

Annex

IV. Annex

The Development of Financial Payment Systems in Taiwan

The Role of Financial Payment Systems

The financial payment systems (FPSs) mainly handle interbank funds transfers among financial institutions; their role in the economy is like that of the utilities plumbing in our day-to-day lives. The performance of FPSs not only determines how well financial transactions run but also has an impact on the stability of the financial system as a whole. Therefore, a well-established FPS is an essential infrastructure that supports the sound operation of a nation's financial system.

In Taiwan, the CBC is the competent authority overseeing the FPSs. Besides building and operating the CBC's Interbank Funds-Transfer System (the CIFS, or CBC-CIFS hereafter), the CBC is mandated to oversee other FPSs in order to construct a safe and efficient financial market infrastructure (FMI).

The Evolution of Taiwan's Financial Payment Systems

1. The Framework

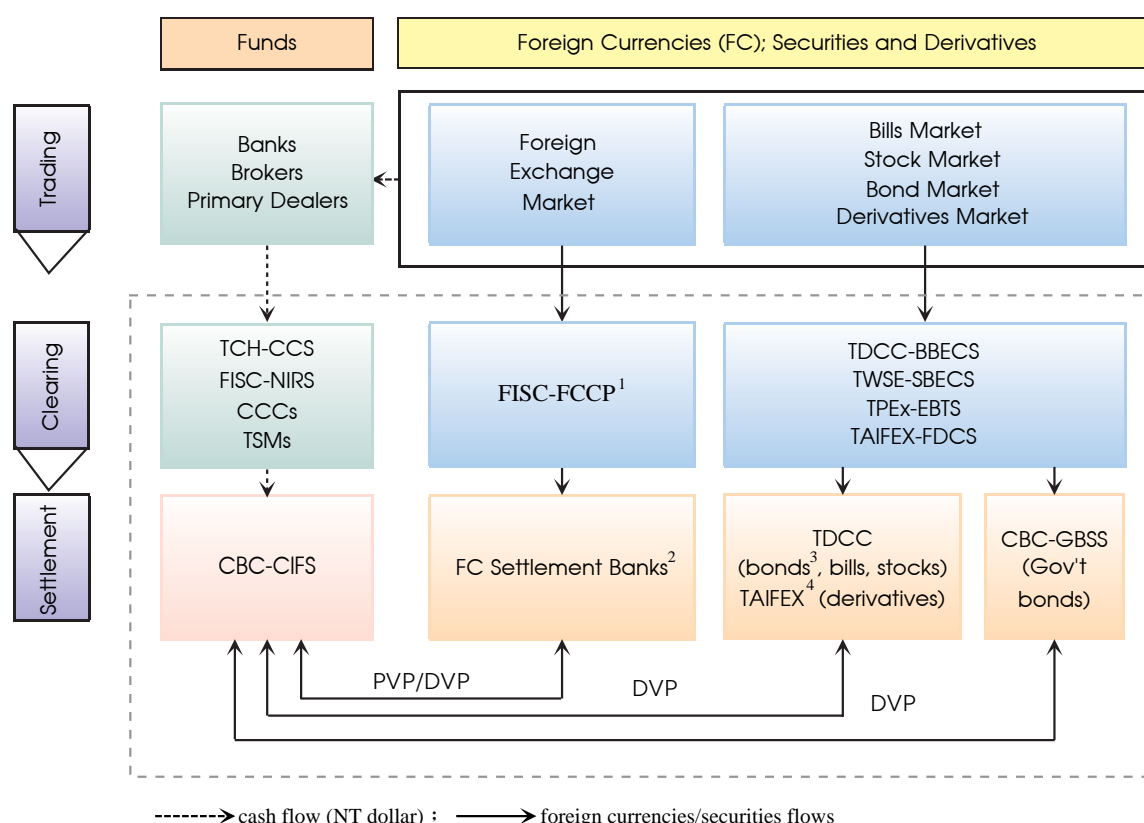
The Bank for International Settlements (BIS) defines FMI as a multilateral trading system among participating institutions, including the operator of the system, used for the purposes of clearing, settling and recording every payment, security, derivative, and other financial transaction. The general picture of the current framework and processes of Taiwan's FMI is illustrated in Chart 1, where the dotted line-framed section indicates the main financial payment and settlement systems operated in Taiwan, including:

- (1) Funds transfer systems: CBC-CIFS, the check clearing system (TCH-CCS), the nationwide interbank remittance system (FISC-NIRS), credit card centers (CCCs), trusted service managers (TSMs) and the foreign currency clearing platform (FISC-FCCP);
- (2) Securities transferring systems: the short-term bills book-entry and clearing system (TDCC-BBECS), the securities book-entry and clearing system (TWSE-SBECS), the electronic bond trading system (TPEx-EBTS), and the futures and derivatives clearing system (TAIFEX-FDCS).

