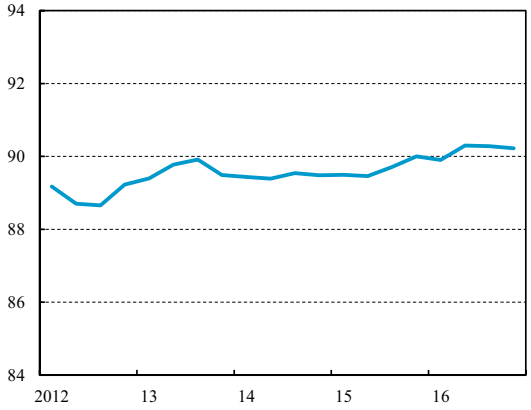
[66] The analytical dimensions of Standard & Poor's BICRA include economic risk and industry risk. The economic risk of a banking sector is determined by factors including economic resilience, economic imbalances, and credit risk in the economy, while industry risk is determined by institutional framework, 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.

[67] Fitch Ratings has devised two complementary measures, the BSI and 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 represents banking system strength on a scale from aa (very strong) to ccc/cc/c (very weak). 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.

unchanged at level bbb/1 (Table 3.2).

All domestic banks received ratings by credit rating agencies for 2016.[68] The credit rating index[69] of domestic banks went up[70] in 2016 (Chart 3.43), mainly because two banks were upgraded.

**Chart 3.43 Credit rating indices of domestic banks**

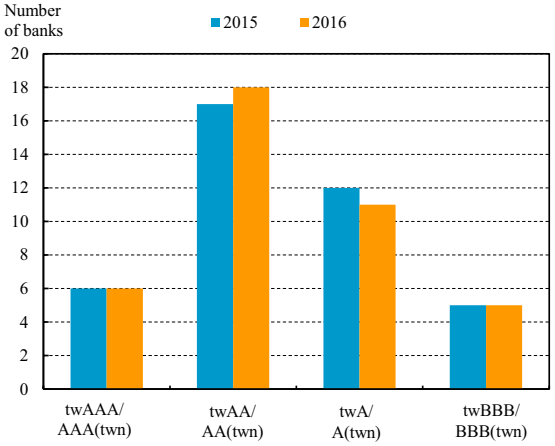



Note: End-of-period figures.
Sources: Taiwan Ratings Corporation, Fitch Ratings, and CBC.

***Rating outlooks for most domestic banks remained stable or positive***

Most domestic banks maintained credit ratings of twAA/twA (Taiwan Ratings) or AA(twn)/A(twn) (Fitch Ratings) at the end of 2016, and none had credit ratings lower than twBB/BB(twn) (Chart 3.44), similar to the previous year. Only three banks had negative rating outlooks in 2016,[71] while the other 37 banks remained stable or positive.

**Chart 3.44 Number of domestic banks classified by credit ratings**




Note: End-of-period figures.
Sources: Taiwan Ratings Corporation and Fitch Ratings.

## 3.2.2 Life insurance companies

In 2016, asset growth in life insurance companies accelerated, their average RBC ratio rose and overall credit rating remained stable at the end of the year. However, the profitability of life insurance companies weakened significantly and market risk stayed high owing to large open foreign exchange positions.

[68] As of the end of 2016, the majority of Taiwan's domestic banks received long-term issuer ratings from Taiwan Ratings, higher than the number of those with national long-term ratings from Fitch Ratings. Therefore, this section is based primarily on the Taiwan Ratings' ratings (tw~), and secondarily on Fitch Ratings' ratings (~twn).

[69] 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 or national long-term ratings from Fitch Ratings. The higher the index is, the better the bank's overall solvency.

[70] The credit rating index by the end of 2016 was slightly lower than that of the third quarter because of changes in total assets of some banks.

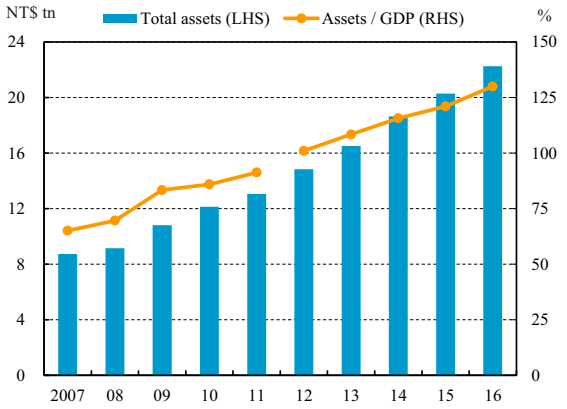
[71] Three banks with negative rating outlooks were ANZ Bank (Taiwan), Yuanta Bank and TC Bank. ANZ Bank (Taiwan) received a negative rating outlook in the third quarter of 2016, affected by its parent company. The rating outlooks of Yuanta Bank and TC Bank had turned stable in January 2017, as the capital level of their parent company, Yuanta Financial Holdings, stabilized when it adopted a more conservative growth strategy.

## Asset growth accelerated

The total assets of life insurance companies grew continually and reached NT$22.25 trillion at the end of 2016, equivalent to 129.97% of annual GDP (Chart 3.45). The annual growth rate of total assets registered 9.74% at the same time, rising from 8.8% a year earlier.

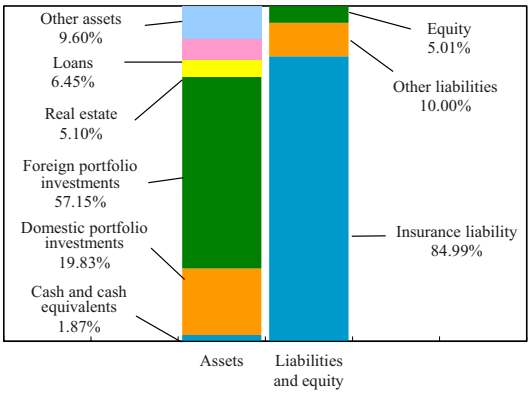
At the end of 2016, 20 domestic life insurance companies [72] held a 98.53% market share by assets, including four foreign affiliates with a 2.72% market share, while four foreign life insurance companies held the remaining 1.47% of total assets. The top three companies in terms of assets held a combined market share of 56.26%, a slight increase of 0.12 percentage points year on year. The market structure of the life insurance industry remained roughly unchanged in 2016.

**Chart 3.45 Total assets of life insurance companies**




Note: Figures from 2012 forward are on the TIFRSs basis, while prior years are on the ROC GAAP basis.
Sources: FSC and DGBAS.

**Chart 3.46 Asset/liability structure of life insurance companies**




Note: Figures are as of the end of 2016.
Source: FSC.

## The share of foreign portfolio investments increased

In terms of the usage of funds, foreign portfolios and domestic securities accounted for the majority of the investments by life insurance companies as of the end of 2016. The share of foreign portfolio investments rose to 57.15%, owing to the fact that life insurance companies, with an expansion in usable funds, increased high-yield foreign bond investments and international bond investments that are not subject to the overseas investment ceiling. On the other hand, the share of domestic securities investments continued to drop to 19.83%.

The primary source of funds in life insurance companies was insurance liability. As policy reserves continually accumulated in line with an expansion in the policy underwriting

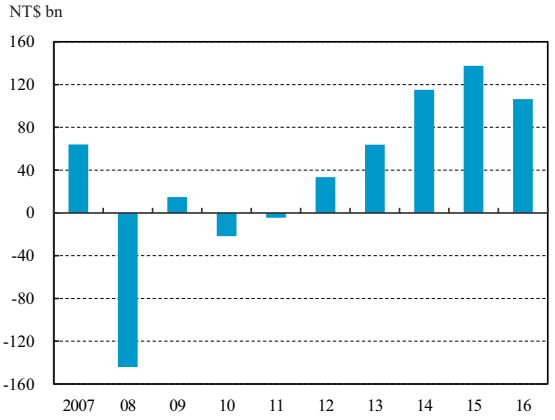
[72] Foreign affiliates included.

business, the share of insurance liability rose to 84.99%, while equity decreased slightly to a share of 5.01%. Overall financial leverage of life insurance companies increased marginally (Chart 3.46).

## Profitability weakened significantly

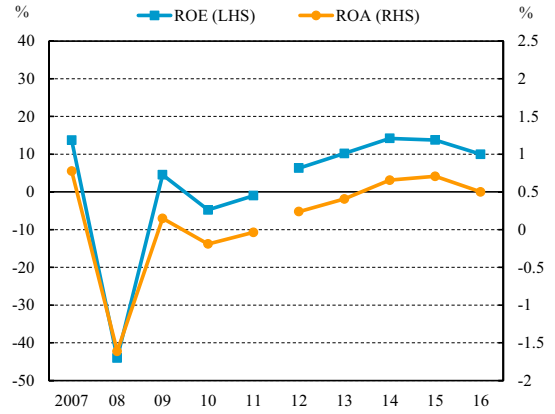
Life insurance companies reported net income before tax of NT$106.5 billion in 2016, a year-on-year decrease of NT$31.1 billion or 22.58% (Chart 3.47). This was chiefly driven by foreign exchange losses deriving from the appreciation of the NT dollar against the US dollar, as well as increases in commission expenses and policy provisions spurred by significant growth in first year premiums. Consequently, average ROE and ROA decreased to 9.98% and 0.5%, respectively, from 13.77% and 0.71% a year earlier (Chart 3.48), and the average rate of return on funds dropped to 4.11% from 4.22% the previous year. This posed challenges for insurance companies to alleviate interest rate spread losses. Among all 24 life insurance companies, ten companies posted better profits and achieved ROEs of 10% or more, equivalent to the number of a year earlier. However, there were eight companies that still suffered losses.

