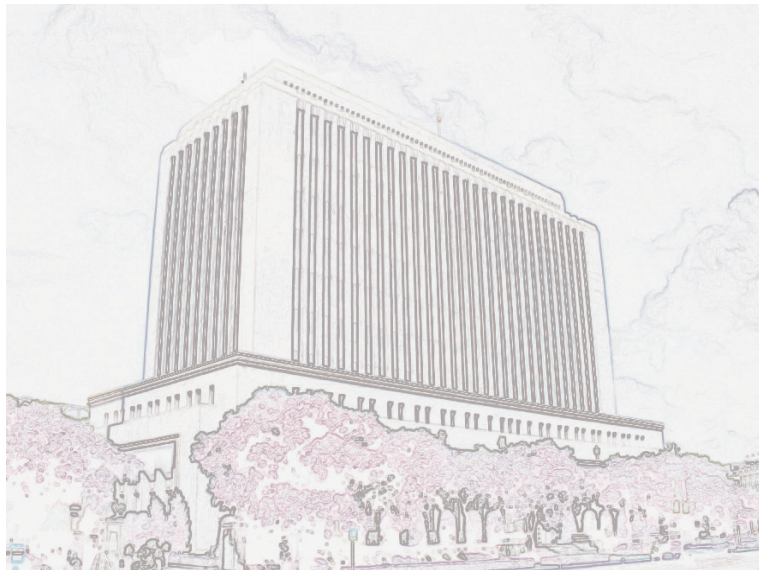


The Central Bank of China (Taiwan)

PURPOSES AND FUNCTIONS

(1992-2004)



The Central Bank of China (Taiwan)

Taipei

2006

Foreword



After the Cold War, many countries embarked upon political and economic liberalization. This development, followed by the hi-tech revolution, promoted the trend toward globalization. As the 21st century unfolds, globalization has proceeded unabated. Flows of information, goods, services and financial assets, and personal interactions have all continued speeding up across borders.

Although globalization brings some wonderful changes to the world, it also exacerbates certain conditions via short-

term capital flows. Short-term capital movements are often volatile. They could disseminate the adverse impact of a panic from one market to neighboring countries or even the whole world in a very short period of time.

The Asian financial crisis broke out in Thailand in 1997. During the crisis period, large capital outflows from Asia exerted a downward pressure on the New Taiwan dollar (the NT dollar), tightened Taiwan's financial conditions, and threatened the stability of the economy. The Central Bank of China (CBC) reacted to these conditions by removing distortions from the foreign exchange market and adopting an accommodative monetary policy. As a result, Taiwan was largely unscathed by the crisis.

The Asian financial crisis also highlighted the importance of financial soundness. In the era of globalization, financial soundness is essential in protecting an economy from the contagion of crises in other countries. The financial system performs important functions in the economy. It settles payments and channels saving into investment. Confronting globalization and financial innovation, financial institutions need to handle increasingly complicated risk management problems.

In sum, volatile international capital flows and interwoven financial risks could pose serious threats to economic and financial stability. Based on this line of reasoning, the CBC seeks to improve policy formulation and implementation, and institutional arrangements to achieve the goals set out in the *Central Bank of China Act*.

Regarding monetary policy operations, the CBC reformed the reserve requirement system and open market operations in the past decade. Following the bursting of the IT bubble, it cut the interest rates 15 times from December 2000 to June 2003 and launched a preferential housing loan program in August 2000 to stimulate the economy. From June 2001 onwards, the CBC encouraged banks to introduce adjustable rate mortgages and adopt the new base rate lending system to increase the transparency and flexibility of interest rate adjustments.

Regarding the foreign exchange market, the CBC put equal emphases on management and development. On the one hand, to ensure orderly conditions in the market, the CBC established a real-time reporting system for large-value transactions. On the other, the CBC expanded the market by deregulating cross-border capital movements. Furthermore, the CBC helped introduce new financial products, expand the Taipei Foreign Currency Call-loan Market, and promote offshore banking units as funding centers for overseas Taiwanese businesses.

Regarding currency issuance, the CBC introduced a brand new series of NT dollar notes sequentially from July 2000 to July 2002 in denominations of 1000, 500, 100, 200 and 2000 dollars. Major changes included the denomination, tint, size, illustration, and anti-counterfeit features.

The CBC also modernized the payment system. It established the CBC Interbank Funds-Transfer System (CIFS) in 1995 and required all payments in the system to be settled on a real-time gross settlement basis in 2002 to minimize settlement risk. The CBC also promoted the use of electronic checks and strengthened the supervision of the payment systems.

In terms of its function as an agent of the treasury, the CBC reformed the Fiscal Agency System to reduce of agent banks' workload of handling the receipt and disbursement of funds. Moreover, the CBC established the book-entry government bond system based on both the experience of advanced countries and the characteristics of domestic bond markets. It also established the electronic bidding system to increase the efficiency of government securities trading.

In the area of financial examination, the CBC adopted risk-oriented procedures to accommodate financial innovation and improve risk management. The incorporation of advanced information technology has greatly increased the efficiency of financial examination.

To promote public awareness of the CBC's operations, the CBC published the first edition of *The Central Bank of China: Purposes and Functions (1961-1991)* in 1996. Many changes have taken place since then. To keep the public abreast of those developments, an updated edition was published in 2004. It covers such topics as institutional arrangements, monetary policy, foreign exchange management, currency issuance, the payment system, treasury management and financial examination in nine chapters. It also includes charts and illustrations, making it more accessible to general readers. We hope that through this book the public will gain a better understanding of the CBC's operations and the efforts it has made to promote financial stability and economic development. We apologize in advance for any possible errors or omissions and welcome any comments and suggestions.

More than 1,300 years ago, the Tang dynasty poet Wang Po wrote, "True friendship shortens the physical distance between people." In the era of globalization, we can now easily interact with people around the world. Looking into the future, international economic and financial systems will continue to integrate and become increasingly interdependent. In this new and challenging environment, the CBC will continue, as ever before, devoting itself to achieving its goal to maintain financial and price stability in Taiwan.

A handwritten signature in black ink, appearing to read 'Fai-nan Perng', written in a cursive style.

Fai-nan Perng
Governor

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Chapter 1 Overview

Since the Central Bank of China (CBC) was founded in 1924, it has gone through various forms of restructuring. In 1949, the civil war in China necessitated the CBC's move to Taiwan and temporary closure. It resumed its operation in 1961 and has been under the jurisdiction of the Executive Yuan (Cabinet) since 1979. Over the past forty years in Taiwan, the top priority of its policy objectives has changed from promoting economic development to carrying out financial reforms and maintaining price and financial stability. This chapter introduces the CBC's roles and responsibilities with separate sections on background, operational objectives, organization, and major operations.

Section 1 Background

The CBC was founded in Guangzhou, China in 1924 and began operating as a national central bank four years later. In 1949, following the move of the central government, the CBC relocated from China to Taiwan but did not resume operation until 1961. At that time, Taiwan experienced trade deficits and a shortage of foreign exchange. The government adopted an export expansion strategy to pursue high economic growth. The CBC kept real interest rates positive to encourage savings and allocated available financial resources via administrative efforts. It also provided export-loan accommodations to banks to promote export.

During the 1970s when the world suffered oil crises, Taiwan faced stagflation. To keep inflation in check, the CBC increased interest rates, adopted selective credit controls and restricted capital inflows. In addition to maintaining price stability, the CBC also accommodated bank loans for financing public infrastructure projects to promote economic growth. As for financial reforms, the CBC together with the Ministry of Finance (MOF) established the money market in 1975. The CBC also replaced the fixed exchange rate regime with a managed float in 1978 and established the foreign exchange market in 1979. On the institutional side, the CBC entered a new era in 1979 when the revised *Central Bank of China Act* took effect. The CBC became under the jurisdiction of the Executive Yuan instead

of the Office of the President. The shift also made the CBC accountable to the Legislative Yuan (Congress).

In the 1980s, the CBC speeded up financial liberalization and internationalization. Interest rate deregulation, which began in 1980, was completed in 1989. Foreign exchange controls on current and capital account transactions began to be relaxed in 1987. The Taipei Foreign Currency Call-loan Market was established in 1989. Along with rapid financial developments, Taiwan's trade surplus also rapidly increased. The huge trade surplus together with a surge of capital inflows resulted in appreciation pressure on the New Taiwan dollar (the NT dollar) and excess liquidity in the financial system. In response, the CBC adopted a policy of gradual appreciation to enable exporters to adjust to the impact of a rising NT dollar. It also stemmed asset price inflation by increasing the discount rate, raising reserve requirements, issuing negotiable certificates of deposit, and exercising selective credit controls.

In the 1990s and early 2000s, a sluggish housing market, cross-strait tensions, the Asian financial crisis, and the bursting of the global IT bubble were major challenges to Taiwan's financial stability. The CBC responded by using market-oriented policy instruments, such as open market operations. The CBC also reformed the reserve requirement system to increase the competitiveness of banks, modernized payment systems, furthered the deregulation of capital account transactions, introduced book-entry government securities, and issued a new series of NT dollar bills and coins. In addition, to enhance its independence, the CBC proposed an amendment to the *Central Bank of China Act* in June 2002. The draft amendment has been approved by the Executive Yuan and is currently under review at the Legislative Yuan.

Section 2 Operational Objectives

The CBC's operational objectives as stipulated in the *Central Bank of China Act* include: to promote financial stability, to guide sound banking operations, to maintain the stability of the internal and external value of the currency, and to foster economic development within the scope of the aforementioned objectives.

1. To Promote Financial Stability

The promotion of financial stability contains two aspects: first, to prevent large

fluctuations in financial asset prices, and second, to prevent systemic risk by providing necessary liquidity. Regarding the first aspect, large fluctuations in financial asset prices could affect market confidence and subsequently trade, consumption, investment, and other economic activities. To maintain financial stability, the CBC closely monitors international and domestic economic developments, and adopts response measures when necessary.

In terms of systemic risk, when a financial institution fails to manage risk properly, not only is its own business endangered, but others may also be adversely affected. The contagion effect could threaten overall financial stability. The CBC, as the lender of last resort, can provide the necessary liquidity to prevent systemic risk.

2. To Guide Sound Banking Operations

Another responsibility of the CBC is to promote the soundness of banking operations by monitoring the performance and operations of banks and, when necessary, undertaking financial reforms. In recent years, financial deregulation and technological advancement have sped up the process of financial integration and innovation. Such changes have not only blurred the distinction among different types of financial institutions and among financial products but also increased the complexity of financial activities. Therefore, the CBC's task to strengthen the soundness of banking operations has become increasingly challenging.

3. To Maintain the Stability of the Internal and External Value of the Currency

Maintaining the internal stability of the currency refers to maintaining price stability at home. Stable prices reduce economic uncertainty and help economic agents to plan and carry out economic activities such as production, consumption, saving and investment. Price stability is fundamental to maintaining sustainable economic growth.

The stability of the external value of the currency refers to the stability of the NT dollar exchange rate. Because the Taiwan economy is highly open and its ratio of external trade to GDP is relatively high by international standards, large swings in the NT dollar exchange rate may adversely affect economic and financial conditions. The CBC, therefore, regards managing large swings in the NT dollar

exchange rate as one of its operational objectives.

4. To Foster Economic Development

In addition to achieving the three operational objectives mentioned above, the CBC may implement expansionary monetary policy to help stimulate economic growth during economic downturns. However, such a policy has only a transitory effect and, therefore, can not be depended upon to stimulate long-term economic growth.

Based on the *Central Bank of China Act*, the CBC pursues multiple operational objectives that may not be perfectly matched. Of these objectives, price and financial stability and sound banking operations are fundamental to sustaining long-term economic growth. Therefore, when formulating monetary policy, the CBC emphasizes these three objectives, and within their scope, helps to foster economic development.

Section 3 Organization

According to the *Central Bank of China Act*, the executive body of the CBC consists of the Board of Directors, the Board of Supervisors, and the Governor and Deputy Governors. Their respective functions are policy formulation, supervision and implementation.

1. Board of Directors

The CBC reaches policy decisions through panel discussion. The Board of Directors consists of eleven to fifteen members. They are nominated by the Executive Yuan and appointed by the President with at least one from each of the agricultural, industrial and commercial, and banking sectors among them. Five to seven directors form the Executive Board of Directors. The Governor of the CBC, the Minister of Finance, and the Minister of Economic Affairs serve as *ex officio* directors and executive directors without term limits unless they change positions. Other directors serve five-year terms and may be reappointed when their terms expire. The major functions of the Board of Directors are to make policy decisions and approve the CBC's operational plans. The Board meets quarterly in general and may hold interim meetings when events of significant

importance take place.

2. Board of Supervisors

The Board of Supervisors consists of five to seven members. They are also nominated by the Executive Yuan and appointed by the President. The Director General of the Budget, Accounting, and Statistics of the Executive Yuan is the *ex officio* supervisor. Other supervisors serve three-year terms and may be reappointed. The major functions of the Board of Supervisors are to examine the CBC's assets and liabilities and audit the CBC's accounts. The Board meets quarterly and may hold interim meetings when needed.

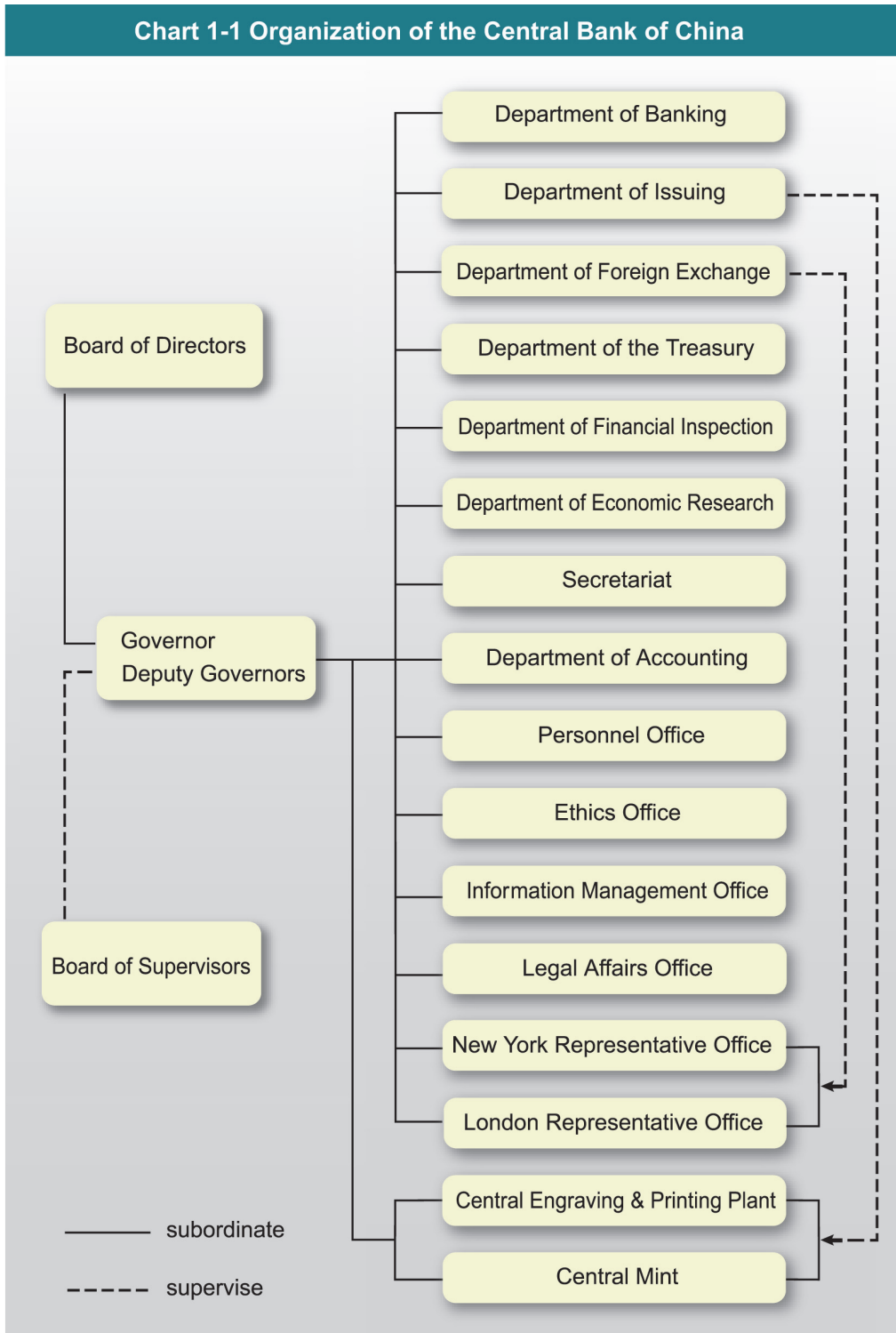
3. Governor and Deputy Governors

The Governor is chairman of the Boards of Directors and Executive Directors. The Governor represents the CBC and is responsible for handling internal affairs and executing resolutions passed by the Boards. Two Deputy Governors assist the Governor in handling the CBC's affairs. Each serves a five-year term and may be reappointed when the term expires.

The Governor and Deputy Governors oversee eight departments, four offices and two overseas representative offices. The Central Engraving & Printing Plant and the Central Mint, two affiliates of the CBC, print notes and mint coins, respectively. Chart 1-1 sums up the organizational structure of the CBC.

In practice, the Boards of Directors and Supervisors convene a joint meeting at the end of each quarter. Department heads of Banking, Foreign Exchange, and Economic Research at the CBC report matters related to monetary policy operations, foreign exchange operations, domestic and international economic conditions, respectively. The





Board of Directors then makes monetary policy decisions. Interim meetings and telephone consultations may take place when events of significant importance occur. After each meeting, the Governor hosts a press conference. Policy resolutions are made public in press releases and on the CBC's website.

Section 4 Major Operations

The CBC's major operations include monetary policy operations, foreign exchange management, currency issuance, financial examination, the management of payment systems, and the fiscal agent of the government. It also participates in activities hosted by international financial organizations.

1. Monetary Policy Operations

The CBC may use a variety of monetary policy instruments to ensure bank reserve positions are consistent with the aims of the CBC's monetary policy. Common instruments used are open market operations, reserve requirements, discount window lending, redeposits of financial institutions, and selective credit controls and accommodations.

(1) Open Market Operations

The CBC conducts open market operations virtually every business day. The CBC trades government securities with banks and thereby affects bank reserves and short-term interest rates. When excess liquidity surges as a result of capital inflows and trade surpluses, the CBC typically issues certificates of deposit to absorb excess liquidity from the banking sector. Conversely, when the banking sector experiences a temporary shortage of funds, the CBC usually purchases securities with repurchase agreements to temporarily increase the supply of reserves.

(2) Reserve Requirements

Central banks usually require banks to keep a certain amount of funds in reserve to meet unexpected withdrawals. The ratio of this fund to bank deposits affects banks' ability to extend credit. An increase in required reserve ratios is a restrictive action while a decrease an expansionary one.

Changes can also be made to adjust the structure of the reserve requirement system, and the potential impact on bank reserve positions can be offset by open market operations. The lowering of required reserve ratios in major industrialized countries in the 1990s is an example. Some even completely abolished the reserve requirement system. To increase financial efficiency, the CBC also realigned its reserve requirements to lower ratios in the mid-1990s.

(3) Discount Window Lending

The CBC serves as the lender of last resort to accommodate banks that are experiencing reserve shortages or a temporary lack of funds. It may adjust the rates and terms of borrowing, credit lines, and the eligibility of bills for discount. These measures influence the cost and volume of borrowing by banks, thereby affecting reserve money and bank credit.

(4) Other Policy Instruments

The redeposit system is another monetary policy instrument. The CBC may accept deposits from banks and the Postal Savings System to absorb excess liquidity in the banking sector. Based on changes in economic and financial conditions, the CBC may require banks to adjust the volume of their deposits with the CBC. An increase in redeposits will reduce the supply of bank reserves, and vice versa.

Under special circumstances, the CBC may enforce selective credit controls or selective accommodations. The purpose of imposing credit controls is not to influence the level of bank reserves, but to suppress speculative financial activities by constraining specific lending businesses. In addition, the CBC may also facilitate programs that grant favorable credit terms to certain borrowers such as the victims of the September 21, 1999 earthquake, who need funds to reconstruct homes.

2. Foreign Exchange Management

The CBC's foreign exchange management includes the management of foreign exchange markets, capital movements, banks' foreign exchange business, and the CBC's foreign exchange reserves.

(1) Managing Foreign Exchange Markets

Since 1979, Taiwan has adopted a managed floating exchange rate regime. In principle, the NT dollar exchange rate is determined by market supply and demand. The CBC may step in the market to stabilize the exchange rate when seasonal or irregular disruptions cause disorderly conditions in the market.

Since the outbreak of the Asian financial crisis in 1997, the CBC has strengthened the real-time reporting system for large-value foreign exchange transactions. This system allows the CBC to gather valuable information regarding market dynamics and to help improve the accuracy of foreign exchange statistics.

(2) Managing Capital Movements

Since July 1987, the CBC has actively deregulated the foreign exchange controls on capital movements. Currently, capital flows not involving the NT dollars are completely liberalized. Those involving the conversion of NT dollars and relating to goods and services transactions, as well as direct investments and portfolio investments approved by the competent authorities, are also liberalized. However, for short-term capital movements that exceed the annual remittance limit on an accumulated basis, prior approval from the CBC is required.

(3) Managing Banks' Foreign Exchange Business

The CBC has actively promoted financial liberalization and internationalization by authorizing more financial institutions to engage in foreign exchange related activities. It has allowed foreign exchange transactions between banks and customers to be made through the Internet in line with the development of online banking. It has also helped introduce financial derivatives to meet the private sector's need to hedge exchange rate risk and to expand the scope and scale of the Taipei Foreign Exchange Market. In addition, to improve the international competitiveness of Taiwan's banks and businesses, the CBC has helped to promote offshore banking units of domestic banks to become funding centers for overseas Taiwanese businesses.

(4) Managing Foreign Exchange Reserves

The CBC's management of its foreign exchange reserves centers on the principles of security, liquidity and profitability. The CBC invests a large portion of foreign exchange reserves in government securities issued by major industrialized countries and deposits a part of reserves with credit worthy foreign financial institutions. The CBC also takes promoting economic development and industrial upgrade into consideration when managing foreign exchange reserves. Therefore, some reserves are used as foreign currency accommodations for domestic businesses, deposits in overseas branches, subsidiaries and offshore banking units of domestic banks, and seed funds for the development of the Taipei Foreign Currency Call-loan Market.

3. Currency Issuance

The national currency is issued by the CBC to provide a stable, reliable, and widely accepted medium of exchange for economic activities. The volume of issue mainly depends on the demand of the public. The public withdraw deposits from banks to meet their immediate needs for currency. Banks, to accommodate the needs of customers, release vault cash and draw against reserves stored at the CBC. When this need declines, banks dispose of and deposit excess currency in their reserve accounts.