The CBC-CIFS functions as the settlement hub for domestic payment systems and mainly handles operations such as interbank funds transfers, call loan settlement, required reserves adjustment, foreign exchange settlement involving the NT dollar, and bonds and bills settlement. In addition, it

connects with the following clearing institutions to handle fund settlements involving the NT dollar: Financial Information Service Co., Ltd. (FISC), Taiwan Clearing House (TCH), National Credit Card Center (NCCC), Taiwan Depository and Clearing Corporation (TDCC), Taiwan Stock Exchange Corporation (TWSE), Taipei Exchange (TPEX), and Taiwan Futures Exchange (TAIFEX).

Chart 1 Framework and Processes of Taiwan's Financial Payment Systems



1. Currently USD bills are settled via Mega Bank's USD Clearing System;

2. FC clearing banks are Mega Bank (US\$ and euro); Bank of China's Taipei Branch (renminbi); Mizuho Bank's Taipei Branch (yen);

3. Including all kinds of bonds except government bonds;

4. DVP facility is not available between CBC-CIFS and TAIFEX-FDCS.

2. System Integration and Development

To comply with international principles¹ recommended by the Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO), the CBC has devoted itself to improving domestically important payment and settlement systems. It also connects domestic large-value payment systems with the CIFS in order to facilitate settlement efficiency, mitigate systemic risk, and timely monitors bank liquidity positions, so as to support its open market operations. Relevant reforms are explained as follows:

¹ CPSS issued *Core Principles for Systemically Important Payment Systems* (2001); *Recommendations for Securities Settlement Systems* (2001) and *Recommendation for Central Counter Party* (2004), which together have become international standards for the design and management of payment and settlement systems.

(1) Applying Full RTGS and Liquidity Risk Control Facilities to CIFS

With a view to improving the security and efficiency of the large-value funds transfer system, the CBC has revamped its CIFS to implement Real Time Gross Settlement (RTGS) across the board starting from 2002 and adopted liquidity risk control facilities as below:

- A. Providing intraday overdrafts in order to streamline the system operation;
- B. Incorporating a queue mechanism with first-in-first-out ordering to help participants control their liquidity positions in real time;
- C. Setting throughput ratios to require participants to complete payments by a specific ratio at a designated time in order to control the daily payment flows.

(2) Integrating Domestic FPSs and Adopting DVP Mechanism

- A. Starting from September 2002, by sequentially linking CBC-CIFS with systems operated by FISC, TCH, TDCC, TWSE, TPEX, and NCCC, the clearing balances resulting from interbank transactions have been settled by CBC-CIFS. Furthermore, a delivery-versus-payment (DVP) mechanism was introduced for securities settlement to reduce default risks;
- B. Starting from April 2008, the CBC has connected the Government Bonds Book-entry Settlement System (GBSS) with the CIFS, which also adopts a DVP mechanism.