**Chart 3.47 Net income before tax of life insurance companies**




Note: Figures from 2012 forward are on the TIFRSs basis, while prior years are on the ROC GAAP basis.
Source: FSC.

**Chart 3.48 ROE & ROA of life insurance companies**



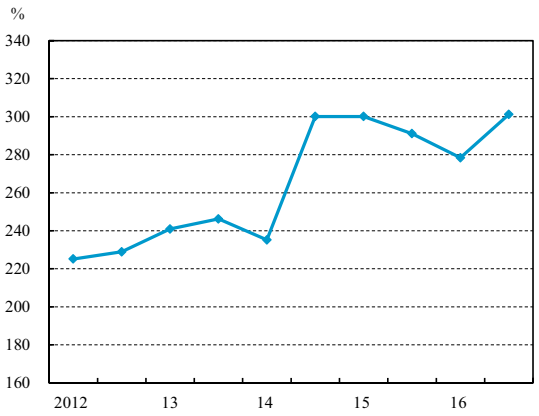

Notes: 1. Figures from 2012 forward are on the TIFRSs basis, while prior years are on the ROC GAAP basis.
2. ROE = net income before tax/average equity.
3. ROA = net income before tax/average assets.
Source: FSC.

## Average RBC ratio rose

In 2016, life insurance companies strengthened capital levels through accumulation of operating profits and issuance of subordinated debt. As a result, the average RBC ratio rose to 301.25% at the end of 2016 from 291.08% a year before (Chart 3.49).

By individual company, there were 15 companies with RBC ratios over 300%, two less than the figure of the previous year. Only one company had an RBC ratio below the statutory minimum of 200% and needed to improve its financial structure, though its assets accounted for only 1.58% of the total (Chart 3.50). Additionally, the negative equity Chaoyang Life Insurance was taken into receivership by the FSC on January 26, 2016 and was merged into Nan Shan Life Insurance on January 16, 2017.

**Chart 3.49 RBC ratio of life insurance companies**

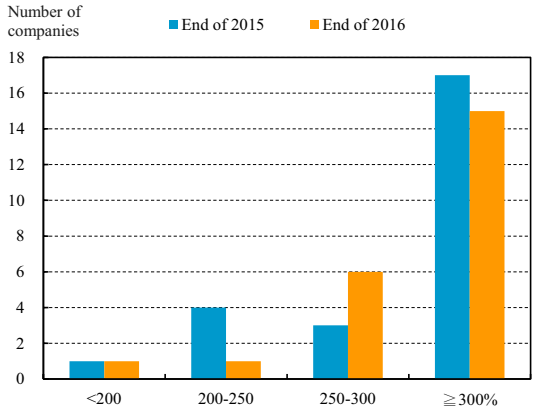



Notes: 1. RBC ratio = regulatory capital/risk-based capital.
2. Figures are exclusive of life insurance companies in receivership.
Source: FSC.

## Overall credit ratings remained stable

Among 12 life insurance companies rated by Taiwan Ratings or Fitch Ratings, none received rating adjustments in 2016, except for Yuanta Life Insurance and Farglory Life Insurance receiving credit ratings of twA+ (Taiwan Ratings) for the first time, and credit rating of CTBC Life Insurance was withdrawn when it merged into Taiwan Life Insurance. As of the end of the year, all rated life insurance companies maintained credit ratings above twA or its equivalent, while the three biggest insurance companies by assets were all rated twAA+, showing strong capability to fulfill all financial commitments. Moreover, all companies received positive or stable credit outlooks except for Taiwan Life Insurance and China Life Insurance.

**Chart 3.50 Number of life insurance companies classified by RBC ratios**




Note: Figure for 2016 is exclusive of Chaoyang Life Insurance.
Source: FSC.

## Life insurance companies faced higher market risk owing to large open foreign exchange positions

As their total assets grew continually in recent years, life insurance companies increased investments in international bond markets and other overseas investment targets owing to insufficient supply of domestic long-term financial instruments and relaxation of the

regulatory overseas investment ceiling. This led to great expansion in their foreign portfolio positions. However, in 2017 Q1, the NT dollar exchange rate hiked against the US dollar because of large international capital inflows. It resulted in great foreign exchange losses and rapid exhaustion of foreign exchange valuation reserves[73] in the life insurance industry. Although life insurance companies had actively deployed hedging strategies, they still faced higher foreign exchange risk because of large unhedged foreign exchange positions. Meanwhile, life insurance companies invested heavily in bonds reported at fair value. While the Fed might continue raising the federal funds rate and scale back QE in the near future, it will put upward pressure on bond yields. Life insurance companies should prudentially control interest rate risk of those positions.

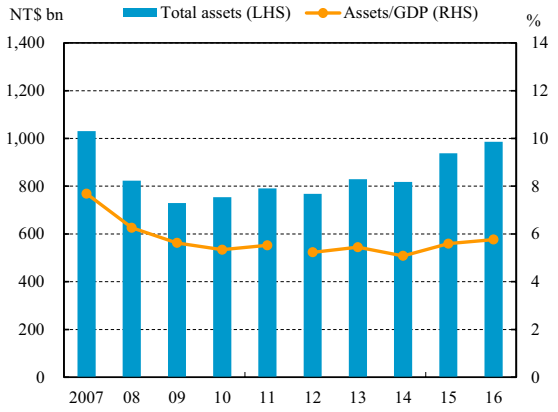
## 3.2.3 Bills finance companies

The total assets of bills finance companies continued expanding in 2016, while the guarantee business maintained an upward trend and credit asset quality remained sound. Net income before tax of bills finance companies slightly rose, whereas ROE & ROA somewhat descended. In addition, the average capital adequacy ratio of bills finance companies declined in 2016, and liquidity risk stayed high.

### Total assets expanded and bond investment risks increased

The total assets of bills finance companies increased 5.22% in 2016 and stood at NT$986.5 billion at the end of the year, a figure equivalent to 5.76% of annual GDP. The asset expansion was mostly caused by more bill and bond holdings for the purpose of yielding revenues from the current market featuring low short-term interest rates (Chart 3.51). Among assets, bond investments amounted to NT$457.8 billion at the end of 2016, with an increase of NT$43.1 billion or 10.39% year on year. Foreign currency denominated bond investments in particular saw a significant increase of NT$44.5 billion

**Chart 3.51 Total assets of bills finance companies**



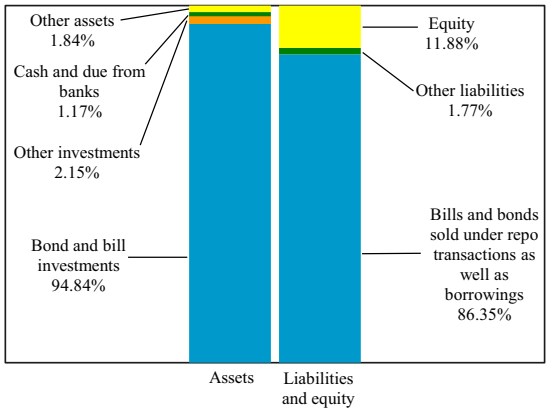

Note: Figures from 2012 onwards are on the TIFRSs basis, while prior years are on the ROC GAAP basis.
Sources: CBC and DGBAS.

[73] The foreign exchange valuation reserve was NT$18 billion as of the end of March 2017, decreasing by NT$25.4 billion or 58.50% from NT43.4 billion as of the end of 2016.

or 2.14 times. Considering the appreciation of the NT dollar against the US dollar in early 2017 and the expected hike of the Fed's policy rate, bond investments of bills finance companies might face increasing foreign exchange risk and interest rate risk.

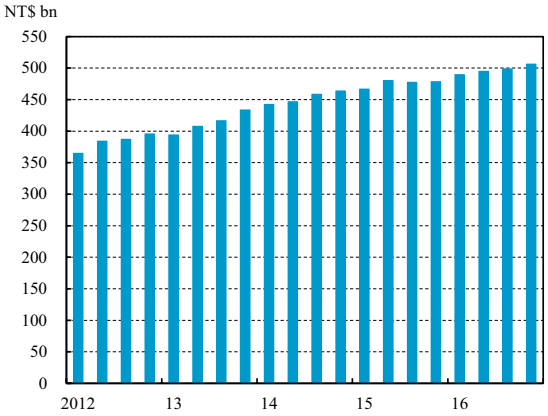
As for the asset and liability structure at the end of 2016, bond and bill investments constituted 94.84% of total assets, an increase of 0.81 percentage points year on year. On the liability side, bills and bonds sold under repo transactions as well as borrowings accounted for 86.35% of total assets, while equity only accounted for 11.88% (Chart 3.52).

**Chart 3.52 Asset/liability structure of bills finance companies**




Note: Figures are as of the end of 2016.
Sources: CBC and FSC.

**Chart 3.53 Commercial paper guaranteed by bills finance companies**




Source: CBC.