The CBC makes public the specifications of notes and coins prior to their issuance. A brand new series of NT dollar bills was introduced sequentially between July 2000 and July 2002 in denominations of 1000, 500, 100, 200 and 2,000 dollars, one in each half-year period. Major changes in the new series include the denomination, size, illustration, and anti-counterfeiting features. The Central Engraving & Printing Plant prints notes and the Central Mint mints coins. The Bank of Taiwan, delegated by the CBC, circulates the currency.

4. Payment Systems Oversight

The CBC oversees the payment systems. Taiwan's major payment systems include the CBC Interbank Funds-Transfer System (CIFS), the Central Government Securities-Settlement System (CGSS), the Nationwide Interbank

Remittance System operated by the Financial Information Service Co., Ltd. (FISC-NIRS), and the check clearing system operated by the Taiwan Clearing House (TCH).

The CIFS, which was established in 1995, settles interbank payments and payments between the CBC and local banks. Prior to September 2002, banks transferred funds through the CIFS system either on a Real-Time Gross Settlement (RTGS) basis or on a Designated-Time Net Settlement (DNS) basis. To minimize settlement risks and to comply with international standards, the CBC abolished the DNS and adopted a new RTGS system in September 2002. The CGSS, a book-entry system established in 1997, handles the issuance, transfer, and redemption of central government bonds and treasury bills. The FISC-NIRS offers bank customers interbank remittance and fund transfer services. The TCH clears checks and is responsible for keeping and handling records of dishonored checks. It also provides an inquiry service on check drawers' credit records to the public.

5. Fiscal Agent of the Government

The CBC also serves as the fiscal agent of the government. It manages the national treasury's deposit account, central governmental agencies' deposit accounts, bills and securities, and the safekeeping of their other asset documents. Starting from February 1999, the CBC established the National Treasury Services Operational System, which links the CBC with the MOF and the delegated banks so that the collection and payment of funds for the national treasury's accounts can be handled more efficiently.

The CBC also undertakes the issuance and redemption of central government bonds and treasury bills. Since the establishment of the CGSS in 1997, central government bonds have all been issued in book-entry form. The issuance of book-entry treasury bills followed suit in October 2001.

6. Financial Examination

Financial examinations help to improve the health of financial institutions. In addition, they help financial markets to efficiently carry out the transmission process of monetary policies.

The CBC, following the establishment of the Financial Supervisory Commission of the Executive Yuan in July 2004, has ceased to conduct general examinations of financial institutions. Nevertheless, it retains the right to conduct target examinations relevant to the implementation of monetary policy.

7. Participation in International Activities

The CBC hosts conferences, provides training programs, and attends annual meetings organized by international organizations such as the Asian Development Bank (ADB), the Central American Bank for Economic Integration (CABEI), and the Conference of Governors of South East Asian Central Banks (SEACEN). In addition, the CBC maintains close working relationships with the Inter-American Development Bank (IDB), the European Bank for Reconstruction and Development (EBRD), and the Bank for International Settlements (BIS).

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Chapter 2**Monetary Policy
and the Taiwan Economy**

The CBC's monetary policy directly influences the level of bank reserves and money market interest rates, and through various channels, the effects of monetary policy are transmitted throughout the economy. External trade and international capital flows may also influence domestic interest rates and NT dollar exchange rates, and hence impact Taiwan's highly open economy. Therefore, to understand how monetary policy is related to the Taiwan economy, one must understand the financial system, the international dimensions of monetary policy, the role of reserve money in monetary policy operations, and the channels through which monetary policy affects total output.

Section 1 The Financial System and Monetary Policy

The financial system includes financial markets and intermediaries. The former mainly consist of equity, bond, and money markets. The latter include banks, community financial institutions, and life insurance companies. The financial system facilitates the transfer of funds from lenders to borrowers, which can be arranged directly in financial markets or indirectly through financial intermediaries.

The soundness of the financial system is essential to the transmission of monetary policy. When the system is healthy and efficient, monetary policy can be effectively carried out. If the financial system turns unhealthy, then the effect of monetary policy will be limited. For instance, between 2001 and 2002, when banks' nonperforming loan ratios were relatively high, banks' lending attitudes turned conservative, which weakened the effect of the expansionary monetary policy the CBC adopted at the time.

The structure of the financial system also affects the effectiveness of monetary policy. In the past decade, Taiwan's financial system has undergone a structural change—borrowers have become more reliant on financial markets to raise funds. As funds increasingly flow through markets rather than banks, monetary policy may become less effective since its operations rely heavily on the central

bank's control over bank reserves.

Besides facilitating the transmission of monetary policy, the financial system also provides payment services. Banks accept transaction deposits and pay upon depositors' demand. They also provide fund remittance and transfer services. The CBC facilitates cash transactions by issuing currency and oversees the system of large-value interbank payments. To ensure the security and efficiency of the payment system, the CBC has continued to promote the modernization of the payment system and urge banks to raise the scope and efficiency of their payment services to the public.

A sound financial system is essential to the transmission of monetary policy and the functioning of payment systems. Yet, to ensure its soundness requires close monitoring because the system possesses two inherent problems, maturity mismatch and asymmetric information.

In terms of maturity mismatch, the traditional banking business involves taking deposits, which are short-term in nature, and making loans, which are of a long-term nature. Maturity mismatch in assets and liabilities may generate liquidity risk and interest risk. Poor risk management by an individual bank could set off a chain reaction leading to a banking crisis.

Asymmetric information refers to the situation where one party has superior information over the others. The better informed can take advantage of this situation to pursue its own interest at the expense of the others. Common problems arising from the presence of asymmetric information are adverse selection and moral hazard. In the case of adverse selection, borrowers with high credit risks are more likely to be granted loans because they are willing to pay higher interest rates. In the case of moral hazard, borrowers getting loans have incentives to make risky investments hoping for better returns.

Adverse selection and moral hazard could be simultaneously present in banks. Banks are lenders to loan-seekers and, at the same time, borrowers to their depositors. High-risk banks tend to attract deposits by offering favorable interest rates, and pursue high returns by making high-risk investments with borrowed funds.

Promoting financial stability and ensuring sound banking operations are part of the CBC's operational objectives. The CBC started to undertake banking examination when it resumed operations in Taiwan in 1961. The Central Deposit

Insurance Corporation (CDIC) began to share the responsibility after its establishment in 1985. The Ministry of Finance (MOF) also participated following the deregulation of bank entry in 1991. In line with the trend of financial integration, the Financial Supervisory Commission (FSC) was set up in July 2004 and the supervision and regulation of banks, securities houses and insurance companies have since been re-delegated to the FSC. However, the CBC still retains the authority to conduct target examinations on financial institutions and adopt corrective measures when necessary in order to ensure the effectiveness of monetary policy and financial stability.

Section 2 International Dimensions of Monetary Policy

Taiwan is a highly open economy, and therefore, external trade is a significant part of its real economic activity. Its financial environment is also increasingly internationalized after a series of liberalization measures on international capital flows were put in motion starting from 1987. With growing external trade and capital flows, Taiwan's economic and financial conditions are becoming more closely linked to the rest of the world than ever before. New opportunities and risks have emerged as a result. The adverse impacts of the Asian financial crisis between 1997 and 1998 and the bursting of the global IT bubble in the early 2000s demonstrated the growing influence external shocks have on the Taiwan economy, and the importance of taking international factors into account in the formulation of monetary policy.

Taiwan has run a sustained trade surplus. The trade surplus expanded sharply in the late 1980s and early 2000s. Capital movements have increased over time and become volatile. In periods when Taiwan records a trade surplus or capital inflow, the supply of foreign currencies and demand for NT dollars tend to rise. As a result, the NT dollar appreciates against foreign currencies, NT dollar deposits increase, and the level of monetary aggregates rises.

If the CBC purchases foreign currencies from banks to stabilize the exchange rate, new liquidity is injected into the banking system. Bank deposits and monetary aggregates further expand through the money multiplier effect. Domestic interest rates tend to fall, which may stimulate private consumption and investment. Depositors searching for higher returns may turn to stock or real estate markets. The booming asset markets in turn attract more capital inflows, which might eventually lead to a financial bubble and pose a threat to economic

and financial stability. A large trade deficit or capital outflow might trigger the reverse process.

On some occasions, foreign exchange market intervention needs to be accompanied by monetary policy operations. For example, in case of irrational exchange rate movements, the CBC may intervene in the foreign exchange market and conduct open market operations at the same time to offset the impact of foreign exchange intervention on domestic liquidity. Such a strategy is known as sterilized intervention. In addition to open market operations, the CBC may adjust required reserve ratios and take deposits from banks for sterilization.

Due to increasing external influence on the Taiwan economy, the CBC has incorporated international dimensions into its monetary policy decisions. For instance, the CBC shifted to an expansionary monetary policy in order to stimulate domestic demand as foreign demand turned sluggish during the Asian financial crisis and when the global IT bubble burst.

Finally, when monetary policy adjustments in other countries change the relative rates of return on domestic and foreign assets, domestic financial conditions are likely to be affected by the resulting cross-border capital movements. Therefore, the CBC usually takes monetary policy adjustments in other countries into consideration when formulating its own policy.

Box: Weathering the Asian Financial Crisis

The outbreak of the Asian financial crisis in 1997 was closely associated with international capital movements. Internationalization of financial markets has been a global trend since the 1980s. The rise of information and communication technology makes flows of information and transactions more convenient and faster in financial markets. However, this also means that news or rumors can quickly spread, and the adverse effects of a panic on one market can disseminate in a very short period of time and eventually affect the whole world.

Short-term capital flows are volatile in nature. If a country's foreign exchange rate is inflexible, then the expectation of currency appreciation could lead to a surge in capital inflows. Surging capital inflows could give rise to excessive growth in bank credit and the money supply, as well as speculative bubbles in real estate and stock markets. Once the bubbles

burst, sudden reversals of capital flows result in a currency crisis, as well as a collapse of the financial system, and eventually undermine the economy. This phenomenon was actually observed across a number of Asian economies during the Asian financial crisis in 1997 and 1998.

In the case of Taiwan, after the outbreak of the Asian financial crisis in 1997, the CBC stepped in the foreign exchange market from July to October to curb depreciation expectations of the NT dollar. As a result of heavy intervention, foreign exchange reserves fell by US\$7 billion within four months. At the same time, monetary conditions tightened, interest rates went up and stock prices fell sharply.

As the Asian financial crisis showed no signs of abating, the CBC decided to change its policy approach in order to shield the asset markets and the real economy from the damage caused by the prolonged monetary tightness. In mid-October 1997, the CBC ceased to defend the exchange rate, and at the same time lowered required reserve ratios. The NT dollar consequently exhibited a sharp downward trend from mid-October onwards and reached a low of 34.4 against the US dollar in mid-January 1998, depreciating by 17 percent within three months.

In addition to implementing a flexible exchange rate policy, the CBC fended off speculative attacks in the foreign exchange market by prohibiting domestic institutional investors from engaging in non-delivery forward (NDF) transactions to block speculators' access to NT dollar funds. As a result, the downward pressure on the NT dollar was largely relieved, and the exchange rate of the NT dollar fluctuated between 32.0 and 34.9 during the remainder of the crisis period. Monetary conditions have become moderately easy. As Asian currencies rebounded strongly in September 1998, the CBC implemented a more relaxed monetary policy to stimulate domestic demand.

The CBC's policy actions largely mitigated the negative impacts of the Asian financial crisis on the Taiwan economy. The event also demonstrated the close economic ties among Asian countries and the growing influence of international capital flows on the policies of Asian central banks.

Section 3 Reserve Money and Monetary Policy

Reserve money is also known as high-power money or monetary base. The implementation of monetary policy usually directly affects reserve money, and this effect initiates a series of financial responses through which monetary policy influences the economy. Thus, reserve money is a fulcrum for monetary policy operations. As for the CBC, reserve money is the operational target variable of its monetary policy operations. This section introduces the concept of reserve money from the uses and sources sides.

1. Uses of Reserve Money

On the uses side, reserve money consists of reserves held by banks and currency held by the nonbank public. In general, the uses of reserve money are jointly determined by the demands of the public and banks as well as the reserve requirements set by the CBC.

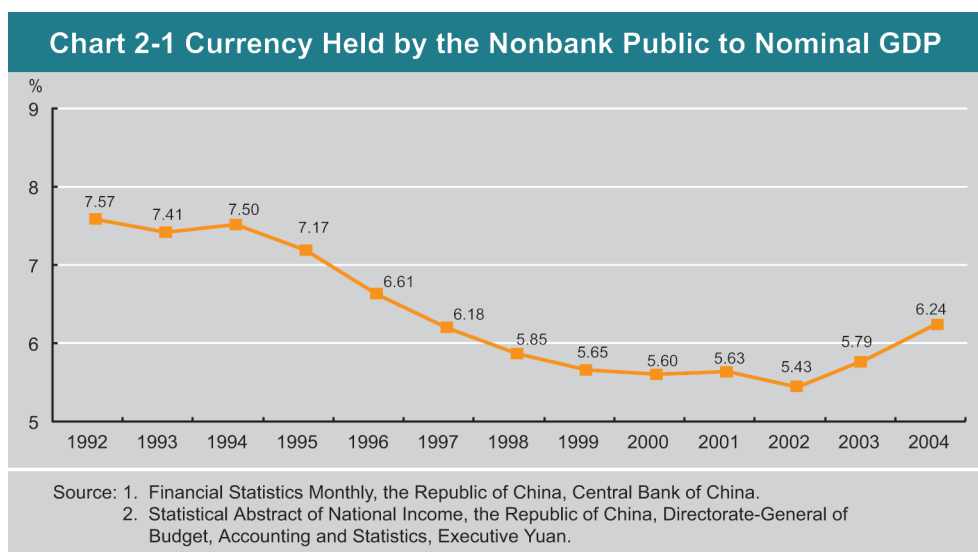
(1) Reserves Held by Banks

Reserves held by banks, including cash held in banks' vaults and reserves deposited with the CBC, are defined by the sum of required and excess reserves. Required reserves are the reserves that banks are required to keep at the CBC or in their vaults against deposits taken. Required reserve ratios are set by the CBC. The CBC realigned its reserve requirements to lower ratios in the mid-1990s, mainly to adjust the reserve requirement structure and raise the competitiveness of banks. It lowered the ratios again during the Asian financial crisis and after the bursting of the global IT bubble as part of an expansionary monetary policy. Excess reserves are the difference between actual reserves and required reserves. The interbank call-loan rate is the opportunity cost for banks to hold excess reserves and is negatively related to excess reserves.

(2) Currency Held by the Nonbank Public

In Taiwan, currency held by the nonbank public constituted about 30 to 40 percent of reserve money during the past decade. The nonbank public's demand for currency depends principally on income and responds to both

long-run growth and cyclical movements of the economy. The public's demand for currency may also experience seasonal swings, such as a surge before the Chinese Lunar New Year holidays. In the past decade, the increasing use of credit cards, debit cards and charge cards has gradually reduced the public's demand for currency. Chart 2-1 displays a downward trend in the ratio of currency held by the nonbank public to nominal GDP between 1992 and 2002. However, it shows how the ratio went up in 2003 and 2004 as a result of large declines in deposit rates.



2. Sources of Reserve Money

Reserve money is a liability of the CBC. Changes in the CBC's asset or other liability items may affect the level of reserve money. Some of these items are under the control of the CBC and reflect monetary policy actions, including the CBC's holdings or issues of securities. Other items, such as government deposits, respond to decisions made outside the CBC. How various items on the CBC's balance sheet affect reserve money is described below.

(1) Foreign Assets

Foreign assets are the largest asset item on the CBC's balance sheet, and their share in total assets exceeded 80 percent in the past ten years. When

the CBC purchases foreign currencies from banks and invests them abroad, both its foreign asset holdings and the balance of banks' reserve accounts at the CBC rise. As a result, the level of reserve money expands. Conversely, reserve money contracts when the CBC sells foreign currencies to banks.

(2) Claims on Banks

The CBC's claims on banks include the following items: (a) discounts of eligible bills with maturities not exceeding 90 days for industrial and commercial bills and 180 days for agricultural bills, (b) temporary accommodations not exceeding 10 days, (c) secured accommodations not exceeding 360 days, (d) foreign currency accommodations, and (e) foreign currency call loans. Banks may apply on their own initiative to the CBC for the amount of credit they need. As for foreign currency credit, the CBC always uses its own foreign assets to accommodate banks' demand; therefore, such accommodations do not influence the level of reserve money. In contrast, an increase in the CBC's NT dollar accommodations to banks expands bank reserves and the level of reserve money, and the opposite occurs when banks repay the CBC. In the past decade, due to abundant liquidity of banks, the CBC's accommodations in the domestic currency have declined, and accommodations in foreign currencies have become the major type of the CBC's claims on banks.

(3) Holdings of Securities

The CBC's securities portfolio mainly comprises repurchase agreements (RPs) in government securities or in negotiable certificates of deposit (NCDs) issued by the CBC. The CBC's purchase and sale of securities, commonly referred to as open market operations, are a means by which the CBC can affect reserve money at its discretion. When there is a temporary shortage of cash in the banking system, the CBC may offer to buy RPs from banks. Under such circumstances, banks transfer ownership of securities to the CBC in exchange for cash. This raises the level of reserves in banks' accounts at the CBC and thus expands the level of reserve money. Conversely, when there is a temporary oversupply of liquidity in the banking system, the CBC may offer to sell RPs, and the reverse occurs.

(4) Government Deposits

The central government maintains balances at the CBC to meet payment obligations. When the government makes payments, the balance of government deposits at the CBC decreases and consequently causes reserve money to expand. When the government receives taxes or proceeds of securities issued, the balance of government deposits at the CBC increases, which causes reserve money to contract.

(5) Securities Issued by the CBC

When there is excess liquidity, the CBC may issue securities such as certificates of deposit (CDs) or NCDs to mop up liquidity. Consequently, the balances of banks' reserve accounts at the CBC and reserve money fall. The reverse occurs when securities issued by the CBC mature.

(6) Redeposits

The CBC may allow banks or the Postal Savings System to deposit their excess liquidity with the CBC. These types of deposits are different from reserve deposits and are known as redeposits. The maturities of redeposits are mostly one year or six months. The interest rates on redeposits, linked to corresponding banks' deposit rates, are usually higher than those on NCDs. When the CBC allows banks or the Postal Savings System to increase their redeposits with the CBC, their balances in reserve accounts at the CBC fall and so does the level of reserve money, and vice versa.

The above-mentioned are the major items on the CBC's balance sheet, which reflect a broad range of the functions that the CBC performs. Through changes in these items, reserve money is affected. In common with other Asian central banks, the CBC owns a high level of foreign assets, which serve as the major source of reserve money. The CBC's most typical operation is to drain excess liquidity to keep reserve money from over expanding.

Section 4 The Transmission of Monetary Policy

Monetary policy influences economic activity mainly by affecting the cost and

availability of money and credit to those who produce and consume the nation's output. The CBC's control of the supply of bank reserves interacts with the banking system's demand for reserves to determine the interbank call-loan rate. Depending on the outlook for economic growth, inflation and credit demand, interest rates with varying maturities, credit risk, and tax status are determined in the financial markets. Given choices of interest rates and maturities, holders of assets and those who make savings from current income allocate their capital among money and other assets and choose between consumption and savings. Interest rates also affect borrowing decisions of households, businesses and the government. Furthermore, monetary policy may influence spending decisions by affecting the availability of credit. Through a series of financial and economic responses, the effect of monetary policy is transmitted to total output, employment, and prices. The following paragraphs describe how an expansionary monetary policy affects economic activity through various transmission channels.

1. Interest Rate Channel

When the CBC conducts an expansionary monetary policy, short-term nominal interest rates, such as the interbank call-loan rate, drop first. Medium- and long-term nominal interest rates tend to follow. As the expected inflation rate is adjusted upwards, the real interest rate is likely to fall. The lower real interest rate boosts consumption and investment, which in turn raises the price level and total output.

2. Bank Credit Channel

The CBC's expansionary policy influences bank credit in two ways: increasing bank funds available for making loans (the bank lending channel) and improving borrowers' financial positions, making banks more willing to lend (the balance sheet channel). For example, when the CBC releases funds through open market operations, it increases banks' excess reserves, or funds available for banks to extend loans. This may also push asset prices upwards and thus improve potential borrowers' net worth, value of collateral and financial positions, making banks more willing to lend. The increased availability of bank loans boosts consumption and investment.

3. Wealth Channel

An expansionary monetary policy may raise asset prices, such as stock prices and housing prices, and consequently increase the wealth of the general public and hence consumer spending.

4. Relative Asset Price Channel

This channel is based on the concept of imperfect substitutability among assets. Money is an imperfect substitute for financial and real assets, such as stocks, bonds and real estate. When money supply increases as a result of an expansionary policy, individuals will adjust their portfolios by increasing their holdings of financial and real assets, which may lead to a rise in consumption and investment.

5. Exchange Rate Channel

An expansionary monetary policy brings domestic interest rates down as it adds to the appeal of foreign fixed income assets relative to domestic ones, which weakens the domestic currency. As the domestic currency depreciates against foreign currencies, export competitiveness improves, thereby promoting exports.

In sum, when economic activity slows down and credit demand shrinks, the CBC may adopt an expansionary monetary policy to boost consumption and investment by affecting asset allocations and spending decisions in different sectors of the economy. During the buoyant phase of the business cycle, to keep inflation in check, the CBC may raise interest rates to restrain growth in money and credit. By affecting the cost and availability of financing in the financial system, monetary policy can be used to keep credit-financed spending in line with the economy's production capacity.

Purposes and Functions (1992-2004)

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CHAPTER 5

Formulation and Implementation of Monetary Policy

CHAPTER 6

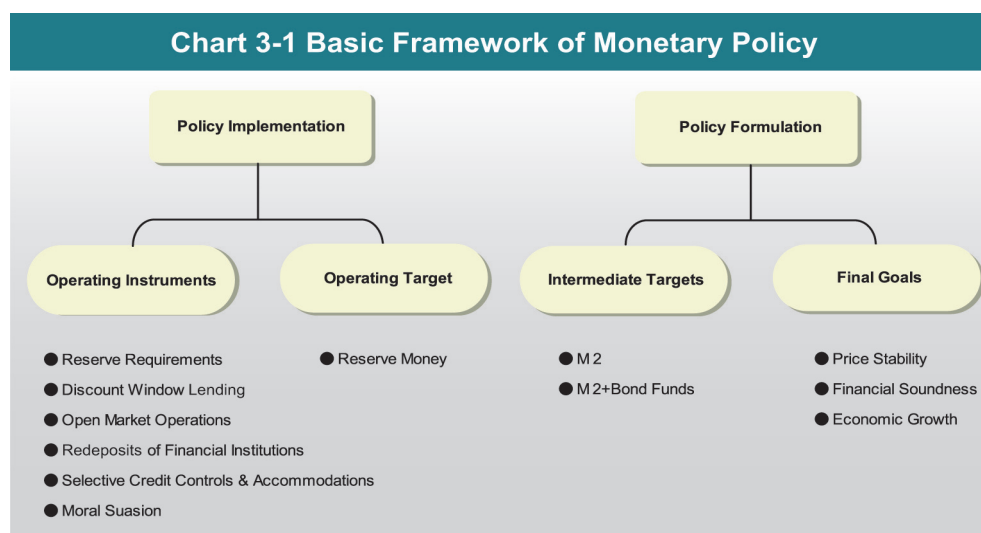
Chapter 3

Formulation and Implementation of Monetary Policy

The goals of monetary policy are spelled out in the *Central Bank of China Act*. How does the CBC gauge whether or not its current operations are consistent with those goals? Will it need to be more restrictive or more accommodative? This chapter discusses the CBC's monetary policy framework, how the CBC determines whether its policy is consistent with its goals, and challenges to the fulfillment of the CBC's goals.