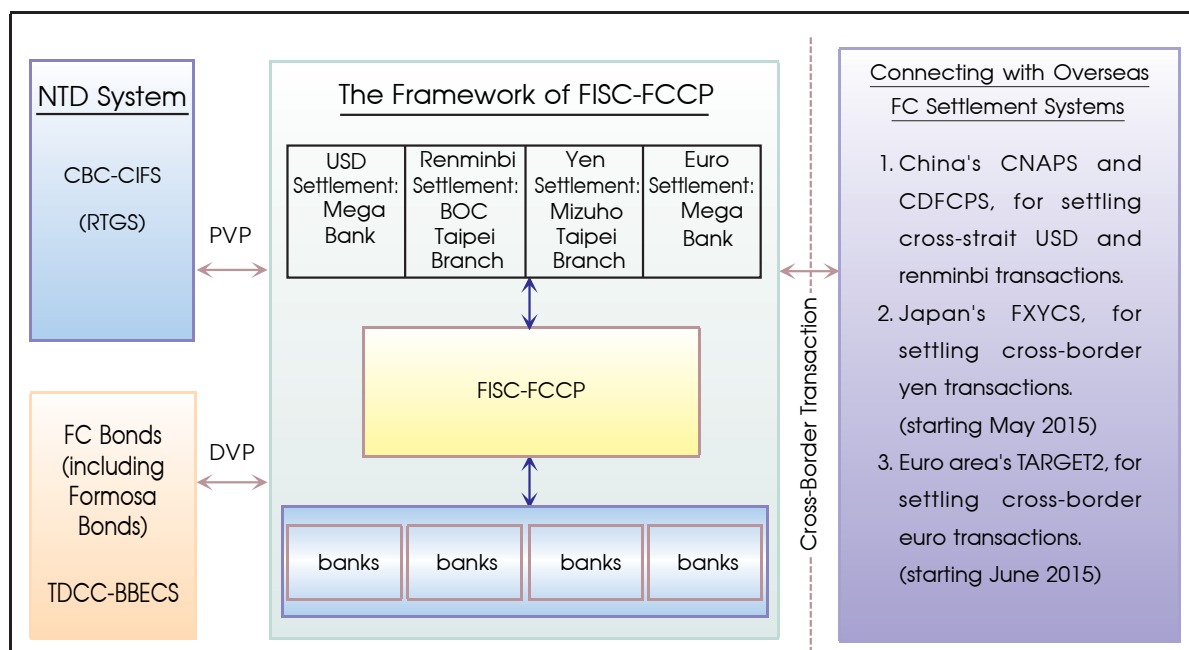
(3) Building Foreign Currency Clearing Platform with DVP and PVP Mechanisms

In September 2012, the CBC consigned the FISC to build a foreign currency clearing platform (herein FISC-FCCP), aiming at enhancing trading efficiency for the foreign exchange market, shortening the payment and settlement process in both local and cross-strait remittances of US dollars and renminbi, and reducing settlement risks and remittance costs of foreign currencies. The platform adopts payment-versus-payment (PVP) and DVP facilities to reduce default risks. The operative framework of the FISC-FCCP is shown in Chart 2.

The FISC-FCCP commenced operation on March 1 in 2013. Later, more businesses have been approved by the CBC to expand the service scope of the platform phase by phase, including:

- A. 2013: offering settlement services for domestic USD remittance and remittance in renminbi both within and across border (including cross strait);
- B. February 2014: offering settlement services for cross-strait USD remittance and PVP settlement for transactions in several foreign currencies;
- C. March 2014: offering settlement services for NTD/USD swap transactions between the CBC and authorized foreign exchange banks, using a PVP mechanism;

Chart 2 Operative Framework of Foreign Currency Clearing Platform



Note: CNAPS = China National Advanced Payment System; CDFPCS = China Domestic Foreign Currency Payment System; FXYCS = Foreign Exchange Yen Clearing System; TARGET2 = Trans-European Automated Real-time Gross Settlement Express Transfer System 2.

D. July 2014: introducing a USD liquidity saving mechanism in order to cut down the demand for USD liquidity;

E. January 2015: offering settlement services for domestic yen remittance.

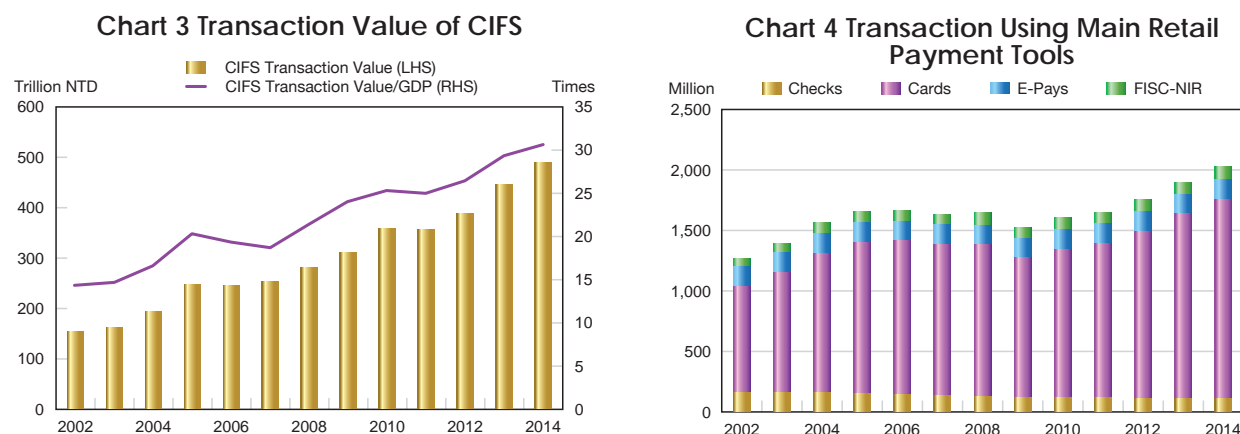
According to the planned service enhancement in 2015, cross-border yen remittance and remittance of the euro both within and across border will be put in place. By then, a PVP mechanism will also have been applied to each currency pair of transactions among US dollar, renminbi, yen, euro and NT dollar. Meanwhile, a DVP mechanism will also be implemented for transactions of bonds and bills denominated in foreign currencies.