## Credit risk

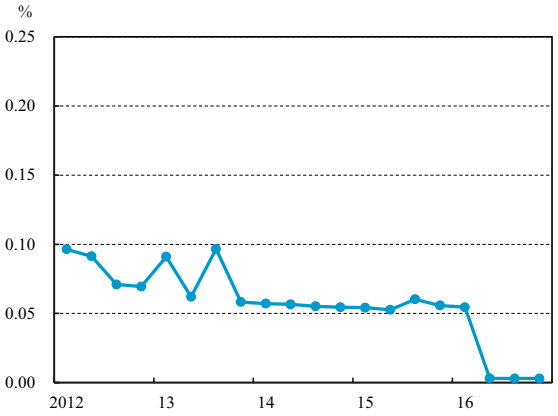
### *Guarantee liabilities grew continuously while the concentration of credit on real estate trended up*

Owing to rising finance demands of corporates in money markets spurred by low short-term market rates, commercial paper guaranteed by bills finance companies saw an increase of NT$27.7 billion or 5.79% year on year and registered NT$506.3 billion at the end of 2016 (Chart 3.53). The average multiple of guarantee liabilities to equity of bills finance companies rose to 4.67 times at the end of 2016, compared to 4.62 times a year before. However, the multiple of each bills finance company still conformed to the regulatory ceiling of 5 or 5.5 times.[74]

[74] According to the *Ceiling on the Total Amounts of the Short-term Bills Guarantee and Endorsement Conducted by Bills Finance Companies*, the ratio of outstanding commercial paper guaranteed to equity for a bills finance company should not exceed 1, 3, 4, 5 or 5.5 times, respectively, depending on the level of its capital adequacy ratio of below 10%, above 10% but below 11%, above 11% but below 12%, above 12% but below 13%, or above 13%.

At the end of 2016, guarantees granted to the real estate and construction industries and the credits secured by real estate accounted for 28.92% and 35.60%, respectively, of total credits of bills finance companies. Both ratios rose in 2016 and remained at high levels. While the outlook for the domestic housing market remains conservative, bills finance companies should closely monitor related credit risks. In response, the FSC continued to put a greater emphasis on real estate credit concentration and risk management for its on-site examinations of bills finance companies in 2017.[75]

**Chart 3.54 Non-performing credit ratio of bills finance companies**

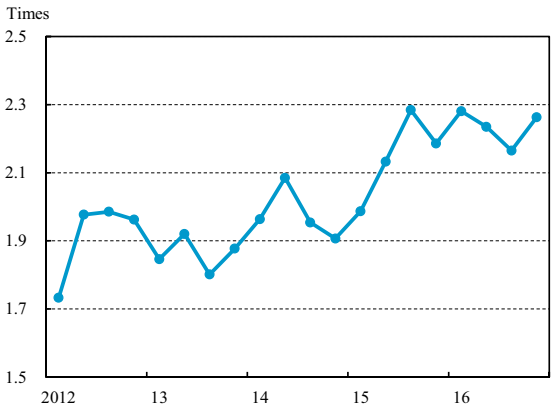



Note: Non-performing credit ratio = non-performing credit/(overdue guarantee advances + guarantees).
Source: CBC.

### *Credit quality remained sound*

The credit quality of bills finance companies remained sound in 2016, as the non-performing credit ratio declined and stayed at a low level of 0.003% at the end of the year (Chart 3.54). Meanwhile, the credit loss reserves to non-performing credits ratio stood at 516.6 times, reflecting significantly sufficient reserves to cover potential credit losses.

**Chart 3.55 0-60 days maturity gap to equity of bills finance companies**




Note: 0-60 days maturity gap = cash inflow of major assets within 0-60 days - cash outflow of major liabilities within 0-60 days.
Source: CBC.

## Liquidity risk remained high

Bills finance companies still faced a significant maturity mismatch between assets and liabilities, as 46.40% of assets were long-term bonds and most liabilities were short-term interbank call loans and repo transactions. Moreover, the substantial increase of bond investments resulted in the 0-60 day maturity gap to equity increasing to 2.26 times, compared to 2.19 times a year before. Both indicated that the liquidity risk in bills finance companies remained high (Chart 3.55).

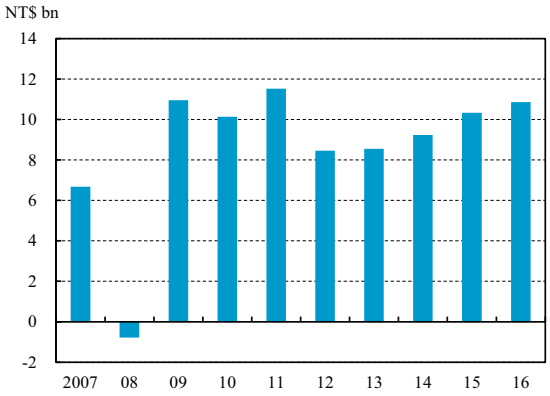
[75] According to the release of the Financial Examination Bureau of the FSC in December 2016.

Moreover, major liabilities[76] in bills finance companies grew by 6.05% in 2016, bringing the major liabilities to equity ratio to increase from 7.77 times a year before to 7.88 times at the end of 2016. However, the multiple of each bills finance company was still below the regulatory ceilings of ten or twelve times.[77]

### Net income before tax slightly rose, whereas ROE & ROA decreased mildly

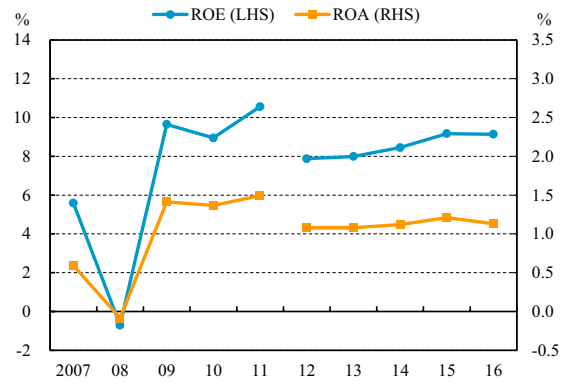
Bills finance companies posted a net income before tax of NT$10.9 billion in 2016, with an increase of NT$0.5 billion or 5.13% year on year (Chart 3.56). The rise was mainly driven by an increase in both commission fee income from commercial paper underwriting business and net interest income arising from higher interest income of bond investments and lower interest cost of call loans and RP transactions. However, owing to the faster growth of equities and assets, average ROE and ROA decreased mildly to 9.14% and 1.13%, respectively (Chart 3.57).

**Chart 3.56 Net income before tax of bills finance companies**




Note: Figures from 2012 forward are on the TIFRSs basis, while prior years are on the ROC GAAP basis.
Source: CBC.

**Chart 3.57 ROE & ROA of bills finance companies**




Notes: 1. Figures from 2012 forward are on the TIFRSs basis, while prior years are on the ROC GAAP basis.
2. ROE = net income before tax/average equity.
3. ROA = net income before tax/average assets.
Source: CBC.

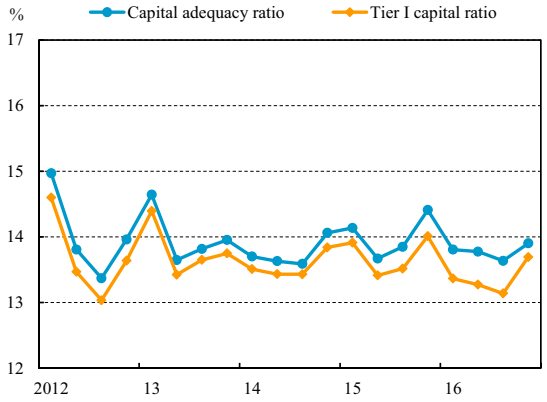
### Average capital adequacy ratio descended

The average capital adequacy ratio of bills finance companies descended from 14.41% the previous year to 13.90% at the end of 2016, owing to higher risk-weighted assets spurred by more non-government bond holdings. The Tier 1 capital ratio also declined to 13.69% from 14.01% a year before. However, the capital

[76] Major liabilities include call loans, repo transactions as well as issuance of corporate bonds and commercial paper.
[77] According to the *Directions for Ceilings on the Total Amounts of the Major Liabilities and Reverse Repo Transactions Conducted by Bills Houses*, which aim to reduce the operating and liquidity risks of bills finance companies, the major liabilities of a bills finance company could not exceed six times, eight times or ten times its equity 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 equity. As of the end of 2016, the capital adequacy ratio of each bills finance company was above 12%, so the ceilings were capped at ten times or twelve times for each company.

adequacy ratio for each bills finance company remained higher than 12%, well above the statutory minimum of 8% (Chart 3.58).

**Chart 3.58 Capital adequacy ratios of bills finance companies**




Source: CBC.

## Box 1
## International anti-money laundering trends

With highly liberalized international finance, booming development of financial products and internet technology, constantly changing and evolving money laundering channels and means, as well as the difficulty of tracing cross-border money flows, the task of anti-money laundering continues to face significant challenges. National regulators tend to strictly require financial institutions to implement anti-money laundering measures and stringently punish those institutions that violate or undershoot related requirements. Consequently, institutions may suffer a great deal of financial loss and have their reputations seriously damaged. Accordingly, anti-money laundering has become a topical issue around the world. This Box first discusses the major rules and standards of cross-border anti-money laundering and supervisory trends and then analyzes related measures adopted by Taiwan's regulators in response to the challenges ahead, before drawing the conclusions.