Section 1 Basic Framework of Monetary Policy

Changes in monetary policy affect the economy with considerable time lags. If the CBC waits until policy effects become evident to adjust its policy, it will often miss the best timing to achieve its objectives. Consequently, the CBC pays close attention to some intermediate economic variables such as monetary aggregates. In practice, the CBC adopts a framework where it periodically checks whether operating targets have been achieved in the short run, and in turn measures intermediate targets to assess how effectively monetary policy is being transmitted to achieve its final policy objectives.



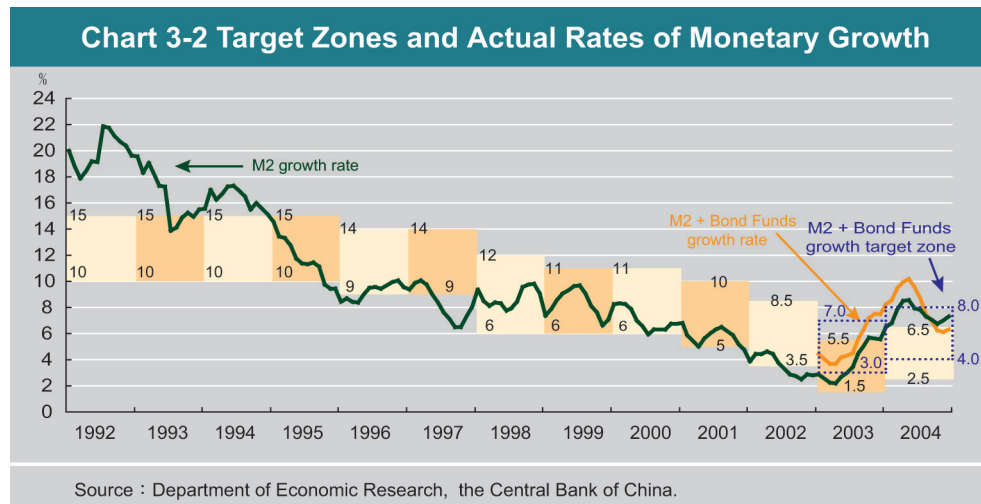
Since the mid-1980s, the CBC has adopted a framework of monetary targeting. Similar to most other countries, the CBC chose a monetary aggregate to be the intermediate target and reserve money to be the operating target. Since 1992, the CBC has been publishing intermediate targets on a yearly basis. The following two subsections describe these targets in detail.

1. Intermediate Targets

For policy formulation, the CBC selects the M2 monetary aggregate as the intermediate target. The staff of the CBC estimate money demand using econometric methods in December of each year to determine the target zone of M2 growth for the coming year. Variables used to estimate money demand include real income, general price levels, the opportunity cost of holding money, indices for financial asset diversification, and the rate of return on foreign currency assets. The CBC then gathers a panel of scholars and experts to discuss the estimation results. The Board of Directors reviews the recommendations and decides on the appropriate annual target zone. The zone set by the Board with related explanations and the proceedings of the panel meeting are released in the *Quarterly Bulletin of the Central Bank of China* to strengthen transparency in the CBC's policymaking process.

The target zone serves as a guide for monetary policy operations throughout the year. Around the middle of the year, the CBC reviews whether the growth of monetary aggregate M2 has stayed within the target zone. If not, it will determine the cause and adopt corrective measures.

The target zones for M2 growth were between 10-15 percent from 1992 to 1995, 9-14 percent in 1996 and 1997, and 6-12 percent in 1998. The range of the zone was widened from five to six percentage points in 1998 in response to the uncertainties caused by the Asian financial crisis. The zone was set at 6-11 percent in 1999 and 2000. In 2001, demand for money decreased as the economy slowed down. The zone was lowered to 5-10 percent. In 2002, it was lowered again to 3.5-8.5 percent. Since 2003, bond funds, which are similar to money market funds in nature, have grown rapidly at the expense of bank deposits. As a result, a new target variable—M2 plus bond funds was added. In 2003, the zones for the dual targeting system were 3-7 percent for the growth of M2 plus bond funds and 1.5-5.5 percent for the growth of M2. In 2004, when the economy picked up, the zones were thus increased to 4-8 percent and 2.5-6.5 percent, respectively.



2. Operating Target

For policy implementation, the CBC chooses reserve money as the operating target for its daily operations. This variable is directly managed through tools of monetary policy and is closely related to the intermediate target.

At the beginning of each month, the CBC determines the monthly target for reserve money. Policy instruments are then used to keep reserve money within the target range. Over the years, the difference between the actual and target levels of reserve money has been small and diminishing.

To accommodate rapidly changing economic and financial conditions, the CBC not only relies on numerical targets for money and credit but also uses a wide range of financial and economic indicators in the formulation and implementation of monetary policy. Financial indicators include short-, medium, and long-term interest rates, exchange rates, excess reserves, bank deposits and credit, monetary aggregates, and the balance of payments. Economic indicators cover imports and exports, industrial production, the rates of economic growth, inflation, and unemployment.

These indicators reflect key macroeconomic conditions in the past. Policy considerations, in contrast, are forward-looking. Therefore, in addition to compiling key statistics, the CBC conducts seminars and surveys. New information derived from these activities expands the CBC's knowledge in

current economic and financial conditions and provides useful references to monetary policymaking.

Section 2 Monetary Policy Challenges

The framework of monetary policy described above helps the CBC to determine whether its policy is consistent with its goals. However, factors such as financial globalization, the rise of direct financing, the development of financial derivatives and financial asset securitization increase the complexity of conducting monetary policy and can detract the CBC from fulfilling its goals.

1. Financial Globalization

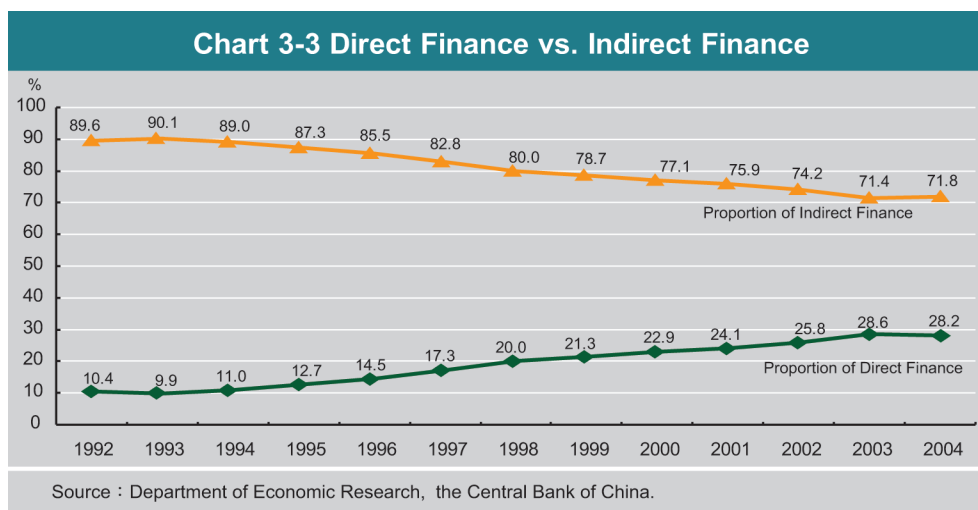
One of the main characteristics of financial globalization is the increase in capital mobility. When cross-border capital flows are large, exchange rates may become unstable and can lead to large swings in prices, financial markets and monetary growth.

Based on the principle of the "impossible trinity" in international economics, an economy cannot simultaneously achieve perfect capital mobility, stable exchange rates, and independence of monetary policy. More specifically, if a central bank allows capital to move freely while maintaining a fixed exchange rate, it will compromise the ability to set its own interest rates, thus losing monetary autonomy. If the central bank seeks a higher degree of monetary independence and allows free movements of capital, maintaining stable exchange rates becomes very difficult. Therefore, each country should choose the most appropriate arrangements based on its financial and economic conditions. In Taiwan's case, since the government has allowed capital to move freely, the CBC, therefore, has to seek a balance between exchange rate stability and the independence of monetary policy based on prevailing financial and economic situations.

2. Rise of Direct Financing

Financial market deregulation measures, such as licensing new securities and bills finance companies, encouraging companies to go public, and speeding up the approval of mutual funds, have helped Taiwan's financial markets to grow in

breadth and depth. An increasing number of individuals and enterprises has turned to financial markets for funding and investment. The importance of direct financing has thus gradually increased relative to indirect financing. Commercial banks, as a result, play the dual role of an intermediary and an investor. Their proportion of securities investment has been rising, while that of bank loans has shrunk. This has, in turn, contributed to the decline in M2 growth. The rise of direct financing may undermine the effectiveness of monetary policy, as bank lending is a major channel in the monetary policy transmission mechanism.



3. Development of Financial Derivatives

Derivatives make financial arbitrage easier. If this increases the substitutability among assets, it will shorten the time necessary for the CBC's monetary policy to take effect via the relative asset price channel. However, if this results in increases in individuals' and businesses' ability to temporarily hedge against price fluctuations in financial markets, it will lengthen the time required for the CBC's monetary policy to take effect.

Financial derivatives may also increase the burden on monetary policy. When combined with bank deposits, they turn into new financial products, which add ambiguity to the definition of money. In general, the cost of these products is low and the leverage is high. Investors may trade them speculatively, which can become a source of risk and pose serious threats to financial stability.

In sum, the rapid development of financial derivatives brings new challenges to

monetary policy. Nevertheless, the CBC may be able to extract valuable information regarding expectations on future interest rates and exchange rate movements from the derivatives markets, which may be beneficial to monetary policy operations.

4. Financial Asset Securitization

Securitization is a process of transforming illiquid financial assets into marketable capital market securities such as mortgage-backed securities, auto loan-backed securities and real estate investment trusts. The process requires well-established credit rating systems, standardization procedures, and credit enhancement mechanisms. In Taiwan, the pertaining law was not endorsed until July 2002, and thus securitization is still in the nascent stage of development.

Securitization may contribute to the operational efficiency of individual financial institutions, but it may also undermine the effectiveness of monetary policy. By improving the banking system's liquidity position, asset securitization may affect the CBC's ability to carry out monetary management. Contractionary monetary policy aimed at curbing liquidity may be limited in an overheated economy since banks can obtain liquidity by way of securitization. In addition, the effectiveness of monetary policy through the bank credit channel may also be negatively affected as securitization may replace part of bank loans as a way for corporate funding.

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Chapter 4**Monetary Policy Instruments**

The CBC bases monetary policy decisions on the framework introduced in the previous chapter and uses various instruments described in the following sections, including reserve requirements, discount windows, open market operations, financial institution redeposits, selective credit management and moral suasion to achieve its policy goals. The CBC initially affects reserve money and interbank call-loan rates, which in turn affect various monetary aggregates, interest rates and other financial and economic variables, and eventually achieves final monetary policy goals.

Section 1 Reserve Requirements*1. Rationales for Reserve Requirements*

Financial institutions are subject to reserve requirements established by the CBC. They are a fraction of banks' liabilities kept in the form of cash or reserves held at the CBC. Financial institutions stated here refer specifically to depository institutions that receive deposits from and extend credit to the general public. The rationales for imposing reserve requirements are:

- (1) Reserve requirements provide assurance over the liquidity of the financial system and safety of customers' deposits. If financial institutions do not have sufficient liquidity, they can apply for temporary accommodations using the reserves they hold at the CBC as collateral.
- (2) Required reserve ratios are an important monetary policy instrument. Through adjusting the ratios on various types of deposits, the CBC can influence financial institutions' ability to extend credit, which in turn helps control money growth.

2. Major Reforms over the Past Decade

The reserve requirement system in Taiwan went through several major changes

in the past decade. In November 1994, the computation and maintenance periods of required reserves were both extended to one month (previously ten days). In September 1996, an ad hoc committee consisting of scholars, bankers and the CBC staff was formed to reform the reserve requirement system. Changes proposed by this committee served as a basis for the revision of the *Central Bank of China Act*, which was passed by the Executive Yuan (Cabinet) in 1997, and then enacted by the Legislative Yuan (Congress) in July 1999. These changes included removing the floor and lowering the ceiling on required reserve ratios. They were not only an integral part of Taiwan's regulatory adjustments for ascension to the World Trade Organization (WTO), but also gave the CBC the legal authority to impose reserve requirements on all types of bank liabilities when necessary.

(1) Lowering the Ceiling and Removing the Floor on Required Reserve Ratios

Requiring banks to hold a certain fraction of their liabilities in accounts with the CBC, which bear very low interest, imposes an additional cost on banks. Banks are thus compelled to pass the cost onto customers by charging higher interest rates on loans and/or offering lower rates on deposits. In addition, financial deregulation and innovation have blurred the distinction between banks and non-bank financial institutions (NBFIs), such as securities firms, insurance companies, and mutual funds. The fact that NBFIs are totally exempted from reserve requirements has also created a source of unfair competition against banks in the financial industry. The CBC, therefore, lowered the ceiling and removed the floor on required reserve ratios on all types of deposits in the revised *Central Bank of China Act* of 1999. The CBC then reduced actual reserve ratios imposed on banks several times. These measures have decreased the cost of bank operations and increased banks' competitiveness relative to NBFIs.

In addition, these measures allowed the CBC to gradually close the gap between required reserve ratios imposed on transaction and non-transaction deposits, which helped eliminate the distortion created by banks' preference of the latter over the former. This is consistent with the practice adopted by most advanced economies as the definition of monetary aggregates has been widened and blurred since the 1980s.

From a monetary policy perspective, removing the floor on required reserve ratios also increased the flexibility of monetary policy. It gave the CBC more

room to adjust required reserve ratios both upwards and downwards in response to economic and financial conditions.

(2) Imposing Reserve Requirements on Banks' Foreign Currency Liabilities

During the 1980s and mid-1990s in Taiwan, banks' holdings of foreign liabilities were subject to a ceiling and a fraction of these liabilities had to be retained as redeposits at the CBC. This was incompliant with WTO rules for facilitating liberalization of capital movements and cross-border financial services. As part of Taiwan's WTO commitments, the CBC had to replace these regulations with market-based measures on capital movements. In December 2000, in accordance with the revised *Central Bank of China Act*, the CBC began to impose required reserve ratios on foreign currency deposits. The requirement was not only consistent with WTO rules, but also put NT dollar deposits and foreign currency deposits on an equal footing. Moreover, it introduced a new monetary instrument which allowed the CBC to modulate abrupt short-term capital movements.

3. Structure of the Reserve Requirement System

At present, depository institutions, including domestic banks, local branches of foreign banks, medium business banks, credit cooperative associations, credit departments of farmers' and fishermen's associations, and the Department of Savings and Remittances of the Chunghwa Post Co., Ltd. (also called the Postal Savings System), are subject to reserve requirements. Reservable liabilities include transaction deposits such as checking deposits and demand deposits, non-transaction deposits such as saving deposits and time deposits, foreign currency deposits, and other types of liabilities such as bank debentures and repurchase agreements. Eligible reserves include cash in vault and reserves deposited at the CBC or other agent banks authorized by the CBC. Agent banks mainly refer to agricultural banks accepting redeposits from community financial institutions.

(1) Reserve Requirement Ratios

According to the revised *Central Bank of China Act* of 1999, the reserve requirement on transaction deposits is set at the range of 0-25 percent (formerly 15-40 percent and 10-35 percent on checking and demand

deposits, respectively); that on non-transaction deposits is set at a range of 0-15 percent (formerly 7-25 percent and 5-20 percent on time and saving deposits, respectively). The range for other types of liabilities is set at 0-25 percent. For the purpose of implementing monetary policy, the CBC may impose additional requirements, which are not bound by the above ratios, on the increment of checking deposits, demand deposits, and other liabilities when deemed necessary.

(2) Reserve Accounts

Banks hold two types of reserve accounts at the CBC: A accounts (non-interest bearing; withdrawals and transfers may be made at any time) and B accounts (interest bearing). Banks' minimum deposits in B accounts for any maintenance periods are a fraction of required reserves of the preceding period determined by the CBC. Since November 2001, the fraction has been maintained at 55 percent (formerly 60 percent). Banks may not make withdrawals or apply for accommodations against B account deposits unless in emergency or to comply with the CBC's monetary policy.

Table 4-1 displays the remuneration rate, which was roughly in line with the trend of money market interest rates, on B accounts of required reserves between 1998 and 2004.

Table 4-1 Remuneration Rate on B Accounts of Required Reserves

Unit: %

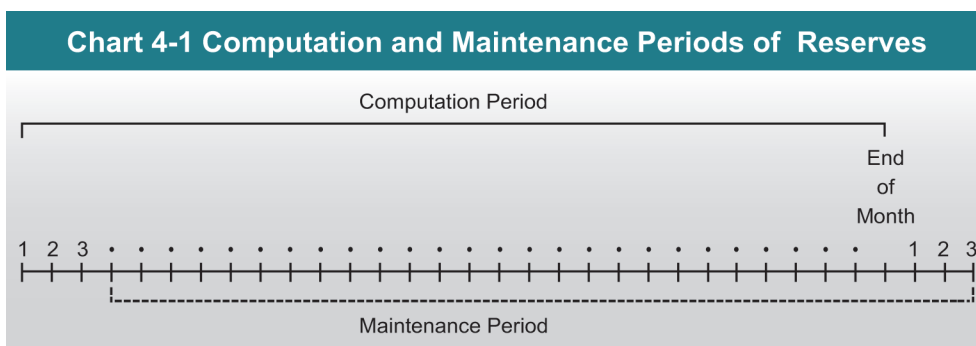
Date (mm-dd-yy)	Remuneration Rate
11. 16. 1998	2.70
01. 07. 1999	3.20
07. 17. 2000	4.00
10. 04. 2001	2.50
11. 12. 2002	2.25
03. 21. 2003	1.75

(3) Computation and Maintenance Periods

Reserve calculation systems in the world can be divided into two types: contemporaneous and lagged. Under the contemporaneous reserve calculation system, the time pattern of the maintenance period coincides with the computation period. Under the lagged reserve calculation system, the maintenance period lags the computation period by one period or more.

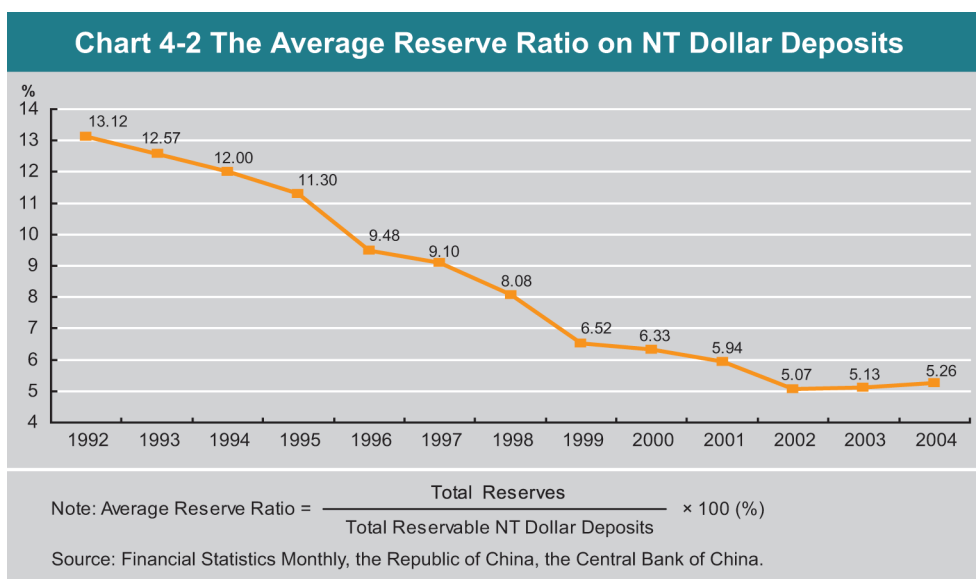
Currently, most central banks in industrialized countries employ the lagged system due to its simplicity in forecasting fund conditions in the banking system. In contrast, the CBC adopts the contemporaneous system because precise timing of monetary policy operations requires a close and immediate link between reserve money and monetary aggregates.

In practice, the maintenance period has been set to be one month since November 1994, running from the fourth day of each month to the third day of the following month. The CBC requires banks to hold an average amount of reserves over the maintenance period rather than a specific amount on each day. When the reserve of a bank falls short by less than one percent of the required amount for the maintenance period, it may make up for the shortfall by carrying over the excess reserves it holds from the previous period. From the banking perspective, the combination of the three devices, namely the intra-period average calculation, the inter-period carry over and the three-day leeway, provides banks with flexibility in meeting their reserve requirements. From a policy perspective, these devices help the CBC to manage fund conditions in the banking system across several maintenance periods. As a result, the stability of reserve money and call loan rates may be achieved more easily. Chart 4-1 displays the computation and maintenance periods of required reserves.



4. Adjustment of Reserve Ratios

Between 1992 and 2004, in line with the international trend, the CBC lowered the required reserve ratio on deposits denominated in NT dollars several times. During the same period, based on the outlook for monetary growth and conditions regarding the flow of funds in the money market, the CBC also issued negotiable certificate of deposits (NCDs) when necessary to mop up the excess liquidity resulting from the lower ratio. As a result, with an eye on financial stability, the operating costs of banks were significantly lowered. In addition, the difference between the reserve ratio on transaction deposits and non-transaction deposits narrowed considerably. As shown in Chart 4-2, the weighted average of the ratio was reduced from 13.12 percent in 1992 to 5.26 percent in 2004.



In December 2000, the CBC began to impose reserve requirements on newly taken demand and time deposits denominated in foreign currencies. The purpose was to curb foreign exchange speculation by forcing banks to maintain an appropriate level of foreign currency liquidity at the CBC. The ratio was initially set at 5 percent, then raised to 10 percent, and later reduced to 0.125 percent in June 2002 in response to changes in economic and financial conditions. Table 4-2 displays the required reserve ratios on various types of bank liabilities between 1992 and 2004.