(4) Launching the Shared Platform for Mobile Payment

To assist the domestic the financial industry in developing safe and convenient mobile payment services while preventing a waste of resource from repeated investment, the CBC and the FSC approved three domestic clearing institutions, the FISC, the TCH and the NCCC to establish the Taiwan Mobile Payment Co. (TWMP) on September 5, 2014, and 32 participating financial institutions were also invited to become shareholders. The TWMP has engaged in the design and construction

of the domestic financial payment service platform for mobile payment. This payment service provider trusted service manager (PSP TSM) platform was completed around mid-December and has been in operation since December 30, 2014.

The Performance of Domestic Payment Systems



Note: Cards include credit cards, ATM cards and debit cards; E-Pays include retail payments for e-commerce development, such as Financial Electronic Data Interchange (FEDI), Financial Extensible Markup Language (FXML), Shared Internet Bank, Shared Mobile Bank, bills payment and ACH.

Sources: National Income Statistics Quarterly, DGBAS, Executive Yuan; Financial Statistics Monthly, CBC.

The CBC-CIFS has become a settlement hub of large-value payments, and its transaction value has more than tripled from NT\$153 trillion in 2002 to NT\$493 trillion in 2014. This reflects that domestic financial transactions increasingly adopt central bank money as settlement assets in place of commercial bank money, and has thus greatly reduced the settlement risk of large value payments. During the same period, the ratio of CIFS transaction value to GDP increased from 15 times to 31 times, with improved efficiency of system operation as a whole (see Chart 3). Moreover, in terms of annual transactions in small-value retail payments, broken down by type of payment tools, checks have shown a remarkable downtrend, cards have become the most popular retail payment instrument, and electronic payments are on the rise and ready to take off (see Chart 4). These changes highlight how the development trend is for e-commerce.

Conclusion

Following the rapid development of information communication technology, domestic banks and non-financial institutions have begun to build transaction platforms based on the Internet or payment channels through mobile devices, in order to tap business opportunities in Internet banking or mobile payment. For example, they may act as an agency of collection and payment, issue

stored-value cards, offer small-value remittance services, etc., keeping in step with the development of e-commerce. To promote the sound development of e-commerce, the *Electronic Payment Processing Institutions Act* was promulgated on February 4, 2015. The Act authorizes non-financial institutions to provide services such as acting as an agent to collect payments, receive funds as stored value, and handle funds transfers under the applicable requirements. The CBC also amended its relevant regulations in accordance with some provisions of the Act, such as reserve requirements and foreign exchange transaction declaration, so as to facilitate related services provided by e-payment institutions.

In addition, in response to emerging business opportunities of mobile payments, four domestic private companies, namely Chunghwa Telecom, United International Mobile Payment, Smart Catch Digital Technology and Taiwan Mobile Payment, have in recent years devoted themselves to building TSM platforms, including the finance-led PSP TSM and the telecom-led mobile network operator (MNO) TSM. These TSMs integrate existing payment methods, such as direct debiting from banking accounts, credit transfer, payment by credit card or stored-value card, or even online/offline to offline/online (O2Os) payments such as online orders collected at convenient stores or cash on delivery. By offering diversified payment services, the TSMs can not only promote convenience and security for the transactions but also boost growth momentum for e-commerce, and thereby further invigorate economic development.