### *1. The major rules of international anti-money laundering*

The major rules and standards of anti-money laundering prescribed by major international organizations and countries are as follows:

#### 1.1 Financial Action Task Force (FATF)

The FATF *Recommendations* are recognized universally as the global anti-money laundering (AML)/countering the financing of terrorism (CFT) standards. The 2003 FATF *Forty Recommendations* were revised and combined with the *Nine Special Recommendations* into the new FATF *Recommendations* in 2012 (e.g., *Recommendation 7* was added to counter the threat of the financing of proliferation of weapons of mass destruction).[1] Under the 2013 FATF *Methodology for Assessing Technical Compliance* with the FATF *Recommendations* and the *Effectiveness of AML/CFT Systems*, the standards of assessment have become more rigorous. The key requirements of the FATF *Recommendations* related to financial institutions include:

(1) Deploying a risk-based approach (RBA) to assess risks.

(2) Undertaking the precautionary measures of customer due diligence (CDD), monitoring business relationships with customers, and maintaining all necessary records on transactions.

(3) Adopting appropriate risk control measures and enhanced due diligence (EDD), and

reporting suspicious transactions for specific customers and high-risk transactions.

(4) Verifying the identity of the customer and beneficial owner before or during the course of establishing a business relationship or conducting transactions for occasional customers, except when, for example, the money laundering and terrorist financing risks are effectively managed.

**1.2 Asia/Pacific Group on Money Laundering (APG)**

APG was founded in 1997 (Taiwan is among the founding members) and is an associate member of the FATF, which has obligations to implement the measures set out in the FATF standards. In order to enhance the capacity of AML/CFT, APG requires its members to be assessed through *Mutual Evaluation* processes according to the FATF *Methodology* (including the technical compliance assessment and effectiveness assessment).

**1.3 USA**

The USA has continually promulgated related laws and regulations of AML/CFT since 1970. The main requirements from 2000 onwards are as below:

(1) To deter and punish terrorism, the *USA PATRIOT Act* was passed by Congress in 2001.[2] The *Act* imposes radical obligations of AML and information declaration on financial institutions, as well as allowing expansion of executive discretion of law enforcement authorities. It not only strictly prohibits transactions from high-risk geographic locations but also requires the know-your-customer (KYC) process to be fully proceeded to carry out the verification of identification.

(2) In June 2016, the New York State Department of Financial Services (NYDFS) enacted a final regulation of *Part 504 – Banking Division Transaction Monitoring and Filtering Program Requirements & Certifications* to require that banks must stringently implement the process of transaction monitoring and filtering, including identifying all the sources of documents, and confirming the integrity, correctness and quality.[3] Each regulated institution shall submit the certifications duly executed by its certifying senior officer to the Department by April 15 of each year. A certifying senior officer who files an incorrect or false Annual Certification also may be subject to criminal penalties for such filing.[4]

***2. Supervisory trends of international AML***

**2.1 Heavier penalties**

In recent years, regulators have imposed heavy penalties on those financial institutions that violated or insufficiently enforced related AML regulations. For example, four of 15 banks penalized by the USA regulators from 2012 to 2015 owing to deficiencies in their AML regimes, including BNP (US$8.97 bn), HSBC (US$1.92 bn), UBS (US$1.49 bn) and Commerzbank (US$1.45 bn), were all fined more than one billion US dollars. This shows much heavier penalties for AML violations than before.

**2.2 Enhancing review processes of high-risk customers and off-shore companies**

Financial institutions should rigorously review the transactions conducted by international and local politically exposed persons, other high risk activities, correspondent banking, non-face-to-face clients, clients with high risk, etc. Because of the so-called Panama Papers leak which revealed that thousands of people worldwide owned shell companies, much more attention has been paid to the implementation of KYC and CDD for off-shore companies across countries. Moreover, it is now commonly recognized that financial institutions should take appropriate measures of identifying and verifying ultimate beneficial owners to contain money laundering and other illegal activities.

**2.3 Expanding scope of application of the AML regulations**

With the types of money laundering activities continually evolving, channels of money laundering are no longer limited to financial institutions; nowadays, even real estate transactions, insurance policies, lawsuits, etc., have been the conduits of money laundering. Therefore, lawyers, notaries, other independent law professionals and accountants proceeding specific transactions for or on behalf of clients should bear the responsibility of reviewing clients' identities, maimtaining transaction records, and reporting suspicious transactions.

***3. Taiwan's efforts to address cross-border AML***

To keep in line with international standards and in response to the *APG Mutual Evaluation* in 2018, Taiwan has actively adopted related response measures (please refer to Section 3.3 *Financial Infrastructure* for details).

**3.1 Building a more comprehensive legal system**

In light of the FATF *Recommendations*, Taiwan's *Money Laundering Control Act* was amended and *Terrorist Financing Prevention Act* was enacted to help further complete our AML/CFT system.

**3.2 Establishing the Anti-Money Laundering Office**

To be better prepared for the third round of the *APG Mutual Evaluation* in 2018, the Executive Yuan (Cabinet) established the Anti-Money Laundering Office in March 2017, gathering specialists from different government agencies to show Taiwan has the determination to carry out anti-money laundering tasks. The office is in charge of organizing national policies and the corresponding guidelines for AML, as well as monitoring the preparations for the forthcoming *Mutual Evaluation*.

**3.3 Strengthening the AML/CFT mechanism of financial institutions**

The FSC has enhanced the AML/CFT mechanism of financial institutions in many aspects including regulation and execution, mainly shown as below:

(1) Improving regulations: the three directions governing AML/CFT for banking, insurance, securities and futures sectors and the *Rules Governing Offshore Banking Branches* have been amended respectively. The related directions or orders in accordance with the *Money Laundering Control Act* and the *Terrorist Financing Prevention Act* have been published for financial institutions to comply with.

(2) Supervising the implementation by financial institutions: financial institutions have been required to complete the full assessment of money laundering and terrorist financing risks, and the FSC has put an emphasis on how effective this is implemented during its annual examinations.

(3) Helping financial institutions strengthen their ability of transaction monitoring: the FSC urges relevant financial associations to come up with a list of activities and products with high money-laundering risk for every sector and study the types of suspicious money-laundering transactions, in order to help financial institutions strengthen their ability of transaction monitoring.[5]

(4) Reinforcing training and awareness: financial institutions have been required to enhance employee training in AML/CFT and to have their board of directors, supervisors and senior management actively attend related seminars to help shape a stronger corporate culture against financial crimes.

The CBC has also amended the *Directions Governing Banking Enterprises for Operating Foreign Exchange Business* in accordance with the rules of wire transfer prescribed by FATF to require that banks should verify the identity of clients engaging in foreign exchange business. The CBC's relevant rules about declaration of cross-border transportation of NT dollar (including failure to declare, false declaration, or amount

exceeding the maximum allowed) have been also incorporated into the newly amended *Money Laundering Control Act*.

### *4. Conclusions*

Enhancement of AML work has become an international trend. In addition to staying in line with international standards from a legal system perspective, rigorous implementation of the relevant regulations is needed. Having only regulations in place is not enough to move forward, government agencies have to actively step in, and the persistent effort from senior management of financial institutions is essential to success as well.

Financial institutions should change their profit-oriented business strategy in the past and put emphasis on the mechanism of internal control and compliance. Not only shall the personnel designated for this task shoulder the AML-related responsibilities, but the AML concept should also be firmly rooted in corporate culture to ensure effective implementation with the joint effort of all employees.

Financial institutions ought to keep abreast of international trends from those aspects of financial technology application, talent training, AML processes, etc., and establish comprehensive anti-money laundering mechanisms in a timely fashion to strengthen the capacity of effective responses.

Notes: 1. FATF (2012), *International Standards on Countering Money Laundering and the Financing of Terrorism & Proliferation*, February.

2. *Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001* is known as *USA PATRIOT Act*.
3. NYDFS (2016), *Superintendent's Regulations Part 504: Banking Division Transaction Monitoring and Filtering Program Requirements and Certifications,* June.
4. The finalized regulation of Part 504 has come into force from January 1, 2017; regulated entities should start to submit the Annual Certification in a regular manner from 2018.
5. The Bankers Association collected local and global cases to come up with the draft version of *Typologies of Suspected Money Laundering and Financing of Terrorism Transactions*, which offered dozens of typologies for banks' reference. For example, the total cash deposits into or withdrawals from the same account on the same business day or at the same counter cumulatively reaches above a certain amount; abrupt and large amounts of cash deposits into or withdrawals from a dormant account; immediately after the opening of a dummy account, there are large amounts deposited or remitted in and quickly transferred out, and which is apparently not commensurate with the client's identity and income background; each deposit or withdrawal is of similar amounts and being done in an intensive manner; frequently deposited/withdrawn large amounts into/out of a specific account for others or through different third parties.

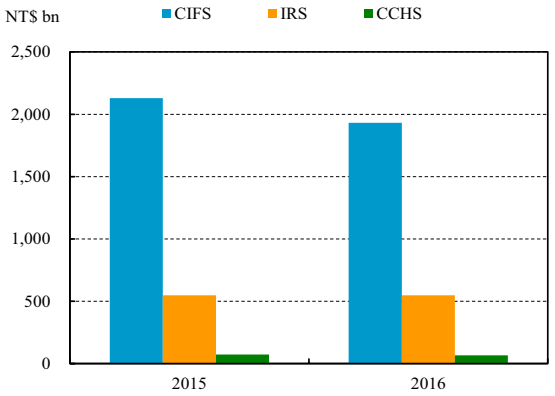
# 3.3 Financial infrastructure

## 3.3.1 Payment and settlement systems

### Overview of three NTD systemically important payment systems (SIPSs) in 2016

The three SIPSs in Taiwan include the CBC Interbank Funds-Transfer System (CIFS), the Interbank Remittance System (IRS) and the Check Clearing House System (CCHS). In 2016, the daily average amount of funds transferred via the CIFS, the IRS and the CCHS were NT$1,931 billion, NT$548 billion and NT$65 billion, respectively. Compared to the previous year, the funds transferred via the CIFS and the CCHS declined, while those via the IRS largely remained the same (Chart 3.59). In particular, the amount of funds transferred via the CBC's CIFS saw a marked decrease of NT$198 billion in 2016. It was mainly because of lower issuance frequency of the CBC's certificates of deposit (CDs) which transfer funds through the CIFS.