Table 4-2 Reserve Ratios on Bank Liabilities

Unit: %

Types of Deposits Date (mm-dd-yy)	Checking Deposits	Demand Deposits	Savings Deposits		Time Deposits	Foreign Currency Deposits	Other Liabilities
			Demand	Time			
01. 09. 1992	27.250	25.250	17.750	8.875	10.875	—	—
09. 17. 1993	26.250	24.250	16.750	8.125	10.125	—	—
08. 12. 1995	25.250	23.250	15.750	7.625	9.625	—	—
09. 25. 1995	24.250	22.250	14.750	7.125	9.125	—	—
11. 07. 1995	23.750	21.750	14.250	6.875	8.875	—	—
03. 08. 1996	22.500	20.500	13.000	6.525	8.525	—	—
08. 24. 1996	22.000	20.000	12.500	6.400	8.400	—	—
09. 25. 1997	21.250	19.250	11.750	6.250	8.250	—	—
10. 16. 1997	19.750	17.750	10.250	5.750	7.750	—	—
08. 03. 1998	19.250	17.250	9.750	5.550	7.550	—	—
09. 29. 1998	18.750	16.750	9.250	5.350	7.350	—	—
02. 20. 1999	15.000	13.000	5.500	5.000	7.000	—	—
07. 07. 1999	15.000	13.000	5.500	5.000	7.000	0	0
10. 01. 2000	13.500	13.000	6.500	5.000	6.250	0	0
12. 08. 2000	13.500	13.000	6.500	5.000	6.250	5.000	0
12. 29. 2000	13.500	13.000	6.500	5.000	6.250	10.000	0
10. 04. 2001	10.750	9.775	5.500	4.000	5.000	5.000	0
10. 08. 2001	10.750	9.775	5.500	4.000	5.000	2.500	0
06. 28. 2002	10.750	9.775	5.500	4.000	5.000	0.125	0

Source: Financial Statistics Monthly, the Republic of China, the Central Bank of China.

5. Liquid Asset Requirement System

All depository institutions in Taiwan are required to hold a certain amount of liquid assets in their portfolios in order to meet changing fund demands at any time. The CBC may, after consulting with the Ministry of Finance (MOF, and since July 2004 with the Financial Supervisory Commission of the Executive Yuan), set a minimum ratio of liquid bank assets to reservable liabilities. The function of the liquid asset requirement system is similar to the reserve requirement system described above. Through imposing a minimum liquidity requirement and administrating reservable liabilities and eligible assets, the CBC is able to influence how banks use their money and how banks manage their liquidity.

The reservable liabilities of depository institutions for the liquid asset requirement system include all types of NT dollar deposits, the net borrowing positions of inter-bank call loans and repurchase agreements. The eligible liquid assets include excess reserves (total reserves minus required reserves), net lending positions in inter-bank call loans, redeposits with maturities less than one year, and various types of marketable securities including treasury bills, NCDs, bankers' acceptances, government bonds, commercial papers, corporate bonds and bank debentures.

The liquid asset requirement system, established in 1977, has helped to expand Taiwan's money market and protect banks from liquidity shortages. The statutory liquidity ratio was initially set at 5 percent and then rose to 7 percent in 1978 and has stayed at this level to this date. In practice, since the mid-1990s, with the advancement in liquidity risk management, most banks have maintained much higher liquidity ratios than the required ratio.

Section 2 Discount Window

The discount window is where banks obtain discount loans from central banks. In practice, the CBC can affect the volume of discount loans in two ways. One is by setting the discount rate or the price of the loans; the other is by affecting the quantity of the loans through its administration of the discount window. Both are important policy tools as the volume of discount loans affects reserve money and monetary aggregates.

In addition to its use as a tool for monetary control, discounting is also important in preventing financial panics. The CBC, like all other central banks worldwide, is the lender of last resort for banks. In other words, when banks have no one else to borrow from, they may come to the CBC for discount loans—loans that are particularly effective for providing liquidity to the banking system during a banking crisis because the reserves are immediately channeled to the banks that need them most.

1. Types of Discount Window Facilities

(1) Rediscounts

When obtaining credit in the form of a rediscount, the borrowing institution transfers eligible papers that are based on real production activities, such as bankers' acceptances, trade acceptances and commercial paper issued by the private sector or public enterprises, to the CBC. In return, the borrower is credited in its reserve account held with the CBC by an amount equal to the discounted value of the eligible paper at the current rediscount rate. However, as the economy continues to evolve, it has become increasingly difficult for the CBC to verify whether the papers traded are actually based on real activities. This results in lengthening the time required for the CBC to complete the inspection procedure, which affects borrowing institutions' abilities to meet funding demands in time. As a result, most banks are generally reluctant to borrow in this way.

(2) Short-term Accommodations

Depository institutions may apply for short-term accommodations with the CBC not exceeding a maturity of ten days. Upon borrowing, the institutions provide collateral approved by the CBC. Satisfactory collateral includes eligible papers for rediscounts, government bonds, NCDs issued by the CBC, and other securities approved by the CBC. Among these, the CBC's NCDs are the most popular form of collateral.

The rate on borrowing depends on certain conditions. Depository institutions that provide satisfactory collateral, or borrow for monetary policy purposes at an amount less than their reserves in their B accounts may borrow at the rate on accommodations with collateral. Those that have difficulties in

providing satisfactory collateral may borrow at the rate on accommodations without collateral. As expected, the rate charged on the former is much lower than that on the latter.

(3) Refinancing of Secured Loans

Depository institutions may apply for refinancing secured loans with maturities less than or equal to 360 days at the discount window providing that they put up securities approved by the CBC or reserves held in their B accounts as collateral. This type of credit is typically used to fund government-approved loans, monetary policy related loans, or emergency situations approved by the CBC. The rate on accommodations with collateral is applied on such loans.

2. Discount Rate Adjustments

In the last few years, banks have seldom used the discount window for borrowing since the banking system has had ample liquidity. Despite this, the adjustment of the discount rate is still important in signaling shifts in the CBC's monetary policy stance to the financial system and the general public. It complements the CBC's open market operations and supports the general acceptance of monetary policy when market conditions change. It is often the leading indicator for the financial market as it actively leads the change in various bank and market interest rates. In general, in an attempt to stabilize the macro economy, the CBC adjusts the discount rate upwards when the economy overheats and downwards when the economy slows down.

From December 2000 to June 2003, the CBC lowered the discount rate 15 times to shore up a sluggish economy. The rate stayed low until the fourth quarter of 2004, when the CBC adjusted the rate upwards twice in an attempt to preempt mounting inflation expectations as the economy showed strong signs of recovery from the third quarter of 2003 onwards. In response, both money market interest rates and bank rates followed suit. Table 4-3 displays adjustments in discount and accommodation rates between 1992 and 2004.

Table 4-3 Discount Rate Adjustments

Unit: %

Date (mm-dd-yy)	Rediscount Rate	Accommodation Rate with Collateral	Accommodation Rate without Collateral
01.09.1992	5.875	6.875	10.125
05.09.1992	6.125	7.125	10.125
10.05.1992	5.625	6.625	9.625
07.30.1993	5.625	6.125	9.625
11.05.1993	5.500	5.875	9.625
11.24.1994	5.500	5.875	9.625
02.27.1995	5.800	6.000	9.625
07.25.1995	5.500	5.875	9.625
05.24.1996	5.250	5.625	9.625
08.09.1996	5.000	5.375	9.625
08.01.1997	5.250	5.625	9.625
09.29.1998	5.125	5.500	9.625
11.11.1998	5.000	5.375	9.625
12.08.1998	4.750	5.125	9.625
02.02.1999	4.500	4.875	9.625
03.24.2000	4.625	5.000	9.625
06.27.2000	4.750	5.125	9.625
12.29.2000	4.625	5.000	9.625
02.02.2001	4.375	4.750	9.625
03.06.2001	4.250	4.625	9.625
03.30.2001	4.125	4.500	9.625
04.23.2001	4.000	4.375	9.625
05.18.2001	3.750	4.125	6.000
06.29.2001	3.500	3.875	5.750
08.20.2001	3.250	3.625	5.500
09.19.2001	2.750	3.125	5.000
10.04.2001	2.500	2.875	4.750
11.08.2001	2.250	2.625	4.500
12.28.2001	2.125	2.500	4.375
06.28.2002	1.875	2.250	4.125
11.12.2002	1.625	2.000	3.875
06.27.2003	1.375	1.750	3.625
10.01.2004	1.625	2.000	3.875
12.31.2004	1.750	2.125	4.000

Source: Financial Statistics Monthly, the Republic of China, the Central Bank of China.

Section 3 Open Market Operations

Like most central banks in advanced countries, the CBC uses open market operations as the most important and active tool of monetary policy. The CBC injects reserves into the banking system when it buys securities from dealers, and drains reserves when it sells. This changes the volume of reserve money and the interbank call-loan rate, which in turn, changes monetary aggregates and various market interest rates.

In practice, open market operations occur through auctions in which the CBC invites dealers to state interest rates for securities of the type and maturity that the CBC has selected to sell or buy that day. Because of changing economic conditions and technological advancement, this process has evolved over the years. Before 1997, only three bills finance companies were authorized to serve as brokers. Between 1997 and 1999, the CBC relaxed this restriction and allowed banks to make bids or offers directly. This change, however, lengthened the time and increased the cost of operations. To correct this situation, the CBC limited open market operations to a set of eligible counterparties in January 2000. In addition, it introduced a new automated online network system in April 2003 to expedite the auction process. In May 2003, the primary dealer system authorizing eligible counterparties and additional securities firms to participate in open market operations was initiated.

1. Tools of Open Market Operations

Depending on the reserve situation, the CBC conducts open market operations in one of the following two ways. When forecasts indicate that the supply of reserves will need to be adjusted for a prolonged period of time, the CBC may make outright purchases or sales of securities. Alternatively, when projections indicate only a temporary need to alter reserves, the CBC may engage in transactions that only temporarily affect the supply of reserves such as repurchase agreements (repos) or reverse repurchase agreements (reverse repos).

(1) Outright Purchases and Sales

Transactions on an outright basis occur largely through auctions in which dealers are requested to submit bids to buy or offers to sell securities. These

securities include short-term bills, government bonds, and NCDs issued by the CBC. In general, the CBC conducts outright transactions only infrequently to meet long-term reserve needs.

(2) Repurchase Agreements and Reverse Repurchase Agreements

When a temporary addition to bank reserves is called for, the CBC engages in short-term repos with dealers; that is, it buys securities from dealers who agree to repurchase them back by a specified date at a specified price. Because the added reserves will be automatically withdrawn when the repurchase agreements mature, this arrangement temporarily injects reserves into the banking system. The opposite situation occurs when a temporary reduction of bank reserves is called for, whereby the CBC sells reverse repos. Since June 1983, the CBC has utilized this method to influence reserves on a temporary basis. Because of the flexibility and simplicity of these transactions, the CBC frequently uses this tool to manage liquidity in the banking system.

2. Issuance of Central Bank Securities

In addition to outright transactions and repos, the CBC has been issuing securities (CD/NCDs) regularly in the past two decades to drain excess liquidity brought forth by Taiwan's sustained trade surplus and excess savings. Such action decreases the supply of reserves, and is therefore considered an instrument of open market operations.

The CBC first issued CD/NCDs in the 1980s with maturities of 3-, 6- and 9-months, and 1-, 2- and 3-years. Financial institutions purchased these securities through auctions. In June 1999, the CBC introduced 14-day and 28-day CD/NCDs. Direct purchases were made at the rate and volume set by the CBC, which served as signals of the CBC's current monetary policy stance. In February 2000, the CBC started to issue CD/NCDs with maturities of 91-, 182-, 364-days, and 2-years. In January 2003, the CBC started to issue CD/NCDs with a maturity of 30-days instead of 14- and 28-days. The CBC then stopped issuing longer term CD/NCDs such as 364-days and 2-years. For the time being, the issuance maturities of CD/NCDs are 30-, 91- and 192-days.

The CBC flexibly arranges maturities of CD/NCDs based on its outlook on fund

conditions in the banking system. Through properly chosen CD/NCD maturities, the CBC keeps the daily supply of reserve money in balance with the banking system's demand. CD/NCDs are thus one of the most important instruments used by the CBC to maintain stability in short-term market rates.

Since 1999, CD/NCDs have become the CBC's most frequently used open market operation instrument. The outstanding balance at the end of 2004 reached NT \$3.56 trillion, or 2.14 times the size of the daily average reserve money of the year.

Section 4 Financial Institution Redeposits

The financial institution redeposit system is an important tool used to control monetary growth and maintaining financial stability in Taiwan. In practice, the CBC may influence the level of reserves in the banking system through taking redeposits from or releasing them to depository institutions, and adjusting the proportion of redeposits allowed to be accepted by delegated banks. The Postal Savings System, as it is prohibited from making loans, accounts for the majority of the redeposits. Redeposits from other depository institutions account for a minor portion. At the end of 2004, the outstanding balances of redeposits from the Postal Savings System and other depository institutions placed with the CBC were NT\$1.35 trillion and NT\$0.53 trillion, respectively. They accounted for 17.56 percent and 6.89 percent of the CBC's total liabilities.

1. Redeposits from the Postal Savings System

The use of postal savings deposits by the Postal Savings System has been gradually deregulated in line with changes in economic and financial conditions in Taiwan during the past four decades. Since the inception of the Postal Savings System in 1964 and up until 1981, the system was only allowed to place its deposits with the CBC to provide medium- to long-term funds needed for economic development. A later regulation required its deposits generated from March 1981 onwards to be distributed among four specialized state-owned banks instead of the CBC. From October 1984 to December 1991, to absorb sustained excess liquidity in the banking system, the CBC joined the four banks in accepting postal savings redeposits. Postal savings deposits generated after 1992 were disposed of in two ways: deposits with any banks (including the CBC), or purchases of government bonds, treasury bills, securities issued by the CBC

and bank debentures. Since 1997, the Postal Savings System has been allowed to gradually take on more responsibility and risk in managing its funds as it has been allowed to purchase bills and bonds issued by the private sector with the approval of the CBC, the MOF, and the Ministry of Transportation and Communications.

2. Redeposits from Banks

In addition to postal savings redeposits, the CBC may also accept redeposits from banks (mostly agricultural banks that accept a large sum of deposits from community financial institutions). This measure came into effect in March 1986, a time characterized by excess liquidity in the market, and alleviated some of banks' pressures to look for sources of loans and investments. However, to encourage proper management of funds by banks, the CBC set maximum proportions of redeposits that it can legally accept and limits the maturity of redeposits to less than one year.

Section 5 Selective Credit Management

There are two types of selective credit management policy in Taiwan: selective preferential loans and selective credit controls. Selective preferential loans refer to the provision of credit to financial institutions directed by the CBC for the purpose of financing selective categories of policy-related loans. In accordance with specific economic development objectives, credit for such purposes has been extended on favorable terms to certain borrowers. Selective credit controls refer to measures that restrict or intervene in financial institutions' extension of certain types of credit. This measure does not affect reserve positions directly. The direct impact falls on the bank credit market. By restricting the terms and sizes of bank loans, such a control places a lid on the speculative demand for bank credit. The following paragraphs describe these two credit management policies in detail.

1. Selective Preferential Loans

There are two types of selective preferential loans. One is through accommodations from redeposits of the Postal Savings System released by the CBC, and the other is through preferential loan programs jointly executed and

supervised by the CBC and other government agencies.

(1) Preferential Loans Accommodated by Postal Savings Redeposits

Accommodations using postal savings redeposits include emergency relief such as loans extended to those who need funds to reconstruct homes and other buildings ravaged in the earthquakes of September 21 and October 22, 1999, assistance extended to small and medium businesses for purchases of machinery, and subsidies to first-time homebuyers.

In view of the sluggish demand for mortgages caused by a real-estate downturn since the early 1990s, the CBC appropriated NT\$100 billion to establish a preferential housing loan program for first-time homebuyers in November 1995. This program was well received by the general public and came to an end in May 1996. Around the same time, the CBC appropriated NT\$15 billion to provide liquidity to the construction industry. These funds were released through commercial banks.

Because of the success of the preferential housing loan program, the CBC reintroduced the program in August 1998 and appropriated NT\$30 billion for that purpose. In January 1999, the CBC and the MOF jointly initiated another preferential housing loan package worth NT\$150 billion to stimulate the real estate market, of which NT\$60 billion was for first-time home buyers, NT\$89.8 billion for the buyers of new housing units, and NT\$0.2 billion for first-time home buyers who are aborigines.

(2) Preferential Loans Administrated by the Government

To help boost the real estate market and relieve the mortgage burden on homebuyers, the CBC, the MOF and the Ministry of the Interior jointly initiated a preferential mortgage loan program in August 2000. A total of NT \$1.5 trillion was earmarked for this purpose from 2000 to 2004. At the inception of the program, the government subsidized 0.85 of a percentage point of the annual interest rate. The subsidy was gradually lowered and reached 0.125 of a percentage point in May 2004. This policy measure was very popular and helped promote the recovery in the real estate market from the third quarter of 2003 onwards.

To provide short- to medium-term working capital and to lower the cost of

funds for traditional industries, the CBC and the MOF jointly initiated the Preferential Loans and Credit Guarantee for Traditional Industries in October 2000. A total of NT\$1.6 trillion had been assigned for this purpose by the end of 2004.

2. Selective Credit Controls

In practice, the only occasion when the CBC exercised selective credit controls was in the late 1980s, when it discovered that banks were financing too many loans for purchases of land and properties and to investment companies. The CBC thus stipulated that, from March 1, 1989, loans secured against land that were used to purchase land, to construct and to purchase residential or industrial properties should not exceed the publicly-announced land value as of the end of February 1989 plus 40 percent, and that the term of such loans should not exceed three years. In addition, unsecured loans for the purchase of land, loans secured against vacant plots of land, and loans secured against land that had not changed hands three or more times within a two-year period were temporarily curbed. Furthermore, the total amount of outstanding credit extended to investment companies was frozen at the end-of-February 1989 level, in order to discourage speculative activities. Loans used to purchase private residences for individual use, in contrast, were excluded from selective credit controls.

As the economy became more stable, these restrictions were gradually phased out in the early 1990s and were nonexistent by 1996. Overall, these measures proved to be very successful in preventing financial disorder in Taiwan.

To sum up, the CBC's monetary policy instruments include repurchase agreements, discount window lending, open market operations, financial institution redeposits and selective preferential loans and credit controls. When necessary, the CBC also exercises moral suasion, or jawboning, to enhance the effectiveness of monetary policy. This is a persuasion tactic used by the CBC to influence and pressure, but not force, banks into adhering to monetary policy. Tactics used are closed-door meetings or telephone conferences with bank management, increases in the severity of inspections and examinations, or appeals to public opinion. Sometimes, the CBC may publicly express its views on current economic and financial conditions and monetary policy stance in an

attempt to communicate directly with the market and to attain support from the general public.

In the early 2000s, interest rates on bank loans charged to retail customers and small and medium enterprises were downwardly rigid (as market interest rates trended down in response to the loosening monetary policy of the CBC). This practice ignored consumer interest and retarded monetary policy transmission. To enhance the efficiency of the monetary transmission mechanism, the CBC encouraged banks to adopt the new base rate system and adjustable rate mortgages (ARMs), both of which adjust rates automatically according to a chosen benchmark interest rate, a mechanism that makes the pricing of loans more flexible and transparent. By the end of 2004, all domestic banks had adopted the new base rate system and ARMs.

CHAPTER 1

CHAPTER 7

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PURPOSES
AND FUNCTIONS

CHAPTER 5

Foreign Exchange Market Management

CHAPTER 6

Chapter 5**Foreign Exchange Market Management**

International trade, foreign travel, cross-border capital flows, and foreign investment all involve the exchange of currencies. A well-functioning foreign exchange market is essential to facilitating international transactions. The CBC has the regulatory authority over Taiwan's foreign exchange market and is responsible for its efficiency and stability. On the one hand, the CBC has adopted a series of liberalization measures to help broaden and deepen the foreign exchange market. On the other hand, the CBC monitors foreign exchange market activities closely and may intervene in the market when necessary in order to moderate excessive volatility in the NT dollar exchange rate.

This chapter starts by introducing the foreign exchange market in Taiwan, then describes the role of the CBC in the market, including foreign exchange liberalization measures and surveillance work, and then touches on the management of foreign exchange reserves.

Section 1 The Foreign Exchange Market in Taiwan

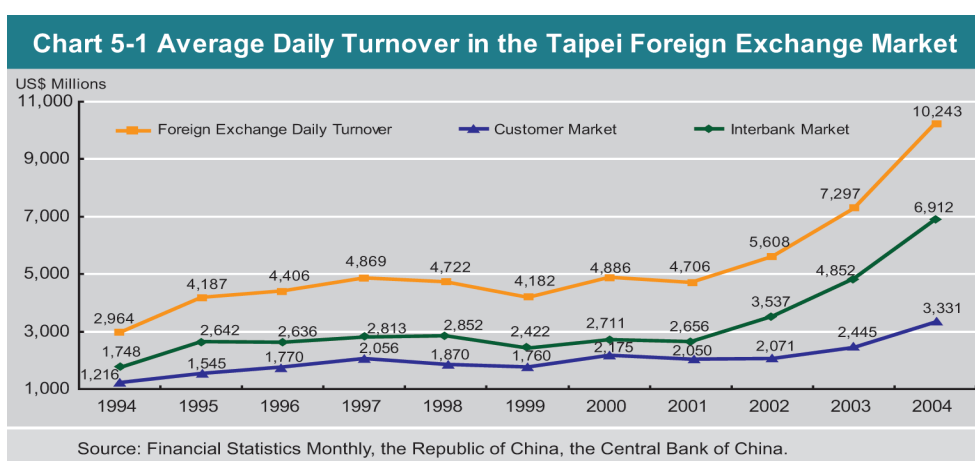
The foreign exchange market in Taiwan was established in 1979. Since its establishment, transactions in the market have expanded considerably along with the rapid growth of external trade and the gradual liberalization of the capital account. In 2004, the average daily turnover of foreign exchange reached US\$10.24 billion, which was 3.5 times the size ten years before.

The foreign exchange market comprises the customer market and interbank market. The customer market is where authorized foreign exchange banks (hereafter banks) trade foreign currencies with their customers. Customers may trade foreign currencies with banks for exports, imports, foreign travel, and overseas investment, and may also receive a wide range of related services from banks, such as trade financing, international remittances, and foreign currency loans and deposits. To cope with the increasing demand for foreign exchange transactions and services, the CBC had authorized 1,104 local banking units to engage in the foreign exchange business by the end of 2004. Among them, 43

were domestic bank headquarters, 995 were domestic bank branches and 66 were foreign bank branches in Taiwan. Besides banks, postal offices and community financial institutions can be authorized by the CBC to sell and purchase foreign currencies and traveler's checks. Postal offices can also make international remittances for customers. Money exchange outlets, usually located in hotels, department stores, convenience stores, popular tourist destinations, visitor centers, railway stations, temples and national museums, can change foreign currencies into NT dollars.

If a bank buys or sells more foreign currencies than their customers demand, it has to decide whether to run an open foreign exchange position. The interbank market is where a bank could engage in transactions to adjust its foreign exchange position for hedging or profiting purposes. Banks may trade with each other directly or through brokers including voice brokers and electronic broking systems. At the end of 2004, 43 domestic banks and 34 foreign banks participated in Taiwan's foreign exchange interbank market. There were two domestic foreign exchange brokers, the Taipei Forex Inc., established in 1994¹ and the Cosmos Foreign Exchange International Co. Ltd., established in 1998.

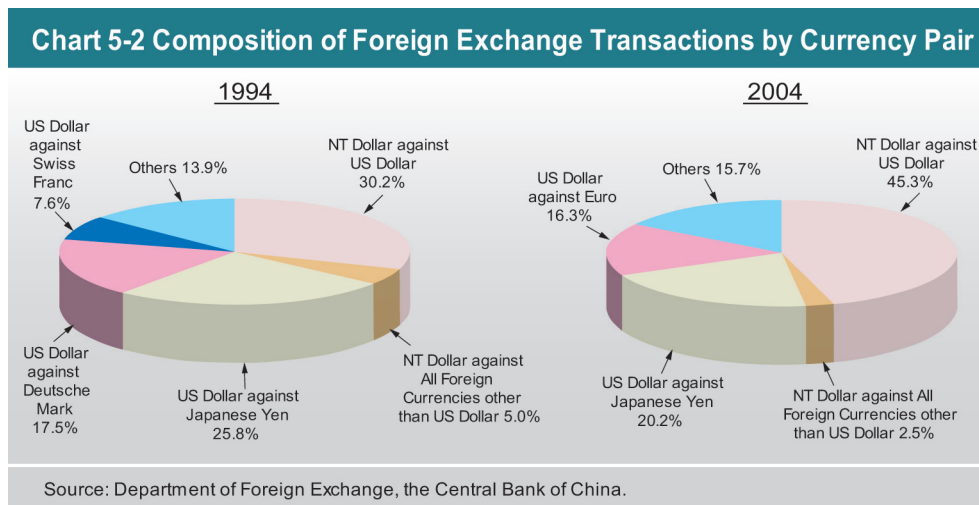
In recent years, the interbank market has grown at a much faster rate than the customer market. In 2004, foreign exchange transactions in the interbank market accounted for 67.5 percent of the total transaction volume in the foreign exchange market, with 20.8 percent of trades involving only local banks, and 46.7 percent of trades involving both a local bank and a bank located abroad. Trading in the customer market accounted for 32.5 percent. Chart 5-1 displays



¹ Before 1994, the Taipei Foreign Exchange Market Development Association (TFEMDA), which was established in 1989, provided foreign exchange broking services for their members.

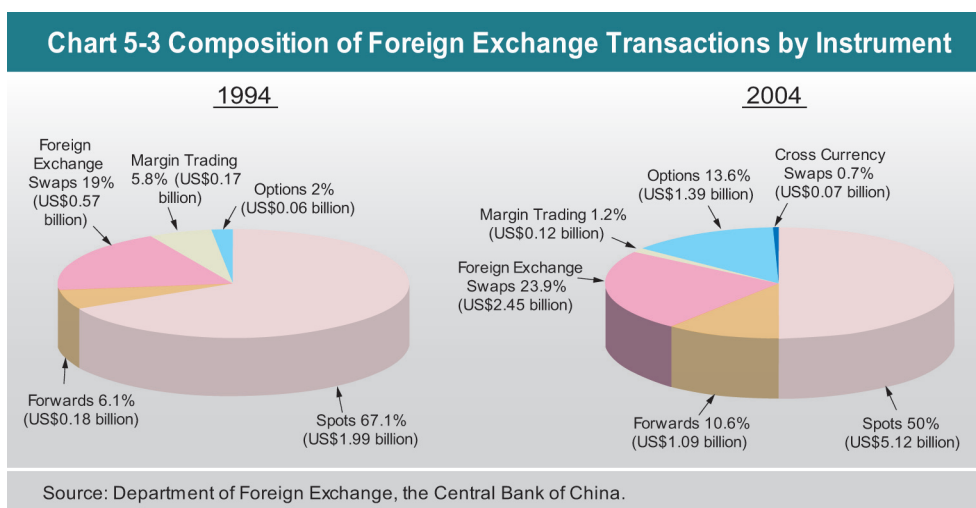
the average daily turnover in these two markets and the sum of the two over the past ten years.

The top three foreign currencies traded in the foreign exchange market in Taiwan are the US dollar (USD), the Japanese yen (JPY), and the euro (EUR). In terms of currency pairs, the NTD/USD was the most traded currency pair and accounted for a share of 45.3 percent in 2004, followed by USD/JPY with 20.2 percent, and USD/EUR with 16.3 percent. Chart 5-2 displays the composition of foreign exchange transactions by currency pair in 1994 and 2004, respectively.



International transactions are not always completed in a short time. For instance, there is often a lapse between the time importers place an order and the time they make payments. Therefore, to hedge the risk associated with exchange rate fluctuations, foreign exchange derivatives have become increasingly common in the market. Foreign exchange derivatives currently traded in Taiwan include forwards, foreign exchange swaps, cross currency swaps, options, and margin trading. In 2004, the share of spot transactions in total foreign exchange transaction volume declined to 50.0 percent from 67.1 percent in 1994, while foreign exchange swaps transactions accounted for a share of 23.9 percent, followed by options with 13.6 percent, forwards with 10.6 percent, margin trading with 1.2 percent and cross currency swaps with 0.7 percent. Chart 5-3

displays the composition of foreign exchange transactions by instrument in 1994 and 2004, respectively.

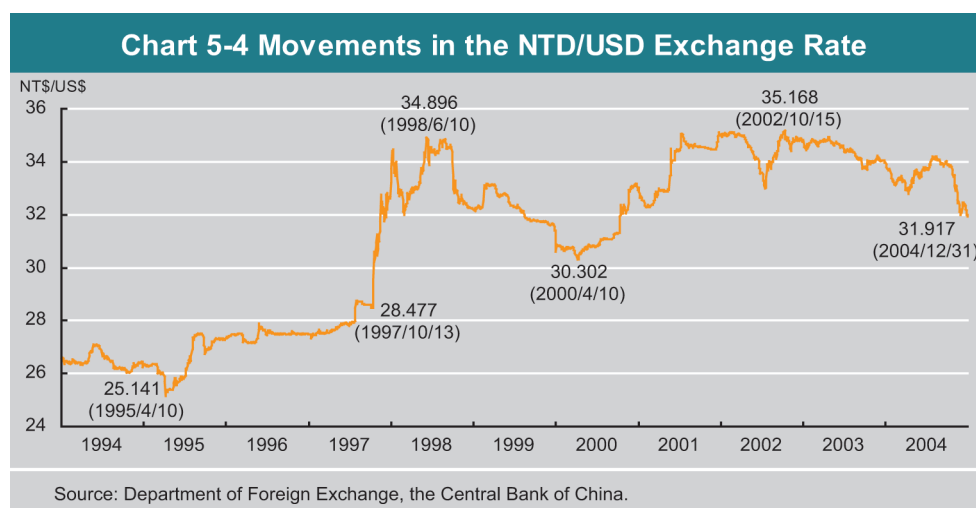


The exchange rate in the interbank market is called the market rate, which is mainly governed by the supply and demand conditions in the market and changes frequently over time. The exchange rate in the customer market is called the counter rate, and each bank decides its own counter rate. The counter rate is usually fixed during a day, but customers may negotiate for better rates.

Concerning the exchange rates of the NT dollar against different foreign currencies, the rate of the NT dollar against the US dollar is determined in the local currency market. The rates of the NT dollar against other foreign currencies are cross rates, which are obtained by combining the NTD/USD rate in the local currency market and the rate of a specific foreign currency against the US dollar in the international currency market.

The CBC adopted a managed floating exchange rate regime in 1979. Movements in the NTD/USD exchange rate have basically reflected changes in Taiwan's external trade and cross-border capital flows. Over the past decade, the NT dollar came under pressure to depreciate during the Asian financial crisis in 1997 and 1998, as well as in 2001 when the global IT recession hit Taiwan's export sector seriously. Conversely, the NT dollar appreciated against the US dollar sharply in 1999 and 2004 as exports expanded rapidly and foreign capital inflows surged.

Chart 5-4 displays movements in the NTD/USD exchange rate during the past ten years.



Movements in the exchange rate in turn affect the prices of foreign goods and services, the costs of traveling abroad, as well as the values of export receipts and cross-border investments. Under a floating exchange rate regime, movements of the exchange rate tend to balance a country's external account over the long run.

Section 2 Foreign Exchange Deregulation

In the past decade, the CBC continued to deregulate capital movements, increase exchange rate flexibility, allow new foreign exchange derivatives to be introduced into the market and offshore banking units (OBUs) to expand their lines of business. These liberalization efforts helped expand the scale and scope of the foreign exchange market and also enhance market efficiency.

1. Deregulation of Capital Movements

In July 1987, the CBC lifted restrictions on capital flows not involving the NT dollar, as well as capital flows involving the NT dollar and related to trade in goods and services. At the same time, the CBC also lifted foreign exchange

restrictions on capital flows for direct investment purposes with the approval of the Ministry of Economic Affairs.

For capital flows that involve the NT dollar but are not for trade or direct investment purposes, the CBC has taken a gradual approach to lifting restrictions. Annual ceilings on such foreign exchange transactions by each domestic company and individual were gradually raised. From 1997 onwards, a domestic company may freely sell (or buy) foreign currencies for (with) NT dollars up to US\$50 million per year, while for an individual or non-profit entity the ceiling is US\$5 million. Companies or individuals who want to exceed the ceilings need the approval of the CBC.

For foreign portfolio investments in Taiwan, the Ministry of Finance (MOF) and the CBC allowed Qualified Foreign Institutional Investors (QFIIs) to directly invest in Taiwan's equity market in 1991. They gradually removed the quota on QFIIs' total investment in the domestic equity market and the time limit on QFIIs' fund remittances for such purposes. With the exception of a few industries, restrictions on foreign ownership of a single listed company were also lifted. In 1996, the MOF and the CBC allowed foreign individual investors to invest in Taiwan's equity market. In October 2003, they abolished the QFII system and simplified the procedure for foreign investors to buy local shares. Foreign investors investing in domestic securities were reclassified into Foreign Institutional Investors (FINIs) and Foreign Individual Investors (FIDIs). Once registered with the Taiwan Stock Exchange Corporation, they may remit investment principal and proceeds through any bank at any time. Each foreign individual investor may invest up to US\$5 million, while foreign institutional investors are not subject to any ceiling.

The MOF and the CBC have also gradually liberalized the scope of foreign portfolio investments in domestic equity markets. Under current regulations, foreign investors may invest in a wide range of local instruments including stocks, corporate bonds, convertible bonds, Taiwan depository receipts (TDRs), warrants, government bonds, asset-backed securities, beneficiary certificates and financial debentures. Beginning in June 2003, foreign investors are allowed to participate in the domestic securities lending market. For the purpose of hedging, foreign investors are also allowed to trade futures, options, and interest rate derivatives. Instead of domestic equities, 30 percent of inward remittances may also be allocated in government bond repos, time deposits, money market instruments and money market mutual funds.

2. Greater Flexibility of Exchange Rate Movements

Taiwan's exchange rate regime has undergone a series of changes during the past decades. Taiwan shifted from a fixed to a managed floating exchange rate regime in 1979. At the beginning of the managed floating, daily fluctuations in the interbank rate of the NTD/USD were limited to upper and lower bounds around the central rate, which was the weighted average interbank rate of the previous business day, and the counter rate for small-amount trading was set within a narrow band around the central rate by each bank on a daily basis.

To make the exchange rate more flexible, the CBC abolished the central rate system in April 1989, and the NTD/USD rate began to move freely according to market conditions. However, for small-amount trading with customers, each bank still had to set its counter rate within a band around the base rate, which was determined collectively by major banks at the beginning of each business day. Starting from December 1990, major banks no longer set the base rate, and each bank began to decide its counter rate according to its cost of funds, foreign exchange positions, and business strategies.

To smooth out excessive exchange rate fluctuations, the CBC adjusted the methods applied to calculate banks' foreign exchange positions and imposed ceilings on banks' short and long positions and foreign liabilities. The purpose was to restrain banks' ability to obtain funds to finance speculative transactions in the foreign exchange market. Beginning in 1991, the interbank foreign exchange forward market bloomed as the foreign exchange positions of banks started to be measured on an accrual basis.

To give banks more flexibility in their operations, the CBC gradually lifted the ceilings on banks' short and long positions, and abolished such restrictions in July 1996. Since then, banks may set their own limits on foreign exchange positions according to their own internal risk control needs. However, to prevent banks' overexposure in the foreign exchange market, the CBC required that foreign exchange derivatives should not exceed one third of a bank's total foreign exchange positions. In the meantime, to further liberalize the foreign exchange market, and in compliance with the guidelines for liberalization of trade in services set by the World Trade Organization (WTO), the CBC removed the ceiling on banks' outstanding foreign liabilities. Beginning in 1999, banks' foreign liabilities and foreign currency deposits are subject to reserve requirements. Since then, the CBC has focused on strengthening banks' risk management

practices to maintain the stability in the foreign exchange market.

3. Development of the Foreign Exchange Derivatives Market

Against the background of increased exchange rate volatility, foreign exchange derivatives began to be used to reduce risks and enhance market liquidity. The first forward contract in Taiwan was made in 1972. At the time, currency forwards could only be used for the purpose of external trade, and the forward rate was determined by the CBC. Exchange rate risk was actually shifted from exporters and importers to the CBC through banks. NT dollar forward contracts involving the US dollar did not begin to be traded until 1979 when the NT dollar was unpegged from the US dollar. In 1984, the domestic money market was set up, and banks were then able to calculate the forward rate.

Foreign exchange swaps, mainly traded in the interbank market, consist of two contracts: a spot and a forward. In Taiwan, the first foreign exchange swap was traded between two local branches of foreign banks in 1983. Foreign exchange swaps have gradually become an important instrument for local branches of foreign banks to obtain short-term NT dollar funds.

Since the early 1990s, as the CBC allowed more and more foreign exchange derivatives to be introduced to the local market and eased restrictions on banks' foreign exchange positions, the market began to grow rapidly. The CBC allowed banks to engage in foreign exchange margin trading and cross currency swaps involving different foreign currencies in 1991, and foreign currency interest rate swaps, foreign exchange options, and both forward rate agreements and interest rate options based on foreign currency assets in 1993. In 1996, the CBC allowed banks to trade foreign currency commodity-linked derivatives, equity-linked derivatives and structured products.

To prevent excessive speculation in the foreign exchange market, the CBC was more cautious about the deregulation of NT dollar related foreign exchange derivatives. Regarding foreign exchange forwards, bank customers other than exporters and importers, such as property insurance companies and cargo-carriers, were allowed to use forwards to hedge their currency risks in 1994. In 1996, all bank customers were allowed to use forwards for hedging purposes. The CBC also allowed banks to engage in NT dollar related cross-currency swaps and non-delivery forwards in 1995, NT dollar related foreign exchange options in 1997, and NT dollar interest rate related structured products in 2003.

Regarding the deregulation of foreign exchange derivative products, the CBC gradually adjusted its position over time. In the first stage, the CBC required banks to obtain permission for selling foreign exchange derivatives on a case-by-case basis. In the second stage, permissions were required for banks trading foreign exchange derivatives on a product-by-product basis. Finally, the CBC shifted to a negative listing approach for foreign exchange forwards in 1996 and for all foreign exchange derivatives in January 2005. The development in foreign exchange derivatives has broadened the scale of Taiwan's foreign exchange market.

4. Development of Offshore Banking Unit Businesses

In December 1983, the *Offshore Banking Act* was promulgated to encourage Taiwanese banks' participation in the international financial arena. The first OBU was set up in June 1984. Initially, OBUs were limited to taking foreign currency deposits and making foreign currency loans to nonresidents. To enhance OBUs' competitiveness in international markets, they were exempt from reserve requirements on deposits, business tax, business income tax, and stamp duties. Interest paid on deposits to nonresidents was also exempt from withholding tax. However, the early operation of Taiwan's OBUs focused on channeling foreign currency funds from foreign financial institutions to local banks. Their syndicated loans were mainly extended to overseas subsidiaries of large Taiwanese businesses. Both OBUs' assets and operating profits were limited.

In October 1997, the MOF and CBC adopted deregulation measures to expand OBUs' lines of business. OBUs were allowed to conduct foreign exchange business with residents. The MOF and CBC also adjusted OBUs' preferential tax status to allow domestic banking units (DBUs) to compete with OBUs on a level playing field. OBUs' revenue and income from business with residents was subject to the *Business Tax Law* and the *Business Income Tax Law*. Interest payments made to residents by OBUs were also subject to the same taxation as those by DBUs. However, the preferential tax status of OBUs' business with nonresidents remained unaltered. The MOF and the CBC also set the *Regulations for OBUs*, and applied the *Banking Act* mutatis mutandis to OBUs' credit business to strengthen the risk management of OBUs.

As Taiwanese businesses expanded their investment abroad, the demand from overseas operations for funding and other financial services continued to

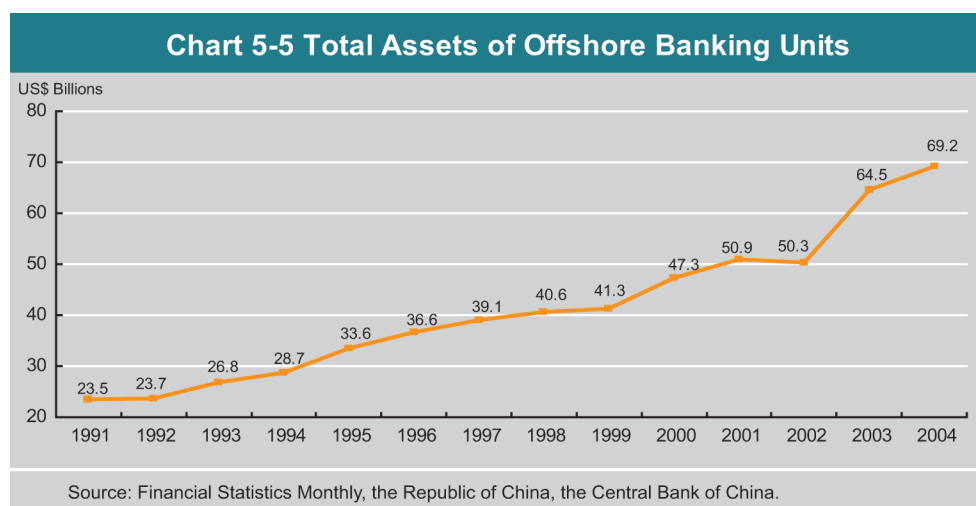
increase. Since most of the overseas investment was bound for China, the CBC and related government agencies began to deregulate cross-strait financial activities. In 1990, they took the first step by allowing local banks to remit funds from Taiwan to China through banks in a third location. In April 1993, they took a further step by allowing overseas branches of domestic banks to do business with foreign banks' branches in China, overseas branches of China-based banks, and overseas legal entities, groups, institutions and individuals from China. To further facilitate the transfer of funds between Taiwan and China, a mechanism was built to enable parent companies in Taiwan to transfer funds to and from their businesses in China through OBUs without rerouting funds through a third location. The key measures to build up the mechanism from 2001 onwards are listed as follows:

- (1) In June 2001, the OBUs were allowed to conduct financial transactions with foreign banks' branches in China, overseas branches of China-based banks, and overseas legal entities, groups, institutions and individuals from China. This measure significantly reduced the time and expense involved. In addition, upon approval, banks could set up representative offices in China to gain a better understanding of their borrowers with investments in China and to provide consultation to Taiwanese businesses in China.
- (2) In November 2001, both overseas branches of domestic banks and OBUs were permitted to conduct financial transactions directly with China-based banks, and legal entities, groups, institutions and individuals in China. The CBC also allowed overseas subsidiaries of Taiwanese businesses to make inward remittances to their parent companies without being subject to the US \$50 million annual ceiling. This measure made it possible for parent companies to utilize the funds deposited at the OBUs by their overseas subsidiaries.
- (3) In February 2002, DBUs and OBUs could directly remit funds to China-based banks and conduct trade-related foreign exchange business with China-based banks.
- (4) In August 2002, overseas branches of domestic banks and OBUs were allowed to extend credit and provide factoring services to Taiwanese businesses in China subject to risk control requirements.

Another major deregulation effort was to increase access to offshore banking services. In the beginning, with the OBU business conducted by an independent

branch of each bank, mostly located in Taipei, access to offshore banking services was inconvenient. From June 2000 onwards, domestic branches of banks were able to act on behalf of their OBUs to provide trade-related financing to nonresidents. They were allowed to make outward remittances for nonresidents on behalf of their OBUs in November 2001, and inward remittances in October 2004. The offshore business that domestic banks were authorized to conduct on behalf of their OBUs was further expanded to include making foreign currency loans to nonresidents in May 2003, and taking foreign currency deposits from nonresidents in October 2004. At the end of 2004, there were 1,104 local branches allowed to act as agents for their OBUs.

The above deregulation measures have helped OBUs develop into funding centers for Taiwanese businesses operating overseas and have increased the efficiency and security of fund transfers across the Taiwan Strait. Among the wide range of services offered by OBUs, cross-strait remittances, as well as the deposit and loan business with non-financial institutions, have grown most rapidly. At the end of 2004, there were 70 OBUs in operation. Among them, 42 were run by domestic banks, while the other 28 were run by foreign banks. The total assets of all OBUs amounted to US\$69.2 billion at the end of 2004, triple those of end-1991. Chart 5-5 displays the growth trend of OBU assets in the past two decades. In 2004, earnings contributed by OBUs accounted for 10.3 percent of the total earnings of domestic banks.



Section 3 Surveillance over the Foreign Exchange Market

The deregulation measures on capital flows and OBU business, greater flexibility of exchange rate movements, and the development of foreign exchange derivatives market have helped Taiwan's foreign exchange market to expand. The NT dollar exchange rate has, however, become increasingly volatile due to surges in capital flows related to portfolio investment. As a result, the NT dollar exchange rate may deviate from economic fundamentals at times. Since Taiwan is a small and highly open economy, with the ratio of external trade in goods and services to GDP exceeding 90 percent, wild swings in the exchange rate is likely to have adverse influences on international trade and financial stability. To cope with the external shocks transmitted via fluctuations in the NT dollar exchange rate, the CBC monitors foreign exchange transactions and capital movements closely and intervenes in the market when necessary.

To enhance the surveillance over the foreign exchange market, the CBC developed the Foreign Exchange Declaration System and the Reporting System of Foreign Exchange Transactions. The CBC also set regulations on foreign exchange derivatives to reduce excessive speculative trading in the market. The details of these measures are described as follows:

1. Establishing the Foreign Exchange Declaration System

Although cross-border capital movements have been deregulated, it is still important for the CBC to monitor foreign exchange market developments and to collect data for compiling statistics on foreign exchange transactions and the balance of payments. To meet these ends, the CBC introduced the Foreign Exchange Declaration System in 1987.

The Foreign Exchange Declaration System requires that each foreign exchange transaction involving the NT dollar with a value equal to or over NT\$500 thousand should be declared by customers. Based on the content and value of the transaction, foreign exchange declaration can be grouped into three categories.