**Chart 3.59 Daily average amount of funds transferred via the three SIPSs**

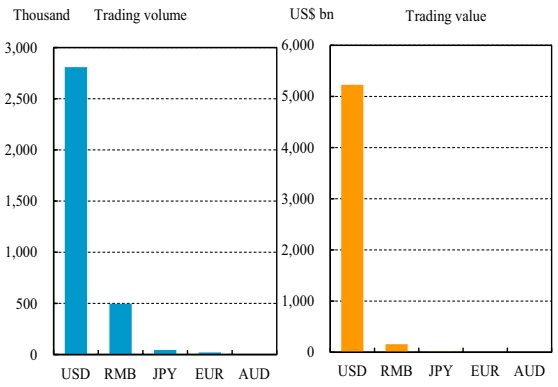



Source: CBC.

### Overview of the foreign currency clearing platform

Since the foreign currency clearing platform was launched on March 1, 2013, it has successively provided US dollar, renminbi, Japanese yen, and euro remittance services, as well as PVP and DVP mechanisms for settlement services. In 2016, Australian dollar remittance was also integrated into this platform. By the end of 2016, the accumulated trading volume and value of funds transferred via this platform recorded

**Chart 3.60 Trading volume and value in the foreign currency clearing platform**




Note : Figures are from March 2013 to the end of 2016.
Source: CBC.

3.37 million and US$5.4 trillion, respectively. The main trading currency on this platform was the US dollar, the average daily transaction value of which registered at US$6.96 billion, while the renminbi was second to the US dollar with a transaction value of US$0.23 billion (Chart 3.60).

After domestic remittance could be settled directly through the foreign currency clearing platform rather than through foreign third parties, remittance fees paid by the public decreased by a great amount of NT$2.1 billion from the first day of platform operation to the end of 2016.

## Measures in response to FinTech development

### *Concerns over the developments of distributed ledger technology*

Blockchain, the distributed ledger technology behind Bitcoin, has gained public attention and become a popular issue in recent years. It provides a decentralized peer-to-peer (P2P) model that may change the current centralized structure of financial operation. Although the blockchain technology possesses advantages of high transparency and easy tracking, there still are some unsolved problems such as processing speed, transaction privacy, and compatibility with existing systems. Accordingly, large global financial institutions currently only carry out conceptual verification or small-scale experimentations in the areas of asset digitization, cross-border payments and trade finance. Broad application of the blockchain technology in finance will take time to achieve.

In view of this trend, the CBC established the Digital Finance Group in 2015 to actively explore the development of the blockchain technology, as well as to study other related issues such as electronic payment developments and virtual currencies (Box 2). Furthermore, to integrate financial industry resources on blockchain experimentations in Taiwan, the FISC, urged by the CBC, invited financial institutions to jointly establish the Financial Blockchain Research and Application Development Committee. This committee will carry out trial runs both in corporate and personal banking and report the trial run results at the end of 2017.

### *The CBC encourages the FISC to assist the financial industry to improve mobile payment services*

In view of the increasing penetration rate of smart phones in Taiwan favoring mobile payment development, the CBC urged the FISC to actively assist financial institutions in

developing mobile payment services. As of the end of 2016, there were 24 financial institutions sharing a mobile payment platform built by the FISC to issue mobile credit cards and cash cards. Using mobile cards, consumers can make payments through 130 thousand domestic sensor-enabled card reading machines, using the near field communication (NFC)[78] functions of mobile devices.

Moreover, in response to the development of cloud technology, the FISC assisted financial institutions to start VISA and MasterCard HCE[79] mobile credit card businesses. By the end of 2016, there were 14 financial institutions operating these businesses. In addition, to meet retailers' needs of using mobile point of sale (mPOS) devices, the FISC provided the mPOS electronic signature and receipt switching service, which accepts payment tools such as credit cards, cash cards and UnionPay cards and helps member banks to expand their mobile card acquiring business.

### 3.3.2 Implementation of the net stable funding ratio in Taiwan

To reinforce banks' liquidity risk management, the Basel Committee on Banking Supervision (BCBS) published *Basel III International Framework for Liquidity Risk Measurement, Standards and Monitoring* in 2010, developing the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR) as globally consistent liquidity indicators. With a view to strengthening the liquidity risk management of domestic banks and keeping in line with international standards, the FSC and the CBC collaboratively promote the implementation of the LCR and the NSFR standards. Among them, the LCR standards were implemented in 2015, while the NSFR regulations, the *Standards Implementing the Net Stable Funding Ratio of Banks,* was jointly promulgated by the FSC and the CBC in December 2016. Furthermore, the NSFR standards, which set the statutory minimum ratio of 100%, will be effective on January 1, 2018. The key NSFR standards in Taiwan are summarized as follows:

- The definition of NSFR: the NSFR is a quantitative indicator for long-term liquidity, calculated by dividing the amount of available stable funding (ASF) by the amount of required stable funding (RSF). ASF is the portion of capital and liabilities expected to be reliable over the time horizon (over one year). RSF refers to the amount of stable funding required, which is a function of the liquidity characteristics and residual maturities of various assets and off-balance sheet exposures held by domestic banks.

[78] NFC is a set of short-range wireless communication technologies that makes contactless and point-to-point data transfers between electronic devices. Based on different card emulation modes, NFC can be classified into three solutions: secure element (SE), host card emulation (HCE) and Tokenizations.

[79] With HCE, customers are allowed to store their card account details in the merchants' secure cloud servers. HCE enables mobile applications to conduct payments by providing virtual representation of account identities.

$$\text{NSFR} = \frac{\text{Available amount of stable funding (ASF)}}{\text{Required amount of stable funding (RSF)}} \times 100\%$$

- Statutory minimum standards: the NSFR of domestic banks should not be lower than 100%. However, in view of the financial conditions and regulatory considerations, the FSC may adjust the ratio after consulting the CBC.
- Reporting mechanism: domestic banks should calculate and report the NFSR on a quarterly basis, and inform the FSC and the CBC immediately when the ratio falls below the statutory minimum.
- Exemption: local branches of foreign banks and Mainland China's banks, as well as those banks which are taken over, ordered to suspend operations or liquidated by the FSC, are exempted from the application of the NSFR.

### 3.3.3 Promoting financial technology development in Taiwan

To promote Taiwan's financial technology (FinTech) development and provide a broader, safer and more predictable experimentation environment under the consideration of financial market order and consumer protection, the FSC amended related regulations and proposed to establish an innovative experimentation mechanism. These efforts aim to encourage Taiwan's financial services and related industries to take advantage of innovative technology to enhance the efficiency of financial services and to facilitate the development of innovative financial activities.

#### *Amending regulations to allow banks to invest in information service and financial technology enterprises*

According to Article 74 of the *Banking Act* and other related regulations, banks may not invest in more than one entity engaging in the same line of business. However, to encourage FinTech development in Taiwan, the FSC amended related regulations in December 2016, stipulating that a bank investing in information service enterprises and financial technology enterprises is not subject to the restrictions if the main business activities of these enterprises are different from the other entity in the same business line the bank has invested.

In addition, the FSC expanded the business scopes of financial technology enterprises invested by banks to include risk management, anti-money laundering, cyber security, transaction security, consumer protection, and P2P lending platforms, in response to the latest

FinTech developments and in order to encourage the financial industry to exploit FinTech to enhance their risk management and provide innovative financial services.

### Establishing the FinTech innovative experimentation mechanism

To encourage Taiwan's financial services and related industries to take advantage of innovative technologies to enhance efficiency, quality and inclusion of financial services, the FSC planned to establish a FinTech innovative experimentation mechanism and drafted the *Financial Technology Innovative Experimentation Act* in December 2016. The draft bill stipulates the application, review, supervision, management and consumer protection procedures for innovation experimentation, as well as regulatory adjustments and liability exemption during the experimentation period (Box 3). The draft bill was approved by the Executive Yuan and was forwarded to the Legislative Yuan for review in May 2017.

## 3.3.4 Enhancing Taiwan's AML/CFT mechanism

To formulate a more comprehensive AML/CFT system and keep pace with the upcoming third round of the *APG Mutual Evaluation* process at the end of 2018, Taiwan has progressively adopted related response actions.

### Enhancing the completeness of fundamental elements of the legal system

#### *Enacting Terrorist Financing Prevention Act*

To build a more comprehensive CFT system, and after consulting the international standard of FATF *Recommendations*, the *United Nations (UN) International Convention for the Suppression of the Financing of Terrorism*, and the *UN Security Council Resolutions* related to countering the proliferation of weapons of mass destruction and the financing of terrorism, Taiwan enacted the *Terrorist Financing Prevention Act* in July 2016. This *Act* stipulates that the Executive Yuan is the authority in charge of policy deliberations related to Taiwan's terrorism financing prevention policymaking and oversight. Furthermore, the Terrorism Financing Prevention Review Board has been established by the Ministry of Justice, which is the competent authority, to deliberate on the sanction list of terrorist groups and terrorists as well as related measures.[80]

[80] The Minister of Justice is the chair and an ex-officio member of the Terrorism Financing Prevention Review Board. The other members are the deputy heads of the National Security Bureau, the Ministry of the Interior, the Ministry of Foreign Affairs, the Ministry of National Defense, the Ministry of Economic Affairs, the Financial Supervisory Commission, and the Central Bank.