For the first category of transactions, bank customers are only required to fill out declaration statements when trading with banks. This category includes (1) foreign exchange receipts from the export of goods and services, (2) foreign

exchange payments for the import of goods and services, (3) a single foreign exchange trade with the value below US\$1 million for a local company and below US\$500 thousand for an individual while not exceeding annual ceilings (US\$50 million and US\$5 million for a company and an individual, respectively), and (4) a single remittance by a non-resident not exceeding US\$100 thousand.

For the second category of transactions, bank customers should submit required documents together with declaration statements to banks for verification when trading with banks. (1) A single transaction made by a local company with the value exceeding US\$1 million or by an individual with the value exceeding US\$500 thousand, (2) remittances already approved by the competent authorities for direct investment or portfolio investment, and (3) outward remittances to China except for the exemptions stipulated in other CBC regulations belong to the second category.

For the third category, the CBC's approval for the transaction is required. A remittance by a local company or an individual whose accumulated remittance amount exceeds the annual ceiling and a single remittance by a non-resident exceeding US\$100 thousand fall in this category.

For a single transaction with the equivalent value below NT\$500 thousand, banks have the responsibility to classify the transaction according to its use and report to the CBC.

In line with the development of Internet banking, the CBC began to allow bank customers to make foreign exchange transactions via the Internet in May 2001. Trading over a bank's counter is no longer the only choice for bank customers making foreign exchange transactions. However, the amount of each transaction must be less than NT\$500 thousand. After the *Digital Signature Act* was enacted on April 1, 2002, with better trading security, the CBC allowed bank customers to trade large-value foreign exchange equal to or more than NT\$500 thousand through digital certification. Documents and declaration statements can be submitted via the Internet.

To ensure the accuracy of the contents of foreign exchange declarations, the CBC published guidelines and instructions on how to fill out the declaration statement correctly. The CBC also routinely reviews the foreign exchange declaration statements and conducts target examinations when necessary.

2. Launching a Large-Value Foreign Exchange Reporting System

As the foreign exchange declaration system only provides information on customer market conditions, in order to get a full picture of the market, the CBC thus requires banks to report their transactions in both the customer market and interbank market, as well as their positions. In September 1997, after the outbreak of the Asian financial crisis, the CBC established a large-value transaction reporting system in order to monitor capital movements in a more timely manner. At the beginning, banks were required to report each forward transaction with a value of US\$1 million or above in writing to the CBC. Each spot transaction with a value of US\$1 million or above with a local company and US\$500 thousand or above with an individual or association should be reported to the CBC by facsimile. In January 2002, banks began to report the above-mentioned transaction information to the CBC online to enhance efficiency. Another function of the reporting system is to gather information on banks' foreign exchange business by product, currency and counterparty to better understand the structure of the market.

3. Regulating Foreign Exchange Derivatives

As more complex foreign exchange derivatives were introduced into the market, the risk of market instability increased. In view of the possible problems associated with derivatives trading, the CBC adjusted regulations on foreign exchange derivatives to reduce excessive speculative trading in the market. The most important example was that the CBC set three additional regulations on banks engaging in foreign exchange margin trading, swaps and NDF transactions on May 25, 1998 against the background of excessive speculation in the foreign exchange market in the wake of the Asian financial crisis. For margin trading, the CBC restricted banks from engaging in foreign exchange margin transactions on behalf of individual or corporate clients through joint accounts. For swap transactions, the CBC restricted individuals from engaging in swap transactions involving the NT dollar as these transactions could be used by banks to circumvent reserve requirements and could also affect taxation. For NDF transactions, the CBC restricted local legal persons from undertaking NDFs involving the NT dollar in order to prevent banks from getting around the limitations on their foreign exchange positions. However, local legal persons could still hedge their exchange rate risk by using foreign exchange forwards,

foreign exchange swaps, cross currency swaps and options.

In addition, the CBC stipulated that financial personnel engaging in the foreign exchange derivatives business should have professional licenses. For banks with permission to engage in the foreign exchange derivatives business, the CBC required them to enhance risk management practices and disclose complete risk information to their customers.

In sum, the Foreign Exchange Declaration System and the Large-Value Foreign Exchange Reporting System have been very important tools for the CBC's surveillance over the foreign exchange market. The regulations on foreign exchange derivatives set by the CBC have also helped reduce excessive speculative trading to some extent without impairing the ability of exporters and importers to hedge their exchange rate risk. However, during the post Plaza Accord period in 1986 and 1987, the Taiwan Strait crises in 1995 and 1996, and the Asian financial crisis in 1997, surges in speculative cross-border capital flows caused the NT dollar exchange rate to deviate from economic fundamentals. As a result, the CBC had to intervene in the market. Furthermore, the CBC has also made every effort to regularly provide more complete data on Taiwan's economic, trade, and financial statistics to the public in order to provide market participants with adequate and updated information on Taiwan's macroeconomic conditions. All these efforts have helped maintain an orderly foreign exchange market in Taiwan.

Section 4 Foreign Exchange Reserves Management

International reserves are external assets available for financing a country's trade deficits or coping with capital outflows. For member countries of the International Monetary Fund (IMF), international reserves consist of Special Drawing Rights (SDRs), reserve positions in the IMF, foreign exchange assets, monetary gold, and other claims. Since Taiwan is not a member of the IMF, it does not have SDRs or a reserve position in the IMF, and hence its international reserves only comprise foreign exchange reserves and monetary gold.

The foreign exchange reserves of Taiwan are held and managed by the CBC, and are accumulated mainly from direct purchases in the local foreign exchange market by the CBC and returns on investments. The foreign exchange reserves are mostly denominated in the US dollar, the Japanese yen, and the euro. Changes in the exchange rates of the US dollar against the Japanese yen or the

euro result in changes in the US dollar value of the foreign exchange reserves. Taiwan's foreign exchange reserves have exhibited an upward trend over the past forty years. As of the end of 2004, foreign exchange reserves held by the CBC amounted to US\$241.7 billion.

The CBC holds foreign exchange reserves for two major purposes. One is to support the exchange rate of the NT dollar when necessary, and the other is to serve as reserves for the issuance of the national currency. With regard to the first purpose, two major events have occurred in the past. During the Taiwan Strait crises in 1995 and 1996, as well as the Asian financial crisis in 1997, the CBC sold large amounts of foreign exchange in the market in order to stabilize the NT dollar exchange rate amidst heavy depreciation pressure caused by massive capital outflows. With regard to the second purpose, it is stipulated in the *CBC Act* that the issuance of the NT dollar notes and coins must be backed by foreign exchange reserves. In practice, the NT dollar value of foreign exchange reserves held by the CBC always far exceeds the amount of currency issued.

The CBC focuses on liquidity, security, and profitability when managing foreign exchange reserves. To achieve these purposes, most of the foreign exchange reserves are invested in government bonds issued by major industrialized countries or deposited in foreign banks of high credit standing. The CBC adjusts its portfolio whenever changes in international economic conditions and the financial status of individual correspondent banks affect the return or risk profile of the reserve portfolio.

To make the best use of the foreign exchange reserves, the CBC appropriated a portion of the foreign exchange reserves as seed funds to set up the Taipei Foreign Currency Call-loan Market in August 1989. Through the market, local banks can borrow foreign currency funds with lower costs than they would pay in the international money market, and lend their

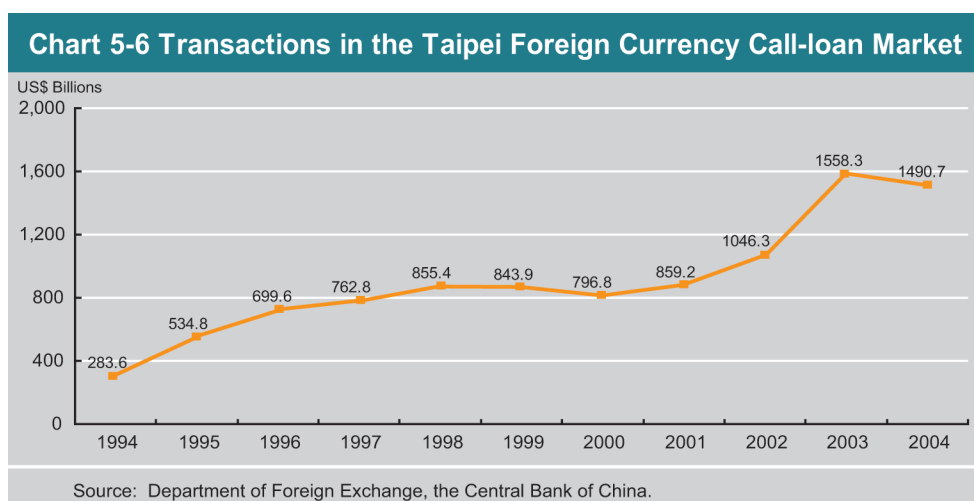


excess foreign currency funds with higher returns than they could obtain from overseas deposits. Initially, the US dollar, the Deutsche mark and the Japanese yen were the only three currencies traded in the call-loan market. Since February 1991, all foreign currencies quoted by local banks have been traded in the market. To attract market participants from abroad, brokerage firms in the local market have links with brokerage firms in Singapore and Hong Kong. The CBC has also increased seed funds for the market six times. The total amount of seed funds provided by the CBC accumulated to US\$20 billion, EUR1 billion, and JPY15 billion at the end of 2004. The volume of transactions in the market has grown approximately five-fold over the past ten years, as depicted in Chart 5-6.

Table 5-1 Balance of Seed Funds for the Taipei Foreign Currency Call-loan Market

Date of Appropriation	Balance of Seed Funds (in billions)		
	US Dollar	Mark / Euro	Japanese Yen
Aug. 7, 1989	3		
Oct. 5, 1989	4		
May 1, 1990	5	0.5 Mark	
Aug. 7, 1991	7	0.5 Mark	
Aug. 22, 1994	10	1 Mark	10
Apr. 29, 1995	10	1 Mark	15
Aug. 16, 2002	20	1 Euro	15

Note: The seed funds denominated in the Deutsche mark has changed to the euro since January 1, 2000.



To promote economic development and industrial upgrading, the CBC has appropriated US\$10 billion of foreign exchange reserves to accommodate banks making loans to major investment projects. The CBC also deposited a small portion of foreign exchange reserves with overseas branches and OBUs of domestic banks. This measure has helped domestic banks expand their international banking business, which in turn has helped Taiwanese manufacturers operating overseas. Especially, during the Asian financial crisis when overseas branches of domestic banks faced a significant markup in the cost of foreign currency funds, the CBC increased the amount of foreign exchange reserves deposited with them.

In recent years, local life insurance companies began to increase the proportion of foreign currency assets in their portfolios. As a result, local banks frequently demand more foreign currency funds to meet the hedging needs of life insurance companies. The CBC began to swap foreign currency funds with banks when they experienced temporary shortages of foreign currency funds.

For most central banks, safety and liquidity are the two most important considerations for foreign exchange reserves management. This is especially the case for the CBC since it has no access to the liquidity support provided by the IMF. Furthermore, Taiwan's capital account has been largely liberalized. External shocks can be quickly transmitted to the Taiwan economy. Therefore, the CBC has to hold relatively large foreign exchange reserves and give priority to liquidity and safety over profitability when managing foreign exchange reserves.

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Issuance of Currency

Chapter 6 Issuance of Currency

The NT dollar banknotes and coins issued by the CBC are the only legal tender in Taiwan. As the sole issuer of currency, the CBC has the responsibility to provide the general public with a stable, reliable and widely accepted currency. This chapter explains the issuance of currency in Taiwan from a historical perspective. It also explains the features of the new series of banknotes that went into circulation sequentially from July 2000. Furthermore, information on sorting damaged money and handling counterfeit money are also included.

Section 1 History of Currency Issuance

Following Taiwan's retrocession from Japan, the Taiwan dollar was first issued by the Bank of Taiwan (BOT) in 1946 and continued in circulation until hyperinflation hit Taiwan in 1949. In an effort to bring hyperinflation under control, the government implemented a currency reform by replacing the old currency with the New Taiwan (NT) dollar in June that year. At the time, every 40,000 old Taiwan dollars were exchanged for one NT dollar.

After resuming its operation in Taiwan in 1961, the CBC became in charge of issuing NT dollar notes and coins. The issuance process ranges from planning and the production of banknotes and coins, to the destruction of those no longer fit for use. The volume of currency production is mainly determined by the demand of the public, which is associated with the rate of economic growth, seasonal factors (for example, a temporary surge in cash demand during the Chinese New Year), and the development of noncash payments (for example, cashless salary payments and credit card payments). In addition, the amount of currency no longer fit for circulation and the amount of currency required as buffer stocks may also affect the volume of currency production. The CBC takes each of these factors into account when estimating the amount of currency required for the fiscal year. After determining the amount of currency to be produced for each denomination of notes and coins, the CBC delegates its affiliates, the Central Engraving & Printing Plant and the Central Mint, to print notes and mint coins.

While the CBC is responsible for planning and producing banknotes and coins, it delegates the responsibilities of circulation, delivery, sorting and destruction to the BOT. The CBC bears all expenses pertinent to the entire process.

The CBC has changed the denominations and design of banknotes and coins several times in the past four decades. The purposes of these changes are to facilitate transactions and to prevent counterfeiting. In compliance with the requirements of the *Central Bank of China Act*, these changes were approved by the Executive Yuan and were made public prior to issuance.

1. Banknotes

In 1949, the BOT issued seven denominations of NT dollar banknotes, 1, 5, 10, and 50 cents, and 1, 5, and 10 dollars. In 1961, the CBC introduced the NT\$50 and NT\$100 notes to facilitate large-value transactions. As the economy grew rapidly, the values of transactions continued to increase. To accommodate such increases, the CBC introduced the NT\$500 and NT\$1,000 notes in 1980.

From July 2000 to July 2002, a new series of banknotes, including NT\$100, NT\$200, NT\$500, NT\$1,000 and NT\$2,000 notes, were introduced sequentially one every half year. The new series incorporates advanced security features and new identification features for machines and the visually impaired. It also bears the legend "The Central Bank of China." The old series, with the legend "The Bank of Taiwan," was removed from circulation in July 2002.



2. Coins

Regarding the issuance of coins, the BOT introduced the 10-cent and 50-cent coins in 1949, and the 20-cent coin in 1950. Coins of these three denominations were gradually phased out of circulation. The CBC introduced the NT\$1 coin in 1961 and the NT\$5 coin in 1970. In 1981, it introduced the NT\$10 coin and redesigned the NT\$1 and NT\$5 coins mainly by reducing their size and weight to make them easier to carry. The CBC began to issue the NT\$50 coin in 1992 and then redesigned it to make it difficult to counterfeit in 1996 and 2002. In 2001, the CBC introduced the NT\$20 coin with latent images, Braille symbols, and Arabic numerals on the rim. The redesigned NT\$50 coin issued in 2002 also incorporated these features.



Currency issued is a liability of the CBC, and is required to be completely backed by gold and silver bullion, foreign reserves, eligible bills or securities held by the CBC. In July 1961, a supervisory committee on reserves against currency issued was established. It audited and published reserve conditions at the end of each month until its termination in June 2002. Since then, the Department of Accounting of the CBC has prepared monthly auditing reports, and the Board of Supervisors has reviewed these reports on a quarterly basis before making public announcements.

Section 2 New Banknotes

Between 2000 and 2002, the CBC introduced a new series of banknotes. The new series features vertically embedded security threads, different sizes and colors for different denominations, tactile marks for the visually impaired, and features identifiable by machines. Two new denominations of banknotes, NT\$200 and NT\$2,000, were included in the new series.

The issuance of the NT\$2,000 note was supported by extensive research. Between 1980 and 2000, Taiwan's GDP and per capita GNP grew more than fivefold, causing the demand for the NT\$1,000 note to increase at a rapid pace. In the late 1990s, the ratio of the largest denomination (NT\$1,000) to per capita GNP was only 0.24 percent in Taiwan, lower than in other countries. In addition, a recent study on credit cards indicated that the average amount of each card transaction was between NT\$3,000 to NT\$4,000. Transactions below this range were mostly paid in cash. All the studies indicated that banknotes of a larger denomination are needed. From the CBC's perspective, the issuance of NT\$2,000 notes not only benefits the public but also reduces the cost of printing notes.

Major changes in the new series include denominations, sizes, background illustrations, and anti-counterfeiting features. Illustrations on the front and back of the new series depict various aspects of Taiwan's history, diversity, natural sceneries, wildlife habitats, and economic development.

The redesigned NT\$100 note in red went into circulation in July 2001. It displays a portrait of Dr. Sun Yat-sen and his calligraphy entitled *Brotherhood and the Great Commonwealth* on the front, and an image of the Chung Shan Hall on the back. A watermark of plum blossoms, the national flower, is visible from both sides.

The NT\$200 note in green was first circulated in January 2002. The front displays a portrait of the late President Chiang Kai-shek and the themes of land reform and 9-year compulsory education to commemorate President Chiang's contribution in paving the way for Taiwan's development. The back displays an illustration of the office building of the President. A watermark of orchids is visible from both sides.

The redesigned NT\$500 note in brown went into circulation in December 2000. It displays a painting of a little league baseball team and an illustration of a

pitcher and a catcher from the major league on the front, and images of Mt. Dabajian and the endangered Formosan Sika deer on the back. A watermark of bamboos, which symbolizes integrity, is visible from both sides.

The redesigned NT\$1,000 note in blue was the first note of the new series to go into circulation in July 2000. The front displays images of elementary school students and symbols of academic subjects including geography, math, and chemistry to demonstrate the importance of education in Taiwan. The back displays illustrations of Mt. Jade surrounded by a sea of clouds and an endangered Mikado pheasant. A watermark of chrysanthemums is visible from both sides.

The NT\$2,000 in purple was first issued in July 2002. The front displays images of satellite dishes, the Taipei World Trade Center, and the ROCSAT-1 satellite to demonstrate the advancement in telecommunication technology in Taiwan. The back features illustrations of the endangered Formosan land-locked salmon and Mt. Nanhu. A watermark of pine trees is visible from both sides.

As of the end of 2004, the NT\$1,000 note was the most frequently used denomination. It accounted for around 40 percent of the banknotes in circulation, followed by the NT\$100 note with a share of 29 percent.

For the purpose of enhancing protection against counterfeiting, the CBC issued an upgraded version of the NT\$500 and NT\$1,000 banknotes on July 20, 2005. The following authentication features were added to this new version: (1) optical variable stripes with holographic images on the front, (2) optical variable window threads with holographic images on the back (replacing the window threads on the front of the previous version), and (3) optical variable ink color alternating between gold and green showing the denomination on the back. In addition, the color scheme of NT\$500 was changed to dark coffee. The previously issued version will remain in circulation simultaneously with the new one until July 31, 2007, when it will be replaced.

Section 3 Sorting Out Damaged Money and Handling Counterfeit Money

Paper notes are easily stained or damaged during circulation. To replace damaged notes, the CBC enacted the *Criteria for the Destruction of Returned Notes* and the *Criteria for the Redemption of Stained and Damaged Notes and Coins Unfit*

for Circulation. Under these rules, each bank is encouraged to help identify stained or damaged notes that should be withdrawn from circulation. The BOT should sort and destroy all notes deemed unfit.

For the purpose of preventing counterfeit currency, the CBC enacted *Regulations on the Handling of Counterfeit, Altered, and Imitation New Taiwan Dollar Notes and Coins by Financial Institutions.* These guidelines require that a financial institution which discovers counterfeit money should, with the consent of the original holder, retain the notes in question, immediately report to the CBC and, when necessary, report to the police authorities for investigation.

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The Payment System

Chapter 7 The Payment System

The payment system is an infrastructure essential for financial stability and development. Through this system, fund transfers, account management, and market information are integrated into one. This chapter begins with a brief overview on the general concept and operation of the payment system. This is followed by a detailed profile of Taiwan's payment systems, including the Check Clearing System and related credit management, the FISC Nationwide Interbank Remittance System, the CBC Interbank Funds-Transfer System, and the Central Government Securities-Settlement System (a book-entry system). The efforts taken by the CBC to develop and oversee the payment system are then discussed.

Section 1 The Concept and Operation of the Payment System

1. *Payment Instruments and Payment Systems*

Currency issued by the central bank serves as a unit of account and the payment system facilitates the transfers of funds among different parties. Functions of the payment system include the delivery of payment instruments, the transmission of payment orders, and the transfer of funds across bank accounts to settle payments. Payments involving interbank fund transfers are settled through current accounts maintained at the central bank.

Payment instruments may be categorized into cash and non-cash forms. Currency plays a vital role in the payment system by performing multiple functions: it is legal tender that serves as a medium of exchange and a unit of account. According to the Bank for International Settlements (BIS), non-cash payment instruments include checks, debit cards, credit cards, credit transfers, direct debits, and both card-based and network-based electronic money.

Innovation in non-cash payment instruments in recent years has brought

significant changes both to the means of payment and to the payment system. Modern electronic payment systems not only facilitate transactions but also increase the efficiency of fund transfers by lowering transaction costs. The electronic payment system may be divided into large-value and small-value payment systems. A large-value payment system processes large-value transactions such as foreign exchange, currency, and securities transactions between banks, and fund transfers for government agencies or commercial transactions. A small-value payment system mainly processes retail payments such as those made via ATMs, credit cards and the Internet.

2. Major Payment Systems in Taiwan

Once a transaction is initiated, fund transfers follow right away. Fund transfers may flow from a customer's account to a bank's account, between two banks' accounts, or from a bank's account to the central bank. Final settlements of funds are completed at the central bank by adjusting the debits and credits entries to the balances of banks' reserve accounts. During this process, one class of payment systems integrates the functions of payment message delivery and exchange with interbank fund transfer settlements. A payment default in such systems could generate a system-wide effect so they are called "systemically important payment systems."

A systemically important payment system is vital to the smooth and effective functioning of the economy. The failure of such a system could trigger disruptions or send shocks across the financial system domestically or even internationally. In January 2001, the BIS released the *Core Principles for Systemically Important Payment Systems*, recommending ten core principles and four central bank responsibilities as general guidelines for promoting the integrity and efficiency of payment systems. Based on these principles, the CBC has made every effort to reconstruct domestic payment systems. The reforms that have been implemented include promoting a network-based interbank payment infrastructure, reconstructing the CBC Interbank Funds-Transfer System, and enhancing oversight of domestic interbank remittance and check clearing systems.

Taiwan's major payment systems include the Check Clearing System launched in March 1951, the FISC Nationwide Interbank Remittance System launched in August 1987, the CBC Interbank Funds-Transfer System established in May 1995, and the Central Government Securities-Settlement System, a book-entry system, launched in September 1997. All these payment systems make use of banks' reserve accounts A held with the CBC for final settlements.

Section 2 The Check Clearing System

The use of checks and drafts is closely related to today's economic activities. Once a check is drawn and circulated, the right and obligation of payment come into effect for the financial institutions involved. To facilitate the exchange and clearing of checks among financial institutions, a centralized clearing-house system was established. With the increasing use of other non-cash instruments, especially electronic payments, the volume and value of transactions through checks have gradually declined since 2000. Nevertheless, as a credit record of checks affects the circulation and public acceptability of checks, check credit management is essential for the development of the payment system.

1. Implication and Operation of Check Clearing

In Taiwan, check clearing refers to the collection and exchange of due checks and drafts among financial institutions in regional clearinghouses. The resulting net balances coming from check clearing are eventually sent to the CBC or other local agent banks for final settlements. A well-functioning check clearing system helps promote the use of checks.

There used to be 16 clearinghouses in Taiwan. Each of the clearinghouses operated separately; their resources could not be managed effectively. In order to further develop the check clearing and interbank fund transfer functions and promote the security and efficiency of the payment system, under the CBC's guidance, the 16 clearinghouses were consolidated into a new independent legal entity named the Taiwan Clearing House (TCH) in November 2002. The former clearinghouses were reorganized as regional head offices or branch offices of the TCH.

Check clearing operations in Taiwan switched from manual to computer processing in response to the increased volume of check clearing. In 1985, an automated Magnetic Ink Character Recognition (MICR) system for check clearing was first introduced in the Taipei clearinghouse. Most of the other regional clearinghouses gradually adopted the MICR system for check clearing as well. In order to process check clearing more efficiently, a computerized dishonored check clearing system was launched in July 1999 at the Taipei clearinghouse to replace manual processing. The data of dishonored checks and their clearance have since been transferred to the Taipei clearing center through a proprietary network. Subsequently, other branches in western Taiwan also participated in this system.

To shorten the time of processing checks and to allow financial institutions to utilize settlement funds more efficiently, the TCH launched the Regional Clearing and Central Settlement System. Under this system, physical checks are cleared in regional branches first. The balances of each region are centrally combined in the Taipei Head Office. The balances will then be sent to the CBC for final settlements. This system commenced operation in July 2002 at the Taipei, Taichung and Kaohsiung clearing centers.

To facilitate fund flows arising from electronic commerce and to enhance the efficiency of the payment system, the CBC initiated the *Electronic Check Development Plan* in December 2000. The TCH was assigned to carry out this project. The first electronic check in Taiwan, also the first in Asia, was issued on September 29, 2003. An electronic check is a virtual check with an electronic signature instead of a hand written signature or physical seal. The scope of electronic bills of exchange covers electronic checks for designated beneficiaries, banks' promissory notes, as well as drafts of fund transfers for correspondence.

To safeguard the integrity of electronic check data, a Centralized Registration and Custody System was introduced. Electronic checks, issued by drawers with an electronic signature and then verified by paying banks, will be sent to the TCH for booking and custody, including their endorsement for transfer, pledge for loans and deposit for collection.

The benefits of using electronic checks as a payment instrument include: (1) the

problems associated with authenticity of seals, lost blank checks and stopping payments common with paper checks are eliminated, (2) electronic information, trading, payment and financing are integrated into a straight-through process, (3) real-time information regarding the check is accessible through an online inquiry system, (4) the use of electronic checks helps integrate firms' internal accounting and financial management, and (5) the use of electronic checks reduces cumbersome manual processing procedures and saves costs.

2. Credit Management

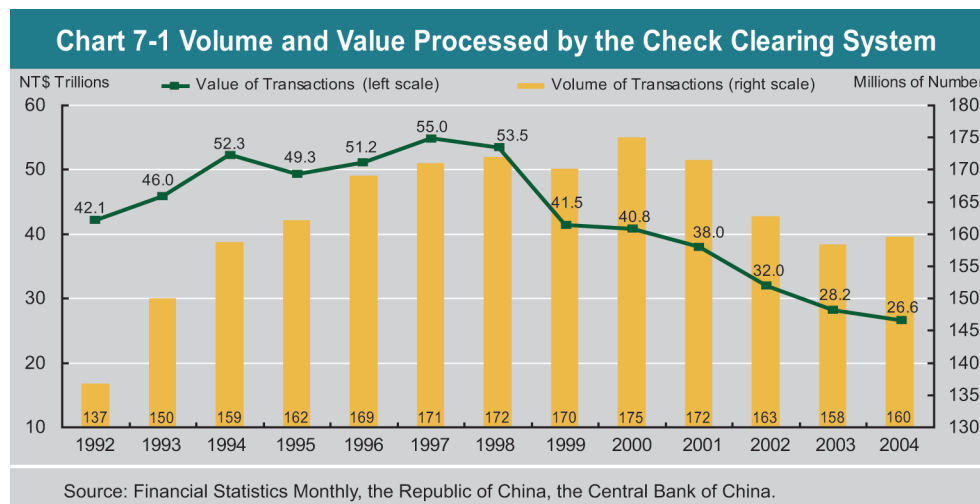
Regarding dishonored checks and rejected checking accounts, the clearinghouses, in addition to performing administrative procedures, maintain a nation-wide database of check credit so that the general public may, through the TCH or banks linked with the clearinghouses, make related inquiries. This has greatly contributed to the establishment of a sound environment for using checks.

Taiwan's check credit management is based on regulations stipulated by the CBC. To cope with the trend of financial liberalization and in accordance with the *Administrative Procedure Act*, the CBC revised the *Regulations on Check Credit Management*, which took effect on July 1, 2001. The revised regulations aim to provide accurate information on check credit records. Under the new rules, records of dishonored checks are available for inquiries for three years. Rejected accounts are suspended for three years but may be reactivated before the end of the refusal period, if holders of the rejected accounts clear up all the outstanding balances.

Table 7-1 Regulations on Check Credit Management Before and After Revision

	After Revision	Before Revision
Legal Basis	<ol style="list-style-type: none"> 1. Agreement Regarding Dishonored Checks and Rejected Checking Accounts Between Financial Institutions and the TCH 2. Agreement Regarding Checking Accounts between Financial Institutions and Depositors 	Administrative Orders
Rescind and Remark	Remarks of rejected checks may be removed upon application within three years. A detailed description of the remarks is available upon inquiry.	Records of rejected checks may be made void within seven business days upon application. Void records are not available for inquiry.
Rejected Checking Accounts	<ol style="list-style-type: none"> 1. An account with a record of three dishonored checks within one year is declared rejected by the TCH. 2. The account will be rejected for three years. 3. To reactivate the rejected account, the account holder should either wait for three years or clear up all the outstanding balances before the end of the refusal period. 	<ol style="list-style-type: none"> 1. An account with a record of three dishonored checks within one year is declared rejected by the TCH. 2. The period of refusal is three years for the above account and six years for an account with more than three dishonored checks within one year. If an account is rejected twice, it can no longer be reactivated. 3. To reactivate the rejected account, the account holder should wait until the end of the refusal period.
Inquiry Information	Inquiries can be made in writing, by phone, or via the Internet for individuals' or legal persons' historical checking credit records.	Inquiries can be made only in writing.

Source: Department of Banking, the Central Bank of China.



3. Automated Clearing House

In June 2002, the TCH was authorized by the CBC to offer automated clearing house (ACH) services to process routine and recurring payments. The ACH system is based on the nationwide check clearing network, through which companies or individuals (originators) authorize banks (Originating Financial Deposit Institutions, OFDIs) to make or collect payments for them. Each bank creates an electronic file of all the payments or collection instructions it has received from all of its customers and delivers it to the TCH for clearing. The individual debit and credit items are sorted in the TCH to create a separate output file for each bank, which is then delivered to the pertinent bank electronically. At the end of the business hours, the TCH delivers net clearing balances of ACH business to the CBC for final settlements. Since the TCH settles the ACH business and dishonored checks together on a net basis, banks can cut costs and utilize funds more effectively. Moreover, using only one bank account, customers are able to make or receive most of the payments involving more than one bank.

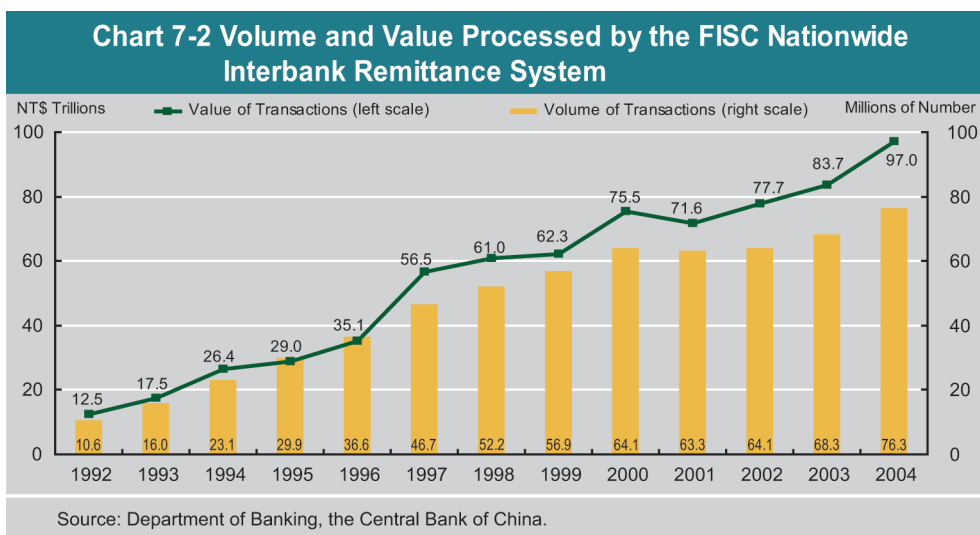
Section 3 The FISC Nationwide Interbank Remittance System

The Nationwide Interbank Remittance System operated by the Financial

Information Service Co. (FISC-NIRS) is a network between participating financial institutions and the FISC. This system allows businesses and the public to perform direct remittances as well as government agencies and financial institutions to conduct treasury and financial remittances. The FISC-NIRS started operation in August 1987.

The participating banks of the FISC-NIRS use funds deposited in the CBC's settlement accounts as payment guarantees. Regional financial institutions and credit departments of farmers' and fishermen's associations need to maintain settlement accounts with the Bank of Taiwan or the Cooperative Bank of Taiwan. The FISC-NIRS will not process interbank remittance instructions unless balances in settlement guarantee accounts are sufficient to cover the payments. In the case of insufficient payment guarantees, financial institutions must transfer funds to the settlement guarantee accounts from their current accounts held with the CBC, the Bank of Taiwan or the Cooperative Bank of Taiwan. At the end of each business day, most guarantee account balances will be transferred back to banks' current accounts, and the remaining balances will be used for the operations of 24-hour ATM services.

As of the end of 2004, a total of 391 financial institutions with 6,141 branches participated in the IRS. The number of payments made through the FISC-NIRS steadily increased from 2,000 recorded in 1987 to 76.35 million in 2004, while its value increased from NT\$15.5 billion to NT\$97,028 billion during the same period.



Section 4 The CBC Interbank Funds-Transfer System

1. Purposes and Functions

The CBC Interbank Funds-Transfer System (CIFS) commenced in May 1995 with an aim to enhance efficiency of fund transfers among its participants, including banks, investment and trust companies, and bills finance companies. The CIFS is an electronic network connecting the CBC with participating institutions. Through this network, participating institutions make large-value payments to adjust reserve account balances at the CBC, and payments associated with interbank call loans, foreign currency transactions, bill and bond transactions, and settlements of interbank net clearing balances from the TCH and FISC.

Since September 2002, the CIFS has been reconstructed into an overall Real-Time Gross Settlement (RTGS) system in order to conform to international best practice set by the BIS on large-value payment systems and to minimize settlement risks.

From participants' perspective, the RTGS system shortens the time lag between acceptance of a payment instruction and its actual settlement, and thus reduces credit risks. However, intraday liquidity needs may increase as a result and participants have to improve their liquidity management for cost considerations. From the viewpoint of payment system regulators, the RTGS system may reduce settlement risks, and enhance the safety and soundness of the whole payment system.

Keeping sufficient intraday liquidity in banks' settlement accounts with the CBC is key to the smooth functioning of the RTGS system. Banks' intraday liquidity may come from reserve account balances at the CBC, in-coming funds from other institutions or borrowings from the CBC or the call-loan market. To smooth payment flows passing through the new system, the CBC has adopted measures such as intraday overdrafts and throughput guidelines. Intraday overdrafts should be fully secured with eligible collateral, charged interest and repaid before 5:10 p.m. of the same business day. Regarding the throughput guidelines, the CBC specifies the percentages of total payments that banks and bills finance companies should settle at certain points of time during the day.

2. System Operations and Future Development

At the end of December 2004, 47 domestic banks, 35 foreign banks, 3 investment and trust companies, China Post Co., and 14 bills finance companies were participating in the CIFS. Financial institutions that maintain reserve or deposit accounts with the CBC may apply for participation in the CIFS. The main business functions of the CIFS are as follows:

(1) Interbank Fund Transfers

Through the CIFS, participating banks make large-value payments associated with interbank funding, call loans, foreign currency trading, bill and bond transactions. Once large-value payment instructions are accepted by the CIFS, they will be executed immediately and are irrevocable. In case of a shortfall in the balance of the settlement account, the payment instructions sent will be queued until the shortfall is replenished. At the end of each business day, all queued and un-executed payment instructions will be revoked.

(2) Payments and Receipts between the CBC and Financial Institutions

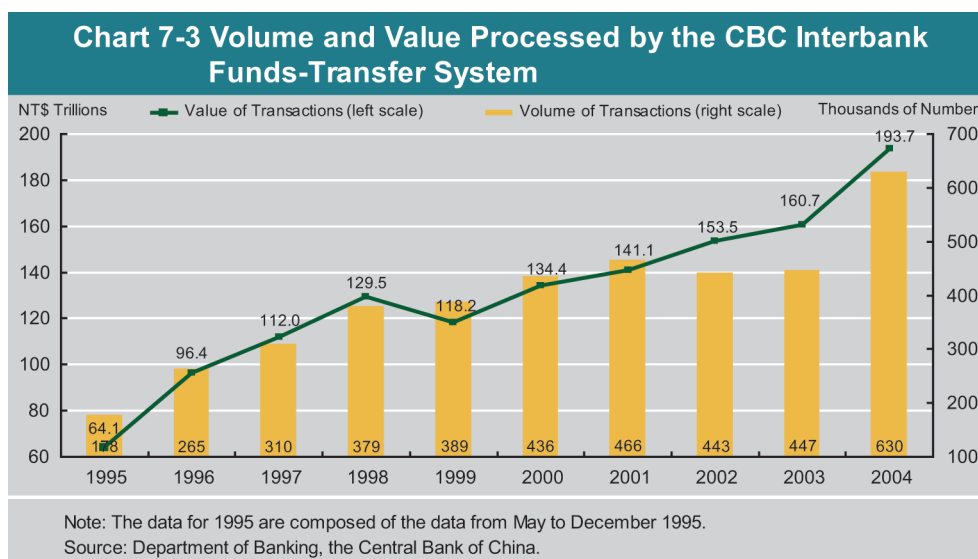
The CIFS may also process payments and receipts between financial institutions and the CBC, such as settlements relating to open market operations, the disbursement and repayment of short-term accommodations, appropriations of the Treasury, principal and interest payments of government bonds, as well as NT dollar settlements resulting from foreign exchange transactions.

(3) Check Clearing and FISC Nationwide Interbank Remittance System Settlements

During the business hours, the TCH may deliver net clearing balances of checks, dishonored checks, and ACH business in the Taipei, Taichung, and Kaohsiung areas to the CBC for final settlements. Settlements of checks will be executed at 3:30 p.m., while settlements of dishonored checks and ACH business will be executed at 5:10 p.m. The FISC-NIRS enables businesses, the public, financial institutions and the government to perform interbank

remittances. At the end of each business day, the FISC will notify the CBC of the resulting clearing balances of the participating banks of the FISC-NIRS. The CBC in turn will settle the payment obligations among these banks by using the CIFS to adjust the positions of their settlement accounts held with the CBC.

Since the commencement of the CIFS, the volume and value of transactions processed by the CIFS have gradually increased over the years. In 2004, 629,930 entries with a total value of NT\$193.7 trillion were processed by the CIFS, compared to 178,000 entries with a total value of NT\$64.1 trillion recorded in 1995.



Section 5 The Central Government Securities-Settlement System

Taiwan's central government securities, including government bonds and Treasury bills, are all issued in book-entry form instead of physical form. Under the current system, the issuance, transfers, redemption, and interest and principal payments of central government securities are electronically registered and processed via the network between each clearing bank and the CBC. The Ministry of Finance (MOF) began to handle the issuance and redemption of government bonds in book-entry form in September 1997 and Treasury bills in

October 2001.

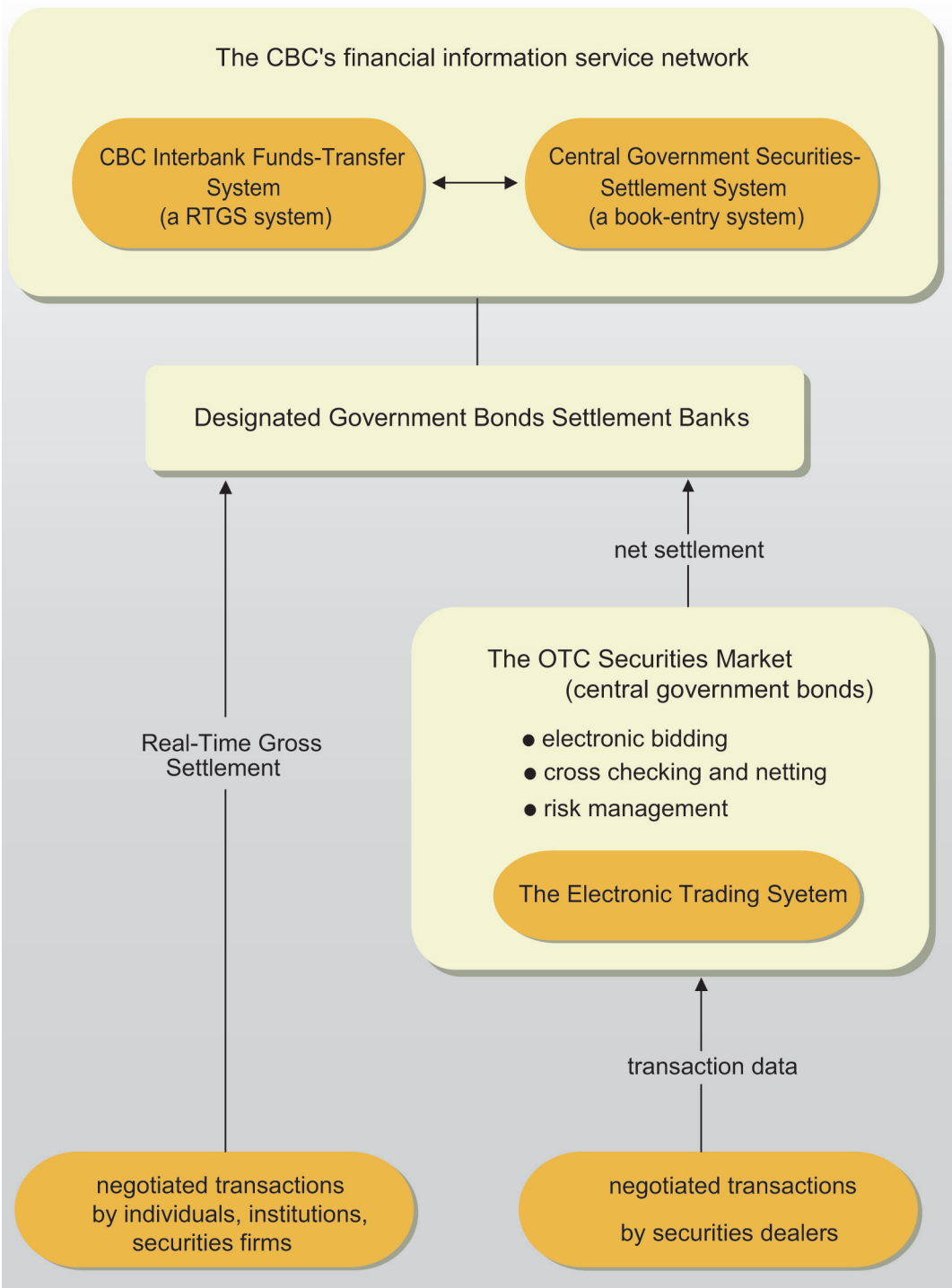
The Central Government Securities-Settlement System (CGSS) established a multi-tiered account structure to keep the records of the obligations and rights of government securities holders. The Department of the Treasury and the Department of Banking of the CBC as well as the clearing banks consigned by the CBC all serve as registration institutions of central government securities. Among them, the clearing banks deal with securities registration, fund transfers, and payments of principal and interest for their own accounts and customers' accounts. The Department of the Treasury carries out the aggregate registration of all central government securities, and handles registration of pledge or guarantee by government securities for central government activities. The Department of Banking handles securities registration relating to its open market operations, accepting government bonds as bank reserves and offering them as short-term financing facilities.

Individuals and organizations are required to open a securities account and a deposit account at a clearing bank to carry out securities registration and fund transfers; a clearing bank should open a securities account and a deposit account with the Department of the Treasury of the CBC.

The system has operated smoothly since its inception. The registration of central government securities is handled by 20 clearing banks and their 1,568 plus branches. The monthly average face value of securities registered in 2004 increased to NT\$6,318 billion from NT\$1,400 billion recorded in 1998. Generally, each transfer of securities or funds can be completed real time. The primary benefits of the book-entry system include the reduction of handling and settlement risks and the enhancement of market liquidity for government securities. The computerized network for transactions is similar to payment systems in major industrialized countries; it provides a solid platform for the internationalization of domestic bond markets.

Two customers trading central government securities within the same clearing bank may choose to transfer the securities only or to deliver the securities versus payment. However, this option is currently unavailable for transactions between two customers coming from different clearing banks. The CBC is actively developing the Delivery Versus Payment (DVP) mechanism across clearing banks so that transactions involving two different clearing banks can be settled based on a DVP basis to reduce settlement risk.

Chart 7-4 Delivery Flow Chart of the Central Government Securities-Settlement System



Purposes and Functions (1992-2004)

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CHAPTER 4

PURPOSES
AND FUNCTIONS

CHAPTER 5

Fiscal Agency and Depository Services

CHAPTER 6

Chapter 8**Fiscal Agency
and Depository Services**

The CBC functions as the government's bank. The fiscal agency and depository services it provides to the government are critical to treasury management and implementation of monetary policy. This chapter explains the CBC's fiscal agency and depository functions, including handling central government bonds and treasury bills, and managing receipts and disbursements of treasury funds.

Section 1 Management of the Fiscal Agency and Depository

One of the core responsibilities of the CBC is to serve as the fiscal agent and depository for the central government. As the fiscal agent, it provides the Ministry of Finance (MOF) with services related to the issuance, buyback, registration, redemption, and interest payment of central government securities. As the depository, it is responsible for the custody of central government deposits, securities, and property. Some of the above functions are delegated to other financial institutions when necessary.

Transactions carried out by central government agencies through various financial institutions all over the country are reported to the CBC through a centralized treasury receipts and disbursements system. Funds received are deposited in the Treasury Deposit Account (TDA) at the MOF's disposition. Government disbursements are transferred from the TDA to regional government agencies, schools, and creditors. As the CBC is also the operator of payment systems, putting it in charge of fund transfers related to government revenues and expenditures improves the efficiency of treasury management.