### *Amending the Money Laundering Control Act*

To set up a sound AML system, ensure orderly money flows, and align with international standards, Taiwan overhauled the *Money Laundering Control Act* in December 2016 according to the FATF *Recommendations*.[81] The key amendments are as follows:

- To align Taiwan's definition of elements of a money laundering crime with international regulations, the *Act* now stipulates that allowing another person to use one's name or bank account to engage in money-laundering through a shell company or a real estate transaction is considered a crime.

- To lower the threshold for felony from crimes punishable by a minimum of not less than five years imprisonment to ones punishable by a minimum of not less than six months imprisonment.

- To increase transparency in money flows, financial institutions are obligated from all aspects to perform customer due diligence, to maintain records, and to report suspicious transactions. Financial lease businesses, as well as nonfinancial businesses and professions are also obligated to do the same.

- To better control borders and track the flow of money, the *Act* now additionally requires customs declarations for New Taiwan dollars and currencies issued by Hong Kong or Macau, gold over a certain value, and other objects that may potentially involve money laundering. Any untruthful declarations are subject to penalty or confiscation. In addition, items mailed or sent by express/cargo delivery must be declared to enhance the tracking and monitoring of cash flows as well.

## Setting up an Anti-Money Laundering Office

The Anti-Money Laundering Office was established by the Executive Yuan in March 2017 to organize AML/CFT polices and execution strategies, to perform risk assessment, to monitor the preparations for the third round of the *APG Mutual Evaluation* in 2018, and to show Taiwan's determination in carrying out AML task.

[81] The amended *Money Laundering Control Act* came into force in June 2017, six months after promulgation.

### Strengthening the regulations of the AML/CFT mechanism

The FSC has consulted the latest international standards and published related directions or orders in accordance with the newly amended *Money Laundering Control Act* and the *Terrorist Financing Prevention Act*. The three directions governing AML/CFT for banking, insurance, securities and futures sectors have been revised respectively. The key amendments for banking include:

- Enhancing board governance, the three-layers of defense for internal control, and training & education to foster a culture of AML/CFT compliance.
- Strengthening the management of overseas affiliates by bank headquarters through group-level AML/CFT programs and designated overseas personnel for AML/CFT.
- Enforcing the regulations of on-going account and transaction monitoring to help banks strengthen their ability to identify suspicious transactions.
- Requiring additional measures to be taken over people on the sanction list, politically exposed persons, and correspondent banking activities in order to reduce AML/CFT risks.

The CBC has also amended the *Directions Governing Banking Enterprises for Operating Foreign Exchange Business* in accordance with the rules of wire transfer prescribed by FATF, which requires banks to obtain the related information of remitter and beneficiary while operating inward and outward remittance activities of foreign exchange. The related transaction documents and records as well as all the information for verifying clients' identification should be kept for at least five years.

## 3.3.5 Synchronizing Taiwan's accounting standards with international norms by adopting IFRS 9 Financial Instruments

In response to the development of the International Financial Reporting Standards (IFRS), Taiwan will further synchronize its accounting standards with international norms by adopting IFRS 9 *Financial Instruments*, starting from January 1, 2018, as scheduled. General industries and financial industries such as financial holding, banking, insurance and securities sectors are required to apply this standard. IFRS 9 is significantly different from current accounting treatments of IAS 39 in the classification of financial assets and the recognition of expected credit losses, for example: (1) IAS 39 financial assets should be classified based on

the intention and ability of the entity,[82] whereas IFRS 9 bases the classification of financial assets on the contractual cash flow characteristics and the entity's business model for managing the financial assets;[83] and (2) IAS 39 adopts an incurred loss model to recognize credit losses, whereas IFRS 9 bases the new impairment requirement on an expected credit loss model.

With the adoption of IFRS 9, financial institutions should evaluate potential impacts and take preemptive actions as early as possible. To this end, the FSC has successively taken assisting measures, including: (1) setting up a joint taskforce on implementation of new IFRSs to tackle possible problems in practices arising from IFRS 9 adoption; (2) supporting the Bankers Association to develop the *Guidance on IFRS 9 Impairment Evaluation Methodology* and related evaluation examples and documents, as well as quarterly review of the implementation of insurance companies; and (3) helping insurance companies clarify the practical issues on the application of the overlay approach with the assistance of the joint taskforce on implementing new IFRSs.

In view of the possible greater effects of IFRS 9 adoption on the financial sector, financial institutions should make adequate preparation to address this impact, including a thorough understanding of the standards, evaluation of the accounting policy, investment policy and internal control systems to identify necessary adjustments, and enhancement of communication with those who are in charge of corporate governance. Financial institutions should make timely release of material information if the result of such evaluation indicates significant impacts on shareholders' rights.

## 3.3.6 Foreign exchange regulation amendments

### Relaxing foreign exchange regulations of banks

In order to promote development of the financial services industry in the context of financial globalization and liberalization, the CBC continued to relax foreign exchange regulations of banks in 2016 as follows:

- To promote Taiwan's development into an offshore renminbi market and to carry out the internationalization and product diversification of the futures market, banks have been allowed to conduct declarations of foreign exchange settlement for transactions of

[82] An entity is required to classify its financial assets into one of the following categories: financial assets at fair value through profit or loss, available-for-sale financial assets and held-to-maturity investments.

[83] An entity is required to classify its financial assets into one of the following categories: financial assets at amortized cost, fair value through other comprehensive income, and fair value through profit or loss.

renminbi/USD options listed on the Taiwan Futures Exchange (TFE) and conducted by the TFE or futures firms since June 27, 2016.

- In September 2016, the CBC revised the *Directions for Issuance of Foreign Currency-Denominated Negotiable Certificates of Deposit by Banks* to encompass the issuance of NCDs denominated in Australian dollars.

### Relaxing foreign exchange regulations related to insurance companies

To help insurance enterprises to expand their business and capture business opportunities, the CBC amended the *Regulations Governing Foreign Exchange Business of Insurance Enterprises* twice in March and December 2016, including: (1) relaxing the regulation on business scope related to the subject matter insured of non-life insurance products denominated in foreign currencies to be stipulated separately by competent authorities; (2) regulating the application procedures and administrative compliance of insurance companies which participate in foreign currency syndicated loans; (3) announcing the exceptions for NTD receipt and payment that may be used for foreign currency-denominated non-life insurance policies and the relevant settlement matters.

Accordingly, the relevant settlement and payment matters of non-life insurance policies denominated in foreign currency conducted by insurance enterprises will become more accurate and convenient. In addition, the simplification of application documents for foreign exchange business conducted by insurance enterprises will also help boost the innovation of insurance products.

### Relaxing foreign exchange regulations related to securities firms

In order to strengthen the competiveness of securities firms, expand their business scope, and provide customers with additional services, the CBC continued to relax foreign exchange regulations of securities firms in 2016 as follows:

- The CBC revised the *Regulations Governing Foreign Exchange Business of Securities Enterprises* in March 2017, which allowed securities firms to conduct NTD spot foreign exchange transactions, expanded foreign exchange financial derivatives business, and simplified application procedures for several related businesses.

- In order to conform with the deregulation of NTD spot foreign exchange transactions, the CBC promulgated the *Directions for Domestic Security Firm Approved to Conduct*

*Foreign Exchange Business while Assisting Customers to Declare Foreign Exchange Receipts and Disbursements or Transactions* in March 2017. Accordingly, the operations for foreign exchange business by securities firms are expected to be more precisely regulated and effectively managed so as to facilitate compliance with the *Regulations Governing the Declaration of Foreign Exchange Receipts and Disbursements or Transactions*.

Given that securities firms are allowed to conduct the above-mentioned businesses, it will provide investors with more diversified financial services, help enhance the quality and quantity of securities businesses, and assist the long-term development of securities enterprises.

## Box 2
## Electronic payment developments in Taiwan and virtual currency issues

Taiwan has already established a comprehensive electronic payment and clearing system to ensure the security and efficiency of large-value payments. Moreover, in recent years, under the cooperation between government and private sectors and gradual change in consumer payment behavior, electronic retail payment services are experiencing a vigorous development with increasing diversity.

### *1. Electronic payment developments in Taiwan*

Currently, Taiwan's diversified payment instruments under electronic payment and clearing systems can be divided into three categories, including: (1) electronic funds transferring through bank accounts; (2) credit cards and cash cards for retail consumption; and (3) electronic money with both top-up and consumption functions. In 2016, the total transactions by these three electronic payment instruments reached NT$615 trillion, 36 times the size of GDP.

#### 1.1 Electronic funds transfers

The transaction amount of electronic funds transferring through bank accounts is enormous, occurring mainly through the CBC Interbank Funds Transfer System (CIFS) and the Interbank Remittance System (IRS) operated by the Financial Information Service Co., Ltd (FISC). In 2016, the total amounts settled through the CIFS and the IRS were NT$477 trillion and NT$135 trillion, respectively.