From a monetary policy perspective, it is useful to the implementation of monetary policy for the CBC to act as the fiscal agent. By monitoring treasury transactions, the CBC is able to obtain timely information regarding fund conditions and adopt measures promptly to maintain monetary stability.

Section 2 Treasury Deposit Account and Deposits of Government Agencies

The management of treasury deposits is separated into two tiers. The first is the CBC's fiscal agency function delegated by the MOF. The second is the CBC's delegation of treasury management responsibilities to other financial institutions.

1. Treasury Deposit Account

The CBC handles treasury funds on behalf of the MOF through the TDA. All receipts and disbursements of the central government are made through this account based on a system of centralized collection and disbursement of fiscal revenue and expenditure.

Central government deposits are either made by the payer directly to the CBC and other agent banks or collected by agent banks stationed at airports, courts, or revenue service offices. The funds received by agent banks are immediately reported to the TDA at the CBC through the National Treasury Services Operational System.

Treasury disbursements, with the exception of special funds and custodial funds in designated accounts, are processed either by treasury checks drawn on the TDA or through the interbank remittance system.

2. The Fiscal Agency System

The CBC manages the TDA and processes treasury transactions for the Taipei city government. For other areas where it has no branch offices, the CBC delegates the handling of treasury receipts and disbursements to 15 other financial institutions and their 350 plus nationwide branches as agent banks. There are more than 4,000 revenue agent banks in the country.

In view of the importance of obtaining timely information on fiscal operations and managing fiscal services more efficiently, several changes were made to the fiscal agency system in February 1999:

- (1) The original three-tier system consisting of central, regional, and branch

account management was streamlined to a two-tier system consisting of the CBC and other agent institutions.

- (2) The CBC was authorized to delegate fiscal agency functions to banks' head offices, which would supervise the treasury operations of their subordinate branches. Before this change, the CBC directly consigned the branches of financial institutions as agent banks.
- (3) The National Treasury Services Operational System was established to transfer receipts and disbursements of treasury funds electronically on a real-time basis. This task had previously been performed manually.
- (4) The two separate systems of bank accounts and treasury accounts in agent institutions were combined into one to simplify the process.

As a result of these changes, it takes much less time to complete a transaction and the associated accounting procedure. Now it takes only one day for the funds received at agent institutions to reach the TDA at the CBC instead of five. The CBC is able to obtain the latest information on treasury transactions. This in turn helps implement monetary policy and manage treasury funds, thereby improving the overall administrative efficiency.

3. Designated Custodian Accounts of Central Government Agencies

In principle, central government agencies should deposit all the revenues they receive with the CBC. However, under certain circumstances, they may set up designated custodian accounts for special funds, governmental funds, and custodial funds with other agent banks. The setup of designated custodian accounts is subject to the approval of the MOF. The CBC also delegates overseas branches of domestic banks as fiscal agents to handle such accounts for overseas offices of the central government agencies in New York City, Los Angeles, Seattle, and Paris.

4. Depository Services

Property of central government agencies or lodgments in court in the form of securities, title deeds, bills and notes should be kept at the CBC or other local agent banks. Depositing agencies receive a monthly statement of deposited items and may request additional statements from the CBC. The launch of the

Automated Telephone Service System in March 2002 makes it possible for depositing institutions to check their account balances over the phone and obtain transaction details and application forms by fax.

Section 3 Managing Central Government Bonds and Treasury Bills

Central government bonds are mainly issued to finance major construction projects. Treasury bills are issued with maturities of less than one year to bridge the timing gap between government revenues and expenditures. Both are marketable and risk-free securities backed by the government. They are regarded as high-quality financial instruments and their yields can serve as benchmark rates for market interest rates.

1. Debt Management Services

The CBC provides services related to the issuance, registration, redemption, and servicing of central government bonds. However, the CBC is prohibited by law from purchasing central government bonds in the primary market, except when approved by the Legislative Yuan.

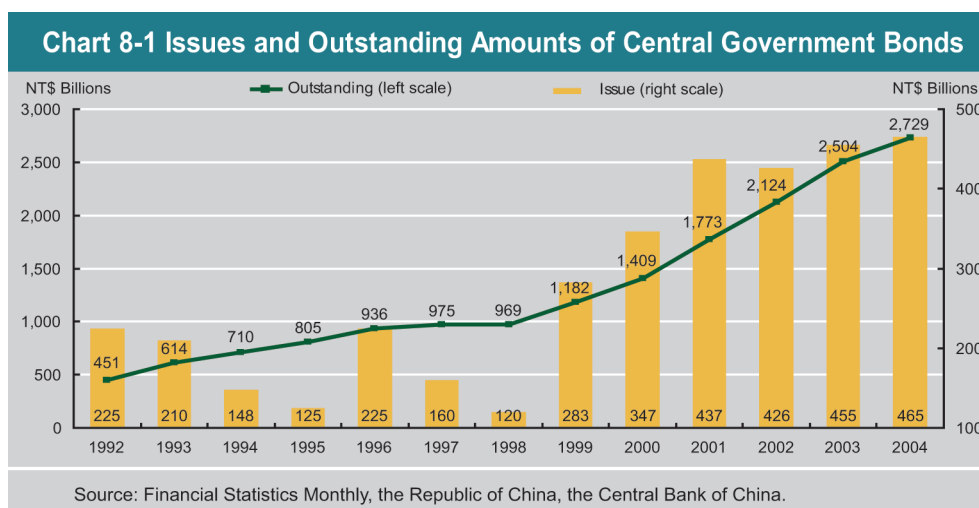
(1) Sale of Central Government Bonds

The MOF entrusted the CBC to sell central government bonds on its behalf. To this end, the CBC arranges auctions, underwriting, or subscriptions by small investors. To obtain central government bonds through auctions, qualified dealers should submit tenders electronically to the bidding system. When necessary, the CBC may have dealers underwrite an issuance. Small investors such as individuals or legal persons may purchase government bonds through certified dealers.

Prior to July 2004, auctions of central government bonds followed two formats: single-price auctions and multiple-price auctions. In 1995, zero-coupon bonds were issued twice, both through a single-price auction. All the other issues were interest-bearing bonds and were carried out through multiple-price auctions. Starting from July 2004, all government bond auctions follow the single-price method. The aim of the change is to conform

to international practice, and to encourage participants to bid more aggressively and reduce the Treasury's financing cost.

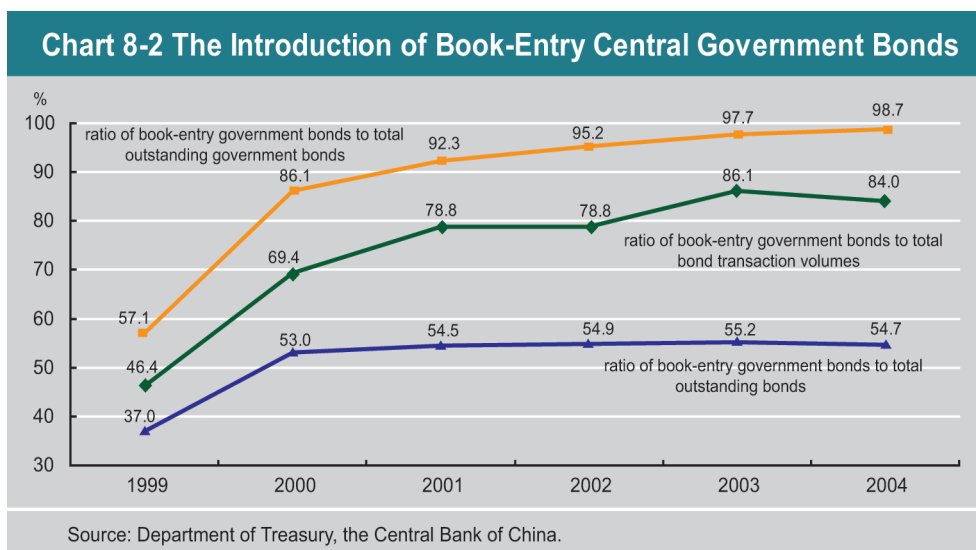
To effectively establish a benchmark yield curve and to increase bond market liquidity, the CBC introduced a new reopen system for additional issues of outstanding government bonds. The first reopen issues were auctioned in April 2003.



(2) Book-Entry Central Government Bonds

The surge in the amount of central government bonds issued after 1991 prompted the CBC to initiate the conversion from physical to book-entry bonds. The new paperless system overcomes problems of losses, forgery, and the cost of safekeeping related to physical bonds, and also promotes the development of the bond market. All central government bonds issued from September 1997 onwards have been in book-entry form.

Following the successful launch of the book-entry system, from January 1999 outstanding physical bonds have also been converted into book-entry form. In December 2002, book-entry government bonds became eligible collateral with the court. This arrangement has in turn speeded up the conversion. As of the end of 2004, book-entry government bonds accounted for 98.7 percent of total outstanding central government bonds.



2. Managing Treasury Bills

The CBC manages the issuance, buyback, servicing, and redemption of Treasury bills on behalf of the MOF. The MOF sometimes consigns the CBC to buy back Treasury bills before their maturity dates when the Treasury account is running a surplus. The CBC may also buy and sell Treasury bills through open market operations on its own account to maintain financial stability.

Treasury bills are sold at discounts through auctions. Participants are limited to dealers, i.e. banks, investment trusts, insurance companies, bills finance companies, and the Chunghwa Post Company. Other legal persons and individuals may authorize dealers to submit tenders in Treasury bill auctions.

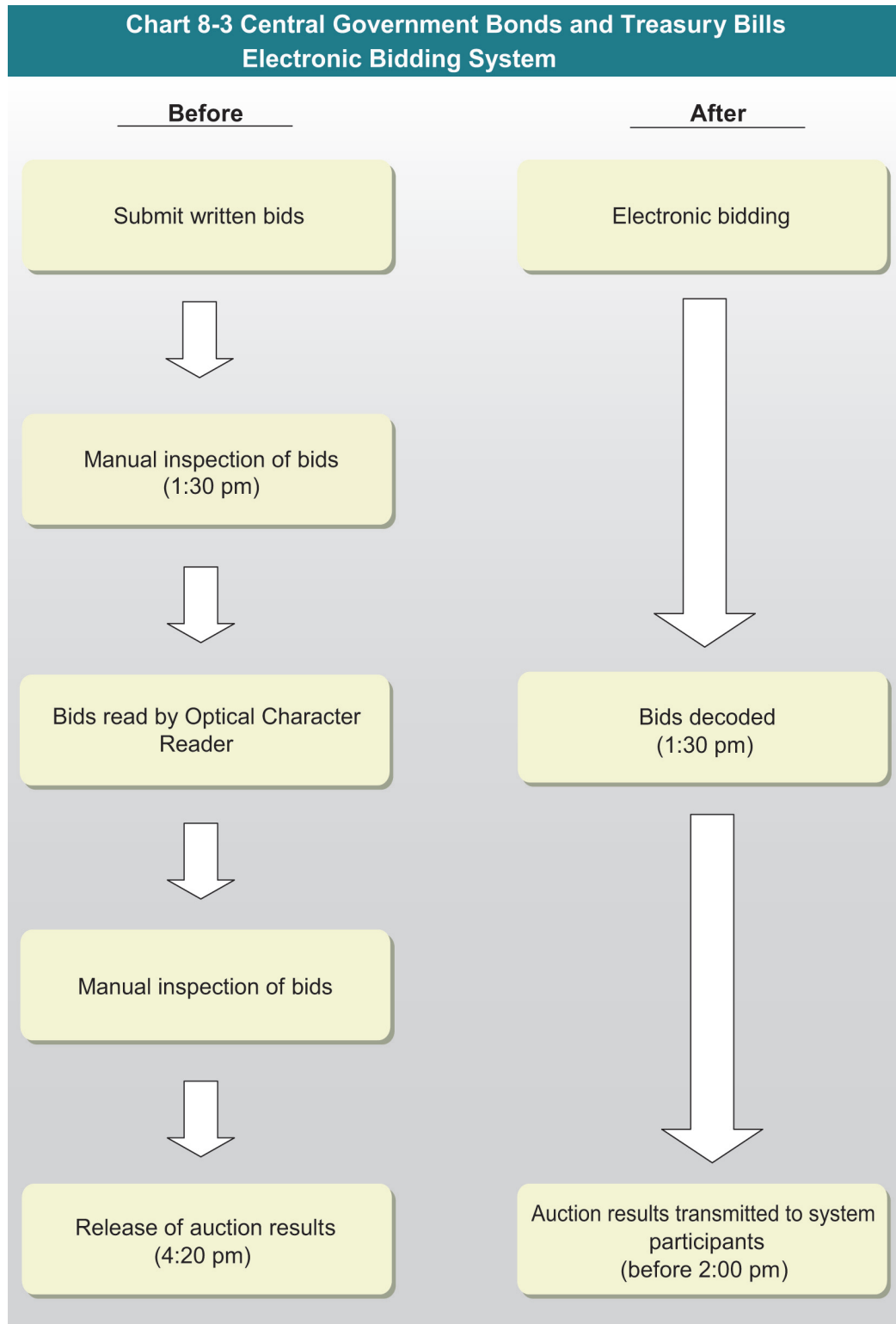
Treasury bills have been issued in book-entry instead of physical form from October 2001 onwards. Single-price auctions, as expressed in discount rates, have since replaced multiple-price auctions to encourage competitive bidding. Buybacks of Treasury bills are also made in single-price auctions as expressed in yield rates. Bids higher than the base rate are accepted, the lowest of which shall be the buyback rate for calculating the prices payable to successful bidders. The same qualifications required for the dealers and bidding process of Treasury bill sales also apply to buybacks.

3. Electronic Bidding System for Central Government Bonds and Treasury Bills

The Electronic Bidding System (EBS) was launched in March 2001, replacing the manual process, to improve the efficiency of government securities auctions. To ensure that the electronic bidding message is authentic, secure and irrefutable, a digital signature mechanism is used for the transmission of bids. The digital signature is an electronic signature generated by using mathematical methods or other means to create a certain length of digital data encrypted by the signatory's private key that can be verified by the public key.

Electronic bids must be submitted and received prior to the closing time specified in the offering announcement. After the closing time, electronic bidding messages shall be decoded by the EBS and then transferred to the Central Government Securities Auction System for determination of auction awards.

The launch of the electronic system has reduced mistakes and other inconveniences in government securities auctions. Auction results are released about two hours earlier at 2:00 pm instead of the previous 4:20 pm. This allows the market to set prices earlier and is conducive to the development of the bond market. It also improves the quality and efficiency of the auction process as system participants can submit statements and search or print information online.



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Financial Examination and Supervision

Chapter 9**Financial Examination
and Supervision**

The central bank implements monetary policy by affecting changes in the behavior of financial institutions, financial markets, and payment systems. Therefore, to reinforce the effectiveness of monetary policy and to keep the payment system running smoothly, it is important for the central bank to adopt appropriate financial supervisory measures. This chapter begins with a review on the functions of the CBC's financial examination, followed by a brief introduction to Taiwan's financial supervisory system and the CBC's responsibilities. The final section describes two recent developments, the establishment of the Financial Supervisory Commission (FSC) and the implementation of the New Basel Capital Accord.

Section 1 Functions of the CBC's Financial Examination*1. To Promote the Effectiveness of Monetary Policy*

The CBC conducts target examinations and takes actions to correct problems. These measures ensure that financial institutions comply with the CBC's policy, which in turn enhances the effectiveness of monetary policy.

2. To Promote Financial Stability

Promoting financial stability and guiding sound banking operations are among the CBC's major operational objectives. To this end, the CBC conducts financial examination to retrieve timely and accurate information regarding the operations of financial institutions, which is important in the making of the CBC's policy.

3. To Promote Efficiency and Integrity of the Payment System

The payment system is like the plumbing system of a city. Operational failure might lead to liquidity crises and subsequently trigger systemic risk and disrupt financial markets. Therefore, the central bank should monitor the operations of

the payment system to promote its efficiency and integrity. The CBC sets rules and standards for the payment system and monitors its operations to assess potential risks.

Section 2 Financial Supervisory Systems and Central Bank Responsibilities

1. Financial Supervisory Systems

(1) Financial Supervisory Systems before July 2004

Prior to July 2004, the CBC shared supervisory responsibilities with the Central Deposit Insurance Corporation and the Ministry of Finance (MOF). To ensure consistency and efficiency, the MOF set up a committee on banking supervision, co-chaired by a Deputy Minister of the MOF and a Deputy Governor of the CBC.

Under this supervisory structure, the CBC examined most of the domestic banks established before 1991, local branches of European, American and African banks, all bills finance companies, the Chunghwa Post Company, and several financial holding companies.

(2) Unified Financial Examination

To enhance the synergy of financial organizations and to cope with the trend of internationalization and conglomeratization that may complicate business operations in the financial services industry, the *Financial Holding Company Act* was passed on July 9, 2001, providing a legal basis for the establishment of 14 financial holding companies. Furthermore, after reviewing the experiences from countries that have already established a centralized supervisory institution such as Britain, Japan, and South Korea, the Financial Supervisory Commission (FSC) was established on July 1, 2004 to consolidate administrative resources and increase the efficiency of financial supervision. This unified supervisory body is responsible for the prudential supervision of the banking, insurance and securities industries.

(3) Changes in the CBC's Role in Financial Examination

After the establishment of the FSC, the CBC no longer engages in general financial examination. Now it mainly conducts target examinations to fulfill its duties stipulated in the *Central Bank of China Act*. However, the CBC still retains investigative power on cases that might impede the implementation of monetary policy and generate systemic risks. Accordingly, the scope of financial examination of the CBC is redefined in the pending amendment of the *Central Bank of China Act*.

2. The CBC's Responsibilities in Financial Examination

(1) Licensing

Banks should obtain approval from the CBC before engaging in foreign exchange business. The CBC reviews banks' applications and grants licenses to authorized foreign exchange banks.

(2) Regulatory Responsibilities

The CBC formulates regulations regarding monetary policy in areas such as deposit and other liability reserves, liquidity reserves, and selective credit controls. The CBC also stipulates regulations governing foreign exchange business such as export/import related foreign exchange business, external/internal remittances, foreign exchange deposits, foreign currency loans, and foreign exchange derivatives.

(3) Off-site Monitoring

In addition to routinely monitoring activities in the money market and the foreign exchange market, the CBC has also established a report-auditing system, collecting information on financial institutions regarding capital adequacy ratios, quality of assets, regulatory compliance, business strategy and stability, profitability, as well as liquidity management. The analysis drawn from this system may serve as a reference for supervisory authorities.

(4) On-site Examinations

As promoting financial stability is one of the CBC's primary objectives, the CBC still retains the authority to conduct target examinations related to its monetary, credit, foreign exchange and payment system policies.

(5) Enforcement Actions

Under the auspices of the *Banking Law*, the CBC may take enforcement actions against banks violating regulations. For banks violating any of the provisions in the *Foreign Exchange Control Act*, the CBC may suspend their foreign exchange business operations, in whole or in part, for a given period of time.

Section 3 The Financial Supervisory Commission

In line with the government's objective to consolidate the financial supervisory framework, the FSC was inaugurated on July 1, 2004. The commission assumes ultimate responsibility for the prudential supervision of Taiwan's financial markets and financial services industry. Here "financial markets" refer to banking, bills, securities, futures, derivatives and insurance markets, as well as the clearing system, while "financial services industry" includes financial holding companies, the Central Deposit Insurance Corporation, banks, securities houses, futures brokerage firms, insurance companies, and companies engaging in electronic financial transactions. The CBC remains in charge of payment systems that involve financial transactions.

1. Main Features of the Financial Supervisory Commission

(1) Independence

The new commission exercises its authority independently. Each commissioner serves a fixed term of office. This, together with a commission system that features collective decision-making, ensures the integrity of the FSC's policy making. The commissioners are nominated by the Premier and appointed by the President. They are required to have academic expertise or

professional experiences in law, economics, banking, public finance, accounting, or management. Commissioners belonging to the same political party should not exceed one-third of the total number of commissioners, and all commissioners are prohibited from taking part in any political activities during their terms of office. A board resolution is reached only with the consent of the majority of commissioners present at a meeting attended by more than two-thirds of the commissioners.

(2) Transparency

Explanations of serious enforcement actions taken by the commission for legal violations by financial institutions are announced at the appropriate moment. Commissioners and those who assist in the handling of cases should withdraw from cases that may involve potential conflict of interest.

(3) Quasi-Judicial Power

The commission has quasi-judicial power to enforce supervisory regulations. The commission and its subordinate agencies may investigate suspected financial criminal cases with due legal procedure.

(4) Establishment of a Financial Supervisory Fund

In addition to government budgets, the major source of income of the commission is annual fees including fees received for services provided to institutions under its supervision to support the FSC's independent operations. The annual fees are around 0.03 to 0.08 percent of the annual business revenues of financial institutions.

2. *The New Basel Capital Accord*

To improve the integrity and soundness of the financial system, the Basel Committee on Banking Supervision released the revised *International Convergence of Capital Measurement and Capital Standards* in June 2004. The new framework places more emphasis on banks' internal control and risk management, the supervisory review process, and market discipline. Major revisions are as follows:

- (1) The three pillars, minimum capital requirements, supervisory reviews, and market disciplines, are emphasized.
- (2) In addition to credit risk and market risk that have been addressed in the previous Accord, operational risk is also emphasized in calculating the capital ratio.
- (3) For the measurement of credit risk, two principal options are proposed: the standardized approach and the internal rating based (IRB) approach. The standardized approach is conceptually the same as the former Accord but is more sensitive to risk, while under the IRB approach (comprising the foundation approach and the advanced approach), banks are allowed to use their own internal estimates of borrower creditworthiness to assess credit risk in their portfolios, subject to strict methodological and disclosure standards.

The New Basel Accord will be implemented in Taiwan in late 2006. It is expected to have a significant influence on both Taiwan's banks and financial supervisory authorities. To address the risk-sensitive approach to capital requirements proposed by Basel II and to emphasize the risk-oriented supervisory approach, the CBC set up a task force in February 2002 to collect relevant information released by the Basel Committee, supervisory authorities, and financial services industries around the world. In the meantime, the CBC, the FSC, and the Bankers' Association have jointly established a research team to study issues regarding the revision of existing regulations and the applicability of new capital rules and risk models in Taiwan. These efforts are aimed at formulating policy recommendations to facilitate Taiwan's implementation of Basel II.

The Central Bank of China (Taiwan)
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Published by	The Central Bank of China (Taiwan) Address: 2, Roosevelt Road, Sec. 1, Taipei, 10066, Taiwan, R.O.C. Tel: 886-2-2393-6161 http://www.cbc.gov.tw
Publishing Day	October 2006
Distributors	State Bookstore Address: 10, Pa-Te Road, Sec. 3, Taipei, 10502, Taiwan, R.O.C. Tel: 886-2-2578-7542 http://www.govbooks.com.tw
Price	NT\$350
Designed by	The Central Engraving & Printing Plant, Taipei, Taiwan, R.O.C.

GPN: 1009501943
ISBN-13: 978-986-00-6651-7
ISBN-10: 986-00-6651-5

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