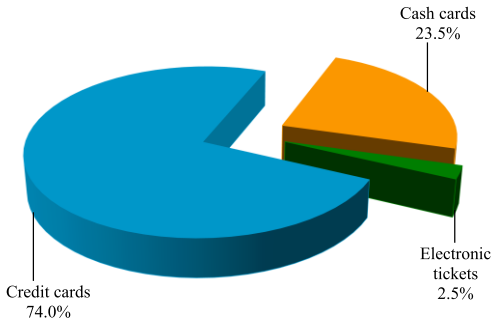
#### 1.2 Credit cards and cash cards

With financial payment services gaining popularity in Taiwan, electronic payment instruments such as credit cards and cash cards are widely used. Total consumption via credit and cash cards in Taiwan was NT$3 trillion in 2016, with credit cards accounting for about 74% of it.

#### 1.3 Electronic money

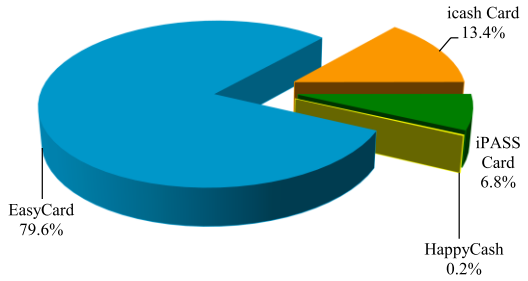
While the transaction amount of electronic funds transferred, credit cards, and cash cards have seen enormous growth, the value of consumption paid for by electronic money remains low (Chart B2.1). Electronic money includes electronic tickets such as EasyCard and stored-value accounts of electronic payment institutions (EPIs) approved by the FSC. Currently, the electronic tickets including EasyCard, icash Card, iPASS Card and HappyCash Card are mainly issued by non-banks.[1] In 2016, the total consumption

**Chart B2.1 Consumption by electronic money in 2016**




Sources: FSC and FISC.

**Chart B2.2 Consumption by electronic tickets in 2016**




Sources: FSC and FISC.

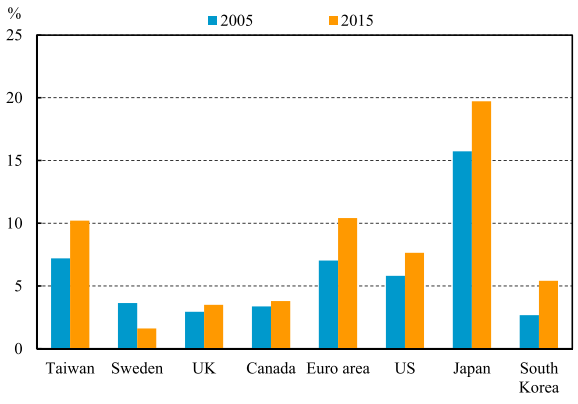
amount paid for by electronic tickets was NT$74.5 billion, with EasyCard contributing nearly 80% (Chart B2.2). Until recently, the FSC has approved five non-bank EPIs including O' Pay, GAMA Pay, Pay2go, Interpay and ezPay, yet their trading volumes remained small.

***2. The CBC has continuously assisted the development of electronic payment***

In recent years, the banknote issuance to GDP ratio has shown an upward trend in most countries, except for Sweden. Even in economies with well-developed electronic payment systems such as the US, South Korea, the euro area and Japan, the public is still using cash frequently. This shows that cash continues to be an important payment instrument for retail consumers (Chart B2.3).[2]

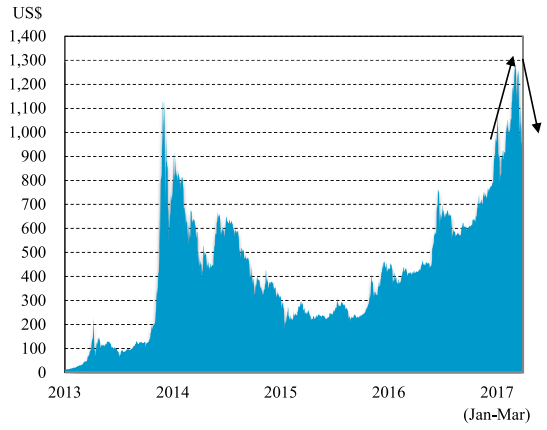
Taiwan has diversified and convenient electronic payment instruments. However, apart from credit cards, most of the public are used to paying by cash for daily purchases. In order to promote electronic payment, the CBC has urged the FISC to assist in the development of payment instruments such as cash cards payment and mobile payment. In particular, for mobile payment, the FISC will provide a full scope of payment services for bank account transferring,

**Chart B2.3 Banknote issuance to GDP ratio in major countries**



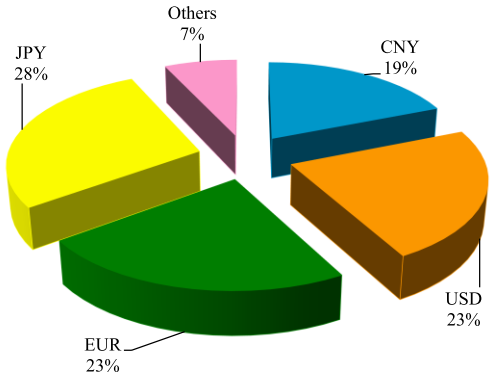

Sources: AREMOS database and CPMI (2016).

**Chart B2.4 Bitcoin price**




Source: bitcoin charts.

**Chart B2.5 Bitcoin trading in different currencies**




Note: Figures are for March 2017.
Source: bitcoin charts.

fee and tax payment, and shopping, and establish a secure and convenient identity authentication mechanism.

### *3. Virtual currency issues*

From 2009 onwards, driven by the development of internet technology, many virtual currency systems have been created. One of the most notable examples is bitcoin, which applies the blockchain technology to build a decentralized P2P network.

#### 3.1 Bitcoin price fluctuated significantly

According to CoinMarketCap, there are over 650 kinds of virtual currencies as of the end of March 2017, with total market value of about US$25 billion. Within them, bitcoin accounts for 67.1% of total market value. In March 2017, the bitcoin price is about US$1,100 per unit, with circulation of more than 16 million units. In the past, the renminbi was the main bitcoin trading currency, accounting for over 80% of the total. However, after Mainland China's government strengthened the supervision on bitcoin trading platforms to prevent the public from using bitcoin to circumvent capital control, the renminbi bitcoin trading market saw a significant decline in trading volume and extremely high price volatility (Chart B2.4). As a result, in March 2017, the Japanese yen became the largest trading currency in the bitcoin market, accounting for 28%, while the US dollar and the euro each accounted for 23%, and the renminbi only made up 19%[3] (Chart B2.5).

### 3.2 Virtual currencies are not currencies

From a legal and economic point of view, the IMF considers virtual currencies not yet satisfying the definition and characteristics[4] of a currency. In addition, according to an ECB survey, owing to low usage and very limited linkage with the real economy, bitcoin will not impact the operation of monetary policy and financial markets.[5] The ECB also considered bitcoin to be more like a value transfer instrument rather than a payment instrument.

Moreover, the US Securities and Exchange Commission (SEC) rejected the listing of a bitcoin exchange-traded fund (ETF) on the Bats exchange in March 2017, since it was considered inconsistent with the *Securities and Exchange Act* requirement that the rules of a national securities exchange should be designed to prevent fraudulent and manipulative acts, as well as to protect investors and promote public interest. Currently, the virtual currency regulations in the international arena are focusing on the supervision of its trading platforms. For example, the platforms should register or obtain a license to prevent from hiding users' identities through the network of virtual currencies and conducting illegal actions such as money laundering and terrorist financing.

### 3.3 The CBC reminded the public to pay attention to virtual currency investment risk and initiated research on digital currency issues

Considering that bitcoin has the characteristics of high price volatility, high speculation and significant investment risk, the CBC and the FSC jointly issued a press release on December 30, 2013, stating that virtual currencies such as bitcoin are highly speculative commodities and reminding investors of the related risk-taking issue. The FSC also issued a press release on January 6, 2014, requiring financial institutions not to receive or cash out bitcoin, as well as not to provide bitcoin-related services on ATMs. The Ministry of Justice is also paying attention to anti-money laundering issues relating to bitcoin.

With respect to the issue of applying new technologies to introduce digital currencies, the CBC has set up a Digital Finance Group to conduct related research. To date, no central bank has issued digital currency yet. Although some central banks, such as the Bank of England and the People's Bank of China, have initiated some research on digital currencies, technique, business model, security and privacy protection issues remain unsolved. In March 2017, Jerome H. Powell, a governor on the board of the US Federal Reserve System, publicly expressed his conservative attitude about central banks issuing digital currencies. His reason was mainly that bitcoin technology development in the

short run still cannot prevent global hacker attacks, and users' serious privacy concerns about digital currencies could arise if public transactional records were in the hands of a central bank or government.[6]

### *4. Conclusion*

In addition to continuing to promote the development of domestic electronic payment, the CBC has set up a group to monitor the latest developments and study the emerging technologies including blockchain, to keep in step with evolving financial technology trends. Moreover, the CBC has planned to run proof of concept tests with the collaboration of the academia and related industries, in order to assess the feasibility of applying emerging technologies to financial services.

Notes: 1. The stored value balance in non-banks was NT$6.94 billion, while that in banks was NT$0.04 billion.

2. See CPMI (2016), *Statistics on Payment, Clearing and Settlement Systems in the CPMI Countries – Figures for 2015*, BIS, December.

3. Website data of CoinMarketCap and bitcoin charts, retrieved on February 18, 2017.

4. See IMF (2016), *Virtual Currencies and Beyond: Initial Considerations*, IMF Staff Discussion Notes, No.16/3.

5. See ECB (2015), *Virtual Currency Schemes - A Further Analysis*, ECB Publication, February.

6. See the speech by Jerome H. Powell, the governor of the Fed, on March 3, 2017, *At Blockchain: The Future of Financial and Capital Markets?*

## Box 3
## Establishment and development of FinTech innovative experimentation mechanism

In response to financial technology (FinTech) development, the British Financial Conduct Authority (FCA) published the Regulatory Sandbox report in 2015, providing an experimentation environment for FinTech innovative products, services or business models. Thereafter, Singapore, Hong Kong and Australia successively established similar experimentation mechanisms. By definition, a regulatory sandbox is a supervisory approach that provides a safe space where innovative products, services and business models can be tested practically under a specific, risk-controllable and risk-recognizable environment with legal exemptions during the experimentation period.

For the purpose of encouraging Taiwan's financial services and related industries to take advantage of innovative technologies, as well as enhancing efficiency and quality of financial services, the FSC promulgated the draft bill of the *Financial Technology Innovative Experimentation Act*, to build an experimentation mechanism similar to a financial regulatory sandbox. The aim is to promote Taiwan's FinTech innovation while ensuring financial market order and consumer protection at the same time. The following are the latest developments of financial regulatory sandboxes in major economies and its implementation progress in Taiwan.

### *1. The latest developments in major countries*

Currently, most of the countries that have set up regulatory sandboxes have the legal systems of common law. Among them, the UK, Singapore and Australia have more concrete and detailed sandbox regulations, mainly because judges of common law systems are bound to the precedents, known as the doctrine of stare decisis. Therefore, the competent authorities could set up standards or plans based on their legal mandate without going through legislative procedures. By contrast, in countries with statutory legal systems such as Japan, South Korea and Taiwan, legislative authorization is necessary if such an experimentation mechanism is to be set up.

The UK was the first country to propose a regulatory sandbox, with the British FCA publishing the Regulatory Sandbox report in November 2015. Singapore, Hong Kong and Australia followed suit shortly after. Singapore essentially followed the UK's principles, while Australia provided start-ups a 12-month testing period after notifying the competent authority. In Hong Kong, the competent authority does not stipulate specific operational guidelines, but provides application review and assistance on a case

by case basis. The FinTech experimentation mechanisms in these countries are summarized in Table B3.1.

In addition to the aforementioned economies, other Asian countries also made some progress in establishing their own financial regulatory sandboxes. Thailand and Malaysia issued related guidelines or frameworks in 2016,[1] and Indonesia launched a FinTech office in charge of promoting FinTech development in November of the same year. South Korea's Financial Services Commission (FSC) established a FinTech Bridge with the British FCA to enhance bilateral cooperation. Japan enacted the *Industrial Competitiveness Enhancement Act* to encourage firms to develop experimental business and services in the fields where existing regulatory scope is unclear, and will revise relevant existing regulations according to the experimental results.

**Table B3.1 Comparison of innovative experimentation mechanisms in major countries**

| Items | The UK | Singapore | Australia | Hong Kong |
|---|---|---|---|---|
| The competent authority | Financial Conduct Authority (FCA) | Monetary Authority of Singapore (MAS) | Australian Securities and Investments Commission (ASIC) | Hong Kong Monetary Authority (HKMA) |
| Titles of guidelines (Release date) | Regulatory Sandbox (2015.11) | FinTech Regulatory Sandbox Guidelines (2016.11) | Regulatory Guide 257 (2017.2) | FinTech Supervisory Sandbox (2016.9) |
| Applicable firms | Authorized and unauthorized financial firms | Financial institutions and non-financial institutions | Non-financial institutions | Authorized financial institutions |
| Review period | 3 months | • 21 work days for document review<br>• Qualified applications will step to an evaluation stage without a stipulated time period | Testing period commences 14 days after the ASIC is notified | Not stipulated |
| Testing period | 3-6 months | 6 months (extension possible) | 12 months (no extension) | Case by case |
| Size of clients | Small scale (limited number of clients) | 50 clients | • 100 retail clients<br>• No limits for wholesale clients | Limited number of clients (not specified) |
| Application criteria | • Firms involved in FinTech<br>• Genuine innovation<br>• Beneficial to customers | • Proposing financial products or services that are unavailable currently | • The maximum exposure is AUD$5 million for all clients and AUD$10,000 for | • Clear definitions about the scope and phases of the trial |

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|---|---|---|---|---|
| | • When experiment is needed<br>• Providing related research reports | • Applying new technology to financial products and services | individual clients<br>• Adequate compensation arrangements<br>• Establishing mechanisms to solve consumer disputes<br>• Conforming to requirements of information disclosure and business conduct | • Customer protection measures<br>• Risk management mechanisms<br>• Preparedness and follow-up monitoring |

Sources: ASIC (2017), FCA (2015), HKMA (2016) and MAS (2016).

### *2. Implementation progress in Taiwan*

To facilitate the development of FinTech innovation in Taiwan, a number of legislators put forward several drafts of law amendments related to regulatory sandbox establishment at the end of 2016. The Finance Committee of the Legislative Yuan also proposed to amend eight pieces of financial laws[2] such as the *Banking Act* and the *Insurance Act* to incorporate articles related to FinTech innovative experimentation mechanisms after a review meeting held in December 2016. However, to ensure the thoroughness of legislation, the FSC formulated a draft of the *Financial Technology Innovative Experimentation Act* after discussing with related agencies, with inputs from financial and technology industries as well. This draft has been approved by the Executive Yuan and was submitted to the Legislative Yuan for review in May 2017.

The aforementioned draft covered FinTech innovation experimentation application, review, participant protection, regulatory adjustments and exemption of legal liabilities during the experimentation period, as summarized in Table B3.2.

**Table B3.2 Contents of the *Financial Technology Innovative Experimentation Act***

| Items | Contents |
|---|---|
| Applicable clients | Natural person, sole proprietorship or partnership company and juristic person can apply for the permit of engaging in the experimentation. |
| Review mechanism | • The competent authorities should convene meetings to review the application and experimentation outcomes. The reviewers include experts, scholars and related agencies coming from finance, technology and other related areas.<br>• When required documentation is submitted, the reviewing process should be completed within 60 days. The review criteria include innovations, financial service efficiency, complete risk assessment and participant protection. |
| Experimentation period | The experimentation period is six months and the applications can be |

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|---|---|
| | extended for an additional six months. If the applicants need to adjust business qualification in accordance with the regulatory requirements, they may apply for another six months of experimentation. |
| • Participant protection | • Applicants should provide protective measures and opt-out mechanisms for participants and stipulate experimentation scope as well as rights and obligations in the contracts consented by participants.<br>• Any civil dispute arising between applicants and participants will be mediated by the Financial Ombudsman Institution. |
| • Regulatory measures after experimentation | • Applicants should inform the competent authority to convene an appraisal meeting within one month after the experimentation is finished. The appraisal meeting should accomplish the evaluation process within 60 days.<br>• Taking into account the experimentation process, the competent authority should review and revise financial regulations as necessary, as well as providing assistance to the applicants for their startup, strategic cooperation or referral to other consulting units. |
| • Exemption from applicable regulations and legal obligations | • The competent authority and other agencies could agree to grant exemption from applicable regulations and administrative directives.<br>• The draft provides the exemption from criminal and administrative obligations in special licensed financial businesses within the scope of experiments authorized by the competent authority. |

Source: Executive Yuan.

### *3. Conclusion*

(1) As FinTech development has evolved rapidly in recent years, difficulties regarding financial law or regulation adoptions faced by some innovative business models might hinder the development of the innovative activities. Establishing innovative experimentation mechanisms is expected to provide innovative financial products and services in a safe experimentation environment by offering legal exemption, with the benefit of encouraging financial innovation.

(2) Currently, those countries that established innovative experimentation mechanisms have formulated related operational guidelines and started to accept applications. However, their effectiveness and impacts on banks still warrant close attention.

(3) Development of financial technology innovation could raise the accessibility, usage and quality of financial services and promote financial inclusion. However, when encouraging innovative experimentation, the competent authority should enhance consumer protection, maintain fair competition in the market and ensure they do not undermine financial stability.

Notes: 1. The Bank of Thailand issued the *FinTech Regulatory Sandbox Guidelines draft* in September 2016. Bank Negara Malaysia also issued *Financial Technology Regulatory Sandbox Framework* in October 2016.

2. The eight pieces of financial Laws include *Banking Act, Insurance Act, Securities and Exchange Act, Futures Trading Act, Trust Enterprise Act, Securities Investment Trust and Consulting Act,*

*Act Governing Issuance of Electronic Stored Value Cards* and *The Act Governing Electronic Payment Institutions.*

References: 1. The *Financial Technology Innovative Experimentation Act* draft, which was sent by the Executive Yuan to the Legislative Yuan for review on May 5, 2016.
2. Australian Securities and Investments Commission (2017), *Regulatory Guide 257*, February.
3. FCA (2015), *Regulatory Sandbox*, November.
4. Hong Kong Monetary Authority (2016), *FinTech Regulatory Sandbox*, Press Release, September.
5. Monetary Authority of Singapore (2016), *FinTech Regulatory Sandbox Guidelines*, November.